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CONTENTS

HIGH EARLY STRENGTH OF SELF-CONSOLIDATING CONCRETE INCORPORATING QUA-SI-RHA

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ABSTRACT

Self-consolidating concrete (SCC) is an innovative construction material that can be placed into forms without mechanical vibration and able to flow and consolidate under its own weight, and completely fill the formwork even in the presence of dense reinforcement. Self-consolidating concrete, a latest innovation in concrete technology is being regarded as one of the most promising developments in the construction industry due to numerous advantages of it over conventional concrete. The use of mineral additives in SCC was also found to produce other advantages such as enhancement of SCC properties in fresh and hardened states, reuse of industrial and agricultural by products in concrete production and reduction of greenhouse gases into the atmosphere. Thus, the incorporation of Qua-Si-RHA which are the combination of Quarry Dust (Qua), Silica Fume (Si) and Rice Husk Ash (RHA) as supplementary cementitious material and fine aggregate replacement in SCC was investigated. The high-range superplasticizer, water reducer was used as the chemical admixtures which can enhance the rheological properties of concrete.This study presents the results of a laboratory investigation of conventional vibrated concrete and SCC with eco-friendly and sustainable materials. The workability test and compressive strength test were conducted to determine properties of fresh and hardened conventional concrete and SCC. The early strength of conventional and SCC concrete cubes were tested after 24 hours of casting. As expected, the innovation material incorporating Qua-Si-RHA in SCC resulted in high workability performance and high early strength self-consolidating in concrete.

Keywords:
High Early Strength, Self - Consolidating Concrete (SCC), Quarry dust (Qua), Silica Fume (Si), Rice Husk Ash (RHA).

INTRODUCTION

Self - consolidating concrete (SCC) also known as self-compacting concrete was first developed in 1988 by Professor Okamura to achieve durable concrete structures that do not require any vibration for placing and compaction in concrete (Okamura & Ouchi, 2003). SCC is defined as concrete that is able to flow and consolidate under its own weight, completely filling formwork even in the presence of congested reinforcement (Kushwaha *et al.,* 2013).

SCC consists of the same components as conventional vibrated concrete which are cement, water, fine and coarse aggregates with the addition of different proportions of chemical and mineral admixtures. The high-range water reducers (superplasticizers) and viscosity-

modifying agents (VMA) can be used as the chemical admixtures which can change the rheological properties of concrete (Kushwaha *et al.,* 2013).

Silica fume is the mineral admixture while quarry dust and rice husk ash are the industrial and agricultural by products in concrete production. Due to the depletion of natural sand, quarry dust can be used as partial fine aggregate replacement and silica fume and rice husk ash can be used as partial cement replacement in order to reduce the use of cement in a high paste concrete. The use of mineral additives and reusing of industrial and agricultural by products in SCC can enhance the properties in fresh and hardened concrete and at the same time reduce the amount of greenhous gases into the atmosphere (Atan & Awang, 2011). Furthermore, Malaysia Quarries Association reported that there were 322 quarries throughout the country which manufactures granite and limestone (Malaysia Quarries Association, 2004). Thus, by replacing the fine aggregates with quarry dust in concrete, it is hoped that it can reduce the environmental impact and economic problem. The disposal of rice husks into landfill create environmental problem that leads to the alternative idea of substituting rice husk ash in concrete production The content of silica in the rice husk ash is reported about 92-97% (Kartini, 2011). Other than that, by adding a large volume of powdered material can eliminate segregation in concrete (Aggarwal *et al.,* 2008).

Strength performance of concrete is among the problem that had been raised up nowadays. Sufficient compaction and vibration by skilled workers are required in order to enhance the durability performance of concrete. SCC has been used in wide world for placement in congested reinforcement concrete structures where casting conditions are difficult and where pump ability properties are required especially in high rise building. The uniformity of SCC mixtures reduces the permeability which can enhance and increase the performance of concrete. Therefore, the development of SCC enhances the concrete lifespan compared to conventional vibrated concrete (Singh *et al.,* 2013).

Kartini (2011) reported the increased of rice husk ash in the mix resulted in a dry and unworkable mixtures unless Sp is added. Thus, by including the superplasticizer in concrete while maintaining the w/b ratio, the slump and cohesiveness of the concrete will be improved. Rai *et al.* (2016) studied the different percentages replacement of river sand by quarry waste, 0%, 10%, 20%, 30%, 40%, 50%, 70%, and 100% to determine the flowability characteristics of SCC. According to their research study, it can be concluded that at 30% replacement of fine aggregate by quarry waste, the slump flow was observed to be consistent. Thus, river sand replacement of 30% with quarry waste is recommended.

Johnsirani *et al.* (2013) investigated on self-compacting concrete (SCC) with sand replacement of a quarry dust with different percentages of 0%, 25%, 50%, 75%, 100%. The addition of mineral admixtures like fly ash and silica fume and chemical admixtures like super plasticizers had been used. It was reported that, by replacing fine aggregate to quarry dust the strength values decreases gradually after 25% of replacement of quarry dust and in the case of 100% replacement, the compressive strength will highly decrease.

Nowadays, the development of SCC is a desirable achievement in construction industry in order to overcome the problems related with cast-in-place concrete as there is no additional inner or outer vibration needed for the compaction (Kushwaha et al., 2013). The SCC that has been adopted by a large number of precast operations that eliminates the need for vibration and also reduces the labour requirement for SCC placement. Therefore, the energy consumption associated with vibration can also be removed. Thus, the formwork used is no longer subjected to stresses of vibration which reduces the initial cost and maintenance cost of formwork. Other benefit by eliminating vibration in concrete is the noise reduction that increase

the worker productivity by reducing noise-induced and vibration-induced illnesses and at the same time improves the working environment and safety (Ahmadi *et al.,* 2007).

Therefore, this study presents the results of a laboratory investigation of conventional vibrated concrete and SCC containing eco-friendly and sustainable materials. Slump flow test was conducted to compare the concrete workability and compressive strength test was conducted to determine the early strength of conventional vibrated concrete and SCC incorporating Qua-Si-RHA.

The early strength of conventional vibrated concrete and SCC concrete cubes were tested after 24 hours of casting. The result of workability test, compressive strength test and the relationship between workability test and compressive test of conventional vibrated concrete and different mixture designation of Qua-Si-RHA in SCC was investigated in this study. Thus, the early strength of self-consolidating concrete incorporating Qua-Si-RHA was investigated in this study which the Qua-Si-RHA are the combination of Quarry Dust (Qua), Silica Fume (Si) and Rice HuskAash (RHA). Quarry dust had been use as partial fine aggregate replacement while silica fume and rice husk ash had been used as supplementary cementitious material in SCC. High-range superplasticizer, water reducer was used as the chemical admixtures which can enhance the rheological properties of concrete.

EXPERIMENTAL PROGRAMME

Material Preparation

The material used in this study were Ordinary Portland Cement, water, sand, gravel, quarry dust, silica fume, rice husk ash and superplasticizer. The rice husk and rice husk ash was obtained from Seri Tiram Jaya Mill in Kuala Selangor, Malaysia. The rice husk was burnt in a ferrocement furnace to produce rice husk ash and were grinded and sieved with maximum size 150µm. Sand and quarry dust with maximum passing size 5 mm sieve, coarse aggregates from crush granite gravel with maximum size 10 mm sieve while silica fume was sieved with maximum size 150µm were used. Quarry dust, silica fume and superplasticizer are shown in Figure 2, Figure 3 and Figure 4 while Figure 5 shows the rice husk ash preparation as SCC admixtures used in this study.

Figure 2: Quarry dust   Figure 3: Silica Fume   Figure 4: Superplasticizer
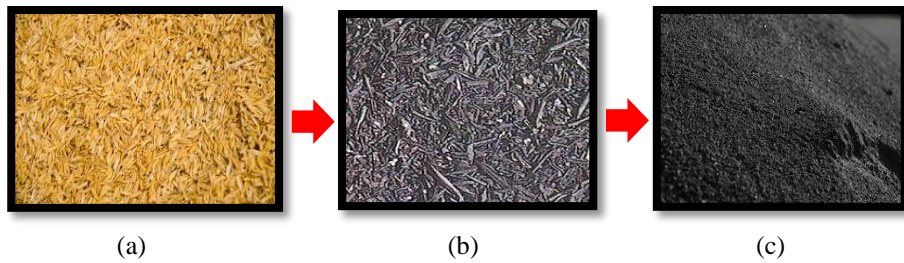
Figure 5: Rice husk ash preparation: (a) Rice husk, (b) Rice husk ash before sieving,
(c) Rice husk ash passing 150 µm sieve, ≤150 µm

Mix Design Proportion

The conventional vibrated concrete or also known as control specimen of concrete grade 40 N/mm² and concrete mix with water cement ratio of 0.45 was designed using DOE method (DOE, 1988). Different mixture designation of QuaSiRHA10, QuaSiRHA20, QuaSiRHA30 with different percentages consist of 10%, 20% and 30% of quarry dust (Qua) to replace sand as partial fine aggregate replacement with constant 5% of silica fume (Si) and 5% of rice husk ash (RHA) of total cement as supplementary cementitious material. The superplasticizer of 2.5% was added as water reducer in SCC. The proportion of partial fine aggregate replacement and supplementary cementitious material were designed based on volume replacement. Summary of concrete mix design for control mix and different proportion of triple blended Qua-Si-RHA in SCC is shown in Table 1.

Table 1: Concrete Mix Proportion

Mixture Designation	Concrete Mix Proportion (kg/m³)							
	Cement	Water	Sand	Gravel	Qua	Si (5%)	RHA (5%)	Sp (2.5%)
Control	440	198	840	840	-	-	-	-
QuaSiRHA10	406.8	198.0	750.1	840.0	89.9	16.9	16.3	11.3
QuaSiRHA20	406.8	198.0	660.2	840.0	179.8	16.9	16.3	11.3
QuaSiRHA30	406.8	198.0	570.4	840.0	269.6	16.9	16.3	11.3

*Qua=Quarry dust, Si= Silica fume, RHA= Rice husk ash, Sp = Superplasticizer

Specimens Preparation

The constituent materials need to be thoroughly mix together to produce a uniform color and consistence in the concrete batch. Method for mixing complies with BS 1881: Pt. 125: 1986. Size of rectangular concrete specimens measuring of 150mm x 150mm x 150mm were casted as shown in Figure 6. All concrete specimens for control, QuaSiRHA10, QuaSiRHA20, QuaSiRHA30 were demoulded and tested in concrete laboratory after 24 hours.
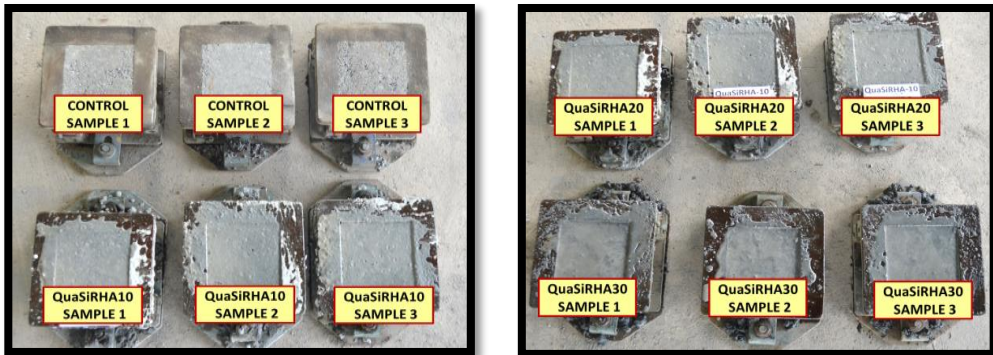
Figure 6: Concrete specimens for control, QuaSiRHA10, QuaSiRHA20, QuaSiRHA30

Test Methods

Slump Flow Test

Slump flow test was conducted in accordance to BS EN 12350-8:2010 to determine the workability of concrete as shown in Figure 7. The cone is lifted and the diameter of the concrete after the flow has stopped is measured. The average diameter of the concrete circle is a measure for the filling ability of the concrete. The slump flow test measures the capability of concrete to deform under its own weight against the friction on the surface of the base plate with no other external resistance present.

Measurement of slump-flow indicates the flowability of self- consolidating concrete and determines the consistency and cohesiveness of the concrete. Slump flow ranging from 500 to 700 mm (20 to 28 inches) is considered as a proper slump required for a concrete to qualify for self-consolidating concrete. The slump flow diameter less than 500 mm indicates the concrete is considered to have insufficient flow to pass through congested reinforcement while slump flow diameter more than 700 mm indicates the segregation of concrete might occur.

Figure 7: Slump Flow Test (BS EN 12350-8:2010)

Compressive Strength Test

Compressive strength test was conducted in accordance to BS EN 12390 – 3: 2009 to determine the early strength of hardened concrete as shown in Figure 8. Size of rectangular concrete specimens measuring of 150mm x 150mm x 150mm were casted. All concrete specimens were demoulded and tested in concrete laboratory after 24 hours. The specimens were dried before tested. The load was applied on the smooth sides without shock and increased continuously until the failure of the specimen.
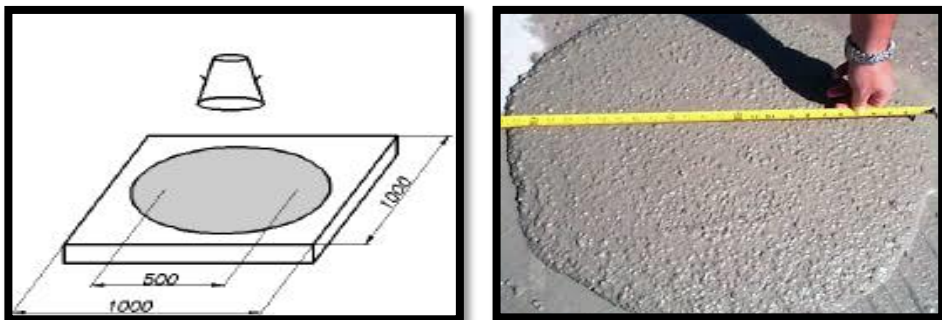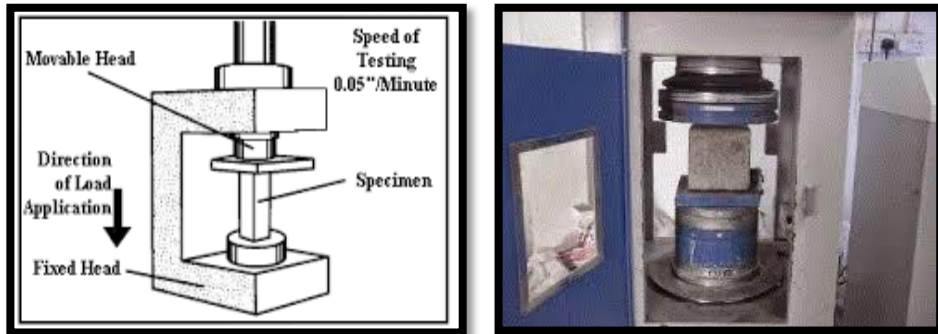

Figure 8: Compressive Strength (BS EN 12390 – 3: 2009)

DATA AND ANALYSIS

Workability Test Result

The graph result of slump flow diameter for control concrete and SCC with different mixture designation of triple blended Qua-Si-RHA for this research study is shown in Figure 9. The slump flow diameter of the SCC mixes with different designation QuaSiRHA10, QuaSiRHA20, and QuaSiRHA30 in SCC increased with the increase of quarry dust consist of 10% to 30% as fine aggregate replacement, constant 5% silica fume and 5% rice husk ash as cement replacement which are 515 mm, 525 mm and 555 mm. The slump flow diameter for QuaSiRHA10, QuaSiRHA20, and QuaSiRHA30 in SCC are more than 500 mm and it can be considered as a proper slump required for a concrete to qualify for self-consolidating concrete.

The workability of SCC increased with the increase percentages of quarry dust due to it physical properties and classified as less water absorbent material than sand. Additionally the usage of superplasticizer in SCC increases the workability exponentially even though the water cement ratio for control and SCC with triple blended QuaSiRHA are the same.

The replacement of rice husk ash in the mix resulted in a dry and unworkable mixtures unless superplasticizer is added. The inclusion of superplasticizer in concrete while maintaining the water cement ratio increased the workability and improved the cohesiveness of the concrete (Kartini, 2011). The addition 2.5% of superplasticizer in SCC absorbed into the cement particles, and imparts a strong negative charge, which helps to lower the surface tension of the surrounding water considerably and thus, greatly enhances the fluidity of the mixes. Therefore, the increases of slump flow diameter with the increase of quarry dust percentages and additional of superplasticizer improve the workability of SCC than conventional vibrated concrete. It indicates the optimum slump flow diameter for this research study is QuaSiRHA30 in SCC.
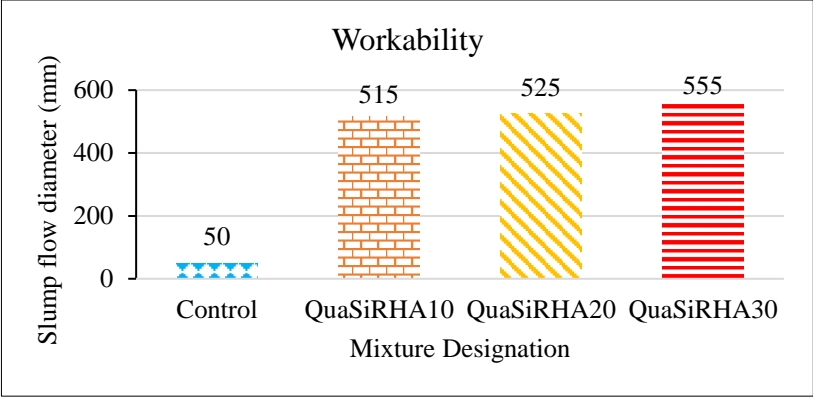
Figure 9: Workability of Concrete Mixture Design

Early Compressive Strength Test Result

The graph result of early compressive strength for control concrete and SCC with different mixture designation of triple blended Qua-Si-RHA for this research study is shown in Figure 10. Early compressive strength test was conducted after 24 hours after concrete mix casting. The result for the early compressive strength test for control, QuaSiRHA10, QuaSiRHA20, and QuaSiRHA30 are 8.22 N/mm^2, 6.68 N/mm^2, 7.36 N/mm^2 and 9.12 N/mm^2. It is observed that the compressive strength of triple blended of Qua-Si-RHA in SCC increased with the increase percentages of quarry dust as partial fine aggregate replacement.

The early compressive strength result for QuaSiRHA10 and QuaSiRHA20 are lower than control concrete. However, the early compressive strength result for QuaSiRHA30 is higher than control concrete and it indicates the QuaSiRHA30 in SCC as the optimum result in this research study. QuaSiRHA30 has the highest early strength between all design mixes, with an increase of 10.9% than control mix. In order to increase the workability of concrete, higher water to cement ratio is needed thus decreasing the strength of concrete. However, by introducing the QuaSiRHA and the use of superplasticizer, higher early strength can be achieved with the constant water cement ratio for all mixes.

Figure 10: Compressive Strength of Concrete Mixture Design
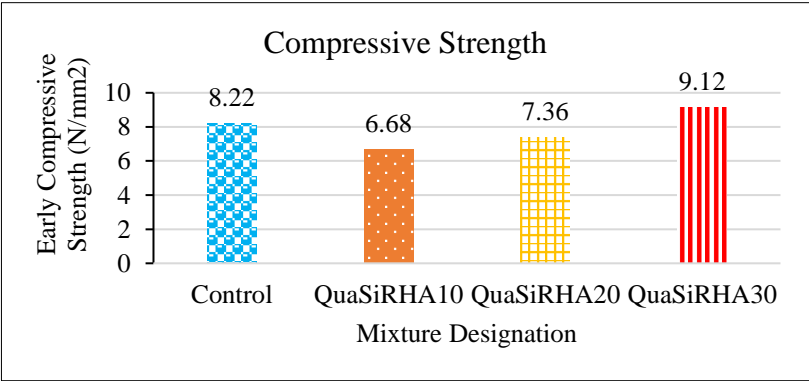
Relationship between Workability Test Result and Early Compressive Strength Test Result

The graph of relationship between workability and early compressive strength for SCC with different mixture designation of triple blended Qua-Si-RHA for this research study is shown in Figure 11. Based on the result of workability and early compressive strength plotted in the graph, equation of exponential trendline was used according to the coefficient of determination value. Furthermore, the coefficient of determination value by using exponential trendline equation is 0.9271 which is nearest to 1.

Thus, the higher the percentage of quarry dust as fine aggregate replacement at constant percentages of silica fume and rice husk ash as partial cement replacement, the higher the workability and the higher the early compressive strength of QuaSiRHA in SCC.

Workability Vs Early Compressive Strength

$y = 493.1e^{0.0374x}$
$R^2 = 0.9271$

QuaSiRHA30 555mm

QuaSiRHA20 525mm

QuaSiRHA10 515mm

Workability (Slump Flow Diameter) (mm)

Early Compressive Strength (N/mm2)
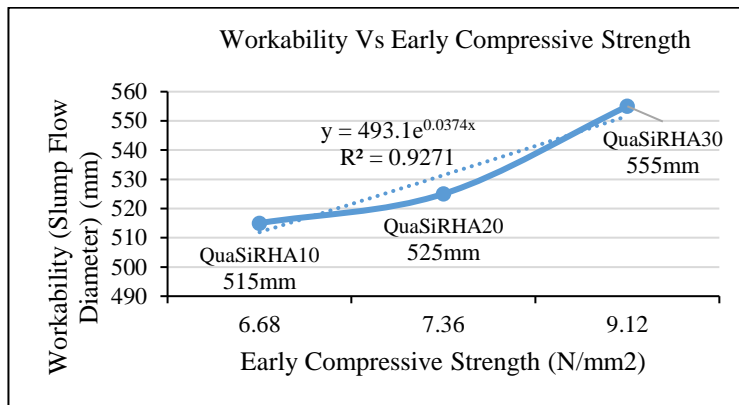
Figure 11: Workability vs Strength of Concrete Mixture Design

CONCLUSION

In conclusion, the workability of SCC increased with the increase percentages of quarry dust due to it physical properties and classified as less water absorbent material than sand. Additionally the usage of superplasticizer in SCC increases the workability exponentially even though the water cement ratio for control and SCC incorporating QuaSiRHA are the same. The early compressive strength result for QuaSiRHA30 is higher than control concrete and it indicates the QuaSiRHA30 in SCC as the optimum result for this research study. QuaSiRHA30 has the highest early strength between all design mixes, with an increase of 10.9% than control mix. Based on the relationship between the workability and early compressive strength result, the higher the percentages of quarry dust as fine aggregate replacement at constant percentages of silica fume and rice husk ash as partial cement replacement, the higher the workability and the higher the early compressive strength of QuaSiRHA in SCC. As expected, the concrete innovation incorporating Qua-Si-RHA as eco-friendly and sustainable materials resulted in high workability performance and high early strength self-consolidating in concrete. Therefore, SCC performance with the innovation of Qua-Si-RHA was improved and higher than conventional vibrated concrete.

ACKNOWLEDGEMENT

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CLOUD BASED STORAGE APPLICATION AS A PROJECT INFORMATION MANAGEMENT TOOL FOR GRADE G5 CONTRACTORS IN SELANGOR

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ABSTRACT

Information management is a vital component of any construction project. Poor communication and collaborations due to poor information management can have a negative effect on project. Small and medium sized organizations face many challenges to adopt high-end project information management software. In such cases, cloud based storage application can offer a feasible solution. This research will focus on the adoption of cloud-based storage application for the G5 contractor in Selangor. Literature review and questionnaire survey were used in the data collection exercise. The study revealed the top three of cloud-based storage application in the industry and there are four (4) critical success factors for adopting cloud based storage application. The aim of this research is to look into the adoption of cloud-based storage applications for small and medium sized contractors. This research is focusing on G5 contractors in Selangor. The output of this research can give a good insight into the industry and help to G5 contractors to adopt cloud-based storage application to improve their information management.

Keywords:

Cloud base storage application, G5 contractor, project information management, Selangor, Malaysia

INTRODUCTION

Information management is a vital component of any construction project. Poor communication and collaborations due to poor information management can have a negative effect on the project. The main reasons for bad information management in the construction industry are the use of traditional means of communications, use of conventional hardcopy storage and fragmented nature of the industry itself. These reasons can be usually overcome by application of new technologies such as project information management software to improve information management of a project.

The small and medium sized contractors are the backbone of the construction industry. They are important not only in small scaled projects, even in large construction projects managed by large contractors, the majority of actual construction works are sub-contracted to small and medium sized organization. Contractors in Malaysia are graded by Construction Industry Development Board (CIDB) according to their net worth and tendering capacity. In this research CIDB grade G5 contractors are categorized as medium sized contractors.

Small and medium sized organizations face many challenges to adopt the high-end project information management software such as the high initial cost and lack of dedicated technical personal to operate it as reported by (Hooks, 2013). Therefore it is not a feasible solution for small and medium-sized organizations. By using the cloud-based storage applications, this will help small and medium-sized organizations to tackle the poor information problems (Michael & Jill, 2013). The features of the cloud-based storage applications make them a suitable option for this purpose such as storing the documents in the cloud and file sharing. By doing so the files can be shared amongst the project team and it can be accessed at anytime and anywhere.

Nourbakhsh et al., (2012) reported that many significant types of research have been done on the development and application of the cloud-based storage application, but there is a lack of research on small and medium organizations usage. This research will focus on the adoption of cloud-based storage application for the G5 contractors group in Selangor. In order to achieve it, the research objectives are (1) to evaluate and compare top three (3) cloud-based applications in the construction industry, (2) to investigate the current usage of cloud-based application among G5 contractors in Selangor and (3) to predict the critical success factors for adoption of cloud-based application G5 contractors in Selangor.

According to CIDB, (2015) G5 contractors are classified as construction organizations that have a net worth of RM 250,000 and tendering capacities of not more than RM 5 million. The justification for choosing G5 contractors, because they make up the majority of the construction industry as reported by the CIDB, (2015). There are currently 1253 registered G5 contractors in Selangor as reported by CIDB, (2015).

CLOUD BASED TECHNOLOGY

The construction industry has been a real catalyst for the economic development enjoyed in recent years, as infrastructure development has been at the core of both the Economic Transformation Program (ETP) and the Tenth Malaysia Plan as reported by (Mohd Fateh et al., 2016). The majority construction industry has shown a comparatively low usage of cloud-based technologies to improve its operation as stated by (Alshawi & Ingirige, 2003). (Pena-Mora & Tanaka, 2002) also highlighted that the construction industry is still primarily exchanged by conventional human communication and printed drawings or documents. (Kumar, Cheng, & McGibbney, 2009) suggested that cloud-based storage application could hold potentials for resolving some of the most demanding needs of the construction industry. It is believed specifically cloud-based storage could increase significantly the usage of information management technology among the small and medium-sized construction organizations mainly due to the prices and costs involved with cloud computing is considerably less than conventional technology.

Cloud-based storage application offered to the general public. The basic services which are free namely cloud storage space and file sharing. For the premium and advanced features such as larger storage space, support for different file type and unlimited file sharing. According to (Scott, Cheong, & Li, 2003) cloud-based storage application can utilize the

browsers, data handling devices and other Internet technology to create a network for sharing and manipulating corporate information in a way that will assist construction project managers to complete work on time and within budget. This research will focus on the top three (3) cloud-based storage applications according to market share. Based on the report by (Griffith, 2015) the top 3 three (3) cloud-based storage applications are Dropbox, Google's Drive and Microsoft's OneDrive. Table 1 summarizes the features of the three (3) applications.

Dropbox

Dropbox is most commonly used cloud-based storage application. Dropbox is estimated to have over 300 million users according to (Griffith, 2015). Dropbox has many features such as allowing file sharing to users who don't have a dropbox account. The most basic plan of Dropbox is for individuals and is free, it offers 2GB of storage and integration with Microsoft 365. This allows editing of documents directly within the Dropbox platform. The basic plan can be upgraded to 1TB of storage. The business plan offers unlimited storage and numbers of users can add according to the organization's needs. Dropbox also has mobile application integrations, which means the users can use mobile devices such as tablets and phones to view and edit documents.

Google Drive

The main benefit of Google Drive is team collaborations. Google Drive also offers storage and file sharing, but it is in terms of team collaboration that it really shines. The documents can be edited simultaneously by different team members in real time. It also offers built-in chat tool to talk to other team members. Google drive also has integration with 3rd party software such as project management software. The price of Google Drive is very competitive with that of Dropbox and like Dropbox Google Drive also has mobile integration in the form of mobile application.

Microsoft Onedrive

Microsoft OneDrive has about 250 million users as reported by (Griffith, 2015). OneDrive offers limited free storage and excellent integration with Windows operating systems. Like Dropbox and Google Drive it also has mobile integration and can be used on mobile devices.

Table 1: Summaries of top three (3) cloud-based applications.

	Dropbox	**Google Drive**	**Microsoft OneDrive**
Free Storage	2GB	15GB	5GB
Price per GB (Paid Plans)	USD 0.008	USD 0.01	USD 0.007
Supported Operating Systems	Windows, Mac	Windows, Mac	Windows, Mac
Supported Mobile Platforms	Android, iOS, Windows Phone, BlackBerry, Kindle Fire	Android, iOS	Android, iOS, Windows Phone
File size Limit	Website: 10GB. Application and Mobile Application: Unlimited	Documents: 50MB for Google Docs, Other documents: Up to 1,024,000 characters. Spreadsheets: 2 Million cells. Presentations: 100MB. Drawings: Unlimited. Other Files: 5TB	10GB
Private File sharing	Yes	Yes	Yes
Public File sharing	Yes	Yes	Yes
Synchronization amongst all platforms	Yes	Yes	Yes
Collaborative Editing	Yes	Yes Including real time editing.	Yes

From table 1, the comparison shows that broadly all three applications offer similar functions such as public and private file sharing, synchronization amongst all platform and collaborative editing. The significant differences will on the price per GB for the storage and sizes that are allowed to be uploaded. The features and cost of cloud storage application are suitable for project information management in a medium size contractor. The findings will contribute the contractor in making decision when choosing the cloud storage application that meets their budget and requirements.

METHODOLOGY

The amount of data required to achieve the objectives of this research is the significant number of respondents. Quantitative method is used for this research. The questionnaire survey was conducted with the key construction professionals of the G5 contractors such as project managers, engineers, quantity surveyors and others. The ideal target respondents for questionnaire were the personal who is in charge of the information management during the projects. The questionnaire is designed into three (3) sections. Section A is focusing on the general information of the respondents and the organizations. While section B and C focus on the second and third objectives of the research respectively. The data collected from the questionnaire survey will be analyzed using the Google Forms application and Microsoft Excel software. For section A and B, frequency analysis is used while for section C the relative importance of was quantified by the relative importance index (RII) method prior to ranking. The target population for questionnaire survey is 1253 registered G5 contractors in Selangor based on the report by (CIDB, 2015) therefore, simple random sampling was used. In order to determine the sample size, the confidence level was set to 95% while the margin of error is 10%, the sample size is 90. Therefore, 200 questionnaire sets were distributed but only 120 questionnaires were sent back.

RESULTS AND DISCUSSION

Top three respondent's designations were project managers (25%), followed by engineers (22%) and administrators (19%). Figure 1 summarizes on the respondent's designations. Most of the respondents that participated in the survey have vast experience in the construction industry. According to figure 2, 42% of the respondents have more than 10 years of experiences followed by 33% have 1 to 5 years experiences and 25% have 5 to 10 years experiences in the construction industry. Figure 3 illustrated the respondent's usage on cloud-based storage applications. 55% of the respondents are using cloud-based storage application as a tool to facilitate their task. Figure 4 summarizes the years of respondents experienced in using cloud-based storage application. The majority of the respondents (57%) have been using cloud-based storage application for 1 year to 3 years. From the data collected, it represents that respondents are experienced both in the construction industry and cloud-based storage applications. Therefore, the data collected is considered to be reliable and good for the survey.
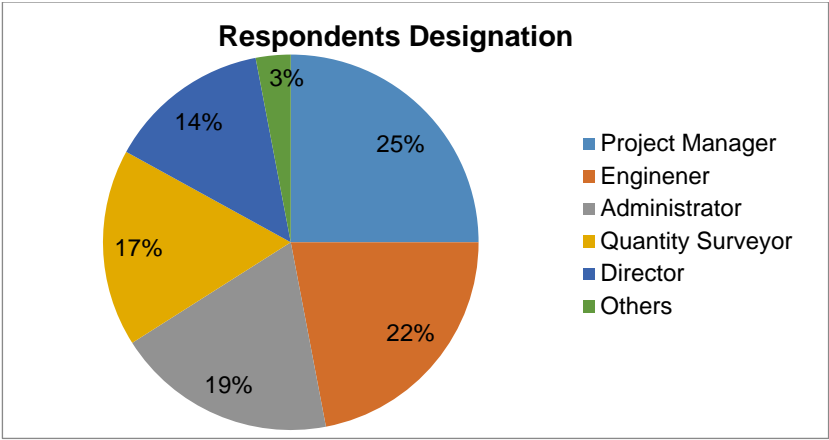
Figure 1: Respondent's designations
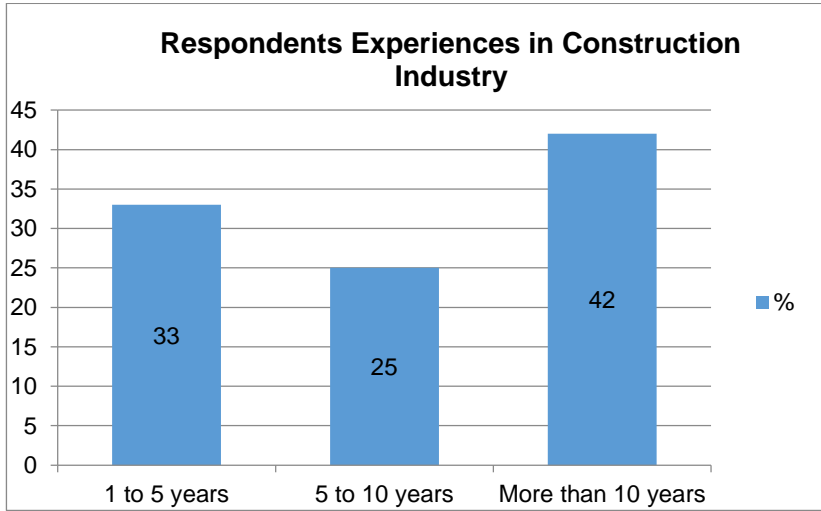
Figure 2: Respondent's Experiences in Construction industry
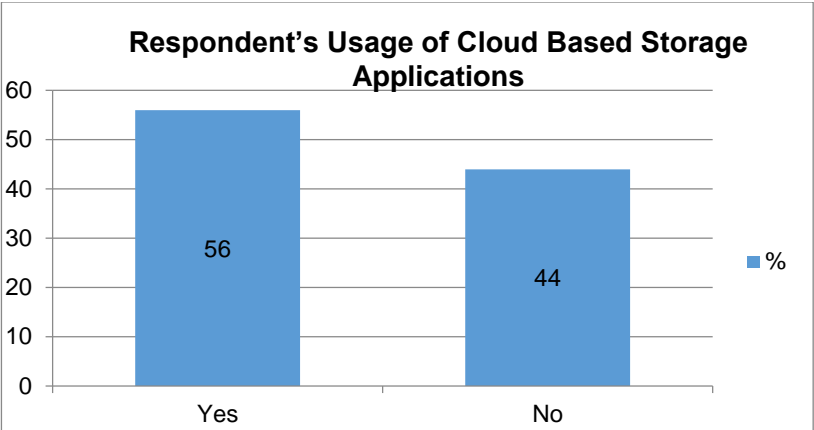
Figure 3: Respondent's Usage of Cloud Based Storage Applications
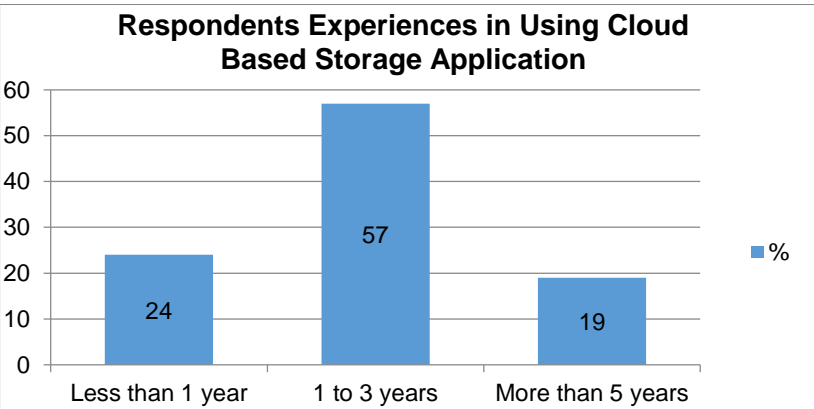
Figure 4: Respondent's Experiences in Using Cloud Based Storage Application

Based on findings from the literature review, respondents were asked the preferred cloud-based storage application. Figure 5 show that majority preferred Dropbox as their cloud-based storage application. Table 2 ranked the selection criteria for the cloud-based storage application. The most important selection criteria for the respondents are the cost, the initial and operating cost respectively. After the cost wise is it followed by the ability of the software to share files with multiple users. The criteria are as expected since the most pressing concern of small organizations like G5 contractors is the cost. The ability to share files with multiple users is mandatory functions for any software that can be used to manage the information of a project, as the files have to be shared with the many stakeholders and the many employees of the contractor. Based on table 3, the respondents admit that use of cloud-based storage application has made sharing of project information easier and has made communication amongst stakeholders easier. They also agreed that use of cloud-based storage application allowed the project team to focus more on the actual construction. These results show that the use of cloud-based storage application can have a noticeable positive impact on a project and construction industry as a whole. Table 4 illustrated the critical success factor for adopting cloud based

storage application. The respondents agreed that intensive training for staffs of the organization is vital for successful adopting of Cloud-based storage application. It needs to cover that on the step by step usage and features of the application. The respondents also agreed that awareness amongst the stakeholder is vital. When the awareness among stakeholders is high, it able to translate into using all features that the application offers.
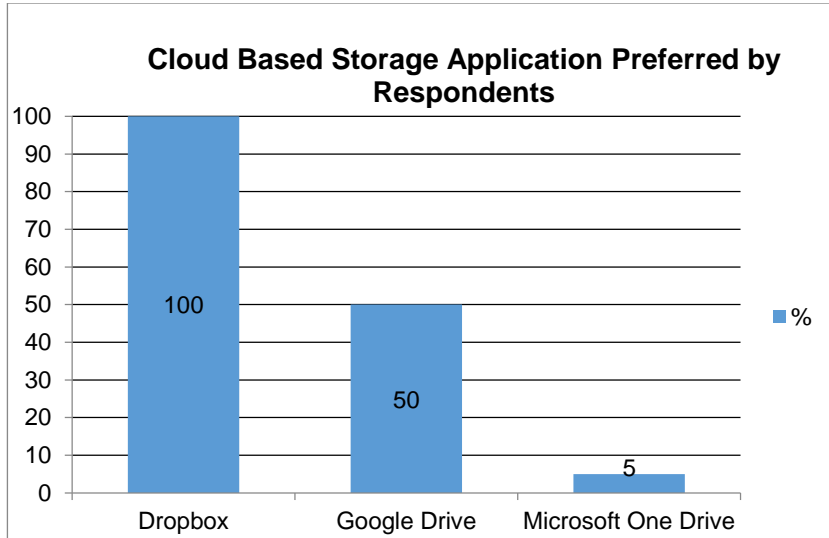
Figure 5: Cloud Based Storage Application Preferred by Respondents

Table 2: Selection Criteria for Choosing the Cloud Based Storage Application

Selection criteria	RII	Ranking
The initial cost of the software.	0.90	1
The operating cost of the software	0.88	2
Able to share the files with multiple users.	0.84	3
The size of free storage provided.	0.80	4
User friendliness / Ease of use.	0.79	5
The security features.	0.78	6
Able to use on mobile devices.	0.72	7
Able to simultaneously do editing.	0.71	8

Table 3: Impact of Using the Cloud Based Storage Application

Impact of Using Cloud Based Storage Application	RII	Ranking
Sharing of project information easier.	0.86	1
Communication amongst stakeholders easier.	0.84	2
Allowed the project team to focus more on the actual construction.	0.81	3
Reduced the cost of projects.	0.71	4
Improved the quality of projects.	0.67	5
Reduced the completion period of projects.	0.62	6

Table 4: Critical Success Factors for Adopting Cloud Based Storage Application

Critical Success Factors for Adopting Cloud Based Storage Application	RII	Ranking
Intensive training for staffs of the organization	0.94	1
Awareness about cloud-based storage application	0.82	2
Make it compulsory or policy in the organization on the usage	0.81	3
Able to use on mobile devices	0.78	4

CONCLUSION

The conclusions are based on the three (3) objectives of this study. Objective 1, to evaluate and compare top three (3) cloud-based application in the industry. Based on the findings from the literature review, the top three used software available were identified as Dropbox, Google Drive and Microsoft OneDrive. Table 1 summarizes the comparison shows that there is little actual difference between the three application and all three are suitable for use by G5 contractors. For objective 2, to investigate the current usage of cloud-based application among G5 contractors in Selangor. Based on the analysis from the questionnaire survey, 56% of G5 contractors use cloud-based storage applications as illustrated in figure 3.57% of them have been using the application for 1 to 3 years as stated in figure 4 and 100% of them preferred using Dropbox as summarized in figure 5. Lastly for objective 3, as stated in table 4 intensive training for staffs of the organization is the critical success factor for adoption of the cloud-based application. Apart from that, respondents agreed that the important selection criteria for the cloud-based storage application will the initial cost of the software. As G5 contractors are small and medium organizations, the initial investment will always play a big role in adopting new technologies and methods.

ACKNOWLEDGMENT

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ENGAGEMENT IN INFORMAL AND FORMAL CROSS-NATIONAL DIVERSITY AMONG LOCAL UNDERGRADUATE STUDENTS IN KLANG VALLEY, MALAYSIA

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ABSTRACT

The purpose of this study was to determine the level of engagement in informal and formal cross-national diversity among local undergraduate students in Klang Valley, Malaysia. A survey design was used to reach out to 1000 respondents who were selected using stratified sampling. The respondents were undergraduate students at three selected higher education institutions in Klang Valley. The findings indicate that the level of engagement for informal cross-national diversity is low and the level of engagement in formal cross-national diversity is moderate. The level of engagement for both types of diversity is not satisfactory and can further be improved to ensure that local students will benefit from cross-national diversity engagements.

Keywords:
Informal cross-national diversity engagement, formal cross-national diversity engagement, undergraduate students, Malaysian context, higher education, diverse campus

INTRODUCTION

Statistics have shown an apparent influx of international students into higher education institutions (HEIs) in Malaysia, particularly in the last ten years. With a total of 31,674 international students in 2004, the number increased drastically to 110,000 by the end of 2015 (The Sun Daily, 2015). Additionally, with the National Higher Education Strategic Plan for 2007-2020 (Ministry of Higher Education Malaysia [MOHE], 2012) in place, Malaysia aims to enrol a total of 200,000 international students by 2020. Thus in years to come, HEIs in Malaysia can expect more international students within their campus.

An increase in the number of international students will result in a racially diverse campus. A racially diverse campus has its own theoretical and practical implications. A greater number of international students on campus increase the probability of local students to come into contact and engage in interaction with international students. Past studies have shown the benefits of contact and interactions with people who are culturally different. Framed upon Allport's Contact Theory (1954), studies have conceptualised and measured contact in two forms: (i) informal interactions and, (ii) formal contexts in learning about culturally dissimilar others. Numerous studies have found that engagement in both formal and informal diversity contributes to a number of positive educational outcomes such as civic-mindedness (Cole & Zhou, 2013; Denson & Bowman, 2011), self-efficacy and general academic skills (Denson & Chang, 2009) and pluralistic skills (Engberg & Hurtado, 2011).

However, for both informal and formal cross-national diversity to yield positive educational outcomes, we must first ascertain if engagement in formal and informal cross-national diversity occurs at a satisfactory level among local undergraduate students. Within

Malaysian context, many studies (Mustapha et al., 2009; Tamam et al., 2013; Tamam & Krauss, 2014) have examined the level of engagement in diversity experiences among undergraduate students; however, these studies examined such engagement at an intra-national level. Limited studies have reported such diversity engagement at a cross-national level in which respondents engage in these diversity engagements with students of other nationalities. According to Kamal and Maruyama (1990), cross-national contacts are more complex as compared to intra-national contacts since within intra-national context, members share some common symbols such as language, food and national customs. Therefore, this study aims to: (i) determine the level of engagement in informal cross-national diversity (InformalDE) among local undergraduate students in Klang Valley, (ii) to determine the level of engagement in formal cross-national diversity (FormalDE) among local undergraduate students in Klang Valley

Engagement in Informal and Formal Cross-National Diversity

Informal cross-national diversity engagement (InformalDE) refers to local students' interactions with international students within informal settings. This type of engagement is unstructured and voluntary. Informal cross-national diversity engagement is measured in terms of its quantity and quality (Bowman & Denson, 2011; Bowman & Park, 2015; Bowman et al., 2016; Mayhew & Engberg, 2010).Quantity refers to the number of times respondents engage in informal cross-national diversity. As opposed to superficial contacts judged on the frequency of interactions, quality interactions are more meaningful and reflect a greater amount of intimacy. Formal cross-national diversity, on the other hand, refers to engagement in diverse activities institutionalised by HEIs in increasing interaction and knowledge about cultural others. Thus the activities are more structured and are carried out within formal settings.

Both quantity and quality are important in diversity engagements; however, a number of studies (Bowman & Denson, 2011; Chang et al., 2004; Denson & Chang, 2009; Hurtado, 2005) found that though quality occurs a lot lesser than quantity, the effects of quality are more significant than quantity. This is because quality exhibits the qualities of the four optimal conditions outlined by Allport (1954) which include equal status, common goals, intergroup co-operation and authority support.

The literature has shown somewhat consistent findings on the level of engagement in formal and informal cross-national diversity. Many studies (Brown & Daly, 2004; Eisenchlas & Trevaskes, 2007; Leask, 2009; Summers & Volet, 2008; Tamam & Abdullah, 2012) found that both local and international students are not interested to engage in both types of diversity experiences, causing the level of engagement in both formal and informal cross-national diversity ranges from low to moderate. Further, Marginson and Wende (2007) found this lack of engagement occurs both inside and outside of classroom. Findings from Leask's (2009) study using focus groups further explain this lack of engagement. International students claimed that local students are avoiding them, and local students expressed difficulty in working with international students.

Brown and Daly (2004) and Cotton et al. (2013), on the other hand, found a slight difference in terms of the level of engagement in formal and informal cross-national diversity between local and international students. Brown and Daly (2004) found that international students are more motivated to engage in cross-national diversity experiences as compared to local students. Brown and Daly (2004) also examined the role of attitude in determining whether or not students would engage in cross-national diversity. They found that the lack of engagement is not attitudinal-based since both international and domestic students indicated a favourable impression of one another. Instead, this lack of cross-national engagements can be explained by various factors such as students' preference to stay within familiar boundaries

(Brown & Daly, 2004; Denson & Bowman, 2011). Despite more active engagement of international students, Denson and Zhang (2010) found that local students demonstrated greater growth in terms of graduate attributes in comparison to international students as a result of the engagement in cross-national diversity. However, most studies focus on international students' engagement in cross-national diversity resulting in the underrepresentation of local students' engagement in diversity experiences within the literature (Jon, 2013; Colvin et al., 2014). Locally, many studies focus on engagement in formal and informal diversity experiences within an intra-national context. At an intra-national level, engagement in diversity experiences is measured based on respondents' contact with other fellow Malaysian students who are mainly the Malays, Chinese and Indians. Contact with students of other nationalities is not included. Tamam et al. (2013) is an example of a study that examined the level of engagement in informal and formal diversity at an intra-national level. The survey was conducted at a Malaysian public university involving Malay, Chinese and Indian undergraduate students. The study found that the level of engagement in diversity experiences as not satisfactory.

A meta-analysis by Bowman (2011) provided a solid evidence for the benefits of engagement in informal and formal diversity. The findings also indicated the stronger role of engagement in informal cross-national diversity as compared to formal cross-national diversity. However, in a survey using longitudinal data set, Chang et al. (2004) found that engagement in formal cross-national diversity has the highest and most consistent effects on student outcomes as compared to informal cross-national interaction. More current studies (Cole & Zhou, 2013; Bowman et al., 2016) have also indicated similar findings, that formal cross-national diversity show consistent effects even post college.

METHOD
Sampling and Data Collection

The population of the study was undergraduate students at three higher education institutions with unique student racial composition characteristics. Based on the statistics from the Ministry of Higher Education, Lim Kok Wing University of Creative Technology (LUCT) meets the characteristics of Location 1 in which international students are the majority within its population. Infrastructure University Kuala Lumpur (IUKL) meets the characteristics of Location 2 in which there is a balanced composition of local and international students. Universiti Kebangsaan Malaysia (UKM) meets the criteria set for Location 3 in which the local students are the majority. Since most universities in Malaysia exhibit heterogeneity characteristics, stratified sampling was used to ensure representativeness of sample across the locations resulting in 1000 respondents involved in the study. At the respective locations, systematic sampling was used to identify the respondents. Respondents were given three days to complete the questionnaires and upon return of the questionnaires, the respondents were given token.

Measurement

Informal cross-national diversity engagement (InformalDE) refers to engagement in voluntary interactions with individuals who are culturally different within informal, unstructured settings. This may include dining, socialising and making friends with international students. Informal cross-national diversity engagement is measured in terms of its quantity and quality. The respondents were asked to indicate their degree of agreement to ten items on a five-point scale (1= never to 5 = very often). Some of the sample items are "How frequently have you dined with international students in this campus?", "How often do you make friends with international

students?" and "How frequently do you share problems with international students in this university?" These items were derived from past studies, and that they have been tested for validity and reliability in exploratory and confirmatory factor analyses by Yunus et al. (2014) using a Malaysian dataset. The Cronbach's alpha value of the ten-item informal cross-national diversity engagement model was 0.945.

Formal cross-national diversity engagement (FormalDE) refers to engagement in diverse activities that provide respondents the knowledge about cultural others and opportunities for cross-national interactions within formal, structured settings. FormalDE was measured using six items tapping into respondents' engagement in diverse structured diversity activities such as enrolment into racial workshops, class assignments and extra-curricular activities. The items are measured using Likert's five-point scale, ranging from 1 (never) to 5 (very often). These items were also tested for reliability and validity by Yunus et al. (2014) using a Malaysian dataset. The reported alpha coefficient is 0.831.

In determining the level of engagement of both formal and informal cross-national diversity engagement, the class interval formula is used. Hence, based on Likert's 5-point scale, a score of 1.00 to 2.33 reflects a low level of engagement; a score of 2.34 to 3.67 reflects a moderate level of engagement; and a score of 3.68 to 5.00 reflects a high level of engagement.

RESULTS

Of the 1000 respondents involved in the study, slightly more than half (54.6%) of the respondents were female, 42.5% male and 2.9% did not indicate their gender. Slightly more than half of the respondents are in the 19 to 21 age category suggesting that most of the respondents were in their first year. Majority of the respondents (70.8%) were Malays, 12.3% were Chinese and 12.9% were Indians showing that all ethnicities are well-represented in the sample. The number of respondents from the three HEIs (LUCT, IUKL and UKM) is comparable based on stratified sampling.

Table 1 Distribution of Respondents by Gender, Age, Ethnicity and University

Variables	Percentage			
	All N=1000	LUCT n = 300	IUKL n = 301	UKM n = 399
Gender				
Male	42.5	42.3	53.2	34.6
Female	54.6	56	45.8	60.1
Missing	2.9	1.7	1.0	5.3
Age				
19-21	56.9	58.3	23.9	80.8
22-24	39.4	39.6	66.1	19
25	3.7	2.1	10	0.2
Mean	21.37	21.24	22.51	20.61
SD	1.62	1.58	1.46	1.25
Ethnicity				
Malay	70.8	71.7	56.1	81.2
Chinese	12.3	10.0	16.9	10.5
Indian	12.9	13.3	22.3	5.5
Bumiputera	2.9	3.3	3.0	2.5
Others	1.1	1.7	1.7	0.3

Level of Engagement in Informal Cross-National Diversity (InformalDE)

As reflected in Table 2, the level of engagement in informal cross-national diversity for the full sample is generally low. Nearly half of the respondents (48.5%) are found to be least engaged, another 35.5% are moderately engaged and 16% are highly engaged in informal cross-national diversity. This is consistent with the mean ($M = 2.51$, $SD = 1.02$) which is below the theoretical midpoint score.

The breakdown of the level of engagement in informal cross-national diversity by institutions provides a clearer pattern of the engagement. At LUCT (international students are the majority) and IUKL (with a balanced composition of local and international students), the respondents indicate a higher level of engagement in informal cross-national diversity. At LUCT, almost half of the respondents (41%) are moderately engaged and 22% are highly engaged in InformalDE. The mean is slightly below the theoretical midpoint score ($M = 2.84$, $SD = .99$). At IUKL, more than half of the respondents (51.8%) are moderately engaged and 16.3% are highly engaged in InformalDE. The mean is slightly below the theoretical midpoint score ($M = 2.86$, $SD = .90$). On the other hand, at UKM (local students are the majority), a majority of the respondents (69.4%) show a low level of engagement in informal cross-national diversity, a small number (25%) indicate a moderate level of engagement and a very small number (5.5%) have a high level of engagement in informal cross-national diversity. The mean ($M = 2.000$, $SD = .912$) is below the theoretical midpoint score. From this finding, it can be observed that respondents at locations with a greater number of international students seem to have a higher level of engagement in informal cross-national diversity.

Table 2 Mean and Distribution of Respondents by Level of Engagement in Informal Cross-National Diversity (InformalDE)

Level of Engagement	All	LUCT	IUKL	UKM
	N = 1000	n = 300	n = 301	n = 399
Mean (SD)	2.51 (1.02)	2.84 (.99)	2.86 (.90)	2.00 (.91)
Low (1.00 – 2.33)	48.5%	37%	31.9%	69.4%
Moderate (2.34 – 3.67)	35.5%	41%	51.8%	25%
High (3.68 – 5.00)	16%	22%	16.3%	5.5%

Note: LUCT=Lim Kok Wing University of Creative Technology, IUKL=Infrastructure University Kuala Lumpur, UKM=Universiti Kebangsaan Malaysia
On Likert's 5-point scale

Level of Engagement in Formal Cross-National Diversity (FormalDE)

As shown in Table 3, respondents indicate a slightly greater level of engagement in formal cross-national diversity as compared to informal cross-national diversity. For the full sample, a majority of the respondents (45.7%) are moderately engaged in formal diversity. The

mean is also slightly higher (M = 2.694, SD = .867) than the mean score for informal cross-national diversity.

When disaggregated by institutions, the engagement in formal cross-national diversity seems to show a similar pattern with the level of engagement in informal cross-national diversity. Respondents at LUCT (international students are the majority) and IUKL (a balanced composition of local and international students) show a higher level of engagement in FormalDE as compared to respondents at UKM (local students are the majority). LUCT shows that majority of the respondents (45%) moderately participated in FormalDE. This percentage corresponds with the mean (M = 2.922, SD = .878) which is very close to the theoretical midpoint. At IUKL, more than half of the respondents (56.5%) are engaged in FormalDE. As for UKM, more than half of the respondents (54.9%) show a low level of engagement in FormalDE.

Table 3 Mean and Distribution of Respondents by Level of Engagement in Formal Cross-National Diversity (FormalDE)

Level of Engagement	All	LUCT	IUKL	UKM
	N = 1000	n = 300	n = 301	n = 399
Mean (SD)	2.69 (.87)	2.92 (.88)	2.88 (.80)	2.38 (.82)
Low (1.00 – 2.33)	33.3%	33.7%	29.9%	54.9%
Moderate (2.34 – 3.67)	45.7%	45%	56.5%	38.3%
High (3.68 – 5.00)	13.2%	21.3%	13.6%	6.8%

Note: LUCT: Lim Kok Wing University of Creative Technology, IUKL: Infrastructure University Kuala Lumpur, UKM: Universiti Kebangsaan Malaysia
On Likert's 5-point scale

Based on the percentage and mean score for both informal cross-national diversity engagement (M = 2.51, SD = 1.02) and formal cross-national diversity engagement (M = 2.69, SD = .87), the respondents seem to show a slightly higher engagement in formal cross-national diversity.

DISCUSSION AND CONCLUSION

The study was carried out to determine the level of engagement in informal and formal cross-national diversity among local undergraduate students in selected universities in Klang Valley, Malaysia. The findings indicate a low level of engagement in informal cross-national interactional diversity and a moderate level of engagement in formal cross-national diversity. In general, the level of engagement for both types of diversity is not satisfactory.

The low level of engagement in informal cross-national diversity (InformalDE) is not new. This finding concurs with most studies done on interracial interactions within higher education contexts (Brown & Daly, 2004; Eisenchlas & Trevaskes (2007); Leask (2009); Summers & Volet (2008). Locally, studies by Mustapha et al. (2009) and Tamam and Abdullah (2012) on level of engagement in informal intra-national diversity indicate similar finding

which implies that even among multi-ethnic Malaysian respondents, the level of engagement in interaction was found to be low and not satisfactory.

In further understanding the pattern of engagement in informal cross-national diversity (InformalDE), the findings are disaggregated by the institutions. The institutions demonstrate unique types of student composition in which LUCT has international students making the majority; IUKL has a balanced composition of local and international students; and UKM has local students making the majority. Based on the descriptive data, respondents at LUCT and IUKL demonstrated a higher level of engagement in informal cross-national diversity (InformlDE) as compared to UKM. It seems to imply that a greater number of international students on campus increase the probability of engaging in informal cross-national interaction. UKM, with the least number of international students, shows a low level of engagement in informal cross-national diversity among its respondents.

A low level of engagement in informal cross-national diversity indicates that local students do not engage much in voluntary interactions within informal settings with international students. Despite the known benefits of intergroup interaction towards various educational outcomes, local students do not seem to capitalise on this resource. Summers and Volet (2008) acknowledged the reservations that local students face in engaging in cross-national interactions. A plausible explanation to this reservation is the preference towards in-group members. Some studies (Arkoudis et al., 2013; Eisenchlas & Trevaskes, 2007) found that the lack of informal cross-national interaction could be due to students' preference to stay within familiar boundaries. This can further be explained by Hofstede's (1980) cultural dimensions which theorises that members of the collectivistic culture tend to favour in-group members who are similar. Thus, in the context of this study, the respondents' lack of engagement in informal cross-national diversity could be due to their preference engaging in informal interactions with their fellow Malaysian friends rather than with the international students.

A low level of engagement in informal cross-national diversity also indicates that informal cross-national diversity occurs at a superficial level, which means that informal cross-national diversity engagement demonstrates quantity and thereof lack of quality. This should be a cause for concern since earlier studies have indicated the importance of quality over quantity in cross-national interaction. Quality of interaction is paramount and that quantity does not equate quality (Leask, 2009). Therefore, informal cross-national diversity engagement must not be left to chances instead it must be systematically planned and executed. Hence, higher education institutions must play their pivotal role in manipulating or planning such activities.

As for formal cross-national diversity engagement, the findings indicate a moderate level of engagement. The engagement in formal diversity is slightly higher than engagement in informal cross-national diversity. This finding concurs with the literature (Bowman, 2011; Glass, 2011; Jon, 2013; Tamam & Krauss, 2014).

Analysis according to the institutions revealed a similar pattern with informal cross-national diversity engagement. Institutions with greater number of international students (LUCT and IUKL) show a greater level of engagement in formal diversity among their respondents as compared to UKM which has a very small number of international students. Due to students' preference to stay within familiar boundaries (Arkoudis et al., 2013), engagement in formal cross-national diversity may be more tolerable since it is institutionalised and not self-initiated thus explains a greater level of engagement as compared to informal cross-national diversity. This is pertinent as a number of studies (Chang et al., 2004; Bowman et al., 2016) found that formal diversity has a more consistent effect on student outcomes as compared to informal cross-national interactions.

The findings have somewhat indicated that student racial composition seems to play a role in the level of engagement in informal and formal cross-national diversity. The role of student composition was not much explored in earlier studies, particularly within Malaysian setting thus the contribution of the present study. This was feasible since the study involved multiple sites which exhibit unique characteristics in terms of student racial composition for data collection. Nonetheless, the finding is based on descriptive data. In further understanding the role of student composition in terms of its direct and indirect effect, more advanced statistical analyses can be used.

In conclusion, higher education institutions must play an active role in institutionalising activities that promote engagement in cross-national diversity among the students. Intervention programmes should be designed to include both the informal and formal types of engagement and with much consideration given not only to the quantity but also the quality of the programmes.

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REFUSAL STRATEGIES IN ENGLISH AMONG MALAY ESL STUDENTS

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ABSTRACT

Good communication requires not only linguistic knowledge, but also an understanding of social and cultural factors in a situation. Studies on refusal strategies are not new. Many studies relating to refusals in English were focusing on western languages. The present study was an attempt to explore the use of refusal strategies as a speech act by Malay university students in Malaysia. Specifically, the study was looking at gender differences in refusal strategies and the most revealing social strategies in response to refusals used for power distance. The study employed a quantitative approach with survey as its research design. The participants consisted of 43 Malaysian students, (20 males and 23 females), studying in their bachelor degree programmes. Data was collected through a Discourse Completion Task (DCT). All data collected were analysed by Mann-Whitney U Test and the Kruskal-Wallis H test. The findings showed that the Malay English as a Second Language (ESL) students employed more indirect strategies compared to the direct strategies. The high frequency in use of indirect strategies demonstrates that the subjects were aware of the fact that the use of the indirect strategies lessens the face-threatening effect of the speech act of refusal.

Keywords:
Refusal strategies, language competence and language performance, communicative competence, ESL students.

INTRODUCTION

Human beings communicate with each other to get information, share ideas and thoughts through small chat with families, friends and people around them. Therefore, proper ways of speaking to others play an important role in communication. Good communication requires not only linguistic knowledge, but also an understanding of social and cultural factors in a situation.

Chomsky's (1965) language competence and language performance is thought to be instrumental in discussing the students' pragmatic competence. The idea of pragmatic competence was first being introduced by Canale and Swain (1982) where they defined pragmatic competence as referring to the ability to use language appropriately in different circumstances. Whereas circumstances are defined as purposes for communicating which often referred to as functions like apologizing, complimenting, requesting and refusing.

Under the umbrella of pragmatic competence there is a term introduced by Canale (1983) called pragmatic impairment. Pragmatic impairment is when a language learner does not have a balanced between fluency and accuracy. Fluency in a language means the ability to speak easily, reasonably quickly and without having to stop and pause a lot. Some students can be very fluent in English language, but they may have some grammatical mistakes that they commit to while communicating with others or they may not be good in using the language. On the other hand, precision in communication encompasses how well communicators engender

verbal and nonverbal messages that are understood by others and how well those messages are perceived, comprehended, recalled, and interpreted.

Furthermore, in communication, refusals take place in all languages. It could be refusing a request, an offer, a suggestion or others. Brown and Levinson (1978) stated that a refusal might offend the listener; hence getting messages across clearly without offending the listener becomes difficult. That is why the speaker has to make the conversation longer in order not to offend the other person.

Statement of the Problem

According to Hiba Qusay et al. (2011) study on a group of Malay students in a university in Malaysia, majority of the Malay students studied appear to be too direct and even rude while they are involved in communication. This is due to their inability to figure out the norms of appropriateness for various speech acts and interlocutors in the target culture. In other words they do not use pragmatically appropriate language when communicating (Graddol, 1997).

Refusals are intricate verbalization acts that require not only long sequences of negotiation and cooperative achievements, but also "face preserving manoeuvres" to accommodate the noncompliant nature of the act (Gass & Houck, 1999, Fe'lix-Brasdefer, 2006). Refusals were not as much studied as other conditions under the Verbalization Act Theory but were being paid incrementing attention to as well (Beebe, Takahashi, & Uliss-Weltz, 1990 Bardovi-Hartford, 1990 Liao & Breshnahan, 1996 Blum-Kulka & Olshtain 1984 Gass 1999 Takahashi & Beebe 1987 Nelson & Cason 2002). Most cross-cultural studies of the verbalization act of reluctant have investigated between varieties of English or English and other languages like Japanese, Arabic, Spanish Germany and so forth. Fewer studies on refusals by Malaysian ESL learners have appeared in the literature according to H.Q.A Sattar et al, (2011).

Moreover, although Malays are Malaysia's largest ethnic group, accounting for over half the population, so far no study has visually examined their performance of refusal verbalization acts in utilizing the English language. Various studies relating to refusals in English were focusing on western languages which was carried by Beebe et al, (1990) Chen, (1996) and Fe'lix-Brasdefer, (2006) which has shown refusing a person of higher power is even more difficult than refusing a person of equal or lower power status. This could be due to the statuses and their position.

Moreover, there are also studies on examining the influence of interlocutors' social status and gender on the provided refusal strategies. While there are a lot of studies in the literature of refusals that have investigated the effects of interlocutors' social rank on their responses, very few have paid proper attention to the power distance and social status in refusal strategies.

According to Athieh and Yassin (2011), there have been studies on the speech act of requests, compliments, apologies, and complaints in the sociocultural pragmatics field, but the speech act of refusal has not been widely studied in the sociocultural pragmatic particularly on specific context.

Riding on this scenario, examining the refusal strategies adopted by some Malay university students should be a good topic for research. Refusals as being discussed by many scholars in the field showed to be very tricky and are considered difficult conditions to face. It involves the sensitivity from both parties; the senders and the receivers.

Jessica Raman (2016) in her thesis "*Refusal Strategies in English by Malaysian Indian Undergraduates*" said that Malaysians, as a whole are a face conscious society. Therefore, they are prone to avoid face-threatening situations as much as possible. Nevertheless, refusals are parts of our daily conversations and cannot be avoided. Refusal expressions differ from one person to the other depending on variables like situations, surroundings, power and the age gap between interlocutors.

Research Questions

The present study was an attempt to explore the use of refusal strategies as a speech act by Malay university students in Malaysia. Hence, researchers mainly focused on the refusal strategies that were used by Malay students who were studying in higher education. Specifically, the study was investigating the differences in refusal strategies used by male and female students, looking into the types of refusal strategies frequently used by them and determining the most revealing refusals according to power distance (social status situation).

These concerns were addressed by searching for answers to the following research questions:

1. What are the types of refusal strategies used by a group of Malay students in IUKL?

2. Are there any differences in the use of refusal strategies between male and female Malay students in IUKL when communicating?

3. Do Malay students in IUKL realise the speech act of refusals when refusing a person of lower, equal, or higher social status situation?

RELATED LITERATURE

Theoretical Framework

The central tenet of Speech Act Theories is that the uttering of a sentence is part of an action within the framework of social institution and conventions. Another important aspect of the Speech Act Theory is the concept of felicity conditions, introduced by Austin (1962) and later developed by Searle (1969).

The theoretical framework of this study explains the connections of each theory in discussing the phenomenon of refusal strategies. The model of Communicative Competence by Hymes (1962) is used as the biggest cause to see how refusal strategies could be explained. The Communicative Competence Model emphasized the importance of language as a system of communication in which knowledge of language use is important. Canale (1983) redefined Communicative Competence as sociolinguistic competence and refers it to how utterances are produced and understood appropriately in different sociolinguistic contexts and how this depend on the contextual facts such as status of the participants, purpose of interaction and conversations governing interactions. In this study, the speech act of refusal falls under the category of expressive referring to Searle's Taxonomy.

The study of refusal strategies also takes into account the aspect of politeness which is the central aspect in the field of cross-culture speech act research. Brown and Levinson's (1987) theory of politeness with the concept of face (self-image) was adopted. Past research that adopted Brown and Levinson's Politeness Theory has shown that the speech of refusal threatens the listener's face-value. It is said that "the speaker does not care about the listener's desires and that the speaker's desires are not the same as the listener's".

Past Studies

Based on Ramos (1991), a refusal is to respond negatively to an offer, request, invitation, and so on. How one says *No* is more important in many societies than the answer itself. Therefore, the interlocutor must know when to use the appropriate form and its function. Refusals are considered to be a Face-threatening Act (FTA) according to Brown and Levinson (1987). The positive or negative face-value of the speaker or the listener is risked when a refusal is called for or carried out. Consequently, refusals, as sensitive and high-risk, can provide much insight into one's pragmatics. Therefore, Ramos (1991) said that, to perform refusals, it is highly indicative of one's non-native pragmatic competence.

Refusals, in cross-cultural communications and for non-native speakers, are known as 'striking points' (Beebe et al. 1990). Generally speaking, various strategies are being used to avoid offending people's interlocutors while communicating to lessen the risk of ruining interpersonal relations.

In a study of Chinese and Malaysian university students' refusal behaviour, Farnia and Wu (2012) investigated the refusals to invitation by using a written discourse completion test and an immediate structured interview aimed to examine the students' perception concerning

their cognition and language of thought in the process of refusing. The findings showed that both groups used similar types of refusal strategies but they are differed in the frequency of the refusals. In addition, the most frequent refusal strategies were found to be *statement of regret*, *excuses*, *reasons and explanation* and *expression of negative ability and willingness*.

Umale (2011) carried out a study to investigate the similarities and differences between ten British speakers and ten Omanis who responded to situations in a Discourse Completion Task (DCT) which consisted of various interlocutor statuses (low, high and equal). Umale's findings suggested that both the Omanis and the British speakers tended to use indirect refusals strategies, mainly *statement of regret*, *care for the interlocutor's feeling*, *giving reasons and promise for future acceptance*, to refuse requests from their superiors.

METHODOLOGY

Sample

For this present study, the participants consisted of 43 Malaysian students, (20 males and 23 females), studying in bachelor degree programmes. They are all Malays by ethnicity. The age range of the students was 18 to 30 years. Their mother tongue was Malay language and English was studied as a second language. The sample used English language for studying purposes only.

Data Collection and Procedure

This study employed a quantitative approach with survey as its research design. Data for this study was collected through the DCT that was adopted from Umale's (2012). The DCT consisted of 12 situations, two of which deal with academic settings and the others with everyday life.

Once the answers were collected, the responses given by the English as a Second Language (ESL) students were classified into strategies and then coded according to a modified classification of refusal strategies proposed by Beebe et al. (1990) as shown in Table 1.

Table 1: Classification of Refusal Strategies

Type	No.	Strategy	Expressions
Direct Refusal	1	Direct	I refuse. No, I can't
Indirect Refusal	2	Reason	I'm busy
	3	Regret	I'm so sorry
	4	Consideration of Interlocutor's feelings	I appreciate the offer ….. 'Thank you'
	5	Let Interlocutor off the hook	Don't worry about it That's Ok You don't have to
	6	Wish	I wish I had money
	7	Set conditions for future or past acceptance	If the work is complete you may go tomorrow
	8	Hedging	Oh, I'm not sure
	9	Statement of philosophy/principle	I never lend money
	10	Repetition of the part of the request	Malaysia?

RESULTS AND DISCUSSION

Research Question 1: What are the types of refusal strategies used by a group of Malay students in IUKL?

To answer the research question, data was gathered from the 12 situations asked in the questionnaires. These 12 situations displayed the types of refusal strategies. Since researcher used Beebe's benchmark, 22 refusal strategies has been highlighted. The data collected were analysed by using descriptive statistic frequency and percentage.

In order to obtain the frequency of refusal strategies used by the participants, the number of each strategy type used was counted. It was found that the types of refusal strategies that most used by the Malay IUKL students were indirect strategies (excuses (100%) and regret (100%)). This was followed by getting off the hook (97.7%), direct (90.7%) and set condition for past and future acceptance (76.7%). As for the lowest refusal strategies used by the Malay IUKL students, indirect strategies (ask reason (4.7%), ask questions (9.3%) and prefer (9.3%)) were used.

Research Question 2: Are there any differences in the use of refusal strategies between male and female Malay students in IUKL when communicating?

Referring to the research question above, the data were gathered from the same DCT. Again, the data was obtained from the 12 situations about refusal strategies. To see the results, the data were keyed-in in the SPSS Version 23. The Mann-Whitney U Test was used to test the data. The Mann-Whitney U Test is known to be used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed. The Mann-Whitney U statistical test is non-parametric alternatives to the Related T-test and the Unrelated T-test. It examines two sample data sets and enables us to decide whether they are statistically different from each other.

Based on the results obtained, male and female participants were found to differ significantly only in their use of the refusal strategies number one which is 'direct' type of refusal strategies (Z = -2.226, p = 0.026) with females used it more than males (24 vs. 19.7 mean rank). They did not differ from each other in their use of all other strategies. Among the relevant responses given by the male and female participants in terms of direct refusal are;

Male participants : *No! I insist!*
   : *I can't lend you some money this month…*
Female participants   : *…. unfortunately, I can't join you.*
   : *I have to decline that offer…*

There are also irrelevant responses given by the male and female participants which are;

Male participants : *hell no…*
Female participants   : *I quit!*
   : *You're fired!*

Research Question 3: Do Malay students in IUKL realise the speech act of refusals when refusing a person of lower, equal, or higher social status situation?

The same DCT, with the same 12 situations were used. Only that, the data gathered was divided into three social statuses. There are equal, higher and lower social status. The data was also keyed-in in SPSS Version 23 but the data was analysed by using Kruskal-Wallis H Test. The Kruskal-Wallis H test (sometimes also called the "one-way ANOVA on ranks") is a rank-based nonparametric test that can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable. It is considered the nonparametric alternative to the one-way ANOVA, and an extension of the Mann-Whitney U test to allow the comparison of more than two independent groups. The Kruskal-Wallis test statistic is approximately a chi-square distribution, with k-1 degrees of freedom should be greater than 5.

The findings showed found that there was no significant number for refusal strategies used by the participants for the equal social status. However, for the higher social status, the most significant refusal strategies used by the participants was refusal strategy 1 (direct) which

was $X^2 = 3.703, p = 0.054$. An example taken from situation 11: Participants had to refuse an offer from someone with a higher status; the manager of the company and one student gave an answer like this *"I can't sell this car…"*

For the lower social status, the most significant refusal strategies used by the participants were refusal strategy 1 (direct) which was $X^2 = 8.337, p = 0.004$ and refusal strategy 5 (get off the hook) which was $X^2 = 3.746, p = 0.053$. Two examples for this;

In situation 3: Participants needed to refuse to his/her employee's request and one student answered, *"I can't allow you to leave early today…."*

In situation 12: Participants had to refuse an offer from the domestic helper and one student answered, *"It's okay. No big deal."*

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

Conclusion

All in all, some findings of the research questions were similar to the past studies and some were different. Farnia and Wu (2012) had similar findings when they also found that both genders used similar types of refusal strategies but only differed in the frequency of the refusals. In addition, the most frequently used refusal strategies were found to be "*statement of regret, excuses, reasons and explanation and expression of negative ability and willingness"*. With regards to the adjuncts to refusals, the results also revealed that the participants used *positive opinions, feelings, or agreement, expressions of gratitude and appreciation*.

Another similar study was also found in Al-Shboul et al. (2012) when they investigated the similarities and differences of the speech act of refusals in English between Jordanian English as a Foreign Language (EFL) and Malay English as Second Language (ESL) among the postgraduate students. His results revealed that both groups used almost similar strategies with similar frequency in performing refusals.

The Malay students of IUKL chose not to risk their interpersonal relationship or also known as face-threatening acts according to Brown and Levinson (1987). Takahashi and Beebe (1987) said that the 'speech act of refusal as a face-threatening-act, has been identified as a "major cross-cultural stinking point for ESL students" which can lead to unintended offense and a breakdown in communication.

In terms of differences in the use of refusal strategies between male and female Malay students in IUKL when communicating, the findings apparently did not show much significant values. This current study is paralleled with the study of Hassani et al. (2011). Unlike Miri et al. (2015), the t-test indicated significant difference between male and female performance on seven refusal strategies including: criticize the requester, hedging, postponement, statement of regret, statement of empathy, statement of principle, and unspecific reply.

All past studies seemed to agree with the same findings. The differences however manifested more in the number of the strategies employed rather than in the types of the refusal strategies. As for the current study, the conclusion might be tenable on the grounds that the number of the students involved was small for the researcher to be able to find more significant values for more Refusal Strategies. As for what have been found, the findings can turn to be generalizable to refusal behaviour as well.

The findings for the third RQ were in line with Hiba Qusay et al. (2011) in their study on the Refusal Strategies in English by Malay University Students. The same findings were found that social status power was closely related to the students' realisation patterns of the refusal strategies. Participants in their study displayed variation in the frequency and the refusal strategies used in relation to the social status variables.

Implications

The current study has a few implications towards the theories underpinning it. Firstly the findings of the study contributed to the study of communicative action in its sociocultural context. Researchers in this study felt there was a need for L2 pragmatics to be taught to develop lexical and grammatical knowledge. The findings strongly suggest that without a pragmatic focus, foreign language teaching could not promote students' metalinguistic awareness. Finally, despite those few limitations, the current study supported the view that pragmatic ability can indeed be systematically developed through proper planning of the classroom activities.

Recommendations

This study considered the type of refusal strategies used by Malay students in IUKL. Nothing was done to compare such strategies with other languages. A cross cultural study of the use of such strategies can be done through the comparison of languages. Finally, the present study compared the use of refusal strategies in general. However, it is possible to compare the effects of gender, age groups, and educational background on the use of refusal strategies in different politeness systems.

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HARNESSING THE POWER OF MOBILE TECHNOLOGY: A LOOK AT MALAYSIAN MOBILE COMMERCE LANDSCAPE

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ABSTRACT

More Malaysians are waking-up with their mobile devices by their sides these days. The adaption of mobile into our daily lives has caused a massive shift in the user behavior. This underscores the absolute importance of mobile technology as a marketing tool. The unprecedented growth of the wireless communication technologies in this case the mobile technology; can be seen as the new business model and a platform that will have a similar, if not bigger, impact on the business communities and industries than electronic commerce. Ways in which people are consuming information have evolved, causing many brands and organizations to change with the times at the risk of losing their business. Businesses should harness and leverage this market segment in depths in order to be able to develop an effective marketing tool. This article provide review on the growth of the mobile technology and in particular amongst the Malaysian.

Keywords: Mobile Commerce, M Commerce, Mobile Technology, Malaysian Consumers

INTRODUCTION

It was not so long ago that the term "digital marketing" was coined and has become a key and necessary function of marketing. The space of digital marketing which has been growing in leaps and bound in the past few years, and combined with the ongoing launches of new mobile devices; the mobile is shaping as a very significant role in digital marketing.

Malaysians are among the most smartphone savvy in the region and constantly seek connectivity as a means to go about their day-to-day lives. This is evident from the report presented in the Digital Integration & Business Transformation Asia Conference (MDA, 2016) which pointed out that from 31,545,990 of the total population (as of February 2016) 21,056,126 are Internet users and above all report shows that 44,509,884 mobile subscriptions were made. In addition, showing that mobile penetration about 144.8%. Thus, instant Internet access is a key criterion when purchasing a mobile device as Malaysian has the need to connect.

Mobile phones today are among the key platforms to access digital services with close to twenty (20%) percent of data being used through mobile networks (Saatchi, 2014), with 64% of the smartphone users are under 30 years as reported by Nielsen Smartphone user segmentation study (Vserv, 2015).

This article will further research into the Malaysian mobile commerce landscape and identify areas marketers can leverage on this market segment.

MALAYSIAN E-COMMERCE LANDSCAPE

The Malaysian electronic-commerce is driven by the rapid knowledge driven economy, economic growth through ICT enablement. Although there is currently no internationally agreed definition for e-commerce, but for the purpose of this article the e-commerce is defined as the sale or purchase of goods or services, whether between businesses, households, individuals, governments and other public or private organizations, conducted over computer-mediated networks (Frost and Sullivan, 2013).

Malaysian legal environment and financial infrastructure which has been e-commerce friendly, plays a huge role in the development of the e-commerce industry. Improved mindset, awareness and better technical infrastructure has spurred the e-commerce industry in leaps and bounds. One of the most well-known example is Malaysian born low cost airline, AirAsia which was established in 2001. AirAsia managed to leverage e-commerce as a main distributor channel and reach USD$0.789 billion revenue in 2008. Indeed Nielsen Global Survey of E-Commerce that was conducted between 17th February and 7th March 2014 goes on to prove that more than 6 in 10 Malaysian consumers purchase their flight tickets online which accounts to 67% and the third highest globally on the online purchase category (Nielsen.com, 2014). This clearly concludes Malaysian's acceptance on E-Commerce.

The e-commerce, has evolved from being virtually unknown in the mid-1990s, to being a global multi-trillion dollar industry in just over a decade. The proliferation of the Internet has brought the world economic activities closer than ever before; overcoming geographical boundaries, increased availability, eliminating intermediaries, decreased administrative and marketing cost and providing a competitive environment to improve the quality of goods and services. Despite the apparent benefits, in the major impediments to consumers are issues regarding to IT illiteracy or unfamiliarity to technology and the fear concerning virtual financial transactions securities remains as major concerns.

The Internet World Statistics records that there were 3,731,973,423 Internet users as of 31st March 2017 (accounts to 49.60% from the world's total population). With the continued growth of ICT application usage worldwide, across lower income groups and older demographic segments, this is set to continue to rise. This is in support to the finding presented in The Statistical Portal on how the Internet use continues to rise from 2005 till to date. This scenario can be accredited to the use of smartphone. From 2013 to 2015 due to the usage of smartphones the use of Internet increase from a median of 45% to 54% with the contribution coming from Malaysia, Brazil and China (Poushter, 2016). Besides the use of Internet due to smartphones, age group that are hooked to Internet and smartphones adds to E-Commerce. The teenagers in the early teens and twenties continue to dominate the average Internet user's profile, with the average age of today's Internet user is 27 years of age (Frost and Sullivan, 2013; Vserv, 2015). As for Malaysia it's been reported that age 15 and above using the Internet was 57% in 2013 and the number increased by 14.1% to 71.1% in 2015. To add on most of them used the mobile phone to access the Internet (Department of Statistics Malaysia, 2016). In conclusion

today both adults and teenagers are using the Internet and thus making the E-Commerce to grow steadily.

The internet per capita penetration is still higher in developed nations. Hence, developing countries are starting to dominate the numbers of actual internet users, with Asia leading the way. In Malaysia, the most popular social media by netizens is Facebook. In 2012, the number of Facebook subscribers in Malaysia totaled 13,589,520 and showed penetration of 46.6% overall (Malaysia Today, 2013; Mahadi, 2013). However this number has increased to 19,000,000 Internet users as of 30th June 2016 with a penetration rate of 61%, Malaysia ranks the eight place in Asia and 21st in the world with most registered Facebook users (Internet World Statistics, 2017). Specifically, 34.5% are those within the 18-24 years old age group, 29.5% are those within 25-34 years old and 16.3% are those within 13-17 years old (Talip, 2013). This is increasing numbers seem to increase as what been reported in

Malaysian youth are a gadget obsessed generation. The penetration of smartphone is equally high for young Malaysians living in rural and urban areas, reinforcing the fact that smartphone is now an essential daily item. A research done by a renowned market research company reported that 96.4% of the Malaysian youth carry a smartphone; some 16.9% has more than one smartphone; 36.7% own at least one tablet and 95% own a laptop (Ragunath, 2016).

The government is also a major catalyst in spurring the growth of the e-commerce landscape in Malaysia. The role of the government in ensuring continuous support in the e-commerce ecosystem, which includes infrastructure, governmental policies and regulations, security and infrastructure issues that are vital in ensuring the growth of e-commerce landscape in the country.

MOBILE COMMERCE

The growing demand of the consumers, wanting personalization to their demands for faster, immediate access to information services, products and contents has given opportunity to the mobile commerce to flourish. Mobile commerce or M-commerce is the process of conducting business transaction using a mobile device, for example, a mobile phone, smartphone or PDA. M commerce is commonly known as any monetary transaction that is conducted by using a mobile network (Clarke, 2001; Ngai and Gunasekran, 2007).

The strongest contributor of the expansion of the M commerce is credited to the new development of mobile devices which are internet enabled (Sumita and Yoshii, 2010; Haque, 2004). Some of the benefits of using M commerce are credited to the mobile network size that covers a wider geographical area as compared to E-commerce according to Dholakia and Dholakia (2004). It is truly a globalized revolution. Cisco's Global Mobile Data Traffic Forecast shows an increase in the global mobile data usage with an increase of 81% from 2012 to 2013. It further reports that the highest growth percentage is from the Asia region with a continuing growth focusing on the developing countries (Hayden & Webster, 2015). The instantaneous and round the clock connectivity, empowers consumers to communicate directly to online business vendors (Yu and Buahom, 2013). The online vendors have an advantage of directly promoting newly available products or services to their customers instead of using the traditional media (Lee and Mills, 2010).

According to Department of Statistics, Malaysia base on population estimates in 2014, 91.3% are Malaysian and 8.7% are non-Malaysia. However, from this 91.3% Malaysian Communications and Multimedia Commission (MCMC) the hand phone users are about 87.9% from the subscriber's base. Interestingly the finding also shows that 33.9% of the school going

children owns a hand phones and 57.6% owns a smartphone. In addition 50.4% of children using hand phones access the Internet via their mobile phones. Furthermore, 37.1% of the smartphone owner's income is in the range of RM1,000 – RM3,000.00 (MCMC, 2015). The finding clearly shows the potential opportunity in mobile phone adoption towards M-Commerce. Despite the tremendous penetration rate, the M commerce adoption rate is still low in Malaysia compared to other nations (Sadi and Noordin, 2011; Goi and Ng, 2011; Moorty et al., 2014).

Business in Malaysia should garner this M-commerce technology to their advantage and incorporate the M-commerce as an important marketing tool in their strategic marketing planning.

WHY M COMMERCE IS AN IMPORTANT MARKETING TOOL IN MALAYSIA?

Mobile phones, especially smartphones are thus crossing the line of being a mere communications tool, but rather becoming an everyday necessity and a lifestyle facilitator. According to Saathi (2014) an international market research report, Malaysians are following the develop country trends by spending more time staring at the mobile screen. Behavioral reports highlight that in general 40 per cent of people use application before getting out of bed and 40 per cent of Malaysians check their phones every 30 minutes.

Aside from short message service (SMS) and voice calls, Malaysians are embracing the available data by mainly browsing the internet, social networking, using applications, reading and sending emails and chatting via instant messages. The growing need for Malaysians to be connected and the need to use applications available at a rapid pace make 76 percent of Malaysian to be connected on a daily basis (Saathi, 2014).

The chat platforms are also crossing the realm of mobile commerce, which is already a common practice of savvy Malaysians. Malaysians are active online shoppers, spending on average of USD2, 000 online per year. The common online shopping category is travel, which extends to the mobile space as well. Over 80 percent of Malaysians bought flights online in 2012 and the mobile-centric behavior is driving the purchase of mobile devices (Saathi, 2014). It is now expectation that they can go through the entire consumer journey via their mobile devices from research to purchase and customer services.

Marketing strategist needs to constantly be alert on the consumer trends to be relevant in the market. Even though the numbers show that mobile devices dominate the market, many marketers especially in Malaysia are not taking leaps to invest in mobile platforms. Organizations such as Ebay, Amazon and Groupon have paved their way into mobile shopping platforms. A recent study by Groupon (2013) revealed that seven out of ten Malaysians planned to do their holiday shopping via a mobile device. In the same survey by Groupon (2013), revealed that for the holiday shopping survey found that throughout 12 markets studied in the region, Malaysian consumers were most prone to shop for holiday gifts through their mobile devices.

CONCLUSION

Goi (2016) quoted Wong and Yapp's finding and showed on the increase of the market size for M-Commerce compared to traditional E-Commerce. However, study by Tanakinjal et al., (2010), showed that perceived risk has been a major concern among Malaysians in the adoption of M-commerce. A similar study on the Y generation in Malaysia by Moorty et al., (2014) revealed the confidence of monetary transaction purposes on the mobile devices is still low and this continues in 2016 with concern on M-payment gateway (Goi, 2016). This clearly shows, that the channel of payments has to be further established, like in Japan, Korea and the United States who are pioneers in the M commerce market.

With the decline of traditional PC sales and the massive increase in mobile devices' popularity, marketers can no longer approach their marketing and communications from a traditional point of view. No longer are the website browsed merely through desktops, but through mobile devices instead. The content served to the audience needs to be attractive to engage with the brand in the right context and through the right platforms.

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