

Pertanika Journal of

# SOCIAL SCIENCES & HUMANITIES

VOL. 23 (S) JUL. 2015

A special edition devoted to issues in Infrastructure Innovation and Transformation for the 21st Century and Beyond

> Guest Editors Karthiyaini Devarajoo & Jason Andrew Polko



A scientific journal published by Universiti Putra Malaysia Press

#### Journal of Social Sciences & Humanities

#### About the Journal

#### Overview

Pertanika Journal of Social Sciences & Humanities (JSSH) is the official journal of Universiti Putra Malaysia published by UPM Press. It is an open-access online scientific journal which is free of charge. It publishes the scientific outputs. It neither accepts nor commissions third party content.

Recognized internationally as the leading peer-reviewed interdisciplinary journal devoted to the publication of original papers, it serves as a forum for practical approaches to improving quality in issues pertaining to social and behavioural sciences as well as the humanities.

JSSH is a **quarterly** (*March, June, September* and *December*) periodical that considers for publication original articles as per its scope. The journal publishes in **English** and it is open to authors around the world regardless of the nationality.

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The Introduction explains the scope and objective of the study in the light of current knowledge on the subject; the Materials and Methods describes how the study was conducted; the Results section reports what was found in the study; and the Discussion section explains meaning and significance of the results and provides suggestions for future directions of research. The manuscript must be prepared according to the Journal's INSTRUCTIONS TO AUTHORS.

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  - Comments to authors are about the appropriateness and adequacy of the theoretical or conceptual framework, literature review, method, results and discussion, and conclusions. Reviewers often include suggestions for strengthening of the manuscript. Comments to the editor are in the nature of the significance of the work and its potential contribution to the literature.
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# Pertanika Journal of

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A special edition devoted to issues in Infrastructure Innovation and Transformation for the 21st Century and Beyond

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# **Preface**

We would like to present, with great pleasure, the Special Edition of PERTANIKA dedicated to the International Infrastructure Conference (IICON 2014), organised and hosted by Infrastructure University Kuala Lumpur, which was held at the Sunway Hotel from 3rd to 4th December, 2014.

This conference was held at a timely juncture with the current development of both hard and soft infrastructure with a theme 'Infrastructure Innovation and Transformation for the 21st Century and Beyond'.

The primary objective of IICON 2014 was to gather professionals, experts, practitioners and industry movers from various fields and backgrounds throughout the world to disseminate their knowledge and share their expertise and vast experience with participants.

There were four (4) satellite conferences running parallel at the same venue to emphasise the four main areas of specialisation in infrastructure i.e. International Conference on Built Environment (ICBE), International Conference on Business & Management (ICBM), International Conference on Engineering, Information Technology and Science (ICEITS) and International Conference on Language, Communication and Education (LANCOMME).

Numerous papers in the above areas presented at this conference integrated knowledge and progress among academicians, researchers, industries, corporate organisations and interest groups. Some of these papers deliberated on emerging trends, threats and challenges in the identified fields.

Selected papers from IICON 2014 are published in this special edition of PERTANIKA Journal of Social Sciences and Humanities. This edition will be presented as a unified publication encompassing all the papers from the four different satellite conferences.

This edition would not have been possible without the great support of the Editorial Board members and the Convenors of each satellite conference, and we would like to express our sincere thanks to all of them.

We would also like to express our gratitude to the Chief Executive Editor of UPM Journals, Dr Nayan Kanwal, and the editorial staff of the Journal Division, who supported us at every stage of this publication. Throughout preparation of this edition the Editors were supported by the IUKL management.

It is our hope that this fine collection of articles will be a valuable resource for readers and will stimulate further research into the vibrant areas of specialisation in infrastructure.

Karthiyaini Devarajoo, PhD Jason Andrew Polko Guest Editors Infrastructure University Kuala Lumpur (IUKL)

July 2015



# Pertanika Journal of Social Sciences & Humanities Vol. 23 (S) Jul. 2015

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#### **SOCIAL SCIENCES & HUMANITIES**

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# Religion and STIs Campaigns: The Perceptions of the Nigerian Youths

#### Kadiri, Kehinde Kadijat\*, Mohd Khairie Ahmad and Che Su Mustaffa

School of Multimedia Technology and Communication, Universiti Utara Malaysia, 06010 Sintok, Kedah, Malaysia

#### **ABSTRACT**

Religious constraints on sexuality may have consequences for the transmission of Sexually Transmitted Infections (STIs). Recognising that several religious tenets may have the positive effect of reducing the prevalence of STIs if incorporated into STI preventive campaigns prompted the decision to carry out this research. This study was conducted to understand how religion tenets can be effectively incorporated into STI preventive campaigns in Nigeria. An in-depth interview was conducted with 32 young people from the University of Ilorin, Ilorin, Nigeria. The result of the study showed that religiouslymotivated young people were likely to avoid engaging in sexual practices as a result of their religious tenets. Informants with strong religious faith mentioned that the virtue of temperance assisted them in curtailing their sexual desires thus reducing their chances of exposure to risky sexual behaviour. Most of the informants mentioned that religion was one aspect of culture that could be used to prevent young people from being involved in risky sexual behaviour or pre-marital sex. The obvious implication arising from this position suggested that the inclusion of religion and the virtues they taught in STI campaigns would result in more positive STI behavioural change among young people. The conclusion is that religion as an attribute of culture can be used to discourage a large number of young people from becoming involved in risky sexual behaviour that leads to STIs.

Keywords: STIs, campaign, youth, religion, risky sexual behaviour, culture

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INTRODUCTION

In Nigeria, the upsurge of STIs has been alarming despite the several preventive communication campaigns designed to create awareness among the people on the adverse consequences of contracting the infections. As at December 2011, in the case of HIV alone, there were 3,459,363 people living with the virus with an estimated number of 1,449,166 requiring Antiretroviral (ARV) drugs (NACA, 2012). That same year, 388,864 new infections were recorded while records show that 217,148 AIDS-related deaths occurred in the country (NACA, 2012). With an estimated population of 162,265,000 and as the most populated country in sub-Saharan Africa, Nigeria is obviously a big burden not only to the West Africa region and the African continent but to the world at large in terms of HIV/AIDS (NACA, 2012). The most recent Nigerian HIV figure of about 3.5 million people infected with HIV ranked Nigeria second among the countries with the highest HIV/AIDS prevalence in the world, next to South Africa (NACA, 2012). The given figures on the prevalence of HIV/ AIDS might probably underestimate the true magnitude of the epidemic because of underreporting, inadequate resources for HIV testing and missed diagnoses in the country (Alubo, 2002).

Undoubtedly, STIs are still on the increase in Nigeria, particularly among the youths within the age range of 15-24 years (Shoveller *et al.*, 2004; Dixon-Mueller, 2009; Okereke, 2010; Ahmed *et al.*, 2013). Other studies affirmed that the reason for the prevalence among this age group was because Nigerian youths were not only sexually active but also indulged in risky sexual behaviour (Nwokoji & Ajuwon, 2004; Oyeyemi, Abdulkarim, & Oyeyemi, 2011; Imaledo,

Peter-Kio, & Asuquo, 2013). In their Goldenberg, Shoveller, and Koehoorn (2008) noted that young people were the most vulnerable to STIs. The reasons given were that apart from their uncontrollable sexual drive, they also had multiple sexual partners and rarely used contraception, making them vulnerable to STIs compared to other segments of the population. As a result of this situation, it is pertinent to say that situation can Nigerian impose grave health challenges not just on the region but also on the world at large. Therefore, it is important to explore a more appropriate way through which STI preventive communication campaigns can be effectively used to reduce the current exponentially growing varieties of sexually transmitted infections.

In the fight against STIs in Nigeria, campaign for sexual behaviour the through incorporation reforms the of religious tenets in the campaign programmes remains a major asset that has remained untapped. Studies STIs in Nigeria have mainly focused on the knowledge, attitude, prevalence and sources of information on STIs e.g. prevalence of STIs among attendees of AFRH centre in Ibadan (Okonko, Akinpelu, Okerentugba, 2012); knowledge and practice of condom usage among undergraduate students in Edo State (Izekor et al., 2014); knowledge and treatmentseeking behaviour of University of Ilorin students (Kadiri, Ahmad, & Mustaffa, 2014); factors predicting attitude of firstyear university students towards STIs, HIV in Ogun State, Nigeria (Adekeye, 2013); vulnerability and knowledge of STIs among female traders of reproductive age in Enugu, Nigeria (Ikeako et al., 2014); and knowledge, sources of information and risk factors for STIs among secondary school youths in Zaria, Northern Nigeria (Aliyu et al., 2013). However, little or no attention has been directed to how religion and religiosity may be associated with the sexual behaviours, treatment and testseeking behaviour and overall vulnerability to infection. Yet, religion represents one of the many potential normative orders claiming youths' allegiance and adherence to sexual behaviour in most communities (Smith, 2003). Also, the acceptance and delivery of STI campaigns may be dependent on the prevailing religious culture within a local community as well as at the national stage. This is because religion has the potential to shape people's perceptions of and dialogue on HIVrelevant behaviours.

Several studies have shown that complying with religious belief and values may have positive impacts on health and infection transmission (Ahmad & Harrison, 2010; Ellison & Levin, 1998; Reynolds & Tanner, 1995). For instance, it has been suggested that Islam and Christianity have been partly responsible for the decrease in post-partum sexual discipline and the sharp drop in polygyny in east Africa (Lagarde *et al.*, 2000). Since the discovery of HIV/AIIDS in the mid-1980s, some religious leaders

have used the opportunity to offer moral recommendations (Kagimu et al., 1998) because religion does not only affect values and attitudes towards sex, but also sexual decision-making and sexual behaviour (Brewster et al., 1998; Rostosky et al., 2004). This is hardly a surprise considering that human sexuality has great religious relevance, which is cross culturally reflected in religious regulation of, or attempts at regulating, schoolbased sex education and condom use distribution (Irvine, and 2002). sexually transmitted the context of infections (STIs), religiosity and religious affiliation do have a negative impact on STI prevalence likely because of the restrictions that religions place sexuality (Seidman, Mosher, & Aral, 1992). If religious factors associated with STIs, which is largely transmitted sexually, can be identified, then this endeavour can be strategically used in curbing STI prevalence (Gayle & Hill, 2001; Piot et al., 2001) in Nigeria.

For instance, strict adherence to religious injunctions may confer protective benefits against sexually transmitted infections. While Islamic marital codes permit men to marry as many as four wives and to divorce relatively easily, potentially increasing the number of lifetime sexual partners, a known risk factor for acquiring STIs (Wasserheit et al., 1991; Stanberrry & Bernstein, 2000), prohibitions against sex outside of marriage may outweigh these risks. However, the Christian religion forbids a man from marrying more than one wife as well as divorce involvement in extra-marital affairs. If the codes against premarital and extramarital sex are followed, it could reduce sexual activity, which will lead to a reduction in sexually transmitted infections. In addition, Islam prohibits the consumption of alcohol; however, it remains permissible in the Christian religion. Alcohol use has been reported as a risk factor for HIV infection (Bastani et al., 1996; Weiser et al., 2006; Kongnyuy & Wiysonge, 2007; Mmbanga et al., 2007). Also, alcohol consumption may favour higher rates of sexually transmitted infections. Lastly, circumcision been identified as a practice has apparently decreasing STI transmission (Weiss et al., 2000; Bailey et al., 2001). Circumcision, which is practised by Muslim men, may also reduce the acquisition of STIs. For these reasons, we may expect Islamic religious affiliation to be negatively associated with STIs.

Studies from Western countries by McCree et al. (2003), Holt, Lewellyn and Rathweg (2005), Rew and Wong (2006) and Muturi (2008) showed that religion and spirituality had positive influence on sexual behaviour. Also, it affects the attitudes of people towards safe sex as well. For instance, McCree, DiClemente, Wingood, Davies and Harrington (2003) pointed out that religiously-motivated participants were found to have used condoms in the past six months of their study, delayed first-

time sexual activity and quite often were attuned to regular condom usage. Likewise. Muturi's (2008)findings revealed that religion served a prominent role in the Jamaican culture as it helped curtail the sporadic spread of STIs. Similar studies conducted by Lengwe (2009) and Mulwo (2010) revealed that religion was a concept that made young people practise restraint from indulging in risky sexual behaviour. Relying on data from the National Longitudinal Study on Adolescent Health in the U.S.A., Meier (2003) established that young people who were religiously inclined had the probability of indulging early in sexual activity. Similarly, Rostosky, Regnerus and Wright Corner (2003) and Rizzi (2004) reported that a delayed onset of penetrative sexual activity might be the result of internalised moral values.

These studies sharply contrast with some others (Rahamefy et al., 2008; HEAIDS, 2010; Noden et al., 2010; Štulhofer et al., 2011) that show that religion and spirituality do not have a negative influence on sexual behaviour and safe sex. Forest et al. (1993) asserted that religion did not seem to play a major role in the male's attitude to risky sexual behaviour. In similar vein, Rahamefy et al. (2008) maintained that religion did not have an association with the use of condoms. Likewise et al. (2010) highlighted their discovery religiousness had minimal effects on sexual activity for females while Štulhofer et al. (2011) asserted that religiosity did not seem to substantially reduce STIand HIV-related risk-taking, particularly among men.

Indeed, the relationship between the STI threat and religion has often been ambiguous, and this may explain why few studies have addressed the incorporation of religion in STI preventive campaigns particularly in Nigeria. To design an appropriate and effective campaign, it is important to understand young people's perspectives on how religion can be used to curb risky sexual behaviour that leads to STIs. However, it is not clear whether those committed to following religious teachings and practices have lower STI infection rates in Nigeria. Consequently, this study was conducted to explore how religiosity can be incorporated into STI preventive communication campaigns in Nigeria.

#### The Role of Communication Programmes

Effective reproductive health communication provides information and in-depth awareness where ignorance and ambiguous misconceptions prevail. In an attempt at focusing on reproductive health activities, communication programmes promote appropriate reproductive behaviour which prevents individuals from contracting STIs, including HIV/AIDS, which is one of the recent causes of death in Africa (Muturi, 2005). Communication provides adequate information, knowledge and understanding to people about specific health problems and interventions. As a result of this, it is important that health communication experts have an in-depth understanding of the various health issues in order to communicate effectively to their various target audience. This prompted communication experts to highlight the role of communication in reproductive health programmes during the 1994 Cairo Programme of Action, which emphasized the need for a multimedia communication approach in reproductive health communication.

On a global perspective, concerted efforts have been channelled towards awareness campaigns that aimed at changing people's attitudes and behaviour or practices on risky sexual behaviour (Mututri, 2005). Several approaches were used in order to achieve the communication goal of creating awareness and achieving behavioural change in the prevention of STIs. The approaches included the mass media communication approach, which uses a wide variety of mass media channels for awareness building, and the social marketing approach that promotes the use of condoms and other contraceptives at a minimal cost in an effort to change the behaviour of individuals who are impeded by inertia or other resistances and the enter-educate approach, which uses entertainment to spread social messages, reach people and influence their attitude and behaviour (Rogers, 1995; Piotrow et al., 1997). In Nigeria, a wide array of mass media initiatives have been put in place to create awareness of STIs and to promote behavioural change among young people (Jappah, 2013). Unfortunately, the

communication approaches used have not proven effective enough to bring about change in behaviour (Jappah, 2013).

communicative approaches have been criticised for being one-way communication with an audience at the receiving end and for not being audiencecentred (Swanepoel, 2005; Jappah, 2013). This is particularly the case in Africa where social, cultural and economic factors mitigate the adoption of healthy reproductive behaviour and practices (Airhihenbuwa, 1995; Airhihenbuwa et al., 2000; Wilson & Miller, 2003). Most women in many parts of the world contracted STIs mainly because they were ignorant of these infections (Muturi, 2005). Eventually, when they got to know about these infections, their knowledge was filtered through pre-judgement and attitudes that purvey myth and other religious beliefs and values that impeded healthy behaviour and practices (Ferguson, 1991; Jagedo, 1996). However, reproductive health programmes have not focused on these factors but continue to disseminate messages through the media with the objective of closing the knowledge, attitude and practice gap or satisfying the unmet need.

#### Religions in Nigeria

Religion is a reality in human cultural experience. It has a pervasive influence on the existence of human beings. Religion as an element of culture describes the way man relates with the supernatural world or the Divine Being. This relationship finds expression in beliefs,

worships, creeds and symbols (Uka, 1990). Nigeria is a religious pluralistic society; all the three religions i.e. Islam, Christianity and traditional worship have an active presence. Pockets of other faiths like Hinduism, Bahai, Judaism, Reformed Ogboni Fraternity and Grail message are also found (Kitause & Achunike, 2013). These other religions are mainly practised by foreigners or a very small percentage of Nigerian citizens.

Adherents of the major religions are found in every city, town and village of the country. The Islamic religion is dominant in the northern part while Christianity is more prevalent in the South-Eastern and South-South regions. The people of the South-West share the two religions of Islam and Christianity with an almost equal passion. The traditional religion is not widely practised in the country, and only a small number still believe and practise it.

Religion determines the lives of Nigerians from cradle to grave: what a person eats and wears, where he goes to school, the occupation he enters and his choice of spouse, to list only five personal decisions, are all nurtured by religion. From all indications, religion remains a potent tool of culture interfacing with STI preventive communication. Its potency lies in its ability to prevent young people from involving in risky sexual behaviour. It can thus lead to the reduction of the prevalence of STIs. The injunctions from different Holy Books can be adapted to communicate encouraging messages to young people to lead a life that can prevent STIs.

#### **METHODS**

This study was carried out among young students of the University of Ilorin, Ilorin, Nigeria. In this study, in-depth interviews were held among 32 young students between the ages of 18 and 25 years from the above-named institution. Twentyeight of the informants were Muslims while 30 were Christians. Thirty-two of the students were females while the remaining were males. Before the study began, ethical clearance was given by the institution's Ethical Committee. At the commencement of each in-depth interview, adequate information was provided to each informant on the rationale for the study. The in-depth interview, which was conducted in the English language, was thematically analysed using the Nvivo 10 software. The in-depth interview centred on the teachings of the religions, influence of a religious background and how the indoctrination of religion can be strategically used to improve HIV/AIDS campaigns in Nigeria. The young students were also asked about the relevance of religion in improving STI communication campaigns in Nigeria. This study also investigated how the values taught by religions in Nigeria can help or hamper STI prevention.

#### **FINDINGS**

Religion as a Tool for Self-discipline

Informants were forthcoming on the potency of religion and how it can be used to prevent STIs. Evidence showed that the majority of the young people who avoided engaging in premarital and extra-marital

sex did so because of their religious beliefs. This study found that some young people's commitment to religion protected them from engaging in sexual risk behaviour. Most of the respondents agreed that religion was an aspect of culture that could be used to prevent young people from becoming involved in risky sexual behaviour or premarital sex.

Informants with strong religious faith mentioned that lessons on the virtue of temperance assisted them in curtailing their sexual desires, thus reducing their chance of exposure to risky sexual behaviour. Furthermore, the spiritual tenets of praying and fasting were mechanisms of control of the desire for "things of the flesh" like sexual pleasures. This showed that religious principles had the capacity to inculcate self-discipline in the young, thus acting as protection against immoral and risky sexual behaviour. The following eloquently captured the attitude of one informant, who stated:

I think religion is the best cultural element to deter one from risky sexual behaviour.... Not that I do not sometimes feel like having sex, but anytime the feelings come up I just pick up my bible and go to church. (Informant 1)

Another informant also gave religion a pass mark because:

Religion is the most important aspect of culture and it will have a tremendous impact in convincing people to change their attitude on sexual issues. (Informant 2) The above comments show that religion can be instrumental as a powerful stimulus in conditioning the young to refrain from premarital sex.

#### Self-conviction

However, several informants had the contrary opinion on the potency of religion as curbing risky sexual behaviour of young people. These informants argued that religion was not a potent protective factor that could dissuade young people from treading the path of risky sexual behaviour. They explained that although religion was a good protective factor, it had limitations based on the lifestyle of people who are referred to as "men of God". They emphasised that self-conviction was more impactful. An informant was emphatic on this, as seen below:

I think what is important is protection because... religious aspect is not helping... even someone who is recognized as a minister in the church and an Imam in the mosque are practicing extra or premarital affair behind and you don't know... (Informant 3)

Informant B 26 further stressed the limitations of religion:

Christianity and Islamic religions both condemned adultery and fornications. It is good if this attribute of religion is used in advert.... However, it now boils down to personal conviction of every individual. Some may ignore it while it may have positive effect on others. (Informant 4)

The above statements showed that the moral precepts preached by religion might not be impactful enough.

#### Virtues from the Holy Books

What is not in dispute, whether in reference to Islam or Christianity, is that the Holy Books of these two religions are explicit in their injunctions concerning sex. The Christian doctrine, for example, expressly forbids single people from pursuing premarital sexual pleasures. Informant B 35 expressed that "...the bible says it is bad and it is in the Ten Commandments that one should not do such because it is a sin". Informant 21, who was also a Christian, supported the informant by adding that "... you know the bible teaches that sex before marriage is adultery and adultery is a sin." Muslims hold to this belief too i.e. that sex before marriage is unwholesome. Some Hausa informants, who were Muslims, explained that the lives of the Hausas revolved around the Holy Quran and thus, some aspects of their culture relating to sex were derived from this holy order:

The Quran frowns at sex before marriage... Hausas believe that the Quran is actually the right way. (Informant 6)

For someone like me while growing up, we had Islamic teachings that deter us from having relationship with the opposite sex. So, I believe religion can deter us from having risky sexual behaviour which can curb STI. (Informant 9)

#### Another informant added:

I will first choose religion because there is punishment for anybody who is not married to involve his/herself in sexual activities. I will just advise him/her to withdraw because for instance I am a Muslim, Islam does not encourage extra marital affair. And it is not good for someone who is married to involve in extra marital affairs. One of the verses in Quran says one should not commit adultery. (Informant 23)

The above views showed that the majority of the young people had sufficiently deep knowledge of the religious implications of premarital and extra-marital sex. It is, therefore, important that campaign planners should draw upon the teachings of holy books in promoting particular normative ideas of what is good and bad, which orientate human consciousness and positively motivate human action.

#### Relevance of Religious Leaders

It is incontrovertible that religions through their doctrines exert a strong influence on the lives of young people. In a country like Nigeria where religious sentiment is high i.e. religion practically determines the live of the individual from cradle to grave: what the individual eats and wears, where he goes to school, the occupation he enters, the choice of spouse, to list a few all are nurtured by religion. How true this assertion is can be verified from the perceptions of the informants in the study. According to one informant:

If we use religion, one we will be getting attention of 70% audience ... about STI. We can also use [the] Islam [aspect] to talk to the Islamic people and the traditional to the traditional people. If we meet their priest (sic), they have where they worship, like I know of the Ogboni people here in Abeokuta, we can use their priest to talk to them. (Informant 5)

#### Another informant commented further:

...in Hausa society, religion will be utmost effective. People can ignore other elements of culture but religion cannot be overlooked. Experience has shown that Imams have a soothing effect on people in troubled areas; religious people are viewed as man (sic) of God and whatever comes out of their mouth are the noble words of God. Even the politicians are afraid of them. So they can be a very important link in the dissemination of STI campaign. (Informant 4)

Religion is embedded in beliefs, when you talk of belief, you talk of religion. The traditional belief says that wherever we are, God or the gods are watching us. The religious leaders are good instruments for passing across STIs messages to young people. Young people will be easily influenced by information from the religious leaders. (Informant 31).

These responses showed that the young people had a strong conviction that religious institutions could be used to change the orientation of the young people in relation to risky sexual behaviour that might eventually lead to STI contraction. Religious institutions are recognised as

enablers for reforming young people in society. Furthermore, a glimpse into the Holy Quran revealed verses that condemned adultery and fornication in all their ramifications. For instance, Quran 17, verse 32 says, "Do not go near adultery. Surely, it is a shameful deed and evil, opening roads (to other evils)". Book 7 Verse 33 expounds further on the issue by stating categorically that, "Verily, my Lord has prohibited the shameful deeds, be it open or secret, sins and trespasses against the truth and reason." The Noble book of God as in Book 24 verse 26 admonishes that, "Women impure are for men impure, and men impure are for women impure and men of purity are for men of purity, and men of purity are for women of purity." The punishment for adultery in Islam is severe:

"the woman and the man guilty of fornication, flog each of them with a hundred stripes: Let no compassion move you in their case, in matter prescribed by Allah, if ye believe in Allah and the Last day: and let a party of the Believers witness their punishment". (Quran, Book 24 verse 2)

Islam, however, is not the only religion that condemns fornication and adultery. Practically all religions do, including many world cultures, because adultery and fornication destroy marital relationships. It can also destroy the family, break careers and leave the byproduct of severe emotional problems. Adultery and fornication are unlawful, and many societies have prescribed standards of legal, customary, traditional

and religious sanctions imposed upon their perpetrators. The Holy Bible, for instance, says that "whoso committeth adultery with a woman lacketh understanding: he that doeth it destroyeth his own soul" (Proverb 6:32). Corinthians 6:18 exhorts, "Flee fornication. Every sin that a man doeth is without the body; but he that committeth fornication sinneth against his own body'."

In summary, the informants indicated that religion protected against risky sexual behaviour, particularly among young people who had strong faith. The majority of the informants expressed the view that religion was a potent element of culture that could be utilised to prevent young people from becoming involved in risky sexual behaviour. However, contrary opinions also existed, insisting that religion was not enough, that personal chastity and self-control needed to be cultivated as additional support.

#### **DISCUSSION**

As the data revealed, the young people saw religion as having the capacity to protect young people from engaging in sexual risk behaviour. Nigeria's two major religions, Christianity and Islam, were found not to tolerate fornication or other immoral sexual behaviour. Most of the informants agreed that religion as an aspect of the people's culture had a positive impact on young people, especially those of them who were religiously conscious. Consequently, religion had the potential to prevent risky sexual behaviour or pre-marital sex among them.

This study showed that the majority of the young people were committed to their faith, which empowered them to overcome the motivation to engage in risky sexual behaviour that often led to STIs. In addition, adherence to religious tenets had also inculcated in the young people the ability to decipher right behaviour from wrong behaviour. To a reasonable extent, religion had therefore encouraged young Nigerians to choose between right and wrong behaviour. Used positively, it is an instrument to curtail risky sexual behaviour among the youth. Lengwe (2009) corroborated that religion was a good concept that made young people cultivate self-discipline; also, Mulwo (2010) asserted that the religion of young people could be used as a motivation in the development of self-mastery when it came to sexual matters. However, several studies have shown that religion does not have an over-whelming influence on curbing the risky sexual behaviour of young people (Forest et al., 1993; Rahamefy et al., 2008; HEAIDS, 2010; Noden, Gomes, & Ferreira, 2010; Štulhofer et al., 2011).

One of the emerging shortcomings of religion has to do with its inability to act singly as a restraint for individuals engaging in immoral or risky sexual behaviour. Compounding the problem has been acts of sexual impropriety on the part of religious bodies and individuals that publicly questioned the honesty of religion as a moral restraining hand on immoral sexual behaviour. The

attendant consequence was to make sexual relations and restraint a matter of personal decision and/or conviction. Therefore, it is important for STI preventive campaigns to advocate that young people adhere strictly to the teachings of religious leaders and also abide by the positive behaviour that they exhibit rather than exercising their negative attributes because no human is perfect. Despite the shortcomings of religion, it can be argued that religion has the capacity to curb the risky sexual behaviour of young people (McCree *et al.*, 2003; Muturi, 2008).

Further questions on the issue of the cognitive traits of individuals reveal that an individual's internal locus of control rather than external events such as religion can be a strong determinant to effect control on some young people to prevent them from becoming involved in risky sexual behaviour. Ironically, consensus cannot be built on this point as Lengwe (2009) suggested that cognitive traits are not significantly related to sexual behaviour. Indeed, for females, as Eleazar (2009) found, self-esteem seemed to be a vital protective shield as he found was the case among female undergraduate students. Therefore, for young people who are not religiously inclined, it would be preferable for the campaign planner to utilise selfconviction as a principle to convince young people to be sexually disciplined.

The prospect of fusing religion with culture to contain the problem of rising STIs in Nigeria emerged in respect of the Hausa people from northern Nigeria, who were principally Muslims and whose life revolved around the Holy Quran, the holy book of Islam. Hence, the presumption was that the Holy Quran contained injunctions that could be adapted to induce positive attitudes towards STIs in the area.

One encouraging finding was that some informants from the northern part of the country advocated that STI preventive communication campaigns could be more impactful if they had the involvement of various trusted religious leaders in the country. The obvious implication arising from the position suggested that the inclusion of religion leaders and the virtues they taught in STI campaigns would result in more positive behavioural change among young people in Nigeria. This finding also synchronises with the findings of Lagarde et al. (2000), who recommended that the involvement of religious institutions in STI campaigns could contain the rapid increase in STI prevalence.

#### **CONCLUSION**

The time has come for STI preventive communication campaigns in Nigeria to adopt some religious doctrines in their conceptualisation and implementation. Anything contrary to that runs the risk of failing. Different religions in Nigeria have their specific belief systems that govern their ideology on sexual issues. The results of the field work in this study have shown that most young people are comfortable when STI preventive communication is located within the realm of their religion.

Based on the responses derived from the informants, it was discovered that none of the STI campaigns that they were exposed to used religious virtues of any religious groups. The reason for the absence might be that Nigeria is a secular country in which religion is prided as being very sensitive. As a result of this it is important for campaign planners to incorporate religion into STI campaigns in a very subtle way that will not infuriate any religious denomination in the country.

The in-depth interviews provided an insight into young people's perception of how religion can be used to improve the effectiveness of STI campaigns in Nigeria. The findings that emerged showed that there are several religious perspectives that should be integrated into programmes designed to discourage young people from becoming involved in risky sexual behaviour. The young people interviewed explained that the incorporation of belief, norms and values of the different religions in Nigeria into STI preventive campaigns would go a long way in improving the receptivity of the campaign among young people who have a strong abiding faith in their religion doctrines.

The findings also improved our understanding that religion alone cannot dissuade young people from becoming involved in risky sexual behaviour that leads to STIs. The informants explained that self-conviction was another attribute that discouraged young people from becoming involved in risky sexual behaviour. As a result of this, it is important for campaign

planners to use religious values to boost the self-efficacy of young people to discourage them from becoming involved in risky sexual behaviour.

Some informants also encouraged the usage of religious leaders in the conceptualisation. implementation. dissemination and evaluation of STI preventive communication campaigns. The reason for the assertion was that people easily accept information that comes from a respected man of God as compared to any other category of people. Though some of the informants expressed their reservations on the integrity of the men of God, it is important for STI campaigns to advocate that young people should adhere strictly to the doctrines of the religion rather than look at the lifestyle of religious leaders.

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# SOCIAL SCIENCES & HUMANITIES

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# **New Venture Creation Determinant Factors of Social Muslimpreneurs**

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#### ABSTRACT

This study aims to investigate new venture determinant factors of Muslimpreneurs. Muslimpreneurs is conceptualised as capabilities of driving innovative societal change on the principles of the al-Quran and al-Sunah not solely for profit, but above all to benefit all of mankind. The two main research questions are, "What factors determine new venture creation?" and "Does training moderate new venture creation?" The study employs the hypothetical deductive approach using the multivariate regressions analysis. Four constructs, namely, Islamic motivation, entrepreneurial capabilities, Muslimpreneur characteristics and social capital are regressed as determinants of new venture creation readiness. Data were gathered from Universiti Sains Islam Malaysia students across all faculties (N=439). The results reveal that all factors are significantly related to new venture creation except social capital and training does moderate the relationship. The findings might be helpful in developing Muslimpreneurs as the main players of Islamic entrepreneurialism that would be the thrust of social enterprises development.

Keywords: Entrepreneurial capabilities, Muslimpreneurs, new venture creation, social capital, social enterprise

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#### INTRODUCTION

In the recent times social enterprise research has received attention from scholars due to huge benefits in relation to societal well-being. Many businesses were created in the past through the concept of capitalism but not all were able to stand the test of time after a global economic meltdown. Hence, there is a need to look inwards by looking at the third sector, which is socialism. It is important for businesses today especially in an Islamic economy to utilise the benefits of social enterprise in order to cater for social needs and to reduce poverty drastically.

entrepreneurial Social activities existed in the life time of the noble prophet Muhammad (peace be upon him) and he was a great mentor to entrepreneurs due to his success in business activities. There are many Muslims who are successful entrepreneurs today. Islam invites all Muslims to be innovative and active entrepreneurs (Faizal et al. 2013b). Unfortunately, most Muslims seem to have lost their confidence as well as their character and soul over time (Faizal et al., 2013b). Most Islamic economies today are controlled by capitalist practices (Kayed & Hassan, 2011). Therefore, it is very important for Islamic economies to look back on how prospective Muslimpreneurs can be trained to engage in ethical business that will have direct impact on societal welfare.

At the World Economic Forum in 2008, Bill Gates shared his view that businesses should be created to find optimum solutions for the problem of poverty. There should be a sustainable way to reduce poverty through profit-making. Gates explained how businesses could sustain their activities without exploiting the poor. For sustainability, one needs to use profit incentives wherever there is a profit. If businesses aim to serve the society profit

as expected may not be realised. Hence, there is a need to employ another business indicator i.e. recognition. Recognition strengthens organisational image, attracts customers and appeals good individuals to such organization.

It is very important to realise that social enterprise cannot exist in isolation; it must be run by a Muslimpreneur or a group of Muslimpreneurs with adequate entrepreneurial capabilities that can drive enterprise to higher heights. While not all social enterprise works in reality, social enterprise with Muslimpreneurs characteristics, Islamic motivation and social capital, coupled with the capabilities of the Muslimpreneurs can help to realise the goals of enterprise.

#### RESEARCH OBJECTIVE

The main objectives of the study were to examine the factors that could influence new venture creation and determine if training moderates the factors that drive readiness for new venture creation.

# LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Definitions

Despite the fact that there is no clear definition of social enterprise, most definitions are either based on social impact direction or social surplus. Social enterprise has been defined in recent times as "a business operation which has social or environmental objectives which

significantly modify its commercial orientation" (Smith & Darko, 2014, p. 3). According to Hoskins (2014) "a social enterprise is an organisation that uses business strategies to maximise its social or environmental impact." In essence this depicts that social impact can be maximised through innovative new ways of operating for public benefit. This impact can arise by employing people who typically have more difficulty in finding jobs such as persons with disabilities, beggars, newcomers or those with health or addiction issues. Muslimpreneurs are described as Muslim entrepreneurs (Faizal et al., 2013a). Therefore, the concept "social Muslimpreneurs" based on the context of this study can be described as the ability of Muslim entrepreneurs to create innovative enterprise for societal well-being.

#### Islamic Entrepreneurship Training

Training is believed to have a positive impact on the moral attitude of students in influencing their readiness towards setting up a social enterprise venture (Kalsom & Seun, 2014). USIM Muslim students are taught various kinds of knowledge on both Islamic and conventional subjects so that they can meet the demands of society at large. This knowledge includes Islamic entrepreneurship.

Training the poor may be quite difficult because the poor are looking for what can sustain them daily. In other words, empowering youth, especially students, to set up a business venture would be a great idea for an economy that seeks the societal well-being of its community as well as economic development. Therefore, a number of policies, initiatives and objectives should be focused on building social enterprise through the empowerment of youth. However, empowering youth can change the mindset of Muslimpreneurs regarding fair production, which is taught by Islam. If youths are trained along the tenet of Islamic entrepreneurship, they can, in turn, employ others who are living in abject poverty. This enterprise can employ the needy in order to provide for their social well-being.

#### Theoretical Framework

The theoretical framework of this study was adopted from Faizal et al. (2013a), Timmon (1994), Sharma et al. (1979) and Gibbs and Ritchie (1982). Faizal et al. (2013a) developed most of the concepts used in this study such as Muslimpreneur characteristics and Islamic motivation variables. Entrepreneur capabilities was developed by Timmon (1994) and Gibbs and Ritchie (1982). Entrepreneurship training and motivation were part of the model developed by Sharma et al. (1979) for developing Muslim countries in Asia. The new venture creation proposed in this study was developed from this research base (see Fig.1).

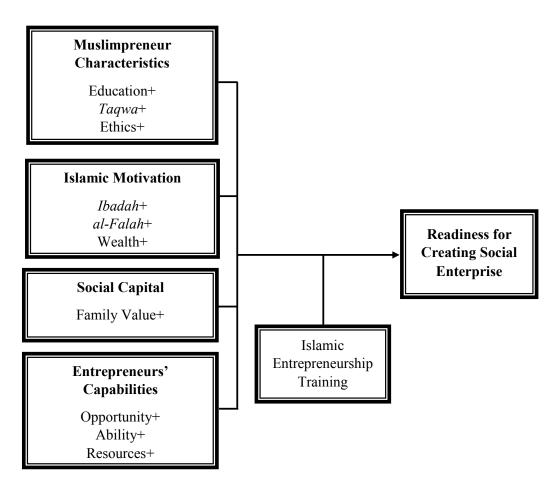


Fig.1: Theoretical framework of the study.

Source: Adapted from Faizal et. al. (2013), Gibbs and Ritchie (1982), Sharma et al. (1979) and Timmons (1994).

#### Muslimpreneur Characteristics

Past studies indicated that the human capital theory was usually used as a theoretical framework for assessing entrepreneurs' characteristics as predictors of success. Based on this theory, entrepreneurs who possess higher skills should be more productive than others (Davidsson & Honig, 2003; Ucbasaran *et al.*, 2008). Therefore, Muslimpreneurs with higher skills and knowledge will be much more productive than those with lower input. According

to Beekun (1996), Muslim scholars have outlined various characteristics to be seen in Muslim entrepreneurs. Some of the characteristics are examined thus:

**Taqwa.** The relevance and importance of *taqwa* (piety, righteousness) has been established from the Qur'an (2:197). Imam Ghazali *et al.* (n.d., p. 1) shed more light on the meaning of this verse. Imam Ghazali *et al.* (n.d.) explained that *taqwa* is an abundant treasure, a precious trait, an honourable substance and a great success,

and it assembles the best of both worlds. These virtues are characteristics that are expected of Muslimpreneurs in creating social enterprise that will earn them the reward of the world and hereafter.

Abu Darda (cited in Imam Ghazali) states that the complete form of *taqwa* is to fear Allah so much that one begins to fear Him from a mustard seed (the potential sin) and until one leaves what might be *halal* in the fear that it could be *haram*. This implies that consuming and creating lawful products have a positive impact on one's closeness to almighty Allah and on the acceptance of one's prayer.

**Education.** Knowledge is very important in Islam (Faizal *et al.*, 2013a). The importance of education is established in the Qur'an 2:239. This verse suggests that Muslimpreneurs can learn various aspects of knowledge that they did not know before. Knowledge of social enterprise can be learned through entrepreneurship training.

The Holy Prophet(s) of Islam stated that, "Seeking knowledge is incumbent upon every Muslim, male and female." (Al-Majlisi Bihar al-Anwar, vol. 1. p. 177). Every Muslimpreneur is expected to seek knowledge that will add to the input of society. In essence, youths can be empowered through entrepreneurial skills and training so that social enterprise can be established. The short term benefit is that the needy can be employed. The knowledge economy will influence economic development through its long-term effect.

**Ethics.** Islam places great emphasis on the importance of ethics and its significance

for the development of individuals and society (Rahim, 2013, p. 511). Good Muslimpreneurs may produce a good society at large. This is explained in the Qur'an (3:104). Building an ethical enterprise culture in the mindset of youths may promote economic growth and improve the welfare of the society. Every Islamic business should be based on good ethics. Training Muslim students on various business ethics can shape their business values in the future.

Islam has laid down the guidelines for the setting up of high moral value businesses. Islam does not encourage unethical trade practices such as bribery (Qur'an, 2:188); *riba* (interest) (Qur'an, 2:188); fraud (Qur'an, 3:161); stealing and robbery (Qur'an,5:38); gambling; trade in wine and related businesses (Qur'an, 5:90) and income from sources of vulgarity (Qur'an, 24:19).

Based on the discussion above, the following hypotheses were proposed:

H1a = Muslimpreneur characteristics are positively related on readiness for new venture creation.

H1b = Training moderates the interaction between Muslimpreneur characteristics and readiness for new venture creation.

#### Islamic Motivation

Previous studies have explained the importance of Islamic motivation in creating new firms. Therefore, this study intended to look at what motivates Muslimpreneurs to create new ventures and how the Islamic perspective can be adhered to.

Act of worship (*ibadah*). Mushtaq (2001) suggested generosity and motivation to help others as one of the motives of setting up a new venture. Love of Allah makes one see every business activity as an act of *ibadah*. There are various Islamic teachings from the Holy Qur'an that encourage Muslims to be productive and to be close to God.

This is evidenced from the Qur'an (62:10). This verse shows that Muslimpreneurs must put Allah first in all their business activities. Allah determines success and successful business activities. Muslim entrepreneurs are bound by Islamic guidelines in the exercise of their business activities. In view of Nooh and Sabri (2005), Muslimpreneurs possess the ability to run business in a proper, transparent and fair manner by staying away from all the prohibitions as stated in the Quran and the *hadith*. This is one of the uniqueness of Muslimpreneurs compared to Western entrepreneurs.

Al-falah motive. Al-falah can be achieved only through a moral approach to human affairs (Kalsom & Ahmad, 2014). Yousef (2001) defined al-falah as the way to achieve higher order needs by seeking the pleasure of Allah. Rahim (2007, p. 6) further explained the meaning of al-falah as the desire to achieve success in the hereafter. From this definition al-falah refers to the achievement motive in the here and the hereafter.

In the study of Kalsom and Ahmad (2014, p. 1537), the findings show that five Islamic business practices i.e.Islamic work ethics, Muslim worldview, Muslim

personal help and Muslim practices are positively related to the entrepreneurs' *alfalah*. *Al-falah* would motivate and inspire every Muslim to put every effort into their work. Islam provides motivation on various economic activities in order to earn a *halal* living, encourages entrepreneurship development for economic growth and accords business a place of high esteem (Solaiman & Yasmin, 2012).

Wealth motive. Yusuf and Amin (2007) pointed out that the main objective of a new firm was not only to acquire wealth, but also to attain social optimality as requested by the accountability and leadership axioms of the Islamic economic system foundational principles. Therefore, social enterprise should be established not just to accumulate wealth but to cater for society at large.

Faizal *et al.*'s (2013b, p. 195) findings show that Prophet Muhammad cared for the society and also encouraged his followers to care for their aged parents and the elderly. Based on the discussions above, the following hypotheses were proposed:

**H2a** = Islamic motivation is positively related on readiness for new venture creation.

H2b = Training moderates the interaction between Islamic motivation and readiness for new venture creation.

#### Social Capital

Social capital can be defined as the norms and networks that enable people to act collectively (Woolcock & Narayan, 2000,

p. 3). Friends and family can influence an individual's decisions related to the emotional, social and economic. The features of social capital have been empirically researched in the past and have practical implications on growth and poverty reduction.

Furthermore, those studying entrepreneurship realise the positive perception of their family and friends about being an entrepreneur, they will be encouraged to become entrepreneurs. Having entrepreneurial-minded friends will also help them (Souitaris *et al.*, 2007). Hence, social capital has both costs as well as benefits. Based on the discussion above, the following hypotheses were proposed:

H3a = Social Capital is positively related on readiness for new venture creation.

H3b = Training moderates the interaction between social capital and readiness for new venture creation.

## Entrepreneurial Capabilities

Entrepreneurial Capabilities can be described as the ability to sense, select, shape and synchronise internal and external conditions for the exploration (recognition, discovery and creation) and exploitation of opportunities (Zahra, 2011). For the purpose of this study entrepreneurial capabilities are categorised thus:

**Opportunity.** Schumpeter (1993, p. 125) describes innovative entrepreneurs as paths to open up new territory and turn dreams into reality. For opportunity to be turned

into business activities entrepreneurs must be innovative in nature. New products and technology should be typically better than existing products. The availability of improved products and technology increases consumer demand. Therefore, creative destruction stimulates economic activities (Barringer & Ireland, 2010).

Furthermore, Islam is not against identifying new business opportunity through innovation. Based on the Islamic perspective, innovative Muslimpreneurs can be described as individuals who have the creativity to create an idea and generate new ways of looking at issues and opportunities (Suherman, 2008, p. 19). This innovative Muslimpreneur cannot just be focused on something new but must also have the mindset and ability to provide added value to existing products using the latest methods in order to meet current market demand (Abdullah, 2013, p. 335). Hence, to enter the market, it is almost a necessity to know how to identify opportunity; in addition, innovation is crucial for survival.

Resources. Resource is meant as activities which could be thought of as a strength or weakness of a given firm (Wernerfelt, 1984, p. 172). According to Barney (2002, p. 155), firm resources can be categorised into all assets, capabilities, organisational processes, firm attributes, information, knowledge etc. that are controlled by a firm that enable the firm to conceive and implement strategies that will improve its efficiency and effectiveness.

Entrepreneurs who obtain essential financial and human resources often need to persuade others of the value or potential of a new venture and its positive effects (Baron, 2008, p. 333). Using few resources to achieve greater results is an important tool that a new venture can use to succeed in the competitive market (Bygrave & Timmons, 1992). Effective new ventures can strive to control resources although they may not necessarily own them. Owning resources sometimes can restrict the profit of an organisation.

According to Timmons (1994), every new venture should strategise whether its assets for the business, team, the business plan or start-up or growth capital should come first. Successful entrepreneurs think cash last because this brings prudence and the discipline of leanness as they are aware of every cash flow. This concept of Timmons can help in creating social enterprise without making money or profit as the main aim.

Ability. Abilities can be acquired through various skills and knowledge. Human capital (HC) is generally used when referring to a hierarchy of skills and knowledge (Ucbasaran *et al.*, 2008). There are various kinds of skills that are required by Muslimpreneurs in order to be successful in creating new firms. There are various skills that can be used for sustainability of new ventures such as managerial, financial and the ability to write effective business plans and to build a team (Kalsom & Seun, 2014).

Khaliq (2004) mentioned that even though an organisational environment for Islamic skills and knowledge is becoming more important daily, only a few Muslims are pursuing accurate ways of achieving the objectives of Islam in organisations. Others may be able to contribute something to his or her organisation but only work in a non-Islamic culture, and some others may be involved in healthy competition between firms but with a wrong Islamic background. Based on the discussion, the following hypotheses were proposed:

- **H4a** = Entrepreneurial capabilities are positively related on readiness for new venture creation.
- H4b = Training moderates the interaction between entrepreneurial capabilities and readiness for new venture creation.

#### MATERIALS AND METHODS

Population and Sampling Frame

The population of USIM students is about 10,000. The sample was drawn from this population. According to Sekaran (2003, p. 294) the required sample size for populations of 10,000 is 370 samples. Four hundred and thirty-nine out of 540 questionnaires were randomly collected to represent the sample size. With this sample size the respondents were adequately represented. The research used the structured questionnaire on undergraduate students of USIM. The

unit of analysis was individual. The time horizon was cross sectional since the survey only collected data at a point in time.

## Instrumentation and Method of Data Analysis

This survey used probability sampling techniques through the simple random survey. The measurement of the variables consisted of the four independent variables, one moderating variable and the dependent variable. Eighteen items with a 5-point Likert-scale were used as the variables in the questionnaire. It is reliable if the test retest produces a Cronbach's alpha of higher than 0.70 (DeVellis, 2003). Tagwa and ibadah were measured through the use of an index. The descriptive analysis shows the demographic characteristics of the students. A hierarchical multiple regression analysis was conducted to see the relationship between the dependent and independents and the inclusion of a moderating variable. The regression equations are represented thus:

## Direct effect:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$
 [1]

Moderating effect:

$$Y = \beta_0 + \sum (\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4) + \beta_m M + \beta_j I_i + e$$
 [2]

 $\beta_0$ =intercept;  $\beta_{1.4}$ =coefficient of the independent variables from 1 to 4;  $\beta_m$ =coefficient of moderator (training);  $\beta_j$ =coefficients of interaction effect e=error term.

## Descriptive Analysis

In this analysis, the majority of the students were female (71.1%) within the age range 20-25 years old and the male students had 28.9%. About 40.9% of the students had parents who engaged in family businesses while the remaining 59.1% of the students' parents engaged in other occupational activities such as civil servant.

## Reliability and Validity

Table 1 is the result of the exploratory factor analysis and reliability test. All of these variables were consistent internally with an alpha value of more than 0.70 as the cut-off point (Nunally, 1978). All the six constructs had a co-efficient that exceeded the 0.8 threshold. The total number of items used was 18 and the total calculated variance of all the constructs was 77.1%. The Cronbach's alpha of all the constructs showed a very high factor loading of .876. This shows that all the constructs were reliable in this research. Factor analysis of the data was also examined via significance of the Bartlett test of sphericity while sampling adequacy was measure using Kaiser-Meyer-Olkin (KMO). Both tests resulted in a good outcome. The Bartlett test of sphericity was significant at p<0.00, c<sup>2</sup> (N=439). The KMO with a value of 0.868 was above the adequate sampling value of 0.6 (Tabachnick & Fidell, 2007).

TABLE 1
Results of the Exploratory Factor Analysis and Reliability Scores

| Factors                          | Number<br>of items | Mean   | Cronbach's<br>Alpha score of<br>factors |   |
|----------------------------------|--------------------|--------|---|---|
| Entrepreneurial<br>Capabilities  | 3                  | 3.2032 | .856                                    | Kaiser-Meyer-Olkin Measure of<br>Sampling Adequacy=.868                   |
| Entrepreneurship<br>Training     | 4                  | 3.8105 | .870                                    | Bartlett's Test of Sphericity Approx.<br>Chi-Square=1728.083<br>Sig.=.000 |
| Readiness                        | 4                  | 3.4287 | .861                                    |   |
| Muslimpreneur<br>Characteristics | 3                  | 3.5342 | .865                                    |   |
| Islamic Motivation               | 3                  | 3.6096 | .867                                    |   |
| Social Capital                   | 1                  | 3.8581 | .862                                    |   |
| Total Number of Items            | 18                 |        |   |   |
| Total Calculated<br>Variance     | 77.113             |        | Total Cronbach's<br>Alpha<br>.876       |   |

The Pearson correlation coefficients showed normality and linearity (Bryman & Cramer, 2001). Table 2 presents a Pearson correlation matrix of the independent constructs. All the correlations are less than 0.01 level of significance. A Shapiro-Wilk's test (p>0.05) (Shapiro & Wilk, 1965; Razali & Wah, 2011) showed that the data were normally distributed for both standardised and studentised with a skewedness of -0.073(S.E=0.117) and a Kurtosis value of -0.064(S.E=.233) for

standardised residual and with a skewedness of -0.086(S.E=0.0117) and a Kurtosis value of 0.044(S.E=0.233) for studentised residual (Crammer, 1998; Crammer & Howith, 2004; Doane & Steward, 2011). The box plot suggested that symmetry in the distribution was not unreasonable. The P-P plot showed that there was no mark or deviation from a straight line that is consistent with expectations since the sample size was drawn from a normal population.

TABLE 2 Pearson Correlation Matrix of Independent Variables

| (X1) | (X2)      | (X3)     | (X4)                                     |
|------|-----------|----------|--|
| 1    | .396**    | .341**   | 034                                      |
|      | .000      | .000     | .475                                     |
|      | 1         | .361**   | .059                                     |
|      |           | .000     | .222                                     |
|      |           | 1        | 026                                      |
|      |           |          | .594                                     |
|      |           |          | 1  |
|      | (X1)<br>1 | 1 .396** | 1 .396** .341**<br>.000 .000<br>1 .361** |

<sup>\*\*</sup>Correlation is significant at the 0.01 level (2-tailed)

<sup>\*</sup>Correlation is significant at the 0.05 level (2-tailed)

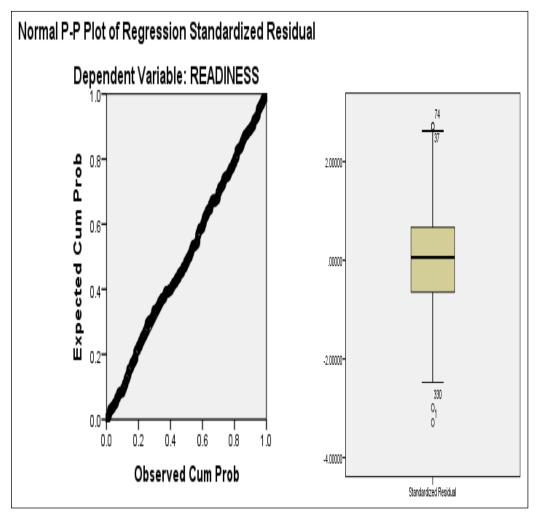


Fig.2: Normal P-P plot and box plot of Regression Standardized Residual.

## RESULTS AND DISCUSSION

In Table 3, all the items used such as Ethics (t=2.052, sig=.041), Al-falah (t=3.912, sig=.000), family value (t=2.046, sig=.041), opportunity (t=4.126, sig=.000) and resources (t=1.996, sig=.047) were

significant and supported at 5% and 10% level of significance, while Education (t=1.593, sig.=.112), Taqwa (t=1.599, sig.=.111), Ibadah (t=1.043, sig=.297), Wealth (t=1.154, sig=.249) and Ability (t=1.275, sig=.203) were not significant.

TABLE 3
Multiple Regression Analysis of Readiness for New Venture Creation

| Model   | Unstandardised<br>Coefficients |            | T     | Sig.   | Collinearity<br>Statistics |       |               |
|---|--------------------------------|------------|-------|--------|----------------------------|-------|---------------|
| R=.679R-<br>Square=.461<br>Adjusted R<br>Square=.448<br>F=36.449<br>Sig.=0.000 <sup>b</sup> | В                              | Std. Error | -     |        | Tolerance                  | VIF   | Decision rule |
| 1 (Constant)  | .169                           | .209       | .809  | .419   |                            |       |               |
| Education   | .041                           | .026       | 1.593 | .112   | .979                       | 1.022 | Not supported |
| Taqwa   | .056                           | .035       | 1.599 | .111   | .765                       | 1.307 | Not supported |
| Ethics  | .080                           | .039       | 2.052 | .041** | .634                       | 1.578 | Supported     |
| al-Falah  | .170                           | .043       | 3.912 | .000** | .542                       | 1.847 | Supported     |
| Ibadah  | .038                           | .036       | 1.043 | .297   | .569                       | 1.759 | Not supported |
| Wealth  | .040                           | .034       | 1.154 | .249   | .789                       | 1.268 | Not supported |
| Family Value  | .095                           | .046       | 2.046 | .041** | .398                       | 2.513 | Supported     |
| Opportunity   | .299                           | .072       | 4.126 | .000** | .300                       | 3.330 | Supported     |
| Resources   | .083                           | .042       | 1.996 | .047** | .809                       | 1.235 | Supported     |
| Ability   | .041                           | .032       | 1.275 | .203   | .736                       | 1.359 | Not supported |

In Table 4, the findings depict that there was positive relationship between readiness for creating social enterprise and the four independent variables. Considering the assumption of no multicollinearity, Menard (1995) suggested that a tolerance level less than 0.1 indicates a serious collinearity problem. Also, a VIF value greater than 10 is a cause for concern. For this model, observed VIF values that ranged from 1.009 to 1.652 and the Tolerance value were all well above 0.6, hence the values were free from a multicollinearity problem. The direct effect regression is shown thus:

$$Y=1.046+.284X_1+.204X_2+.173X_3$$
  
+.035 $X_4+.167$  [1]

The findings supported hypotheses  $H_1a$ ,  $H_2a$  and  $H_3a$  but not  $H_4a$ . "Social capital"

(t=8.141, Sig.=0.000), "Muslimpreneur characteristics" (t=5.506, Sig.=.000) and "Islamic motivation" (t=5.436, Sig=.000) were found to be significant towards readiness on new venture creation (p<0.05, p<0.01) while "Entrepreneurial capability"(t=1.312, Sig.=.190) was the only independent variable that was not significant at the earlier stage.

After the introduction of entrepreneurship training as a moderator in the model, the significance level of all the variables changed. "Social capital" (t=7.158, Sig.=.000), "Islamic motivation" (t=5.763, Sig=.000),"Muslimpreneurs characteristics" (t=3.579,Sig. = .000), Entrepreneurship training (t=3.498,Sig=.000) and Entrepreneurial capabilities

(t=1.883, Sig.=.060) were found to be significant for new venture creation (p<0.05, p<0.10). The interaction effects were all significant and supported except for social capital interaction. The R-square indicated approximately only 38.2%. This improved to 46.1% after the training and explained the variance of readiness for new venture creation. The results showed that the predictive value of the moderator had a significant t-test on the four constructs. The general form of the equation is represented thus:

$$Y=.719+.248X_{1}+.137X_{2}+.11X_{3}+.050X_{4}\\+.160M+.011I_{11}+.092I_{12}+.120I_{13}+.08\\6I_{14}+.200 \qquad \qquad [2]$$

The findings support all the hypotheses  $H_1b$ ,  $H_2b$ ,  $H_3b$   $H_4b$  at 0.1 level of significance; however, interaction effect of social capital was not significant at both 0.05 and 0.1 level of significance. Since the moderator was significant, therefore there was partial moderation of entrepreneurship training on readiness to create social enterprise.

TABLE 4 Hierarchical Regression Model

| Model |                                       | Unstandardised Coefficients |               | T       | Sig.   | Collinearity<br>Statistics |       |                  |
|-------|---------------------------------------|-----------------------------|---------------|---------|--------|----------------------------|-------|------------------|
|       |                                       | В                           | Std.<br>Error | •       |        | Tolerance                  | VIF   | Decision Rule    |
| 1     | (Constant)                            | 1.046                       | .167          | 6.273   | .000   |                            |       |                  |
|       | Entrepreneurial Capabilities (X4)     | .035                        | .027          | 1.312   | .190   | .991                       | 1.009 | Not<br>Supported |
|       | Muslimpreneur<br>Characteristics (X2) | .204                        | .037          | 5.506   | .000** | .780                       | 1.282 | Supported        |
|       | Islamic Motivation (X3)               | .173                        | .032          | 5.436   | .000** | .824                       | 1.214 | Supported        |
|       | Social Capital (X1)                   | .284                        | .035          | 8.141   | .000** | .797                       | 1.254 | Supported        |
| R     | =.618 R Square=.382                   | Adjuste                     | d R Squa      | re=.377 | F=67.0 | )43                        | Sig.( | (F)=.000         |
| 2     | (Constant)                            | .719                        | .200          | 3.601   | .000   |                            |       |                  |
|       | Entrepreneurial<br>Capabilities       | .050                        | .026          | 1.883   | .060*  | .971                       | 1.030 | Supported        |
|       | Muslimpreneur<br>Characteristics      | .137                        | .038          | 3.579   | .000** | .684                       | 1.463 | Supported        |
|       | Islamic Motivation                    | .181                        | .031          | 5.763   | .000** | .790                       | 1.266 | Supported        |
|       | Social Capital                        | .248                        | .035          | 7.158   | .000** | .750                       | 1.333 | Supported        |
|       | X4_Training (I <sub>14</sub> )        | .086                        | .042          | 2.032   | .043** | .948                       | 1.055 | Supported        |
|       | X2_Training (I <sub>12</sub> )        | .092                        | .044          | 2.115   | .035** | .618                       | 1.617 | Supported        |
|       | X1_Training (I <sub>11</sub> )        | .011                        | .045          | .245    | .806   | .605                       | 1.652 | Not Supported    |
|       | X3_Training (I <sub>13</sub> )        | .120                        | .043          | 2.781   | .006** | .795                       | 1.257 | Supported        |
|       | Training                              | .160                        | .046          | 3.498   | .001** | .702                       | 1.425 | Supported        |
| R     | =.656 R Square=.430 A                 | djusted l                   | R Square      | =.418   | F=35.  | 842                        | Sig.  | (F)=.000         |

#### **CONCLUSION**

The purpose of this study was to ascertain the determinant factors that can prompt readiness for new venture creation and to determine if training moderates new venture creation. Using readiness for new venture creation as the dependent variable, the findings showed that the four independent variables, moderating variable and their interaction effects were positively related to readiness of Muslim students to create new ventures

This model has shown that entrepreneurship training can moderate readiness for new venture creation. From the model above the findings revealed that the determinant factors that could influence new venture creation were Islamic motivation, entrepreneurial capabilities, Muslimpreneur characteristics and social capital. Islamic motivation, entrepreneurial capabilities Muslimpreneur and characteristics were all significant and supported and therefore, can be moderated through training.

Social capital on the other hand, showed that there was direct relationship between social ties on readiness for creating new ventures. Unfortunately, training does not moderate social capital. Even after engaging in various entrepreneurship training, parents can still influence their children's decisions on their readiness to invest in new venture creation. Most parents worry their children will "fall in with the wrong decision" and that peer pressure and a strong desire for acceptance affect their success in creating

new firms while others will fully support their children due to their experience in family business. Hence, social ties can be both a blessing and a blight and this may have greater implication on the career of a graduate Muslimpreneur.

In addition, given the nature of the model in this study, it would be appropriate to conduct qualitative research so that an open-ended questionnaire and interview can be performed on the components of Islamic social enterprise.

In conclusion, youth should fear Allah and aim to achieve more success for the hereafter through business creation. Muslimpreneurs should identify ethical business opportunity, utilise available resources, improve their knowledge and seek Allah blessings for the success of their business and to have greater impact on society.

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# **SOCIAL SCIENCES & HUMANITIES**

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# Fuel Prices and Road Transportation Fares in Ghana

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#### **ABSTRACT**

We develop a mathematical model for automatic adjustment of new transportation fares in terms of old transportation fares, the number of litres of petrol/diesel a vehicle requires, the quantum of adjustment, the number of trips a vehicle makes on a specified route and the number of passengers a vehicle carries. We recommend that any adjustment to existing fares should be exactly the loading and that any additional amount to the existing fares differing from the loading leads to either overcharging or undercharging of passengers. We also show that any negotiation about the quantum of adjustment to existing fares reduces to the proper assignment of the number of trips a vehicle plies on a specified route. We tested our models on privately operated commercial vehicles using data from major lorry stations in Accra, the National Petroleum Authority and Drivers and Vehicular License Authority in Ghana. The results indicated that passengers are undercharged on some routes whereas they are overcharged on others. The model should be useful to transportation planners, coordinators and administrators in setting and adjusting road transportation fares. It should assist in settling disputes about new transportation fares between passengers and drivers that arise when there is adjustment in fuel prices.

Keywords: Asset replacement cost, destination distance, expected charge, loading, viability condition, stability model

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#### INTRODUCTION

Increases in transportation fares are frequent in the Ghanaian transportation sector and other developing countries of the world especially in the non-oil producing countries. Whenever there is an increase or decrease of oil prices at

the global level, countries tend to adjust prices to reflect the prevailing prices of the world market. Historically, fuel costs have been subsidised in Ghana; however, with successive governments unable to shoulder the increasing cost of the subsidy, removal of subsidies has become the adopted approach. Hence, in 2005, by an act of Parliament (Act 691), the National Petroleum Authority (NPA) was mandated to regulate the downstream sector of the petroleum industry. As a result, the NPA adjusts prices of petroleum products every two weeks to reflect recurrent global market costs of the commodity. Minimal increases in global oil price account for the Ghanaian fuel price increases. Largely, the increases are triggered by the depreciation of the local currency, the Ghana Cedi (GHS), to the United States Dollar (USD), the currency Ghana uses for its oil payments. Thus on July 14, 2014, transportation fares went up by 15%. This increment was the sixth for the year 2014, and cumulatively accounted for a 40% increment since the beginning of 2014. This led to a sharp increase in fuel prices. The regular increase in fuel prices imposed a corresponding pattern of increase in transportation fares that did not seem commensurate with the fuel price adjustments. As most goods and services are transported by road in Ghana, an increase in fuel prices automatically leads to increases in prices of other goods and services. In addition, whenever there is an adjustment of fuel prices as is currently the case, there are disputes between drivers and possibly their assistants (fare collectors) on one hand and passengers on the other as to the amount that

has to be added or subtracted from the existing fares. Thus, Ghanaian passengers feel they are paying unrealistic transportation fares and, therefore, feel cheated.

In Ghana transportation fares are largely determined by the Ghana Road Transport Coordinating Council (GRTCC), which is an umbrella institution for transportation associations throughout Ghana. To ensure economic viability of their operations, the GRTCC usually maximises revenue by adjusting fares upwards, in a manner which does not seem commensurate with fuel price increase. If Ghanaian commuters are ever to pay realistic transportation prices for each increase in fuel price then it is essential that a framework is put in place that determines what constitutes a fair price for commuters based on each increase.

There are several important questions to which passengers, vehicle operators, GRTCC and the Ministry of Transport are awaiting answers. What is the fair price that passengers have to pay when there is an adjustment in fuel price? Is there a model that can be employed by GRTCC that can minimise the frequency of adjustments in transportation fares? What is the minimum number of trips that vehicle operators have to make on a specified route so that their operations are profitable? Thus, there is the need to have a model that transportation planners, coordinators and administrators can employ to automatically adjust transportation fares. In addition, there is the need to have a model that can be employed to minimise the frequency of adjustment in fuel prices.

In this study, we developed a model for lorry fare adjustment to verify whether the lorry fare adjustments in 2014 were reasonable for some major routes. In addition, we proposed a model that would assist in minimising the frequency of adjustments not only for transportation operators but other businesses that are likely to be affected by fuel price increases to enable all involved to properly plan their budgets.

Very little has been written in this area. In fact, hardly any study exists within the Ghanaian context that this study could draw from. Arndt et al. (2008) studied fuel price increases in Africa. However, they linked fuel price increases to food prices in Mozambique, concluding that increase in fuel prices led to higher food prices in Mozambique. In Europe, Delsalle (2002) conducted a study on fuel price changes in the transportation sector and concluded that increase in fuel prices led to higher transportation costs. Furthermore, Ortunaand Fernandez-Aracil (2013) analysed the impact of the variation in the price of fossil fuels on the development of the urban sprawl in Spain. Their study combined the principles of the natural evolution theory with the price of fuels and two types of family house. The analysis was empirical and was based on a panel data collected in the provinces of Alicante, Almeria, Balearic Islands, Barcelona, Cadiz, Castellon, Cordova, Girona, Granada, Huelva, Jaen, Lleida, Madrid, Malaga, Murcia, Seville, Tarragona and Valencia from 2000 to 2010. The main finding drawn from the econometric analysis was that an increase in the price of fuel led to a decrease in the construction rate of single-family houses. In Australia, Jago and Sipe (2007) assessed the socioeconomic risks from higher urban fuel prices, and found that there was wide spatial variability in the vulnerability of Australia's urban populations to rising fuel costs, which might compound existing socio-spatial divisions. However, a study conducted by Setwayan (2014) in Indonesia found that increasing fuel prices had a devastating impact on the transportation sector of the economy. Pizer (2006) on his part, researching fuel economy in the United States, concluded that improvements can be cost-effective; that is, gasoline savings can pay for the cost of fuel-saving technologies.

Shang and Guo (2005) established a trip cost model for a bus rapid transit (BRT) system in the Taipei metropolitan area (the main metropolitan area in Taiwan). The main purpose of the BRT system was to provide high-efficiency low pollution and lower construct costs in order to lower the misuse of social resources and to reduce social costs 2005). (Shang & Guo. This accomplished through the combination of the advantages of rail service quality and bus operation flexibility. The main finding of the study was that the total cost of private transportation was much higher than public transit.

Notwithstanding the effort of the preceding studies to highlight the effects of fuel price increases, there was a point

of departure from this study in that this study went further to develop a framework that ensured transportation fare increases arising from increase in fuel prices were based on fair adjustment.

The rest of the study is organised as follows: in Section 2 we develop the mathematical models for managing the pricing of road transportation. Here, we develop the pricing model for fuel price adjustments and give conditions under which the operations of vehicle operators will be viable. In addition, we provide the expected charge for any specified destination and propose a model that can be employed to minimise the frequency of fuel price adjustments. The empirical results are contained in Section 3 while the discussion of the results is given in Section 4. Section 5 concludes the study.

## MODEL DEVELOPMENT

In this section, we develop mathematical models for setting and adjusting fuel prices. We also develop conditions under which the transportation business will be viable for transportation operators. A model for minimising the frequency of fuel price adjustments is provided and the expected charge for any destination of the vehicle is also given.

Vehicles that Ply Specified Destinations
We denoted the profit function of vehicular class operations by

$$p_f = N_t(n_p s_p d) - [t_f + V_c + w_i A R_c (1+r)^i], i = 1,...,n$$

 $N_t$  is the number of trips a vehicle makes in a week to a specified destination.  $n_n$ is the permissible number of passengers a vehicle may carry;  $S_p$  is the price per kilometre travelled by a passenger and d, the destination of a passenger, which we called the destination distance. Thus  $S_n d$ is the amount a passenger pays for getting to her destination.  $t_f$  is the fixed cost of operations within a week. These fixed costs are the amount paid for the annual insurance, parking tickets, assembly permits, vehicle income tax and roadworthy certificate, which has to be renewed semi-annually from the Drivers and Vehicular License Authority (DVLA). We split the variable cost,  $V_c$ , into two parts: one part triggered by fluctuation in the fuel price,  $V_c$ , and the other part,  $\widetilde{\mathcal{V}}_c$ , that changes only when there is an upward review of fuel prices, a characteristic peculiar to the Ghanaian economy (compare with Andoh et al. (2012), p. 65). The part of the variable cost,  $V_c$ , triggered by fluctuation in fuel prices is defined by:

$$v_c = n_l p_l$$

where  $n_l$  is the number of litres of petrol or diesel that a vehicle requires in a week and  $p_l$  is the price per litre. Other expenses such as vehicle lubricant engine oil, spare parts, washing or cleaning cost, cost of settling passengers' lost items, servicing of the vehicle, driver and possibly, driver's assistant fees, booking fees and vehicle income tax have been merged  $\widetilde{V}_c$ .

Here,  $AR_c$ , has to be interpreted as the purchase price of the vehicle and the

cost of vehicle tyres, which has to replaced semi-annually. We assumed that  $AR_c$  was paid over n weeks.  $W_i$  ( $0 < W_i \le 1$ ) is the fractional part of  $AR_c$  that has to be paid in a week and satisfies:

$$\sum_{i=1}^{n} w_i = 1$$

For viability of transportation business operations, the transportation fare per kilometre travelled,  $S_p$ , must be such that:

$$s_{p} \ge \frac{t_{f} + n_{l}p_{l} + \widetilde{v}_{c} + w_{i}AR_{c}(1+r)^{i}}{N_{t}(n_{p}d)}$$
[1]

It can be seen from [1] that vehicle operators can charge less for increasing number of trips and yet obtain some profit. On the other hand if  $S_p$  is fixed, then, for transportation business operations to be viable:

$$N_{t} \ge \frac{t_{f} + n_{l}p_{l} + \widetilde{v}_{c} + w_{i}AR_{c}(1+r)^{t}}{ds_{p}n_{p}}$$

In a typical transportation business,  $v_c$  is the only item in the above inequality that typically triggers a change in  $\widetilde{v}_c$  within a short period of time. Note also that greater distance triggers greater increases in  $v_c$ . For example, more fuel has to be purchased for increasing d. Thus  $v_c$  varies directly as the destination distance d. Hence, we may write:

$$v_c = kd$$

for the constant, k. Consequently, the constant may be determined by:

$$k = \frac{n_l p_l}{d}$$

We denote the profit from old fares of vehicular class operations by  $p_{f^o}$  and the profit from new fares of vehicular operations by  $p_{f^n}$ . Then we may write:

$$p_{f^{o}} = N_{t}(n_{p}s_{p^{o}}d) - [t_{f} + n_{l}p_{l^{o}} + \widetilde{v}_{c^{o}} + w_{i}AR_{c}(1+r)^{i}]$$
 [2]

where  $s_{p^o}$  is the old fare per kilometre travelled by a passenger,  $p_{l^o}$  is the old price per litre of petrol or diesel and  $\widetilde{\mathbf{V}}_{\mathbf{c}^o}$  is the old variable cost.

In similar fashion we may write:

$$p_{f^{n}} = N_{t}(n_{p}s_{p^{n}}d) - [t_{f} + n_{l}p_{l^{n}} + \widetilde{v}_{c^{n}} + w_{i}AR_{c}(1+r)^{i}]$$
 [3]

where  $s_{p^n}$  is the new fare per kilometre travelled by a passenger,  $p_{l^n}$  is the old price per litre of petrol or diesel and  $\widetilde{\mathbf{V}}_{\mathbf{c}^n}$  is the new variable cost.

Assuming the number of trips a vehicle operator makes on a specified distance does not alter when there is adjustment in fuel prices, subtracting [2] from [3], we get:

$$p_{f^n} - p_{f^o} = N_t n_p (s_{p^n} - s_{p^o}) d +$$

$$p_{f^n} - p_{f^o} = N_t n_p (s_{p^n} - s_{p^o}) d +$$

The viability condition implies that the new price per kilometre  $s_{p^n}$  must be such that:

$$s_{p^n} \ge s_{p^o} + \frac{n_l(p_{l^n} - p_{l^o}) + (\widetilde{v}_{c^n} - \widetilde{v}_{c^o})}{N_t n_p d}$$

Obtaining an estimate of  $(\widetilde{V}_{c^n} - \widetilde{V}_{c^o})$  in practice can be tedious and so we obtained an estimate via the following observation peculiar to Ghana. A decline in fuel prices does not cause a reduction in the prices of goods and services. Consequently, we may

write:

$$(\widetilde{\mathbf{v}}_{\mathbf{c}^n} - \widetilde{\mathbf{v}}_{\mathbf{c}^o}) \propto \left| p_{l^n} - p_{l^o} \right|$$

Thus.

$$(\widetilde{\mathbf{v}}_{c^{n}} - \widetilde{\mathbf{v}}_{c^{o}}) = k |p_{l^{n}} - p_{l^{o}}| = \frac{n_{l} p_{l_{A}}}{d} |p_{l^{n}} - p_{l^{o}}|, p_{l_{A}} = \frac{p_{l^{n}} + p_{l^{o}}}{2}.$$

Therefore,

$$s_{p^n} \ge s_{p^o} + \frac{n_l(p_{l^n} - p_{l^o})d + n_l p_{l_A}|p_{l^n} - p_{l^o}|}{N_l n_n d^2}$$

$$ds_{p^{n}} \ge ds_{p^{o}} + \frac{n_{l}(p_{l^{n}} - p_{l^{o}})}{N_{l}n_{p}} + \frac{n_{l}p_{l_{A}}|p_{l^{n}} - p_{l^{o}}|}{N_{l}n_{p}d}$$

with equality if  $p_{l^n} = p_{l^o}$ . A reduction or increase in fares is completely determined by the difference in the price  $p_{l^n} - p_{l^o}$ ,  $p_{l_A}$  and the total distance  $N_t d$  as  $s_{p^o}$ ,  $n_l$  and  $n_p$  remain the same for every kilometre travelled. Thus, the appropriate new fare for any destination is  $ds_{p^n}$ . The expression:

$$\frac{n_{l}(p_{l^{n}}-p_{l^{o}})d+n_{l}p_{l_{A}}|p_{l^{n}}-p_{l^{o}}|}{N_{t}n_{p}d^{2}}$$

is the price each passenger pays per kilometre for adjustment in fuel prices, called the loading. A large value of  $N_t$  means a smaller addition to existing fares. As vehicle operators are generally interested in increasing their profit, they would prefer  $N_t$  to be as small as possible. Nonetheless, any addition to any destination should lie in:

$$\left(0, \frac{n_{l}(p_{l^{n}}-p_{l^{o}})d+n_{l}p_{l_{A}}|p_{l^{n}}-p_{l^{o}}|}{n_{p}d^{2}}\right)$$

It should be noted that negotiations with vehicle operators about the quantum of adjustment to existing fares reduces to the proper assignment of  $N_t$ .

## Expected Charge

We could not completely rely on the word of vehicle operators to determine  $N_t$  as these operators tend to be interested in maximising their profit. Consequently, we obtained a just price for any destination, called the expected charge, via the following technique.

Observe from [1] that the amount each passenger pays for her destination,  $ds_p$ , must be such that:

$$ds_{p} > \frac{t_{f} + n_{l}p_{l} + \widetilde{v}_{c} + w_{i}AR_{c}(1+r)^{i}}{N_{t}n_{p}}, i = 1,...,n$$

Keeping all other inputs on the RHS constant, the amount each passenger pays hinges on the number of trips a vehicle operator makes on a specified route. Consequently, for all reasonable values of  $N_t = 1, 2, ..., M \in \mathbb{N}$ , generate the paths  $C_1, C_2, ..., C_M$  and select the median  $\widetilde{C}_j, j = 1, 2, ..., M$  for each path. Then, the expected charge, EC, can be approximated by:

$$\frac{1}{M} \sum_{j=1}^{M} \widetilde{C}_{j} \approx EC$$

EC is the amount each passenger pays for every destination.

We may also compute:

$$\hat{S}_c = \sqrt{\frac{1}{M-1} \sum_{j=1}^{M} \left( \widetilde{C}_J - \hat{\mu}_c \right)^2}, \hat{\mu}_c = E\hat{C}$$

Then an  $\alpha$ % confidence interval for the expected charge,  $E\hat{C}$ , is given by:

$$\left[\hat{\mu}_c - \frac{c\hat{S}_c}{\sqrt{M}}, \hat{\mu}_c + \frac{c\hat{S}_c}{\sqrt{M}}\right]$$

where  $\mathcal{C}$  is a number that satisfies  $P(-c \le T \le c) = \frac{\alpha}{100}$  and T obeys the t-distribution with k = M - 1 degrees of freedom (see Berstimas & Freund, 2004, p. 167).

## Avoiding Rampant Changes in Transportation Fares

Individuals, businesses and organisations are typically worried about the uncertainty associated with prices of petroleum products. They want stable prices so that they can properly plan their activities. To avoid rampant change in transportation fares, we proposed the following strategy. Set:

$$p_l^c = p_{l^n} - p_{l^o}$$

as the difference in price between the old and the new per litre. Then, for reasonable past data

$$p_{l_1}^c, p_{l_2}^c, ..., p_{l_T}^c$$
, up to a period  $T$ , compute  $\overline{P}_l = \frac{1}{T} \sum_{t=1}^T p_{l_t}^c$  and set:

$$s_{p^n}^* = s_{p^o} + \frac{n_l \overline{P}_l d + n_l p_{l_A} |\overline{P}_l|}{N_t n_p d^2}$$
[4]

We called [4] the stability model. Thus  $|s_{p^n} - s_{p^n}^*|$  will be the gain or loss per kilometre to the vehicle operator when

there is adjustment in petroleum prices. This works well in regions where the prices of petroleum products are relatively stable. The analysis can be done in a stable currency and converted to the unstable currency in regions where prices are volatile.

#### EMPIRICAL RESULTS

We tested our models on privately operated long distance commercial vehicles commonly used by vehicle operators on the Ghanaian road transportation sector.

## Assumptions and Data Analysis

Historical prices of premium gasoline and gas oil for our analysis were obtained from the website of the National Petroleum Authority, the sole agency responsible for setting the prices of petroleum products in Ghana (http://npa.gov.gh/npa\_new/index. php). Primary data of vehicular operational costs were also obtained from randomly selected vehicle operators in Ghana at major lorry stations in the capital city, Accra.

To get a sense of their operating expenses such as maintenance cost, salary etc. per week we asked respondents questions pertaining to the amount they spent weekly maintaining their vehicles, the amount they received as salary, the amount they paid their assistants daily and other expenses they incurred in a week. To reduce the impact of extreme values in the data we used 5% trimmed mean of data collected for our analysis.

Data on the amount vehicles paid for renewal of roadworthy certificates were also obtained from DVLA, the sole agency in Ghana responsible for the issuance of certificates to vehicles that ply Ghanaian roads. The amount the transportation operators' typically paid for insurance cover was obtained from the largest insurance company in Ghana, the State Insurance Company Limited. All these information are summarised in Table 1 for the various vehicle seating capacities.

TABLE 1 Operational Costs (in GHS) for Commonly Operated Private Vehicles

| Costs   | Private vehicle operators           |                 |                 |                 |                 |
|---|-------------------------------------|-----------------|-----------------|-----------------|-----------------|
|   |                                     | 5-seater        | 6-13 seater     | 14-19 seater    | 20- 33 seater   |
| Fixed cost  | Components                          | Amount in (GHS) | Amount in (GHS) | Amount in (GHS) | Amount in (GHS) |
|   | Yearly insurance                    | 83.95           | 93.02           | 96.27           | 135.47          |
|   | Semi-annual<br>Roadworthy cost      | 37.22           | 40.66           | 60.02           | 60.02           |
|   | Quarterly vehicle Income tax        | 12              | 12              | 15              | 35              |
|   | Yearly assembly permits for vehicle | 7               | 15              | 15              | 15              |
|   | Yearly assembly permits for driver  | 10              | 12              | 12              | 12              |
| Yearly total fixed cost                                 |                                     | 223.39          | 249.39          | 375.81          | 422.51          |
| Weekly total fixed cost                                 |                                     | 5.20            | 5.80            | 8.74            | 9.83            |
| Variable costs ( $\dot{\mathcal{V}}_c$ )                | Weekly wage of driver               | 50              | 62.5            | 75              | 87.5            |
|   | Weekly assistance wage              | -               | 120             | 120             | 150             |
|   | Weekly booking fees                 | 3.5             | 77              | 77              | 105             |
|   | Weekly parking tickets              | 3.5             | 28              | 28              | 28              |
|   | Other weekly<br>Expenses            | 54              | 62.29           | 72.74           | 75.72           |
| Weekly total variable costs ( $\tilde{\mathcal{V}}_c$ ) |                                     | 111             | 349.79          | 372.74          | 456.22          |
|   | Vehicle cost                        | 16500           | 16500           | 30000           | 40000           |
| $AR_c$  | Tyre cost (Long distance)           | 450 × 76        | 450 × 76        | 450 × 76        | 450 × 76        |

A difference in quality of vehicle of a particular type used for the transportation sector does not generally cause a difference in the transportation charges. Consequently, we assumed that all vehicles used for the transportation business were not new vehicles, and their corresponding costs in Ghana cedis are indicated in Table 1. In addition, we assumed the lifespan of all vehicles used for the operations was 10 years. This information was obtained from vehicle operators at major lorry stations in Accra. The rate of interest employed for the analysis was 31%, the current rate banks charge on loans

We assumed drivers worked 43 weeks in a year (all Sundays and public holidays in Ghana excluded).  $AR_c$  as indicated in Table 1 is in two parts: the cost of the vehicle and the cost of tyres for the entire life of the vehicle. We also assumed that vehicle operators would replace their tyres semi-annually. For long distance vehicles 76 tyres would be required for the entire lifespan of the vehicle. Observe that the first set of tyre replacements

is at the end the first sixth month of vehicle operation and, therefore, 76 tyres would be required for long-distance operations.

Column one of Table 2 shows the names of some of the common vehicles operated privately by vehicle owners. The seating capacities including for the driver are shown in column 2 and the type of fuel used by the vehicle is indicated in the last column of the table. Columns 3 and 5 are respectively the destination from Accra and the number of litres of fuel required for a full tank. Column 4 is the average number of trips vehicle operators make in a week for the various destinations. This information was obtained from questionnaires designed for the operators.

TABLE 2
Most Common Private Operator Vehicles that Ply Ghanaian Roads

| Vehicle type        | Seating capacity | Destination from Accra (in km) | Average number of trips in a week | Number of litres for full tank | Fuel<br>type |
|---------------------|------------------|--------------------------------|-----------------------------------|--------------------------------|--------------|
| 609 Benz<br>bus     | 33               | Accra-Oda<br>(125 km)          | 7                                 | 74                             | Diesel       |
| Sprinter bus        | 27               | Accra-Oda<br>(125 km)          | 10.5                              | 90                             | Diesel       |
| Sprinter bus        | 23               | Accra-Cape Coast (144km)       | 2.5                               | 75                             | Diesel       |
| 207 bus             | 23               | Accra-Breman Asikuma (123km)   | 2.5                               | 75                             | Diesel       |
| Sprinter bus        | 23               | Accra- Bogoso<br>(295km)       | 2.5                               | 75                             | Diesel       |
| Erton bus           | 20               | Accra-Takoradi<br>(221km)      | 4                                 | 88                             | Diesel       |
| Urvan               | 15               | Accra-Kpandu (203km)           | 8                                 | 64                             | Diesel       |
| Toyata<br>Hiace bus | 15               | Accra-Hohoe<br>(224 km)        | 3                                 | 67                             | Diesel       |
| Ford                | 14               | Accra-Cape Coast (144km)       | 12                                | 66                             | Petrol       |
| Hondai<br>Asterisks | 12               | Accra-Aflao<br>(33km)          | 4.5                               | 63                             | Diesel       |
| Urvan               | 15               | Accra-Ho<br>(158km)            | 3                                 | 64                             | Diesel       |
| Ford                | 14               | Accra-Kumasi<br>(258km)        | 3                                 | 66                             | Petrol       |
| Urvan               | 15               | Accra –Koforidua (82km)        | 6                                 | 64                             | Diesel       |

## Data Analysis

Fig.1 shows a plot of petroleum prices from January 2007 to mid-July 2014 as posted by the National Petroleum Authority in US dollars and in Ghana cedis. It can be seen from the figure that the first 17 months from 2007 till somewhere mid-2008, the Ghanaian cedi was stronger than the US

dollar. As can be seen from the prices of the petroleum products for the two currencies, the gap between the two currencies began to widen until the mid-July 2014. Thus, while petroleum products in US dollars remained relatively stable, the same quantity of products kept rising in Ghana cedis.

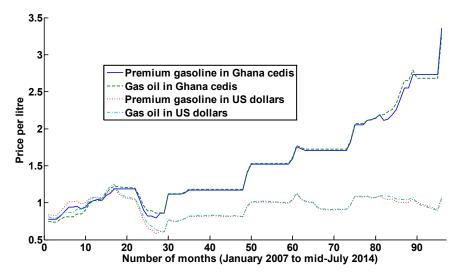


Fig.1: Comparison of petroleum prices in Ghana cedis and US dollars.

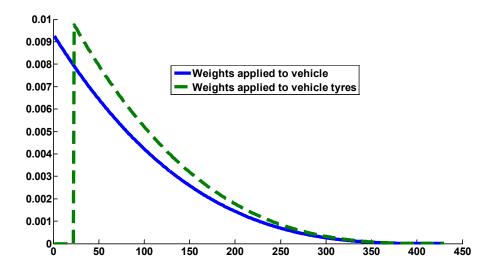


Fig.2: Weights applied to vehicle and vehicle tyres.

A number of things can be deduced from Fig.1. In the first place, it is clear that Ghana has not been able to manage her currency well against the US dollar. This has accounted for the continual devaluation of the Ghanaian cedi against the dollar. It can also be seen from Figure 1 that the prices of premium gasoline and gas oil were relatively stable in US dollars whereas they kept rising in Ghana cedis.

Fig.2 shows the weights applied to the cost of the vehicle and the cost of tyres for vehicle that had to be replaced semiannually. Observe from the figure that in the first six months no tyre is needed to be replaced and so no weights were assigned for that period. This accounts for the initial zero weights seen in Fig.2. We also paid a greater part of the cost of vehicle and tyres in earlier years than in later years as the vehicle and the tyres were more useful in the earlier years. The weighting style was good for commuters as they would otherwise have to be paying higher transportation fares in later years. Thus, the chosen weighting style is good for both commuters and vehicle operators.

We demonstrated our analysis pictorially for a bus (Ford) that runs from Accra to Kumasi. The results for some selected destinations can found in Table 3.

TABLE 3
Expected Charge for Selected Destination from Accra, the Current Transport Fare, the Number of Trips per Week to Break Even and a 95% Confidence Interval for the Expected Charge

| Destination from<br>Accra and<br>vehicle type | Expected charge (in GHS) | Current charge (in GHS) | Number of trips per week to break even | 95% Confidence interval for the expected charge |
|---|--------------------------|-------------------------|--|---|
| Cape Coast<br>(Sprinter bus)                  | 13.37                    | 11                      | 4                                      | [6.63 20.12]                                    |
| Bogoso<br>(Sprinter bus)                      | 22.66                    | 23                      | 2.5                                    | [11.30, 34.01]                                  |
| Kumasi<br>(Ford)                              | 31.25                    | 30                      | 2.5                                    | [20.28, 42.22]                                  |
| Koforidua<br>(Urvan)                          | 13.40                    | 10                      | 5                                      | [6.78, 20.02]                                   |
| Akim-Oda<br>(609 Benz bus)                    | 16.10                    | 12                      | 4                                      | [6.81, 25.24]                                   |
| Ho<br>(Urvan)                                 | 17.19                    | 16                      | 4                                      | [7.97, 26.40]                                   |
| Hohoe<br>(Toyota Hiace)                       | 32.36                    | 20                      | 2.5                                    | [16.84, 47.87]                                  |
| Aflao<br>Hundai (Asterisks)                   | 9.95                     | 18                      | 7                                      | [4.76,15.14]                                    |

Kumasi: Ford (14-seater)

From [1], the lorry fare to Kumasi, over the life of the vehicle should be such that:

$$ds_{p} \ge \frac{381.48 + 3.36n_{l} + w_{i}AR_{c}(1+r)^{i}}{13N_{c}}, i, ..., 430$$

Substituting appropriate values for a 14-seater vehicle from Tables 1 and 2 we get:

Typically,  $N_t$  is not known in advance but it is reasonable to expect (considering the competition from other vehicle operators) a driver to make a trip daily to Kumasi from Accra each day for six days.

Thus for  $N_t = 1,2,...,6$  we generate the paths  $C_1, C_2,..., C_6$  depicted in Fig.3. It can be seen from the figure that as the number of trips an operator makes in a week increases, the amount the commuter pays reduces. Observe from Fig.3 that profit increases at a decreasing rate as  $N_t$  increases. Thus, vehicles operators should not strive to increase the number of trips per week beyond a reasonable number as this does not lead to much profit.

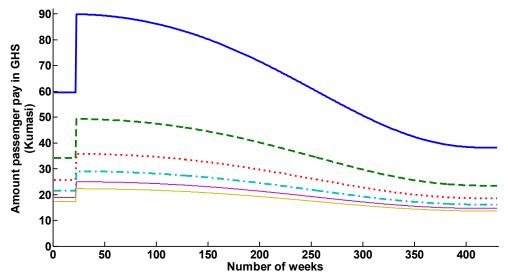


Fig.3: Possible cost for a trip from Accra to Kumasi over 430 weeks.  $N_t = 1$  (thick line),  $N_t = 2$  (broken line),  $N_t = 3$  (dotted line),  $N_t = 4$  (broken-dotted line)

The expected charge, EC, is given by:

$$\frac{1}{6}\sum_{i=1}^{6}\widetilde{C}_{i}\approx E\hat{C}=31.25$$

The path of the median charge against number of trips in a week is depicted in Fig.4. The minimal number of trips that break even for the vehicle operator on this route is 2.5 trips per week (i.e. the vehicle operator has to do two trips in a week and also load passengers' half-way through a town between the two cities to break even). Note that as operators cannot increase transportation fares arbitrary to make up

for a fewer number of trips in a week, the profitability region is smaller than the shaded region in Fig.4. Consequently, if the lorry fare setting is not set right, there is the tendency for operators to over-speed on the road to stay in business but this comes along with causing potential accidents.

It can be seen from Fig.4 that for the operator to make a profit for the expected charge GHS31.25, the number of trips to

make a week has to be greater than 2.5. The vehicle operator breaks even if 2.5 trips is made in any particular week. Table 3 shows similar results for expected charge and the corresponding 95% confidence interval for some selected destinations. We have included the current fares and the number of trips a vehicle operator must make to break even.

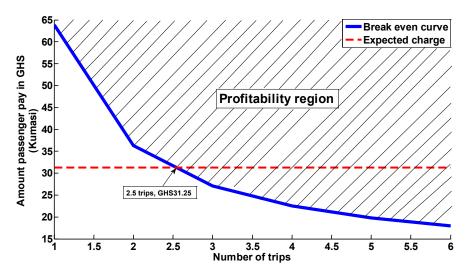


Fig.4: Median charge (solid line) for 6 paths and the expected charge (broken line).

## **DISCUSSION**

A number of things can be done to stabilise the Ghanaian cedi. There is the need to minimise the importation of vehicles and other transportation devices such as motorbikes and bicycles and for Ghana to manufacture her own transportation. After all, Ghana was manufacturing its own vehicle, called "Boafo", in the early 1980s. That technology and effort should be revamped. The cost of tyres form a substantial operating cost of vehicles

in the Ghanaian transportation sector. Consequently, we call on the government to revive the Bonsu tyre factory as this would halt the importation of used tyres imported into the country. Also, Tema Oil refinery has to be rehabilitated to allow for the refining of locally produced crude oil (Ghana currently produces crude oil in commercial quantities). Thus, there will be no need to export locally produced crude and import the same crude in US dollars. In addition, the government can create buffer stocks of

oil for future use. This would ensure that there would be enough oil for continuous use so that even when world market prices go up, the country would have existing oil stocks to rely on. The public transportation system should be made comfortable (it is largely overcrowded, causing passengers to endure the journey in heat and discomfort) and reliable (it is largely not time bound) for people to patronise. Other means of transportation such as cycling to work and short distances should be encouraged. This would mean making provision for cyclists in the construction of roads in Ghana. Hedging the price of oil over a period of time (perhaps semi-annually) is another strategy that can be employed. This strategy would minimise the frequency of fuel price adjustments.

In recent times, a number microfinance institutions have offered loans to drivers to utilise for purchasing vehicles at the interest rate of over 50% per annum, a much higher rate of interest than the 31% employed in this study. As vehicle operators cannot arbitrarily increase their fares, they have to increase the frequency of trips per week to increase their profits in order to stay in business. The division of the Bank of Ghana responsible for the supervision of microfinance institutions should place a cap on the maximum rate of interest these institutions can charge on loans offered to vehicle operators, thereby minimising the interest rate, and as a result, lowering the number of trips per week as well as the number of accidents on Ghanaian roads.

#### CONCLUSION

The model we have developed is a very useful tool for setting the road transportation fares. It allows transportation planners, coordinators, administrators and vehicle operators to determine every point in time of the vehicle's lifespan whether their operations are profitable. Some passengers undercharged while others overcharged on some routes and so there is the need for adjustment of the fare to reflect the true cost of operation. Prudent financial management is especially necessary in the early years of operations by vehicle operators. Significantly, the stabilisation of the transportation fare must be preceded by the stabilisation of the Ghana cedi.

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# Movement of Contaminants through Kaolin Clay: A Numerical Approach

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#### **ABSTRACT**

Understanding the fate and movement of contaminants through soil is essential in applications such as ecological and environmental risk assessment. Abundance of clayey soil is available across the world. Presented in this paper is a parametric study of the movement of contaminants through clays. The current paper provides a holistic approach addressing these issues by providing an understanding of the factors influencing movement of contaminants in soil strata using available numerical models (advection and dispersion) for contaminant flow through porous medium. A numerical model using the finite difference and finite element method is considered in this study to estimate the contaminant transport phenomenon presented by Zhao *et al.* (1994) that utilises the analytical solution proposed by Ogata and Banks (1961). The results and discussions of the parametric study highlight the influence of various properties of soil and the contaminant on permeability and concentration (contaminant) variation with time and depth. The finding indicates that the diffusion coefficient ( $D_x$ ) plays an important role in determining the time taken for the concentration of contaminants to be evenly spread in a vertical direction.

Keywords: Advection, clays, contaminant transport, dispersion, environment, permeability

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## INTRODUCTION

Contamination is a cruel word to the environment; the condition exists in different phases: solid, liquid and gaseous. Movement of contaminants through the soil is one of the leading environmental concerns today. In recent years, interest in understanding the mechanisms and

prediction of contaminant transport through soils has radically increased because of growing evidence and public concern that the quality of the subsurface environment is being adversely affected by industrial, municipal and agricultural activities. Although contamination of groundwater system has a direct effect on the health of mankind, contamination of the porous medium, the soil strata itself, certainly presents a high environmental impact. This concern becomes urgent when the field conditions experience shallow water tables, thereby presenting a case of submerged soil deposits. Clavs are a type of soil typically present in sites prone to contaminant effluents. Clays are also unique as they are commonly used as liners or barriers for waste landfill. Therefore, a thorough understanding of flow behaviour (permeability) and the change in mass flux of contaminants through these clayey deposits forms the essential assessment of contaminant transport and their influence. The main transport processes of concern in soil strata include advection, diffusion, dispersion, sorption and first-order decay (Shackelford, 1993). Advection is the movement of contaminants along with flowing ground water at the seepage velocity in porous media in response to a hydraulic gradient. Dispersion, on the other hand, is mass movement without bulk motion (Anderson, 1984). These important factors, addressed by Zhao, Xu and Valliappan (1994), present a review of numerical modelling on movement of contaminants through porous media.

However, the mass transport demonstrated that the flow due to advection is small in comparison to that due to dispersion.

A portion of the literature since reviewed previous analytical and numerical solutions to predict the transport of contaminants through porous media subjected to time and depth (Zhao et al., 1994; Rajasekaran, Murali, Nagan, Amoudhavally, & Santhaswaruban, 2005; Jaiswal, Kumar, & Yadav, 2011). Furthermore, insight into diffusionrelated modelling studies is only now growing due to the limited availability of laboratory and field experimental data. In this paper, a contaminant transport model is presented for modelling of water infiltration and contaminant transport through the saturated soil zone. This paper highlights the variation of permeability of flow and change in concentration of the contaminant with time and depth. A numerical model using the finite difference and finite element method was considered in this study to estimate the contaminant transport phenomenon presented by Zhao et al. (1994) that utilised the analytical solution proposed by Ogata and Banks (1961). The permeability values in the current parametric study was estimated as a function of particle size, void ratio and viscosity of the contaminant using the homogenisation theory presented by Wang, Leung and Chow (2003). The materials considered for this study were clayey soils and methylene blue (MB). Although not strongly hazardous, MB can have various harmful effects such as nausea, vomiting,

diarrhea and chest pain, and this should be kept in mind when this substance is being used in laboratory work.

## **GOVERNING EQUATIONS**

Soil formation processes are very complex and in reality, they display spatial variability in their geometric and hydraulic properties. Furthermore, due to lack of precise description of their structural irregularity from field and laboratory investigations, it is assumed in general engineering practice to be a homogeneous and isotropic medium. This assumption neglects small scale variations associated with heterogeneity and the averaged smooth flow of fluids through the porous medium. The numerical equation for advection and dispersion considered in this paper was presented by Zhao et al. (1994) and used the solution proposed by Ogata and Banks (1961). This equation assumes a homogeneous, flow-saturated isotropic and medium from the law of conservation of mass. Similarly, the equations used in this study to estimate the permeability of the soil medium was presented by Wang et al. (2003). The development part of this equation, discussed by Sriraam and Raghunandan (2014), are briefly addressed in this paper.

## Advection-Dispersion Equation

The mass flux through a porous medium is derived from the mathematical statements of the conservation of mass. In a three-dimensional rectangular coordinate system, the specific discharge *v* 

has three components including  $v_x$ ,  $v_y$  and  $v_z$ . Therefore, the average linear velocity v' = v/n also has three components  $v'_x$   $v'_y$  and  $v'_z$  where n is the porosity of the porous medium. The concentration of the contaminant solute as the mass of solute per unit volume of solution is expressed as  $^C$  and mass of solute per unit volume of porous media is nC. On condition that the homogeneous medium of porosity is constant, the change in concentration gradient in x-direction is defined as  $\partial(nC)/\partial x = n(\partial C/\partial x)$ .

The mass of solute transported in *x*-direction by advection is represented by:

$$m_1 = v_x nCdA$$
 [1]

and the mass of solute transported in  $\underline{x}$ -direction by dispersion, derived from Fick's law is:

$$m_2 = nD_x \frac{\partial C}{\partial x} dA$$
 [2]

The coefficients  $D_x$  and  $V_x$  are referred to as the solute dispersion coefficient and uniform velocity, respectively. Likewise, using the law of conservation of mass, the governing equation of mass transport through a porous medium can be derived

$$\frac{\partial F_x}{\partial x} + \frac{\partial F_y}{\partial y} + \frac{\partial F_z}{\partial z} = -n \frac{\partial C}{\partial t}$$
 [3]

Equation (3) can be derived in a threedimensional form and reduced to a onedimensional form as:

$$D_{x} \frac{\partial^{2} C}{\partial x^{2}} - v \frac{\partial C}{\partial x} = \frac{\partial C}{\partial t}$$
 [4]

Further, an analytical solution for this problem proposed by Ogata and Banks (1961) can be written as:

$$C(x,t) = \frac{C_0}{2} \left[ efrc \left( \frac{x - v_x t}{2D_x t} \right) + \exp \left( \frac{v_x x}{D_x} \right) efrc \left( \frac{x + v_x t}{2D_x t} \right) \right]$$
[5]

where the solute concentration at position of the domain at time is given as *t*. The error function, *efrc* is the complementary error function and be expressed as:

$$efrc(z) = \frac{2}{\sqrt{\pi}} \int_{z}^{\infty} \exp(-u^{2}) du$$
 [6]

## Fluid Flow in Porous Media

The flow equations, including seepage, presented by Wang et al. (2003), was derived from the Naiver-Stokes equation using a low Reynolds number through a two-scale homogenisation method. A finite element technique further facilitated the derivation of the permeability coefficient. A micro-structural unit cell model was used to compute the flow and permeability values for a given void ratio. However, the expression used in this parametric study was limited to a one-dimensional unit cell that included two important parameters of equivalent particle size (d) and void ratio (e) in addition to the viscosity of the fluid (µ). Therefore, the coefficient of permeability was a function of these three parameters as shown below:

$$k = f(d, e, \mu)$$
 [7]

The equivalent particle size (d) included a range of void ratios. However, the effect of a thin water film layer could not be eliminated completely. The adhesive water film around the particle generally formed a typical two-layer micro-structure. The water film therefore narrowed the flow

channels, thereby reducing the permeability of the porous media. However, the reduction ratio depended on pore size; the smaller the pore size, the larger the reduction ratio of the flow channels. Therefore, an effective void ratio was defined as the void ratio for free water passage between particles with adhesive water films where the thickness of water film was  $\Delta d$ , and the effective void ratio (e) was determined by:

$$e = \frac{d_1^0 - \Delta d}{d^0 + \Delta d}$$
 [8]

and the equivalent particle size was

$$d_{eff} = d^0 + \Delta d$$
 [9]

where the superscript ' $\theta$ ' refers to the state without a water film  $\Delta d \equiv 0$ . A simple closed form solution was presented for the coefficient of the permeability in 1-dimensional flow as [7]:

$$k = \frac{\rho g}{\mu} \frac{\left(d_1^0 - \Delta d\right)^3}{d^0 - d_1^0}$$
 [10]

where  $(d^0 + d_1^0)$  was the characteristic size of a unit cell; hence when  $d_1^0 - \Delta d \le 0$ , there was no flow passage and k = 0.

## Model Parameters

The parameters governing the movement of contaminants through soils vary significantly depending upon the site specific conditions and perhaps the properties of the contaminant itself. Although the theory of parametric study is amenable to consider the entire spectrum of possible parametric combinations, the current study is limited to select parameters that are apparently more applicable to the

local conditions. However, to illustrate the significant factors arising from the use of the formulation presented above, the parametric study for the soil deposit considers a hypothetical case of 20m thick homogeneous clayey stratum with void ratio (e) varying between 0 and 3 (Shear et al., 1992). In homogenised soil conditions with a free flow of contaminants, the particle size  $(d_{eff})$  plays a crucial role in determining the void ratio. This is rather important as the higher the voids, the greater the increase in rate of contamination flow. Earlier studies on clays show an average  $d_{eff}$  of 0.002mm; hence  $d_{eff}$ throughout the current study is considered equal to 0.002mm. Another important parameter as evident from equation 2 is the thickness of the water film around the idealised individual soil particles. In general geotechnical practices, the thickness of the water film varies depending upon the geochemical interaction of the soil particles with the surrounding water molecules (Tripathy et al., 2004), and is rather significant in the case of clays (Azam et al., 2013; Khan et al., 2014; Raghunandan et al., 2014). However, a thickness of water film equal to 0.002mm was considered throughout this study.

Methylene Blue, C<sub>16</sub>H<sub>18</sub>N<sub>3</sub>SCl, was selected as the contaminant for the current study. The density and viscosity of a contaminant plays a significant role as evidenced from equations 7-10. Therefore, the properties considered in this study were those of an aqueous solution (MB) with uniform concentration. The values

for the density and viscosity of MB used in this study were 1000kg/m<sup>3</sup> and 8.90mPa.s, respectively. The concentration gradient was a function of both space critically influenced time, advection, dispersion and flow velocity (Jaiswal et al., 2011). The water table played a crucial role in aiding the mechanism of dispersion and advection, and the dispersion coefficient,  $D_x$  was the parameter that described the ability of a contaminant to disperse in water. The literature shows MB to have low  $D_r$  values of 0.3-0.6m<sup>2</sup>/day through the water table (Boon et al., 2003; Ferreira et al., 2013). Therefore, a higher coefficient of dispersion should sharpen the boundary region for contaminant transport. In this study, the chemical reactions within the soil system were considered to be inert, pushing towards an idealised condition.

#### RESULTS AND DISCUSSION

Fig.1 shows the variation of permeability coefficient (k) of the contaminant model flow through soil strata with different void ratio (e) values. The flow parameter k is a function of the void ratio, where the size of the flow channels were perpendicular to the direction of flow, and the shape of the flow channels were parallel to the direction of flow. Higher values of e represent larger pores and vertical flow channels resulting in large e values. However, in the case of low e values, the pore volume reduces and tortuous flow channels further retard permeability through the soil strata.

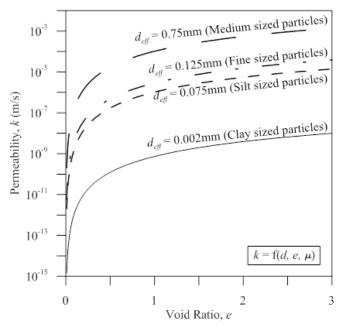


Fig.1: Variation of permeability of contaminant (MB) through the soil strata with varied void ratio.

The k values presented in the figure were explicitly calculated resulting in a vertical direction only. The parametric study presented here also considered different particle sizes expressed as  $d_{eff}$  in order to account for the change in soil type along the profile. However, the soil profile was considered to be homogeneous, which apparently formed one of the limitations of this study. The  $d_{eff}$  values selected included particle sizes that were equivalent to the soil sample such as clays (0.002mm), silts (0.075 mm), fine sands (0.125 mm)and medium sands (0.75mm). The model results, as anticipated, showed higher values of k with increasing  $d_{eff}$ . The increase in  $d_{eff}$  values certainly corresponded to an increase in e, thus producing clear and straight flow channels contributing to increased k values.

Referring to equation 7 used in this paper, the viscosity of the contaminant  $(\mu)$  was identified as one of the significant contributors to evaluate permeability (k). Therefore, the parametric study would not be complete without studying the effect of  $\mu$  on flow behaviour. Fig.2, thus, highlights the influence of the contaminant viscosity on flow behaviour. This is measured in terms of permeability of MB in a homogeneous deposit of clays. Observations from the figure show similar trends for the clay samples and the variation in the viscosity values sets an offset from the previous. For example, lower values of  $\mu$  results in higher k values. Moreover, the variation pattern increases as the *e* values increase. This effect with increasing e values can be clearly explained considering the variation of k with e observed in Fig.1.

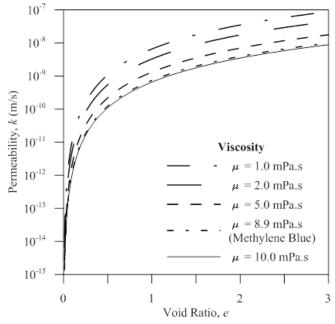


Fig.2: Influence of the void ratio of the clayey soil strata and the viscosity of the contaminant on the permeability coefficient of the contaminant.

In the previous discussion of Fig.1 it was clear the flow path and the e offerred resistance to the fluid (contaminant) flow. Nonetheless, Fig.2 demonstrates a different perspective using another parameter  $\mu$  having a significant role to play in dictating the fate of k for a given soil strata and fluid, that is, clay and MB in this study, respectively. The figure shows that the fluids with higher viscosity tended to take longer flow durations when studied at a particular depth of reference in the homogeneous soil strata.

Fig.3a - 3c show the variation of MB of relative concentration with depth at time durations of 24, 240 and 480 hours after the application of MB at the surface (z=0). The results were calculated for four different dispersion coefficients ( $D_x$ ) at values 0.1, 0.2, 0.4 and 0.6 m<sup>2</sup>/day.

The concentration of MB in this study was normalised with the initial concentration  $(C_0)$  and expressed as normalised concentration ratio  $(C/C_0)$ . Increase in the value of  $D_x$  demonstrated an increase of concentration spread across the clayey strata at any depth over a defined time. As observed in the figure at any time t, the increasing value  $D_x$  results in lower concentration of the contaminant at a particular depth in the soil strata. In other words, a contaminant with a higher  $D_x$  value tends to disperse more compared to its movement in a vertical direction.

Further, the plots suggest that over a period of time, the concentration will tend towards its initial value ( $C = C_0$ ). Therefore, the term  $D_x$  plays an important role in determining the time taken for a contaminant concentration to spread

evenly in the vertical direction. Similarly, Figures 4a - 4c show the variation of MB of relative concentration with time at depths 1, 10 and 20m from the ground surface (z=0). Observation of the figures shows that the concentration variation of the contaminant takes less time for the soil profile to be fully concentrated as compared with concentrations measured at a greater depth.

Observations clearly demonstrate that for the given dispersion coefficient, the  $C/C_0$  reached its maximum at a lower

time duration; for example (from Fig.4a) the concentration reached 90% well under 500hrs at 1m depth, whereas the time taken for the contaminant to flow through 20m (from Fig.4c) initiated at around the 500th hour even at the high value of  $D_x = 0.6 \text{ m}^2/\text{day}$ . However, at time t=1200hrs observed values from Fig.4c showed that only 5% of the concentration was achieved at depth 20m. This led to the conclusion that the rate of change of concentration reduces along the depth of soil layer.

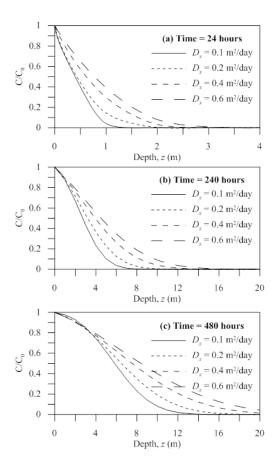


Fig.3: Effect of dispersion coefficient of MB on the concentration variation along the depth of clayey soil strata; (a) t=24hours, (b) t=240hours, (c) t=480hours.

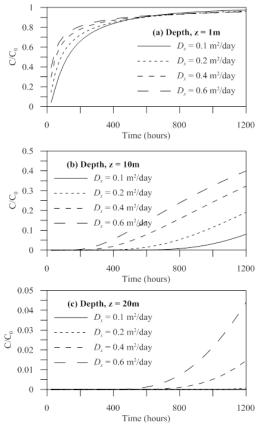


Fig.4: Effect of dispersion coefficient of Methylene Blue on the concentration variation with time after contamination application at the surface (z=0); (a) z=1m, (b) z=10m, (c) z=20m.

#### **CONCLUSION**

This paper highlights the influence of diffusivity and viscosity on permeability and movement of contaminants through clays. The numerical model was validated by application to a number of standard examples from the literature. parametric study used numerical solutions on contaminant transport through porous media, giving importance to the advection and dispersion phenomena, methylene blue (contaminant) and clay (porous medium). The results and discussions further present the influence of the parameters on the permeability and concentration (contaminant) variation with time and depth of the idealised soil strata. To illustrate the effect of dispersion on concentration, a parametric analysis was performed on a range of dispersion coefficients from the available literature. Results from the numerical model estimated an increase in permeability with increasing  $d_{eff}$ . Since  $d_{eff}$ directly correlates to void ratio, a higher void ratio thus contributes to higher k values. The results also demonstrated that the higher viscous fluids tended to take longer flow durations when studied at a particular depth of reference in the homogeneous soil strata. Furthermore, the model to estimate the movement of contaminants suggested that over a period of time, the contaminant concentration will tend towards its initial value  $(C = C_0)$ , therefore highlighting that the  $D_x$  value plays an important role in determining the time taken for the concentration of contaminants to be evenly spread in vertical direction.

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# **SOCIAL SCIENCES & HUMANITIES**

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# Contribution Towards Improvement of Getting Rid of Heavy Metals and Toxic Substances in Wastewater Operations: The Case of Soba / Khartoum Treatment Plant

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#### **ABSTRACT**

Growing demand for and limitations to traditional water sources (surface-groundwater) led to the development of non-conventional sources. This research assessed the waste stabilisation pond treatment system built in the Green Belt, GB, in Khartoum state and the prototype model that was constructed simulating the same dimensions of the GB plant. The study took into account the system's hydraulic symmetry, rheological simulation, organic loadings conditions and some parameters applied at the station. Wastewater reaching the GB station is domestic in addition to industrial waste from tanning plants and Khartoum's coin manufacturing industry. Monthly laboratory analysis results for heavy metals and toxic substances at the GB station and model farm were monitored and recorded for two years. Attained values were not in conformity with the specifications of treated effluent reuse and reclamation, particularly in the GB station. This research applied a case study to upgrade wastewater treatment in an experimental field model using natural means. This is through introduction of a system of aquatic plants as an advanced biological treatment following natural ponds. The achieved results indicated high-quality of wastewater treatment with low-cost, which is suitable for agricultural irrigation or other beneficial uses without exposing stakeholders to any health risks or environmental ailments.

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Shouldered research advocates broader implementation of this advanced biological treatment system for gray wastewater using vegetation and plants. This is due to sound socio-economic rewards and ease of operation and maintenance. The purpose of re-use of such treated effluent reduces

health risks and ill-environmental impacts. This is besides supports to traditional water sources, contribution to integrated water resources management and mitigation of any potential environmental pollution.

Keywords: Wastewater, heavy metals, toxic substances, oxidation ponds, soba

#### INTRODUCTION

Water is the most important requirement of life. Allah Almighty has said in the Holy Quran, "And We made from water every living thing. Will they not believe?" 1. Water is the basic element of human life, animals and plants. In addition, its existence has outlived the earth and civilisations thrive wherever it is available.

The problem of lack of water in the Arab world is considered to be one of the most important challenges facing both safety of water and food. This is because water as a natural but meagre resource is of paramount importance in human life, continuation of life and achievement of socio-economic progress. World population increased by around 3% during the third millennium. This increase in population requires an increase in food production. This is to be achieved by increasing cultivated areas, intensifying agricultural activities and augmenting the amount of production per unit area. This will be achieved by escalating the amount of water available for use in agricultural irrigation through natural treatment means or wastewater reclamation and reuse as an inexpensive

# RESEARCH OBJECTIVES AND ITS IMPORTANCE

This research aimed to assess the treatment system that is based on natural waste stabilisation ponds at the Green Belt in Khartoum state and the model prototype, which was implemented with the same dimensions in ratio as those of the Green Belt station i.e. ratio of length to width. The model was constructed in the vicinity of the station of the Green Belt. The system's hydraulic similarity, rheological and organic loading simulations were taken into account together with other actions that could be applied at the Green Belt plant. Physico-chemical, microbiological and biological views were kept in focus. The built model at the station was the only one applied in Khartoum state at such a large scale. This was to serve as a suitable field research case. The idea was to determine governing reasons that obstruct proper operation of the Green Belt station at required efficiency and to find ways to develop plant treatment units according to specifications and prevalent environmental,

method compared with desalination of sea water and brackish groundwater. Treatment of wastes by natural systems is considered to be one of the effective methods, of low cost and suitable for reaching sound high quality water treatment specifications for agricultural purposes and other beneficial reuse and activities (Roberts & Greenwood, 2002; Kirkham, 2004; APHA, 2012; AWWA, WEF & Rice, 2012; FAO, 1990, 2012; Goyal, 2014).

<sup>&</sup>lt;sup>1</sup> The Prophets-alAnbiya: 30

economic and social conditions. Such a precaution would enable the station to reach its desired efficiency for removal of organic and microbial contaminants, particulate matter, toxic substances, heavy elements and compounds of nitrates and phosphates. The research aim was to get treated effluents of high quality but low cost suitable for agricultural irrigation and/ or other beneficial uses, without any health or environmental risks. The importance of this work is reflected in the apparent shortage and availability of water for agricultural purposes, especially in arid and semi-arid zones.

A Brief Site Description of the Green Belt Station and Experimental Prototype Farm at Soba-Khartoum, Sudan

The treatment plant built in the area of the Green Belt in Khartoum addresses treatment of wastewater (a mixture of domestic and industrial wastewater collected from the tannery and the coin manufacturing laboratory) connected to it through a sewerage system with 16 lift stations and pumps. The plant operates using natural oxidation ponds (waste stabilisation ponds) designed for a flow of about 31420 m³/day. The plant process incorporates an initial treatment stage based on a bar screen

consisting of two paths (east and west). Each of the tracks consists of two in parallel anaerobic ponds followed in series by one facultative pond proceeded in series by one polishing (maturation) pond (See Fig.1). Table 1 shows the general specifications of the oxidation ponds of the Green Belt station in Khartoum. Photographs 1 and 2 and Table 2 show descriptions of natural oxidation ponds (natural waste stabilisation ponds) for the field experimental model (See Fig.2). Raw wastewater was pumped into the model out of the same wastewater entering the oxidation pond plant in the Green Belt. Prototype model units included an inspection chamber entrance, screen racks followed by a distribution chamber to the oxidation ponds. A metallic box was placed in the wastewater distribution chamber. It was made of a metallic net of spacing 0.2 cm to prevent cogging of the tube and tap by suspended plankton. The head of the tube, of diameter 0.5 inches, was placed in the box to ease gravitational flow of the wastewater to the experimental field model. A flow control tap was placed at the end of the tube to control the amount of flow (1.58 m<sup>3</sup>/day) entering the model farm. Natural anaerobic, facultative and maturation oxidation ponds were then connected in series.

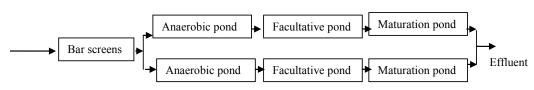


Fig.1: Green belt WWT.

TABLE 1 Specifications of oxidation ponds in Green Belt Station in Khartoum

| Pond Specification   | Anaerobic | Facultative | Maturation |
|----------------------|-----------|-------------|------------|
| Number               | 2         | 1           | 1          |
| Length (m)           | 174       | 785         | 220        |
| Width (m)            | 100       | 240         | 240        |
| Depth (m)            | 3         | 1.2         | 1.2        |
| Detention time (day) | 3.3       | 14.4        | 4          |



Photograph 1: Descriptions of natural waste stabilisation ponds of field experimental model.



Photograph 2: Descriptions of natural waste stabilisation ponds of field experimental model.

TABLE 2 Description of Aquatic Plant Oxidation Ponds of the Experimental Field Model

| Pond Specification   | Anaerobic |         | Facultative | Maturation | Aquatic | plants  |
|----------------------|-----------|---------|-------------|------------|---------|---------|
|                      | Track 1   | Track 2 |             |            | Bamboo  | Papyrus |
| Number               | 1         | 1       | 1           | 1          | 1       | 1       |
| Length (m)           | 1.5       | 0.24    | 7.05        | 2.65       | 2.0     | 2.0     |
|                      | 1.        | 74      | 7.85        | 2.65       |         |         |
| Width (m)            | 1         |         | 2.4         | 2.4        | 1.5     | 1.5     |
| Depth (m)            | 3         | 3       |             | 1.2        | 0.6     | 0.6     |
| Detention time (day) | 3         | .3      | 14.4        | 4          | 2.2     | 2.2     |

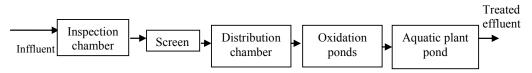


Fig.2: Green belt experimental model.Bar screens

#### MATERIALS AND METHODS

Samples were taken for laboratory physicochemical, microbiological and biological analysis from both the Green Belt station and the experimental model at a daily rate, every month, for a period of two years, generally during the period between 10 and 12 morning hours. All measurements were conducted according to the American standard methods for the examination of water and wastewater (Pommerville, 2013). Laboratory tests were carried out at the Corporation of Cities Waters at Khartoum State, Environmental and Construction Center Laboratories and the Environmental Laboratory of the Faculty of Engineering of University of Khartoum. Measurements of heavy elements were conducted at the Corporation of City Waters of Khartoum State, Geological Research Laboratory of the Ministry of Petroleum and Mining and the National (Estak) Laboratory of the Ministry of Health. Physical analysis (temperature, dissolved oxygen, electrical conductivity, etc.) were carried out directly onsite using relevant field kits and instrumentation.

#### RESULTS AND DISCUSSION

Assessing Efficiency of the Treatment Plant and Experimental Farm Model/Soba (Maturation Pond Output)

Tables 3, 4 and 5 illustrate monthly average changes of bio-chemical oxygen demand (BOD<sub>5</sub>) and chemical oxygen demand (COD) at the entrance and exit of both the Green Belt station and the experimental model during the study period. Temperature has an obvious effect on removal rate as displayed in Tables 6 and 7. Removal values were considered low in relation to the natural waste stabilisation pond systems, with an efficiency not less than 90% for the station in particular due to lack of appropriate conditions to carry out effective photosynthesis. This is in addition to the discharge of wastewater of certain factories, such as a coin manufacture factory and tannery, in the wastewater sewer entering the plant without being processed prior to its discharge with the domestic wastewater.

TABLE 3
Quality of Raw Water Entering the Green Belt Plant and Experimental Farm Model

| Month Analysis               | Jan                     | Feb                     | Mar                     | Apr                     | May                     | Jun                     | Jul                     | Aug                     | Sept                    | Oct                     | Nov                     | Dec                     |
|------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BOD <sub>5</sub> (mg/l)      | 300                     | 255                     | 335                     | 575                     | 480                     | 520                     | 275                     | 260                     | 270                     | 250                     | 240                     | 220                     |
| COD(mg/l)                    | 830                     | 790                     | 960                     | 800                     | 640                     | 480                     | 490                     | 515                     | 525                     | 540                     | 560                     | 730                     |
| TSS (mg/l)                   | 360                     | 410                     | 497                     | 340                     | 392                     | 360                     | 370                     | 490                     | 410                     | 340                     | 315                     | 320                     |
| T.C<br>No/100 ml             | 2.1×<br>10 <sup>7</sup> | 3.9×<br>10 <sup>7</sup> | 4.2×<br>10 <sup>7</sup> | 5.8×<br>10 <sup>7</sup> | 7.3×<br>10 <sup>7</sup> | 8.2×<br>10 <sup>7</sup> | 5.7×<br>10 <sup>7</sup> | 7.4×<br>10 <sup>7</sup> | 8.0×<br>10 <sup>7</sup> | 5.0×<br>10 <sup>7</sup> | 4.4×<br>10 <sup>7</sup> | 2.5×<br>10 <sup>7</sup> |
| F.C<br>No/100 ml             | 3.0×<br>10 <sup>6</sup> | 5.1×<br>10 <sup>6</sup> | 4.2×<br>10 <sup>6</sup> | 6.0×<br>10 <sup>6</sup> | 6.8×<br>10 <sup>6</sup> | 8.0×<br>10 <sup>6</sup> | 6.0×<br>10 <sup>6</sup> | 6.6×<br>10 <sup>6</sup> | 7.3×<br>10 <sup>6</sup> | 4.3×<br>10 <sup>6</sup> | 4.0×<br>10 <sup>6</sup> | 3.2×<br>10 <sup>6</sup> |
| Helmineth eggs<br>No/1000 ml | 28                      | 30                      | 27                      | 23                      | 21                      | 26                      | 24                      | 19                      | 21                      | 23                      | 25                      | 26                      |

TABLE 4 Quality of Treated Effluent Emerging from a Maturation Pond in the Experimental Farm Model

| Month Analysis               | Jan                     | Feb                     | Mar                     | Apr                     | May                     | Jun | Jul                     | Aug                     | Sept                    | Oct                     | Nov                     | Dec                     |
|------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-----|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BOD <sub>5</sub> (mg/l)      | 45                      | 39                      | 48                      | 69                      | 57                      | 58  | 42                      | 45                      | 55                      | 46                      | 42                      | 43                      |
| COD(mg/l)                    | 139                     | 121                     | 150                     | 117                     | 102                     | 75  | 110                     | 112                     | 103                     | 115                     | 112                     | 128                     |
| TSS (mg/l)                   | 60                      | 66                      | 86                      | 63                      | 74                      | 73  | 63                      | 87                      | 81                      | 69                      | 60                      | 66                      |
| T.C<br>No/100 ml             | 6.5×<br>10 <sup>2</sup> | 7.2×<br>10 <sup>2</sup> | 6.0×<br>10 <sup>2</sup> | 4.3×<br>10 <sup>2</sup> | 3.2×<br>10 <sup>2</sup> | 0   | 3.3×<br>10 <sup>2</sup> | 4.5×<br>10 <sup>2</sup> | 5.6×<br>10²             | $3.8 \times 10^{2}$     | 2.5×<br>10 <sup>2</sup> | 4.6×<br>10 <sup>2</sup> |
| F.C<br>No/100 ml             | 1.4×<br>10²             | 1.0×<br>10 <sup>2</sup> | 0.9×<br>10 <sup>2</sup> | 0.3×<br>10 <sup>2</sup> | 0.7×<br>10 <sup>2</sup> | 0   | 0.8×<br>10 <sup>2</sup> | 1.2×<br>10²             | 1.3×<br>10 <sup>2</sup> | 0.8×<br>10 <sup>2</sup> | 0.8×<br>10 <sup>2</sup> | 1.2×<br>10²             |
| Helmineth eggs<br>No/1000 ml | 0.02                    | 0.01                    | 0                       | 0                       | 0                       | 0   | 0.01                    | 0.03                    | 0.03                    | 0.01                    | 0.02                    | 0.02                    |

TABLE 5
Quality of Treated Effluent Coming Out of Maturation Pond at Green Belt Station

| Month<br>Analysis                 | Jan                     | Feb                     | March                   | April                   | May                     | June                    | July                    | Aug                     | Sept                    | Oct                     | Nov                     | Dec                     |
|-----------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| BOD <sub>5</sub> (mg/l)           | 73                      | 75                      | 67                      | 61                      | 58                      | 60                      | 54                      | 65                      | 63                      | 62                      | 63                      | 70                      |
| COD (mg/l)                        | 154                     | 136                     | 120                     | 132                     | 149                     | 150                     | 145                     | 152                     | 165                     | 159                     | 125                     | 143                     |
| TSS (mg/l)                        | 78                      | 71                      | 65                      | 76                      | 79                      | 93                      | 66                      | 92                      | 74                      | 85                      | 65                      | 73                      |
| T.C No<br>/100 ml                 | 6.5×<br>10 <sup>6</sup> | 5.7×<br>10 <sup>6</sup> | 3.8×<br>10 <sup>6</sup> | 3.8×<br>10 <sup>6</sup> | 3.9×<br>10 <sup>6</sup> | 3.4×<br>10 <sup>6</sup> | 3.7×<br>10 <sup>6</sup> | 5.7×<br>10 <sup>6</sup> | 3.9×<br>10 <sup>6</sup> | 2.8×<br>10 <sup>6</sup> | 4.8×<br>10 <sup>6</sup> | 7.0×<br>10 <sup>6</sup> |
| F.C No<br>/ 100 ml                | 5.9×<br>10 <sup>5</sup> | 5.2×<br>10 <sup>5</sup> | 3.1×<br>10 <sup>5</sup> | 2.8×<br>10 <sup>5</sup> | 2.2×<br>10 <sup>5</sup> | 1.0×<br>10 <sup>5</sup> | 2.3×<br>10 <sup>5</sup> | 3.7×<br>10 <sup>5</sup> | 3.8×<br>10 <sup>5</sup> | 2.6×<br>10 <sup>5</sup> | 3.7×<br>10 <sup>5</sup> | 5.3×<br>10 <sup>5</sup> |
| Helmineth<br>eggs No<br>/ 1000 ml | 3.2                     | 3.2                     | 3                       | 6.9                     | 9                       | 8.7                     | 2.8                     | 3.3                     | 3.6                     | 7                       | 6.7                     | 3.3                     |

TABLE 6
Mean Values for % Removal (Entering to Model and Outgoing from the Maturation Pond of the Model)
Depending on Climatic Seasons

| Time period               | I      | II     | III    |
|---------------------------|--------|--------|--------|
| Analysis                  |        |        |        |
| BOD <sub>5</sub> (mg/l)   | 82     | 83     | 88     |
| COD (mg/l)                | 79     | 83     | 85     |
| TSS (mg/l)                | 81     | 82     | 81     |
| T.C No/100 ml             | 99.999 | 99.998 | 99.999 |
| F.C No/100 ml             | 99.997 | 99.997 | 99.999 |
| Helmineth eggs No/1000 ml | 99.90  | 99.94  | 100    |

TABLE 7
Mean Values for % Removal in the Green Belt Station Depending on Climatic Seasons

| Time period                  | I                   | II                  | III                 |
|------------------------------|---------------------|---------------------|---------------------|
| Analysis                     |                     |                     |                     |
| BOD <sub>5</sub> (mg/l)      | 76                  | 72                  | 81                  |
| COD (mg/l)                   | 70                  | 73                  | 76                  |
| TSS (mg/l)                   | Influent > effluent | Influent > effluent | Influent > effluent |
| T.C No/100 ml                | 93.83               | 81.42               | 94.15               |
| F.C No/100 ml                | 94.88               | 86.87               | 96.35               |
| Helmineth eggs<br>No/1000 ml | 81                  | 85                  | 72                  |

#### Key:

I: From July to October (rainy period)

II: From November to February (moderate period, cold)

III: From February to June (warm period)

Total suspended solids (TSS) are of particular importance as one of the important indicators in determining effectiveness of separation of impurities and their deposition in treatment plant units (Stesland, 1976). They also offer a direct idea of pollutant loads and suspended impurities in the sample water. This is because suspended solids contain heavy metals as a result of linkage of the latter by several different mechanisms. Their disposal greatly impairs the quality of sewer wastewater with toxic heavy metals. The values of TSS in the effluent are generally high as shown in Tables 3, 4 and 5. This is due to the presence of algae in the treated effluent as per treatment regimes of natural oxidation ponds.

High values of pathogenic indicators (TC and FC), during the study period, were noticed in the influent raw wastewater flowing during the summer months (Table 3). This was due to availability of

favourable factors for pathogen growth and multiplication such as sunshine rays and alleviated temperatures (Heimlich & Ogg, 1982; Spurlock & Clifton, 1982). An increase in numbers of these pathogens was observed during the rainy season (during the months of August and September). Such occurrence necessarily pointed to the role of rainfall in increasing the number of pathogens by atmospheric and soil washing during storm water runoff through agricultural land and industrial areas. This was besides other factors like erosion and corrosion.

The heat factor had an evident effect in increasing the effectiveness of treatment during the summer season as compared to the winter and rainy seasons. This was clearly illustrated in Tables 6 and 7. It ought to be noted that the absolute value of number of FC bacilli in many of the measurements taken from the Green Belt station did not satisfy the standards in the event of use of

treated effluent for indefinite or unrestricted agricultural irrigation purposes. World Health Organisation guidelines (WHO, 2006) limit the maximum allowable level of number of fecal coliform bacilli (FC) to be 1000 bacillus in each 100 ml in case of use of treated effluent to irrigate agricultural crops that are eaten raw. It is to be noted that this value has become unacceptable in most countries of the world as a precaution to effectively ensure healthy conditions. As such, the American Environmental Protection Agency (EPA, 1992) has limited the allowable value for (FC) bacilli to 14 in every 100 ml.

Helminthic eggs (Tables 3, 4, 5) were absent from the experimental model effluent during the hot season (March to June) and in all months it was satisfactory as per permitted standards. In the Green Belt station their presence was realised to be unsatisfactory by allowable standards for agricultural irrigation water, which is one egg or less in each 1000 ml according to WHO guidelines.

Results of measurements for heavy elements and toxic substances presented their existence as detected in wastewater to concentrations not satisfying allowable standards to use water for agricultural irrigation. Tables 8 and 9 show changes of concentrations of copper and cadmium in raw wastewater and in the outlet of the treated effluent from Green Belt treatment plant and the outlet of the maturation pond in the experimental model. The values of ions of copper in the outlet of the Green Belt plant did not conform to the specification of use of treated effluent for irrigation, which was 0.2

mg/l. Likewise were the values of cadmium ions, which was 0.01 mg/l in the case of use of treated effluent for continuous irrigation in most months. It should be noted that the ions of copper and cadmium were found in the industrial wastewater for the paint and ink industry i.e. from the Coin Manufacture Laboratory in Khartoum. This finding is in agreement with the study of Alasfary (Asfari, 1996). This was the same for lead (Tables 8 and 9). Some of the values were found not to be able to cope with the use of treated effluent for irrigation specification in the maturation pond of the experimental model. At the outlet of the Green Belt plant most values did not satisfy the specification of use of treated effluent for irrigation, which was 5 mg/l in the case of continuous use of treated wastewater in irrigation. It should be noted that lead was present in the wastewater of the coin industry in Khartoum as it was in waste from film developing, the battery industry, welding and glass processes just as stated by AlAsfari (1996) and Rustam (1989). The increase in the values during the rainy period in raw wastewater was due to the presence of open garbage dumping without any treatment. As for chrome (Tables 8 and 9), the values of chromium ions in the outlet of the maturation pond of the experimental model and in the outlet of the Green Belt plant did not satisfy the specification for use of treated effluents for irrigation, which was 0.1 mg/l in the case of continuous use of treated effluents in irrigation and 1 mg/l for the use of treated effluents for a period of 20 years in a soil of a soft fabric with a pH=6-8.5. It should be noted that chromium is present

in the wastewater of the leather tanning industry (White Nile tannery in Khartoum and AlNasr tannery) and the wastewater of the paint, ink and dyes industry. This agrees with what AlAsfari (1996) noted in his study. Also found to be present was arsenic (Tables 8 and 9) as some of the values in the outlet of the maturation pond of the experimental model did not satisfy the specification for use of treated effluenst for irrigation. While in the outlet of the Green Belt plant all values did not satisfy the specification for use of

treated effluents for irrigation, which was 0.1 mg/l in the event of continuous use of treated effluent in irrigation and 2 mg/l when using treated effluents for a period of 20 years in a soil of a soft fabric with a pH=6 to 8.5. It should be noted that arsenic was present in the wastewater of the paint, ink and pesticide industry (Tchobanoglous *et al.*, 2002); pesticide is used for spraying rodents, insects, fields and agricultural land. These results agree with research findings outlined by Alnunnah (2000) and Asfari (1996).

TABLE 8
Concentration of Heavy Metals in the Raw Wastewater Entering the Experimental Field Model and the Green Belt Station

| Month<br>Analysis | Jan  | Feb   | Mar   | Apr   | May   | Jun  | Jul   | Aug   | Sept  | Oct   | Nov   | Dec   |
|-------------------|------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| Fe                | 1.35 | 1.9   | 0.79  | 0.85  | 0.69  | 0.57 | 2.24  | 2.96  | 2.19  | 1.13  | 0. 9  | 1.01  |
| Cu                | 0.09 | 0.12  | 0.25  | 0.30  | 0.34  | 0.08 | 0.1   | 0.15  | 0.21  | 0.13  | 0.15  | 0.11  |
| Cd                | 0.05 | 0.048 | 0.055 | 0.042 | 0.027 | 0.02 | 0.037 | 0.043 | 0.044 | 0.033 | 0.030 | 0.041 |
| $p_b$             | 6.4  | 5.9   | 5.1   | 5.9   | 5.1   | 5.7  | 6.3   | 7.2   | 7.3   | 7.1   | 5.8   | 6.0   |
| Cr                | 0.76 | 1.0   | 1.09  | 0.96  | 0.72  | 0.91 | 0.89  | 0.72  | 1.06  | 0.7   | 0.92  | 0.77  |
| As                | 0.94 | 0.88  | 0.79  | 0.73  | 0.44  | 0.3  | 0.45  | 0.51  | 0.69  | 0.96  | 0.95  | 0.92  |

TABLE 9
Concentration of Heavy Metals in Treated Effluent Outgoing Maturation Pond of the Experimental Field Model and Green Belt Station

| Month<br>Analysis | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug   | Sept  | Oct   | Nov   | Dec   |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Fe*               | 1.3   | 1.5   | 0.6   | 0.63  | 0.37  | 0.15  | 1.9   | 2.39  | 1.92  | 1.01  | 0.71  | 0.92  |
| Fe**              | 1.4   | 1.72  | 0.68  | 0.76  | 0.32  | 0.29  | 2.08  | 2.36  | 2.03  | 1.09  | 0.84  | 0.95  |
| Cu*               | 0.054 | 0.044 | 0.038 | 0.032 | 0.025 | 0.0   | 0.04  | 0.048 | 0.043 | 0.03  | 0.042 | 0.037 |
| Cu**              | 0.069 | 0.01  | 0.18  | 0.27  | 0.31  | 0.06  | 0.08  | 0.1   | 0.16  | 0.09  | 0.09  | 0.06  |
| Cd*               | 0.028 | 0.025 | 0.022 | 0.016 | 0.011 | 0.01  | 0.026 | 0.031 | 0.025 | 0.021 | 0.016 | 0.018 |
| Cd**              | 0.035 | 0.031 | 0.04  | 0.028 | 0.02  | 0.015 | 0.03  | 0.033 | 0.03  | 0.026 | 0.02  | 0.031 |
| P <sub>b</sub> *  | 3.1   | 2.7   | 3.3   | 2.8   | 2.3   | 2.4   | 3.6   | 5.5   | 5.2   | 5.5   | 2.9   | 3.2   |
| P <sub>b</sub> ** | 5.3   | 6.1   | 6.0   | 5.1   | 4.6   | 4.8   | 5.0   | 6.0   | 4.8   | 5.3   | 5.1   | 5.2   |
| Cr*               | 0.76  | 0.77  | 0.73  | 0.7   | 0.46  | 0.61  | 0.55  | 0.5   | 0.82  | 0.52  | 0.61  | 0.53  |
| Cr**              | 0.91  | 0.9   | 0.92  | 0.87  | 0.63  | 0.76  | 0.75  | 0.62  | 0.96  | 0.63  | 0.79  | 0.65  |
| As*               | 0.3   | 0.21  | 0.15  | 0.1   | 0.09  | 0.07  | 0.12  | 0.16  | 0.18  | 0.3   | 0.28  | 0.27  |
| As**              | 0.6   | 0.57  | 0.5   | 0.47  | 0.25  | 0.2   | 0.27  | 0.38  | 0.44  | 0.6   | 0.62  | 0.6   |

Key:

<sup>\*</sup> Values of the experimental model

<sup>\*\*</sup>Values for the Green Belt station

# Development of Natural Treatment Systems by Oxidation Ponds Method

There are several research possibilities for the development of natural systems using treatment oxidation ponds in achieving best removal of persistent organics, microbial pollutants, heavy metals and compounds of nitrates and phosphates, suspended solids and some algae (16-21). In this research work, aquatic plants were applied for the treatment of wastewater as advanced biological treatment method following natural oxidation ponds. Two aquatic plant basins were designed and constructed parallel to one another other and in series with the maturation pond of the experimental farm model. Table (2) represents the dimensions of each of the two basins and related detention time.

The aquatic plants absorbed the heavy metals from the wastewater. This is clearly demonstrated by the analytical tests, which showed accumulation of these metals in tested aquatic plants as shown in Table 10.

As а result of analysis measurements that were conducted on effluents emerging from the basins of aquatic plants, it was noted that the basins were identical in achieving removability. Nonetheless, the papyrus basin contributed to better removability for BOD5, COD and TSS. Both basins contributed together achieving additional intermediate removability in values of contaminants and heavy metals as depicted in Table 11.

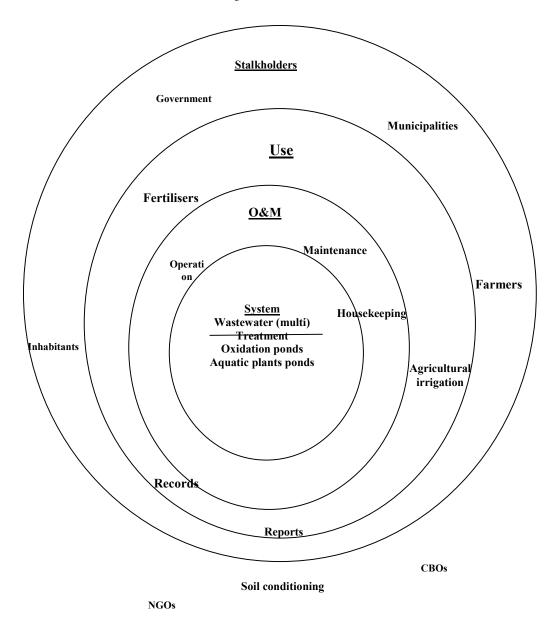
Helmineth eggs and pathogenic bacillus FC, TC and heavy metals (cadmium Cd, copper Cu, lead Pb, chromium Cr and arsenic As) were negative.

TABLE 10 Concentration of Heavy Metals in Aquatic Plants

| Plants<br>Analysis | Pap    | yrus  | Bamboo |       |  |  |
|--------------------|--------|-------|--------|-------|--|--|
|                    | Leaves | Roots | Leaves | Roots |  |  |
| Fe                 | 0.81   | 0.53  | 0.86   | 0.48  |  |  |
| Cu                 | 0.019  | 0.012 | 0.017  | 0.012 |  |  |
| Cd                 | 0.015  | 0.02  | 0.014  | 0.022 |  |  |
| $p_{b}$            | 2.8    | 2.6   | 2.7    | 2.5   |  |  |
| Cr                 | 0.29   | 0.43  | 0.36   | 0.51  |  |  |
| As                 | 0.09   | 0.11  | 0.12   | 0.13  |  |  |

TABLE 11 Contribtion of Both Basins in Additional Removability of Contaminants and Heavy Metals

| Pollutant         |                          | Removability per season |                        |
|-------------------|--------------------------|-------------------------|------------------------|
| PO <sub>4</sub>   | 72 % during rainy season | 79 % during cold season | 83 % during hot season |
| SO <sub>4</sub> - | 66 % during rainy season | 64 % during cold season | 69 % during hot season |
| NO <sub>3</sub>   | 64 % during rainy season | 62 % during cold season | 66 % during hot season |
| BOD <sub>5</sub>  | 60 % during rainy seaon  | 62 % during cold season | 79 % during hot season |
| COD               | 56 % during rainy season | 61 % during cold season | 71 % during hot season |
| TSS               | 71 % during rainy season | 71 % during cold season | 77 % during hot season |



Private sector

Fig.3. Interactive use of aquatic plants.

# CONCLUSION AND RECOMMENDATIONS

From this research work the following conclusions may be drawn. Firstly, Green Belt wastewater treatment plant

that operates via natural wastewater stabilisation ponds system did not achieve the required efficiency in reducing chemical and organic pollutants. On average basis and at best climatic conditions (hot climate) removability did not exceed 81% for BOD<sub>5</sub>, 76% for COD and 76% for TSS.

Secondly, the efficiency of the Green Belt wastewater treatment plant did not decrease beyond 96% at best conditions for the reduction of bacteriological or pathogenic pollutants (FC) and 85% in removing helminthes eggs. However, it did not achieve the required efficiency for pathogenic standard needed for continuous use of treated effluents for unrestricted agricultural purposes as recommended by WHO.

Thirdly, the climate (rainy, cold or hot period) had a clear role in influencing the efficiency of the biological treatment of the oxidation ponds. It was clear that the operation of the ponds was better during the warm period (March-June) than during the cold and rainy period, which was almost equal (July to February).

Fourthly, it was a times observed, in both serial tracks of the Green Belt station, that there was an increase in values of helminthic eggs, FC and BOD5 in the treated effluent from maturation ponds than when compared to influent wastewater from facultative ponds. This may be a direct result of external contamination from the residents living in the vicinity of the plant maturation ponds when using them as toilets, swimming purposes and for watering their livestock and so on.

Fifthly, the experimental field model of oxidation ponds at the area of the green belt was constructed with same dimensional ratios to the adjacent Green Belt wastewater plant. This is by taking into account system's symmetry, hydraulic and organic load simulation. The achieved quality improvement of treated maturation pond effluent is apparent. This is as a result of the appropriate operation as per design of Green Belt plant, prohibiting inhabitants from its misuse, sludge cleaning, dead algae removal from surface of ponds, placement of a screen after bar racks before influent of raw wastewater to anaerobic pond and splitting the anaerobic pond into two to adjust and control flow entering the facultative pond. These measures alleviated removal rates to 88% for BOD<sub>5</sub>, 85% for COD and 81% for TSS.

Sixthly, the experimental ponds of the aquatic plants farm model, constructed after the maturation pond, gave distinct improvement to the efficiency. Thus, the model contributed towards achieving maximum removal of BOD5: 79%, COD: 71%, TSS: 77%. Helmineth eggs and bacillus pathogens FC, TC and heavy metals (Cr, Pb, Cu, Cd, As) were always negative. This achieved the standards required for use of treated effluents for unrestricted agricultural purposes according to WHO guidelines.

Seventhly, the elimination or reduction of heavy metals, toxic substances and suspended solids in the treated effluent by natural oxidation ponds can be processed as an advanced treatment through use of aquatic plants.

Eighthly, the use of aquatic plants for treatment after the maturation pond was scalable by branching the linkage to improve treatment returns through serial connection of ponds.

Finally, the cost of building and operating treatment ponds by aquatic plants should be low as they do not rely on operation by machinery, equipment and technical instruments of high costs. In addition, they do not require skilled labour for their operation and maintenance. They can be carried out anywhere because the growth of higher plants makes it an integral part of nature and the surrounding environs.

#### Recommendations

From the results acquired from this research the following findings and recommendations are made in the hope of alleviating existing treatment problems and to increase treatment plant investment:

Firstly, generalisation of gained experience of natural biological oxidation ponds treatment systems (primary or secondary) followed by aquatic plants treatment deserves implementation. Thus, this work advocates more coverage of this kind of treatment system in all countries where wastewater contains an industrial wastewater component. This is in order to take advantage of using treated effluents for unrestricted agricultural purposes or other uses. This system is economical, easy to operate and maintain depending on availability of favourable climatic conditions. It should be noted that this experience would be more successful in countries with large open areas and a warm climate, which is available in most Arab countries.

**Secondly**, it is recommended to adopt an optimised operating treatment system with

natural oxidation ponds, anaerobic ponds, followed by facultative ponds, followed by maturation ponds so as to ensure sufficient detention time for the growth of green algae. This is to be followed by aquatic plant basins at the end of these lines. As such, two maturation ponds should be installed in parallel after aquatic plant basins. One pond may be used for fish farming and unrestricted agricultural irrigation, and the other for swimming.

**Thirdly**, there should be the establishment of branched disposal stations to relieve pressure on the main network.

**Fourthly**, an awareness unit should be activated. This is to guide and direct farmers to analyse soil before planting. This will ease addition of the right amounts of chemical fertilisers. In this particular case, perhaps, there would be no need to add fertilisers that are available in the treated effluents.

**Fifthly**, sludge should be promoted for use as an agricultural fertiliser and soil conditioner.

**Sixthly**, close monitoring of farmers is needed. They should also be advised not to use treated effluents for irrigating vegetables, especially leafy ones, which are eaten raw. It is vital to be sure that effluent quality satisfies specifications before it is used for irrigation of crops that are eaten raw. This is in addition to the application of stringent laws regulating this matter.

**Seventhly**, there should be activation of private associations, NGOs and CBOs

such that each member be a platform for the dissemination of knowledge about this plant and its objectives.

Eighthly, permanent awareness about non-disposal of all that may jeopardise the work of microorganisms that play a role in biological treatment, such as oils used more than once in the process of frying food and industrial oils, should be carried out. Such substances form an insulating layer that prevents oxygen access for treatment within the basins and thus the organisms are poisoned, decreasing the efficiency of the plant. Thus, it is necessary to propose separating oil from waste from the start to overcome repercussions of such wrong environmental behaviours.

Ninthly, sorting and cleaning up the site (good housekeeping) is necessary. Implementing internal arrangement procedures of good housekeeping such as continuous cleaning of site, buildings and pumps cabins, should be encouraged. The maintenance of green areas, parks and cultivated land to prolong the design period of the station and seeing to employees' psychological stimulus to work in a healthy and comfortable atmosphere should also be implemented.

**Tenthly**, there must be emphasis on operating records and reports. Records should be kept for the station, performance, equipment and maintenance reports in order to estimate plant treatment efficiency. In addition the safe-keeping of operating manuals for each unit of the station and for equipment must be emphasised.

Finally, with regards to the maintenance of the wastewater treatment plant, operations must be carried out hand in hand with maintenance. Maintenance time is normally one-third of operation time.

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# A Review of Usability Challenges Identified in Health Information Technology

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# **ABSTRACT**

User-centred design applies to processes in which end-users influence how a design takes shape. Usability engineering is now in the direction of the user-centred approach. This article addresses a review of its restrictions and challenges. Problems will be focused on healthcare as it is a critical system that may cause medical errors which can lead to the patient's injury or death. Through user interaction with healthcare devices/software, many usability problems have been identified including poor legibility, feature clutter, poorly distinguished alarms or alerts, lack of intelligent design, poor feedback on system behaviour, no provision for online help, poor support in local languages and right-handed design. Analysis of the usability evaluation technique was conducted to remedy the identified problems and meet the usability objective.

*Keywords*: Healthcare, Health Information Technology (HIT), infusion pump, usability challenges, Usability Evaluation Method (UEM)

#### INTRODUCTION

Health Information Technology (HIT) implies "the application of information processing involving both computer

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hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making" (Yen, 2010). HIT helps clinicians in offering effective and quality healthcare. On the other hand, just as HIT can provide potential benefits, without proper handling and poor requirement gathering prior to design, it can interrupt workflow, cause delays and introduce errors.

Healthcare systems are used by both clinicians and patients. In the course of usage, many usability problems can be identified including poor legibility, feature clutter, poorly distinguished alarms or alerts, lack of intelligent design, poor feedback on system behaviour, no provision for online help, poor support in local languages and right-handed design (Bhutkar et al., 2013). A medical error report from the Institute of Medicine has greatly increased people's awareness of the frequency, magnitude, complexity and seriousness of medical errors (Jiajie, 2003). Thus, the need for evaluation of medical devices and healthcare application usability is essentially important.

Among the medical devices that require evaluation is the infusion pump. Infusion pumps are medical devices that deliver fluids, including nutrients and medications such as antibiotics, chemotherapy drugs and pain relievers into a patient's body in controlled amounts (FDA, 2014). The most common problems found with the infusion pump were with the "Change Mode" and the "Select New Patient" features. Use of the On/Off switch was identified as a common strategy to clear pump information and to escape incorrect navigation paths. The consequential contribution to patient safety of these problems ranged from nonhazardous to potentially very hazardous (Lamsdale et al., 2005).

#### LITERATURE REVIEW

There are several healthcare usability evaluation methods (UEM) practised

by usability professionals and system designers. UEM can be based on case studies or lessons learned that are collected from several experimental studies across many domains and organisations. Some well-known and widely used UEM include heuristic evaluation, cognitive walk-through, task analysis, video analysis, rapid prototyping, field study, goals, operators, methods, and selection rules (GOMS) analysis, usability testing, keystroke-level model (KLM), the think-aloud method, structured interview, cluster analysis and severity ratings (Ganesh, 2013).

In the hybrid model of usability, five essential usability characteristics were highlighted to be part of any product: learnability, allowing a user to easily start working with the system without training; efficiency, allowing a user of the system to accomplish a high level of productivity; memorability, enabling a user to use the system without relearning after a period of non-use; low error rate, enabling users to make fewer and easily rectifiable errors while using the system, and without disastrous errors; and satisfaction, allowing users to enjoy using the system.

To ensure a software project has these essential usability characteristics, usability researchers like Holzinger have special methods. Holzinger, for instance, used two methods: the inspection method (without end users) and the test method (with end users). The accompanying figure details these characteristics (Holzinger, 2005).

### Inspection Methods

Usability inspection is the generic name for a set of methods that are based on having evaluators inspect the interface. Typically, usability inspection is aimed at finding usability problems in a design (Mark, 1994), although some methods also address issues like the severity of the usability problems and the overall usability of an entire design (Nielsen, 1993). Many inspection methods lend themselves to the inspection of user interface specifications (Nielsen, 1990) that have not necessarily been implemented yet, meaning that inspection can be performed early in the usability engineering life cycle (Nielsen, 1992).

TABLE 1 Comparison of Usability Evaluation Techniques (Holzinger, 2005)

|                        | Insp  | ection Metho             | ods                | Test Methods      |                      |                |  |  |  |  |  |
|------------------------|---|--------------------------|--------------------|-------------------|----------------------|----------------|--|--|--|--|--|
|                        | Heuristic<br>Evaluation                       | Cognitive<br>Walkthrough | Action<br>Analysis | Thinking<br>Aloud | Field<br>Observation | Questionnaires |  |  |  |  |  |
| Applicably in Phase    | all   | all                      | design             | design            | final testing        | all            |  |  |  |  |  |
| Required<br>Time       | low   | medium                   | high               | high              | medium               | low            |  |  |  |  |  |
| Needed<br>Users        | none  | none                     | none               | 3+                | 20+                  | 30+            |  |  |  |  |  |
| Required<br>Evaluators | 3+  | 3+                       | 1-2                | I                 | +                    | I              |  |  |  |  |  |
| Required<br>Equipment  | low   | low                      | low                | high              | medium               | low            |  |  |  |  |  |
| Required<br>Expertise  |   |                          |                    |                   |                      |                |  |  |  |  |  |
| Intrusive              | no  | no                       | no                 | yes               | yes                  | no             |  |  |  |  |  |
|                        | Comparison of Usability Evaluation Techniques |                          |                    |                   |                      |                |  |  |  |  |  |

Heuristic evaluation. Heuristic evaluation is the most informal method and involves having a usability specialist judge whether each dialogue element follows established usability principles (Nielsen, 1990).

**Cognitive** walk-through. Cognitive walk-throughs use a more explicitly detailed procedure to simulate a user's problem-solving process at each step through the dialogue,

checking if the simulated user's goals and memory content can be assumed to lead to the next correct action (Wharton, 1994).

Action analysis. The action analysis method is divided into formal and back-of-the-envelope action analysis; in both, the emphasis is on what the practitioners do rather than on what they say they do. The formal method requires close inspection

of the action sequences a user performs to complete a task. This is also called keystroke level analysis (Holzinger, 2005). It involves breaking the task into individual actions such as move-mouse-to-menu or type-on-the-keyboard and calculating the times needed to perform the actions. Backof-the-envelope analysis is less detailed and gives less precise results, but it can be performed much faster. This involves a similar walk-through of the actions a user will perform with regard to physical, cognitive and perceptual loading. To understand this thoroughly we must keep in mind that goals are external and that we achieve goals (Carroll, 2002).

#### Test Methods

Testing with end users is the most vital usability method and is very important. It offers direct data about how people utilise a system and their exact problems with a specific interface. There are several methods for testing usability; among the common are thinking aloud, field observation and questionnaires.

Thinking aloud. The think aloud method formally belongs to the verbal report method and stems from the field of cognitive psychology. It was specifically developed to gather information on the cognitive behaviour of humans when they were performing tasks. The think aloud method is viewed upon as particularly useful in understanding the processes of cognition because it assesses human cognition concurrently with its occurrence. It is, therefore, a unique source of information

on these cognitive processes and a very direct method to gain insight into the way humans solve problems (Jaspers, 2009).

Field observation. Field observation is the simplest of all methods. It involves visiting one or more users in their workplace. Notes must be taken as unobtrusively as possible to avoid interfering with their work. Noise and disturbance can also lead to false results. Ideally, the observer should be virtually invisible to ensure normal working conditions. Sometimes video-recording is used to make the observation process less obtrusive, but it is rarely necessary. Observation focuses on major usability catastrophes that tend to be so glaring that they are obviously first-time occurrences and thus do not require repeated perusal of a recorded test session (Holzinger, 2005).

Questionnaire. The questionnaire was designed in a systematic way so as to capture both the passive and active experience of users. Careful consideration was given to ensure that the questions were arranged in a well synchronised manner so as to make correspondents have less difficulty as they answered the question; sufficient time was also given. In choosing the correspondents for the survey, it was also ensured that balance was struck in terms of users' exposure to the system. All of the above standards were adhered to so as to obtain a reliable data.

The analysis of the data obtained was done with the usage of standard data analysis tools and care was given to ensure that errors and false results were avoided. The final analysis was then subjected to proper checks in order to ensure that it was in consonance with other data from similar research.

#### METHODOLOGY

Fig. 1 illustrates the approach used for this article. Journal articles regarding healthcare usability were searched using online journal databases and Google Scholar. Literature review and identification of problems were conducted simultaneously. Lastly, the analysis was based on finding ways to solve the identified problems without interfering or interrupting the whole system. This was done by studying other related systems and coming up with a more robust system that could eliminate the identified problems.



Fig.1: Methodology framework.

#### Test Case 1

A study was conducted in the Shock Trauma Air Rescue (STARS) Centre (Lamsdale *et al.*, 2005) using video and audio recording devices. The participants were 13 hospital nurses from different wards. The infusion pump used was Baxter (Fig.2) because it uses numerous advanced automated features.

Before the start of the study, two groups of participants each completed the 30-minute standard Baxter Colleague CX in-service performed by a Baxter Corporation clinical-training nurse. The inservice covered a general device overview (e.g. powering-on the device, display introduction, alarm and alert identification, tube loading and programming of primary and piggyback infusions) and an integrated protection system demonstration and also provided an opportunity for the participants to interact directly with the pump (Lamsdale *et al.*, 2005).

The next approach after in-service was think aloud; the participants were separately presented to the STARS simulation training centre and received instructions on the 'think-aloud protocol. This verbal protocol analysis captures the user's thought process descriptions as they complete the steps for each use case (Lamsdale *et al.*, 2005). A rehearsal was conducted to enable participants to become comfortable and used to the pump and with voicing the stages required for the think-aloud protocol.

Three use cases were presented to the nurses. Each case included background patient information, the supplies available, physicians' orders and additional instructions such as invoking the Guardian TM integrated protection system when necessary (Lamsdale *et al.*, 2005). Demonstration of the use cases was equally balanced. Every participant was given 30 minutes to conduct the three use cases. The practice use case required the nurse to

start a potassium chloride (KCl) infusion at 5mEq/hr and then to increase the amount of medication being infused to 10mEq/hr. The next use case dealt with a patient who was septic and hypotensive. The nurse had to infuse the antibiotic meropenem over a 15-minute period based on the concentration

of the mini-bag. The nurse also had to administer a dopamine infusion at 5 mcg/kg/min, check the patient's vital signs and increase the amount to 10 mcg/kg/min. The final use case involved a patient who was having an acute myocardial infarction (MI) (Lamsdale *et al.*, 2005).



Fig.2: Baxter Infusion Pump (S. B. Dulak, 2005).

#### Test Case 2

This study was done using a one-channel volumetric infusion pump (Fig.3). Four individuals applied the defined heuristics to the user interfaces of two one-channel volumetric infusion pumps, identified usability problems in various areas/ sections of the pumps and identified one or more heuristic violations for each usability problem. Two of the four evaluators were graduate students in the School of Health Information Sciences at UT Houston, and the other two were graduate students in the Department of Psychology at Rice University. They had taken at least one graduate level course on human factors or human-computer

interaction. Before the evaluation, they were given a copy of the report of a heuristic evaluation conducted for a different product using a harmonised definition of heuristics (Jiajie, 2003).

They were then given instructions on how to conduct the evaluation by the first author of this paper, who is an expert in heuristic evaluation and has performed heuristic evaluations on several products. After the list of usability problems were discovered and heuristic violations were identified for each usability problem, the four evaluators independently assessed the severity of each usability problem. Their severity ratings were then averaged (Jiajie, 2003).



Fig.3: Alaris One Channel Volumetric Infusion Pump (www.dremed.com).

#### **ANALYSIS**

Data for the analysis were obtained based on the identified Useability Evaluation Methods defined in the literature review. The identified methods were the inspection method (heuristic evaluation, cognitive walkthrough and action analysis) and the test method (thinking aloud, field observation and questionnaire). Based on the analysis, the following deductions were made.

### Test Case 1 Analysis

Recorded video and think-aloud scripts were scrutinised. During interaction with the infusion pump, the nurses made various mistakes, like thinking the infusion pump had only one channel instead of three; not reading feedback from the screen; and not conforming to the settings of the infusion

pump. Nearly 80% of the nurses (78%) did not use the 'Change Mode' feature and incorrectly performed manual medication calculations instead of using the integrated protection system. The 'Select New Patient' feature was also problematic for 72% of the nurses when 'powering-on' the pump. Some nurses (25%) had difficulty loading the IV tubing into the pump's channel. Use of the On/Off switch was identified as a common strategy to clear pump information and to escape missed prompts or incorrect navigation paths (Lamsdale *et al.*, 2005).

Change mode. The Baxter 'change mode' attribute computes precise dose of drug in accordance with a regular set of concentration and time limits allocated by the nurse. In case two, the nurses were supposed to use the 'Change Mode'

attribute to infuse meropenem, 1 gm IV q 8h over 15 minutes but they seemed to forget about the 'Change Mode' feature and did not engage the drug dosage protection system, which caused the administration of an improper amount of medication and concentration.

For this to be error free, there should be a barcode feature that recognises the drug name and concentration. If the system is nonproprietary, it could be feasible to contain a laser scanner on the interface. The nurses should just have to scan the barcode and the dosage and treatment schedule should be input into the infusion pump automatically. The feedback should be drug name and concentration to confirm to the nurses (users) that appropriate medication and action have been performed. Additionally, dosage procedure can be saved to reduce the rate of error. There is no need for patients on regular treatment to have their medication requirements entered every time.

**Select new patient.** The 'select new patient' function as provided by the devices comes up when the device is switched on and disappears after a few seconds if it is not selected as the device assumes it is still to be used on the last patient.

Users of the device found it hard to observe the 'select new patient' option when the device starts and also had difficulty resetting it for a new patient when the machine starts but displays the data of the previous patient. This can be solved by increasing the time during which

the 'select new patient' option is shown when the device is switched on and also by making the option more clearly visible.

The design for the screen and buttons can also be enhanced so as to accommodate left-handed users as now the buttons are aligned for the right-handed, making it difficult for left-handed users to operate. To achieve this enhancement, the screen and the buttons should be centralised, modelled after the current Automated Teller Machine (ATM) as that can give ease of use to both left- and right-handed users of the system.

## Test Case 2 Analysis

For Pump 1, heuristics were violated a total of 192 times. Consistency and visibility were the two most frequently violated heuristics (53 and 28, respectively). Feedback and match were the next most common violations (22 and 21). These four heuristics accounted for 64% of the violations. For Pump 2, heuristics were violated a total of 121 times. Visibility was the most frequently violated heuristic (29 violations). Memory and consistency were the next most common violations (19 and 17, respectively). These three heuristics comprised 54% of the violations (Jiajie, 2003).

A distinct case of visibility violation is when the 'enter' option is not pressed after the user enters the value for 'Rate' and 'VTBI' (volume to be infused). The user is shown a message 'complete entry' which sounds too ambiguous; a more appropriate response should be displayed to confirm values.

#### **CONCLUSION**

Healthcare is a very tricky environment with many dynamics that need to be taken into consideration and at times within a limited time frame that might be as little as a few seconds. As such, there is the need to equip the environment with not only the needed devices but to ensure that the devices are designed in such a way that the users will find no or very minimal difficulty in using the devices.

To guarantee the best utilisation of HIT, it is important to be focused on HIT usability, keeping in mind its envisioned users like physicians, nurses or pharmacists; intended tasks like medication management, free-text data entry or patient record search; and environment to be used like operation room, ward, or emergency room.

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# **SOCIAL SCIENCES & HUMANITIES**

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# **Voters versus the Corpus of Fictional POTUS**

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#### **ABSTRACT**

Scholars have argued that voting behaviour changes over time and, today, voters are no longer loyal to traditional 'political brands'. We, hence, try to explore, through constructing 'action corpora' using novels, movies and TV dramas from the last 50 years (1960-2012) relating to fictional US presidents to see what the mass media have been conveying to the public subconsciously over time. We then looked at and discussed how people have responded since they last voted over the past five US presidential elections from 1992 through 2008 using excerpts from the Corpus of Contemporary American English (COCA). While voters were found to fall into two broad categories when making their voting decisions, powerful media bias right before elections could have caused vote swings and, hence, voters could have voted for 'the wrong person with all the wrong reasons' when, in fact, they were subconsciously warned – not by anyone else, but by the mass media

Keywords: Corpus application, fictional POTUS, mass media, movies, novels, presidential election, TV dramas, voting behaviour

#### INTRODUCTION

Classical studies of voting behaviour at Columbia University from the 1950s suggest that voters do not take what the media say very seriously when they decide on who to vote for (Berelson *et al.*, 1954;

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Lazarsfeld *et al.*, 1944). According to these studies, subconscious loyalty to 'brands', in terms of religion, social class and status, as well as views from like-minded peers, are more often referred to as the important factors because voting decisions "seem to be matters of sentiment and disposition rather than reasoned preferences" (Berelson *et al.*, 1954, pp.310-311) and that such decisions may better be related to "cultural tastes – in music, literature, recreational activities, dress, ethics, speech, social behavior...

(and) have their origin in ethnic, sectional, class, and family traditions" (p.310-311). Yet, recent studies (Dellavigna & Kaplan, 2007; Bergan et al., 2009; Clinton & Enamorado, 2012) are beginning to steer away from such a traditional viewpoint as the relationship between media bias and voting is grabbing the attention of more and more researchers and is no longer merely about simple media persuasion in the arena of linguistics (Lakoff, 1987). For election campaign strategists who need to plan ahead for any given political party, such a shift in voting behaviour is anything but worrying, particularly when bias through the media is completely ad hoc and volatile in nature and is terribly difficult to plan effectively and accurately.

This paper, written from the practical perspective of an election campaign strategist, set out to look at what kind of message(s) (through novels, movies and TV dramas) the mass media have been sending to the public subconsciously over time, how people have responded since they last voted, and eventually, if any resemblance could be identified between the messages the media sent and the actual responses from the voters. The goal of the study was to find out what voters would really consider or fail to consider, even subconsciously, in the course of casting their votes. Our target of study for this paper is the series of presidential elections held every four years in the United States of America.

Specifically, we looked at two separate sets of data, both relating to the President of the United States (i.e. 'POTUS'). On the one hand, we looked at how fictional Republican and Democrat POTUSes have been portrayed differently in mainstream best-selling American novels, Hollywood movies and popular TV dramas within the last 50 years<sup>1</sup>. An 'action corpus' is constructed to help understand what kind of message(s) the media are sending to the public about these fictional POTUSes. One the other hand, a corpus of how people responded four years after they last voted for their 'once favorite candidate' is constructed using the Corpus of Contemporary American English<sup>2</sup> (COCA). Concordance lines containing the core term 'voted for (someone, e.g. Clinton or Bush)' was gathered. The corpus covers voter responses found in COCA right before five consecutive U.S. presidential elections from 1992 through 2008. The results obtained from the two data sets were then compared and contrasted.

Our main result was that voters basically fell into two broad categories when they made their voting decisions. People either voted for a man they loved (e.g. a countryman or a patriot for whatever reason or no reason at all) or a plan (soundly entrusted with an enlightening

<sup>&</sup>lt;sup>1</sup>A full list of movies, novels and TV dramas is available upon request.

<sup>&</sup>lt;sup>2</sup>Corpus of Contemporary American English developed and maintained by Mark Davies at Brigham Young University (Provo, Utah), accessible online at http://corpus.byu.edu/coca/

goal by an eloquent salesperson-like candidate) before they realised they had picked the wrong choice four years down the road. The implication of the results was clear for the election campaign strategist. The classical Chicago findings have not expired and voters are still just as partisan and loyal to 'brands' as their parents were in the 1950s. With powerful media bias, we may now be able to do quick-fixes and effectively manipulate voter decisions or make them swing and vote for 'the wrong person for the wrong reasons'. In other words, with increasing media bias, we can expect more political leaders to be elected by voters who vote for all the wrong reasons, possibly implying that stability of democratically elected governments or credibility of new administrations will face even more challenges than ever as candidates could have been elected merely because of a 'quick swing as a result of intensive media bias right before elections',

and not because of a 'long-time partisan loyalty, sentiment, and disposition that was implanted through years of exposing to the traditional media'.

# MESSAGE FROM THE FICTIONAL POTUSES

First. to understand how fictional Republican and Democrat POTUSes are being portrayed differently in mainstream media, over 500 mainstream American movies, novels and TV dramas have been reviewed<sup>3</sup>. Among these, 119 fictional POTUSes (or f-POTUSes) have been identified showing recognisable political affiliations i.e. either a Republican or a Democrat (see Table 1). These have been shortlisted and the descriptions of the characters were combined to form an 'action corpus' – a corpus based on the actions of the f-POTUSes. A full list of the sources of these f-POTUSes is given in Appendix I.

TABLE 1 Source of Fictional Presidents of the United States ('f-POTUSes')

|              | DEMOCRAT    | REPUBLICAN |
|--------------|-------------|------------|
| Novels       | 37          | 37         |
| Movies / HBO | 13          | 8          |
| TV series    | 11          | 13         |
|              | (N=61)      | (N=58)     |
|              | TOTAL = 119 |            |

Their 'backgrounds', stories of 'how s/he came to power', 'personalities and lifestyles', adventures 'during his/her term', deeds or 'what s/he had done' plus 'dirty works' (fictional, of course), endings and even their

deaths of these f-POTUSes are all tabulated and compared (see Tables 2a to 2h).

<sup>&</sup>lt;sup>3</sup>Owing to paper length restrictions, the full listing with descriptions of all 500 reviewed movies, TV drama series and novels will be available upon request.

TABLE 2a Action Corpus of f-POTUSes – His/Her Background

| Fictional DEMOCRAT POTUS   | Fictional REPUBLICAN POTUS  |
|--|---|
| was the first Hispanic-American president     was first African-American president and the oldest elected president     became the first foreign-born VP     became the first woman President     was the first Asian-American president (third generation Japanese-American)     was the first straight female president     was second African-American president     was second African-American president     was the nation's youngest president at 39     was first to divorce while in office     was a widow of Mars expedition commander     was from a wealthy family     married to former movie star     served in Vietnam | former screen actor     was a decorated Vietnam veteran and a Medal of Honor winner     was a former WWII General     was CEO of a successful investment firm     was a fighter pilot |

TABLE 2b Action Corpus of f-POTUSes – How Did S/He Come to Power?

| Fictional DEMOCRAT POTUS  | Fictional REPUBLICAN POTUS  |
|---|---|
| • took over as acting President due to President's failing health under the 25th Amendment <sup>11</sup> • assumed the reins of power as acting President, as per the 25th Amendment, after his predecessor went on leave of absence due to deep depression | took office after POTUS died from wounds received in terrorist bombing of US Senate     used the nuclear destruction of Metropolis as an issue to win the presidency     became president after slipping poison into his predecessor's coffee, under orders from the leader of the extraterrestrials     elected after a nuclear exchange sparked by the Cuban Missile Crisis |

TABLE 2c Action Corpus of f-POTUSes – Personality and Lifestyle

| Fictional DEMOCRAT POTUS  | Fictional REPUBLICAN POTUS   |
|---|--|
| enjoyed cigars and shark steak sandwiches     ate junk food     depicted as rather mediocre and uncertain of himself     interested only in his domestic agenda     appeared to be a charming and philandering politician     listened more to the counsel of his amoral advisers | <ul> <li>was recently lobotomised</li> <li>was strongly anti-Communist</li> <li>portrayed as devious, a grasper of power and slightly paranoid</li> <li>was a pro-cloning president</li> </ul> |

<sup>&</sup>lt;sup>11</sup>The Twenty-fifth Amendment (Amendment XXV) to the United States Constitution deals with succession to the Presidency and establishes procedures both for filling a vacancy in the office of the Vice President, as well as responding to Presidential disabilities. See http://www.law.cornell.edu/constitution/amendmentxxv

TABLE 2d Action Corpus of f-POTUSes - What Happened During His/Her Term?

| Fictional DEMOCRAT POTUS   | Fictional REPUBLICAN POTUS   |
|--|--|
| orchestrated the first manned space mission to Mars     was in office during massive earthquake, which hit Los Angeles     was there when VP was killed along with most of Congress in a terrorist attack     was in office when the Soviet Doomsday Device detonated, destroying most living things on the planet     was in a series of planned bio-terrorist attacks on Rome, Jerusalem and Mecca, orchestrated by rogue FBI agent     was in chaotic times due to Republican opposition to a controversial arms control treaty with the Soviet Union | was in office when China invades the US     was in office during US-Iran War     was found two days later curled up naked in an air duct after accidentally being given tea with an LSD-laced sugar cube by his daughter     was President during the 16-day World War III which ended with the nuclear destruction of Birmingham, England, and Kiev in the Soviet Union     was in office when the space shuttle Atlantis II was marooned in space after deflecting off of the Earth's atmosphere to go careening towards the sun |

TABLE 2e Action Corpus of f-POTUSes – What Did S/He Do?

| Fictional DEMOCRAT POTUS                              | Fictional REPUBL            |
|---|-----------------------------|
| • resolved a Constitutional crisis due to an election | ordered the conscription of |
| stolen by computer fraud                              | • supported tax in exchange |

- backed down the Soviets in a crisis • created a loose American Federation with
- neighboring Canada • launched a successful rescue operation when a
- Chinese submarine was downed off the coast of Los Angeles
- relocated the nation's capital back to Philadelphia after tsunami hit DC
- worked towards multilateral disarmament and the coalition of the World Peace League
- refused to use bombing attack for political gain as he regretted the killing of innocents
- attempted to give part of the Southwest US to Mexico as a goodwill gesture
- normalised relations with Cuba
- got US Virgin Islands as the 51st State
- led surviving Earth resistance military forces into battle against alien invasion
- consented to using nuclear power on American soil after learning of aliens' invasion plan

# LICAN POTUS

- of all 18-24 y.o.
- e for anti-terrorism
- opposed evacuating the US when new Ice Age freezes the Northern Hemisphere
- ordered a covert war against drug lords
- led the nation during a crisis in Georgia and a rebellion in Indonesia
- defended S. Korea during an American-Japanese conspiracy to start WWIII
- led the US in 2nd American Civil War
- faked a cross-country trip in Air Force One in order to negotiate a mutual defence treaty against China with the Soviets, forced to remain in hiding after Air Force One crashed
- promoted (with political opposition) an interventionist line on foreign policy and a strong stance against terrorism
- nominated a Democrat as his running mate (and shocked everyone) during the election campaign
- · clashed with President-Elect over policies regarding a free Taiwan

TABLE 2f Action Corpus of f-POTUSes – What Kind of Dirty Work Did S/He Do?

| Fictional DEMOCRAT POTUS  | Fictional REPUBLICAN POTUS   |
|---|--|
| blackmailed Republican Congressman into backing an administration bill after he procured evidence of the Congressman's closeted homosexuality     approved a CIA plan to aid an exile invasion of Dominica, but ordered an assassination to make the invasion fail     leaked info (about unethical behaviour of his opponent) to a journalist before the presidential debate through a third party     spent his Administration propping up the House of Saud to ensure the flow of oil     ordered the bombing of Libyan Intelligence Headquarters in retaliation for bombing of an | started World War III and resulting nuclear holocaust     was one of the principal instigators when European terrorists released nerve gas on American soil     faked the death of his brother and framed another person for the murder     escalated the Cold War in an effort to regain lost status and prestige, risking nuclear war with the expectation that he and his supporters could withdraw safely to another universe should events escalate     began a military build-up and a campaign against terrorist states |
| American missile defence system in Israel   | terrorist states   |

TABLE 2g Action Corpus of f-POTUS Adventures: What Happened to Him/Her?

| Fictional DEMOCRAT POTUS   | Fictional REPUBLICAN POTUS   |
|--|--|
| kidnapped by the KGB (during the Cold War) and replaced with a Soviet agent who had been surgically altered     was punched in the Oval Office     became mentally unhinged during multiple crises faced by her administration, all worsened by her fatally flawed executive decisions     became a figurehead and lame duck after his powers were removed by an antichrist     held in secure bunker for many days during a terrorist attack on the White House causing his unpopular VP to take control     ignored evidence of a terrorist plot that threatened to cause a massive tidal wave     had a massive stroke (and his staff attempted to replace him with a lookalike, but then the double became mentally unstable and was assassinated to cover up the truth) | sufferred a major political scandal involving the collaboration with a neo-fascist conspiracy     survived a failed nuclear attack on Nashville, Tennessee by American terrorists     suffered from severe stress     was blamed for "anointing the regimes that haunt the US today"     attempted suicide     kidnapped by Swiss terrorist group     had a finger cut off by the group as proof of his kidnapping |

TABLE 2h Action Corpus of f-POTUS Deaths: How Did S/He Die?

| Fictional DEMOCRAT POTUS   | Fictional REPUBLICAN POTUS  |
|--|---|
| died in his sleep at the age of 91     assassinated while running for President     dies in office of electrocution, as a result of a hairdryer in bathtub     killed in crash of Air Force One     was killed in the crash of Air Force One on Thanksgiving Day during a Nuclear strike on Washington     dies of a heart attack     committed suicide in the Oval Office minutes after assuming the presidency     assassinated for not being a puppet | <ul> <li>assassinated by anarchists prior to his inauguration</li> <li>executed for colluding with Al Qaeda</li> <li>became a selfish tyrant and was killed</li> <li>died from a blood clot after breaking his leg in a horse riding accident</li> <li>was killed in a war</li> <li>killed in terrorist strikes</li> <li>was stabbed by the First Lady</li> </ul> |

# What kind of presidents were they?

A close study of the above f-POTUS action corpora revealed that Democrat f-POTUSes, when compared to their Republican counterparts, were portrayed by the popular media to be more accepting and open to new ideas. For instance, the first Hispanic-American president, the first Japanese-American president and the oldest elected president are all depicted to be Democrats (see Table 2a). In reality, however, other than the fact that Barack Obama is indeed the first African-American president and is a Democrat, both the youngest and the oldest presidents at time of their inauguration, as well as the longest living presidents were in fact all Republicans<sup>4</sup>. Even the first black female Haitian-American to be elected Congresswoman in Utah (where the black is

the absolute minority) is also a Republican<sup>5</sup>. Other than being portrayed to be more open and accepting, Democrat f-POTUSes were also depicted to be more charming, philandering yet rather mediocre leaders who choose to enjoy their lives (see Table 2c). They differed from the Republican f-POTUSes in the sense that Republican f-POTUSes showed a strong stance against anti-American values (e.g. Communism) and were often decorated veterans, jetfighter pilots or war generals, and were generally devious, a grasper of power and even, in one case, slightly paranoid (see Table 2c). Yet when it came to how they rose to power, Democrat f-POTUSes were in general, legitimate successors of an outgoing or recently deceased president whereas Republican f-POTUSes would use

<sup>&</sup>lt;sup>4</sup>The youngest president of the United States at the time of inauguration was Theodore Roosevelt (at age 42, in 1909), the oldest was Ronald Regan (at age 69, in 1989), and the longest living president was Gerald Ford, who died at the age of 93 in 2006.

<sup>&</sup>lt;sup>5</sup>See "First black female Republican in Congress: Mia Love wins Utah House seat in tight race", International Business Times, dated November 5, 2014. Retrieved November 6, 2014 from http://www.ibtimes.com/first-black-female-republican-congress-mia-love-wins-utah-house-seat-tight-race-1719069

war, terrorism or anything military-related to help pave their way to the top (see Table 2b). In short, Democrat f-POTUSes were intellectuals who would work their way to the presidency with plans or via the use of the constitution, whereas Republican f-POTUSes were power leaders who would take advantage of military conflicts in order to take hold of the presidency.

What did these presidents do? Democrat f-POTUSes were also depicted to resolve not only constitutional crises within the country, face down the Soviets, work towards multilateral disarmament, promote world peace but were also shown to be socialist-friendly. This is shown in the rescuing of a Chinese submarine and the normalising of relations with Cuba (see Table 2e). It is also particularly interesting to note that only the Democrat f-POTUSes had ever been portrayed to lead in the rebuilding of the United States after major natural disasters (e.g. tsunami and earthquakes) or to defend the country from an alien invasion. Writers and film producers seem to love including a Democrat president whenever it came to leading people out of difficult times. Republican f-POTUSes, on the other hand, were the ones to lead in battles with drug lords and to drag the country into wars. They were also the ones who would choose to 'stay and fight' during adverse times, just as when one f-POTUS opposed the evacuation of the country when a new Ice Age froze the entire Northern Hemisphere (see Table 2e). Republican f-POTUSes, therefore, were leaders who fought for

the goodwill of allies while at the same time could also start a self-devastating second civil war. Just as they would order the conscription of all 18 to 24 year-olds or nominate a Democrat as their running Republican f-POTUSes shocking, surprising and even unwelcome decisions. Yet in reality, it is an open secret that the Chinese Communists actually preferred to work with the Republicans and not the Democrats<sup>6</sup> due to various reasons including their difference of stance on human rights issues. In fact, US President Obama's recent pivot to Asia has also been criticised by the Chinese to have heightened disputes in the region<sup>7</sup>, a phenomenon not seen during the days when a Republican president was in office.

<sup>6</sup>See the BBC article on "China's socialist rulers prefer Republicans to Democrats", dated November 4, 2004, accessible online at http://news.bbc.co.uk/2/hi/americas/3978489. stm See also the Slate V article, "Jon Huntsman compares Republican Party to Communist Party", dated April 23, 2012, accessible online at http://www.slate.com/blogs/trending/2012/04/23/jon\_huntsman\_compares\_republican\_party\_to\_communist\_party.html and the YouTube clip at http://youtu.be/edcmubro0A0

<sup>7</sup>The U.S. already has stationed approximately 320,000 troops in the region, as well as 50 percent of its formidable global naval assets. Under the current pivot strategy, the US is set to commit several thousand additional troops and increase its naval strength by another 10% in the coming few years. See the Anti-war.com article by Richard Javad Heydarian on "US pivot heightens Asian disputes", dated December 14, 2012, accessible online at http://original. antiwar.com/javad-heydarian/2012/12/14/us-pivot-heightens-asian-disputes/

#### What was worst about these presidents?

While the Republican f-POTUSes were often portrayed to be more conservative, occasionally paranoid and possibly warloving, the Democrat f-POTUSes were no better leaders when it came to dirty work. One Democrat f-POTUS blackmailed a homosexual congressman into backing his administration bills, another ordered an assassination in order to ruin a government plan he ordered himself and one other leaked information unethically to the press just before the presidential election (see Table 2f). Republican f-POTUSes, in this regard, seemed to score better as their scandals were basically all related to military operations: escalate the Cold War, begin a military build-up or even start World War III. Yet, if we reviewed the top 10 scandals in American history that involved the president, we may easily see that this really was not the case. According to historian Martin Kelly (see Table 3), in the four out of 10 major scandals in history concerning the Democrats, a stunning three were either a marriage issue or a sex scandal whereas for the Republicans, all of their six scandals were either related to corruption or abusive trading practices that involved under-the-table money or abuse of power.

## DO VOTERS' COMMENTS MATCH WHAT IS PORTRAYED OF F-POTUSES?

In our previous section we looked at how mainstream traditional media portrayed the Republican and the Democrat POTUSes in novels, movies and TV dramas differently. Having identified some of the key characteristics of these fictional POTUSes, we went on further to see how people, or voters, actually responded four years after they last voted for their 'once favorite candidates'. Specifically, we focused on whether comments from voters would match the fictional characters we discussed above.

In order to look for the voter's comments, a corpus with the core words 'voted for (a Republican or a Democrat president since 1988)' in the Corpus of Contemporary American English (COCA) was constructed (see Appendix II). Out of the 258 matching excerpts found from COCA, 123 excerpts were found for the Democrat president and 125 for the Republican (selected excerpts in italics below). Those related to the Republicans seemed to be more willing to vote for a Democrat candidate without later regretting it, especially when they believed that the American people were mired in a terrible recession and the country needed something. Such a mentality seemed to match perfectly with our previous discussion about people expecting Democrat f-POTUSes to be the kind of presidents who 'would lead people out of their difficult times'. Similarly, many registered Republicans, voted for Clinton and Gore, voted for Clinton twice. This again coincided with our previous findings related to the f-POTUSes in the sense that as the American economy was recovering during the two Clinton terms (1997-2001) even the Republicans were expecting the country to rise again through a Democrat president. In fact, there were even rumors that *President (Ronald) Reagan voted for Clinton* – another indication of the dependence on Clinton (a Democrat) to bring the American people out of the shadow of recession.

But no matter for whom Republicans voted, Republicans were still Republicans, as summed up by one voter who said he voted for Obama (in 2008), but remains Republican. This remark matched the finding of the classical Columbia studies, in which the voter was found to be subconsciously loyal to 'brands' i.e. Republicans, yet for some reason voted for a Democrat. Such a response also agreed with other studies (Markus & Converse, 1979; Page & Jones, 1979) in which partisan predispositions were said to unlikely dominate an election completely as all candidates were being assessed continuously, not just in terms of the candidates themselves but also on the extent to which current issues 'conflict or coincide with established party cleavages' (Page & Jones, 1979, p.1088).

However, this was not quite the same for Democrats. They seemed to complain more when they chose to vote for the wrong Republican. One Democrat who voted for Bush in 2004... (said) he doesn't plan to do so again, and there were some blue collar Democrats who voted for Bush and (said they) don't want to again. If there was one simple explanation for these remarks, it could be that the Democrats thought they switched just

because they were then voting for 'a Republican with a plan' and when it turned out to be just 'a man without a plan', they all regretted casting their votes for the wrong person.

Similarly, people who voted for a Republican because of 'the man' seemed to regret their choices more economic conditions worsened. person (political affiliation or orientation not known, presumably a member of the general public) who voted for Bush ... thinks despair is now at an all-time high and a medical doctor who also voted for Bush ... (says) he's unhappy with high taxes and the economy. Interestingly, there was also a certain worried Jarvis. who voted for Bush but sympathizes with Gore's position, too. While some Americans voted for Bush because he made them feel safe, others said Americans deserved to be bombed because they had voted for Bush, and that because you voted for Bush, so you're responsible for this disaster, or they voted for Bush, (and so) support(ed) the Iraq war. The comments seem to coincide with what our study of the f-POTUSes revealed in the previous section: people either voted for a man (who was a Republican) or a plan (from a Democrat).

What about Democrats for Democrats or Republicans for Republicans? While the excerpts did not reveal much on this, they did provide some hints as in the following two examples: A Republican who voted for Bush in 1988 ... said he reluctantly would do so again, and, for

the Democrat who voted for Obama in 2008 ... (said he/she) would again. It does seem like the sixty-year-old Chicago concept was still applicable, and partisan predisposition was still working to some degree, especially when voters were voting for a candidate from their own party.

### **CONCLUSION: A MAN OR A PLAN?**

The paper studied the kind of messages the mass media, through novels, movies, and TV dramas, had been sending to the public subconsciously over time in terms of fictional POTUSes and compared them to how people, voters specifically, have responded and commented on the real-life presidents since they last cast their votes four years ago through the construction of a corpus. Our goal was to find out what voters would really (fail to) consider, even subconsciously, in the course of casting their votes, so that election campaign managers may focus their resources on the crucial factors in formulating their campaign strategies.

Our results from our 'action corpus' was that Democrat f-POTUSes, as portrayed by the media, were intellectuals who would 'bring people out of difficult times' and 'lead the nation when mother nature strikes' whereas Republican f-POTUSes were patriots who would never leave their wingmen and would choose to 'stay and fight' for American values, even if it meant getting killed (see Table 2h). These findings, interestingly,

coincided with the voter comment excerpts we found from COCA. Voters seemed to understand that when they voted for a Republican presidential candidate, they voted for a person who shared the American dream and envisioned a united America with strong military power; whereas, when they voted for a Democrat, they voted for a charismatic leader with a great plan: a plan either to help the people or to save the country. For instance, one lady who won't say whether she voted for Obama ... (says) she feels his health plan may be the answer. Another man who voted for Obama ... said he still believes in this president's (plan). There are some others who also said that they either voted for Obama's big government health care (plan) or Obama's Wall Street bailout (plan). As long as the Democrat's plan was working and the economy was reviving, voters would not complain and the president would always get a second term, even when Democrat presidents were notorious for sex scandals in the American presidential history (see Table 3). As a matter of fact, Bill Clinton (42th president) served two terms (1993-2001), Andrew Jackson (7th president) served two terms (1829-1837) and even Grover Cleveland (22nd and 24th president) managed to get reelected and served two non-consecutive terms (1885-1889 and 1893-1897) and was the only US president to be counted twice in the numbering of the presidents.

TABLE 3
Top 10 American Presidential Scandals 1810-2010

| President            | Scandal                             | Description of Scandal   | Party      |
|----------------------|-------------------------------------|--|------------|
| Andrew Jackson       | Andrew Jackson's<br>marriage (1828) | Believing that she was legally divorced,<br>Rachel Donelson married Jackson in 1781.<br>Her first husband later charged her with<br>adultery.  | Democrat   |
| Ulysses S. Grant     | Black Friday (1869)                 | Grant found out gold prices were soaring and quickly had the Treasury add gold to the economy. This in turn resulted in the lowering of gold prices on Friday, September 24, 1869, which adversely affected all those who had bought gold. | Republican |
|                      | Credit Mobilier (1872)              | The Credit Mobilier company stole from the Union Pacific Railroad while trying to cover up by selling stocks at a large discount to government officials and Congress members.   |            |
|                      | Whiskey Ring (1875)                 | Grant called for swift punishment of government employees who were pocketing whiskey taxes but caused further scandal when he attempted to protect his also implicated personal secretary.   |            |
| James Garfield       | Star Route (1881)                   | Concerns corruption in the postal service.   | Republican |
| Grover Cleveland     | Ma, Ma, Where's My<br>Pa? (1884)    | Cleveland had previously had an affair with a widow named Maria Halpin who had given birth to a son. Cleveland paid child support and then put the child in an orphanage.  | Democrat   |
| Warren G.<br>Harding | The Teapot Dome (1920-1923)         | Harding's Secretary of the Interior sold the right to the oil reserves in Teapot Dome etc. in exchange for personal profit and cattle.   | Republican |
| Richard Nixon        | Watergate (1972)                    | In 1972, five men were caught breaking into the Democratic National Headquarters located at the Watergate business complex. Richard Nixon and his advisors worked to cover up the crimes.  |            |
| Ronald Reagan        | Iran-Contra Affair<br>(1985-1987)   | Money that had been obtained through selling arms to Iran was given secretly to the revolutionary Contras in Nicaragua. The hope was that by selling the weapons to Iran, terrorists would be more willing to give up hostages.            |            |
| Bill Clinton         | Lewinsky Affair<br>(1998)           | Lewinsky was a White House staffer with whom Clinton had an intimate relationship, or as he later put it, an "improper physical relationship."   |            |

 $Source: Presidential\ Scandals\ by\ Martin\ Kelly\ http://americanhistory.about.com/od/uspresidents/tp/presidential\_scandals.htm$ 

Indeed, by comparing popular cultural fantasy taken from novels, movies, TV dramas with COCA excerpts, we could see why even when the media were in part misrepresenting the reality of the POTUS, the kind of long-lasting American sentimental loyalty and attachment to the two main parties, in terms of either 'a man or a plan', could still be reinforced (Campbell et al., 1960, p.121). Such sentiments effectively reduced the other more reasonable factors in importance when it came to making voting decisions8 (Campbell & Miller, 1957; Campbell et al., 1960; 1966). When party loyalties and social characteristics, which are relatively inert through time, are bombarded with new, collaborative, uncensored and open forms of continuous assessment of the candidates over the new battlefield of social media, traditional political parties will have to move quickly into this new arena of political discourse (Shamma et al., 2010), if not merely to make up for lost time during election campaigns<sup>9</sup>. Despite the fact that social media platforms are used 'mainly as a way to push messages out' (Pew Foundation, 2012) and are considered cross-ideological (Yardi & Boyd, 2010), polarisation of similar political views can be

lightning fast (Conover et al., 2011) through natural homophily<sup>10</sup> patterns (McPherson et al., 2001). These patterns of polarisation, adding to the fact that it is often the average (non-elite) user who eventually controls distribution (Parnell et al., 2012), makes social media a substantial component in the final vote swing. For the election campaign strategists, this would translate into the sad fact that it would be easier to anticipate immediate success for a new, young conservative star (who would rely heavily upon the attached loyalties to his/her party) than to maintain votes for an experienced, heartfelt politician who has really dedicated his/her life to the people. The media subconsciously warned the people of this long ago; they just failed to realise it.

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<sup>&</sup>lt;sup>8</sup>These are a series of findings from followup studies at the University of Michigan in the 1960s that further supported the Columbia results.

<sup>&</sup>lt;sup>9</sup>See the Phys.org article by Stephane Jourdain, "Republicans make up for lost time on social media", dated November 3, 2012, accessible online at http://phys.org/news/2012-11-republicans-lost-social-media.html

<sup>&</sup>lt;sup>10</sup>Homophily, a concept in sociology, is the tendency of individuals to associate and bond with similar others. The presence of homophily has been discovered in a vast array of network studies (McPherson, Smith-Lovin, & Cook, 2001).

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## **Appendix I. Full Listing of Fictional POTUS Sources**

## List of 58 fictional Republican POTUSes and their sources:

#### **NOVELS**

President Jeremy Haines "The President's Plane is Missing" (1960) and its sequel "Air Force

One is Haunted" (1993) by Robert Serling

President Edgar Frazier "Seven Days in May" (1962) by Fletcher Knebel and Charles W.

Bailey, Jr.

President Robert Winslow Sheldrake

President Andrew Bee

President "Dad" Kampferhaufe

President Thompson

President Browning Dayton President Augustus Alvin York

President Jack Donnelly President Wesley Hamlin

President Veronica Townshend

President Peter Arnold Robinson

President Carmen Hiero President Liedermann

President Herbert Forrest

President Connor Doyle President-Elect MacArthur Foyle

President Matt Hutton

President Charles Foster Kane

President Kevin Martindale

President Anna Bester President-elect Phil Bristol President Gordon Davis

President C. Douglas Dillion President George Romney

President George W. Knox

President Bill Baker

President Rupert Justice Tolliver

President Jack Rutledge President David Bowers

President James MacPherson

President LaMonte Nielson

President Floyd Davis

President Lee Alexander James

President William Harvard Oaks President David Payne

President George White

"Missing!" (1969), a novel by Michael Avallone

Brian Garfield's 1972 novel "Line of Succession"

Death of a Politician, a 1978 book by Richard Condon

"The Third World War", a novel by General Sir John Hackett (1978) "The Zero Factor" by William Oscar Johnson (1980)

"The Zero Factor" by William Oscar Johnson (1980) "The KGB Candidate", a 1988 novel by Owen Sela

"Moonfall" by Jack McDevitt (1988)

"Moonfall" by Jack McDevitt (1988)

Michael P. Kube-McDowell's 1988 novel, "Alternities"

"The Stone Dogs" by S.M. Stirling (1990) "The Stone Dogs" by S.M. Stirling (1990)

Superman Annual #3 (vol. 2), DC Comics (1991)

"The People's Choice" by Jeff Greenfield (1995) "The People's Choice" by Jeff Greenfield 1995)

"The First Lady" by Edward Gorman (1996)

"Back in the USSA" by Eugene Byrne and Kim Newman (1997)

"Shadows of Steele" (1997) by Dale Brown John Shirley's "Eclipse" Trilogy (1999) "Protect and Defend" by Eric L. Harry (1999) "Protect and Defend" by Eric L. Harry (1999)

"Resurrection Day" by Brendan Dubois (1999) "Resurrection Day" by Brendan Dubois (1999)

"GURPS Alternate Earths" by Kenneth Hite, Craig Neumeier and

Michael S. Schiffer (1999)

"Invasion" by Eric L. Harry (2000)

"Rides a Pale Horse", a 2000 novel by Franklin Allen Leib

"The Lions of Lucerne" (2002) by Brad Thor "Splinter Cell" series by Tom Clancy (2004)

Joel C. Rosenberg novels: "The Last Jihad" (2006), "The Last Days" (2006), "The Ezekiel Option" (2006), "The Copper Scroll" (2007)

and "Dead Heat" (2008)

Orson Scott Card's novel, "Empire" (2007)

Paul J. McAuley's alternate history novel, "Cowboy Angels" (2008)

"Dead Heat" by Joel C. Rosenberg (2008) "Dead Heat" by Joel C. Rosenberg (2008) "The Interim" (2011) by John Prescott

"The Kid Who Ran for President" (2012) by Dan Gutman

#### TV SERIES

President Richard Monckton "The Company" by John Ehrlichman, adapted as TV series

"Washington: Behind Closed Doors" (1977)

President Johnny Cyclops "Whoops Apocalypse" (TV series, 1982)

President Kang The Simpsons: "Treehouse of Horror VII" (1996)

President Owen Lassiter "The West Wing" (TV series, 1999-2006)

President Wyndom Brody "The Outer Limits" episode "Decompression" (TV drama, 2000)

President Caroline Reynolds "Prison Break" (TV series, 2005-2009)

President Mackenzie Allen "Commander-in-Chief" (TV series, 2005–2006)
President Teddy Bridges "Commander-in-Chief" (TV series, 2005-2006)
Acting President Nathan Templeton "Commander-in-Chief" (TV series, 2005-2006)

President John Keeler "24" (TV series, 2005-2006)
President Charles Logan "24" (TV series, 2006-2007)
President Allison Taylor "24: Redemption" (TV series, 2008)
President P.J. Aimes "The Summit" (TV mini-series, 2008)

#### **MOVIES**

President Edward Bennett

President William "Bill" Haney

President Ted Matthews

President James Marshall

President Raymond Jarvis

President Raymond Becker

"Clear and Present Danger" (film, 1994)

"My Fellow Americans" (film, 1996)

"Air Force One" (film, 1997)

"The Event" (drama film, 2003)

"The Day After Tomorrow" (film, 2004)

President Raymond Becker "The Day After Tomorrow" (film, 2004)
President John Ballentine "The Sentinel" (novel 2003, film 2006)

President Andrew Boone "Swing Vote" (film, 2008)

#### List of 61 fictional Democrat POTUSes and their sources:

#### TV SERIES

President Esker Scott Anderson "The Company" by John Ehrlichman, adapted as TV series

"Washington: Behind Closed Doors" (1977)

President William Arthur Curry "The Company" by John Ehrlichman, adapted as TV series

"Washington: Behind Closed Doors" (1977)

President Josiah "Jed" Bartlet "The West Wing" (TV series, 1999-2006)
President D. Wire Newman "The West Wing" (TV series, 1999-2006)
President Matt Santos "The West Wing" (TV series, 1999-2006)

President David Palmer "24" (TV series, 2001-2005)
Acting President Jim Prescott "24" (TV series, 2003)
President Wayne Palmer "24" (TV series, 2009)

President Fred Collier "Political Animals" (TV miniseries, Season 1)(2012)
President Paul Garcetti "Political Animals" (TV miniseries, Season 1)(2012)
President Donald "Bud" Hammond "Political Animals" (TV miniseries, Season 1)(2012)

#### **MOVIES**

President Jordan Lyman "Seven Days in May" (1962)(adapted film 1964)

President Merkin Muffley "Dr. Strangelove" (film, 1964)

President Arthur Morose "By Dawn's Early Light" (novel, 1990) (HBO movie, 1990)

President Andrew Shepherd "The American President" (1995) President Thomas J. Whitmore "Independence Day" (film, 1996)

#### Voters versus the Corpus

President Jack Stanton "Primary Colors" (1996 novel, 1998 film) by Joe Klein

President Jackson Evans "The Contender" (film, 2000)

President Paul L. Greene "The Last Debate" by Jim Lehrer (2000)
President Lisa Simpson The Simpsons: "Bart to the Future" episode
President Monroe "Eagle" Cole "Welcome to Mooseport" (film, 2004)
President Gerald Fitzhugh "Left Behind: World at War" (film, 2005)

President Eugene Lorio "Jack & Bobby" (film, 2005)

President James Stanford "In xXx: State of the Union" (film, 2005)

## NOVELS

President Mark Hollenbach
President Kenneth Saxon
President Howard Brewster
President Tommy Owens
President Andrew Bradford

Fletcher Knebel's novel "Night at Camp David" (1965)

"Missing!" by Michael Avallone (1969 novel)

Brian Garfield's 1972 novel "Line of Succession"

"The Essential Man" by Al Morgan (1977)

"The Second Lady" (novel) by Irving Wallace (1981)

President Florentyna Kane

"The Prodigal Daughter" by Jeffrey Archer (1986)

President Hawley Briggs

"The Red President" by Martin Gross (1988)

President Joseph Armando "Mars" by Ben Bova (1993)

President Bedford Forrest Lockwood Charles McCarry's novels: "Better Angels" (1979) and "Shelley's

Heart" (1995)

President Pete Parkin

President Tucker Attenborough
Acting President Sam Clark
President Roger Durling

"The Prodigal Daughter" by Jeffrey Archer (1986)

"Shelley's Heart", a 1995 novel by Charles McCarry

"Shelley's Heart", a 1995 Novel by Charles McCarry

Tom Clancy novel, "Debt of Honor" (1995)

President Thomas Nelson Tucker "The White House Mess" (1995) by Christopher Buckley

President Thomas Edison (Shy)

"Garland Father's Day" by John Calvin Batchelor (1996)

President William Ballard Tom Clancy's "Politika" (1997)
President Andrew Y. Culpepper "Moonfall" by Jack McDevitt (1998)
President Charles Haskell "Moonfall" by Jack McDevitt (1998)
President Henry Kolladner "Moonfall" by Jack McDevitt (1998)

President Benjamin Knight "The Lucky Ones" by Doris Mortman (1998)

President Clark Kent Action Comics Annual #3 (1991)
President Walter N. Livingston "Arc Light" by Eric L. Harry (1994)
President Kenneth Yamaoka "Eagle" by Kaiji Kawaguchi (2000)

President Ed Kealty "The Teeth of the Tiger" by Tom Clancy (2002)

President Kerry Francis Kilcannon Richard North Patterson's novel "Protect and Defend" (2001) and

"Balance of Power" (2003)

President Kathy Alton

President Mark Hunt

"The Illuminati" by Larry Burkett (2004)

"Fourteen Points" (2004) by Emily McCormack

"Fourteen Robert Hayes

"Transfer of Power", novel by Vince Flynn (2005)

President Eve Carol Larsen Quantico by Greg Bear (2008)

President Katherine Powers Ellen Emerson White's "President's Daughter" (2008)

President Noah Daniels "24" (TV series)(2009)

President Charles McBride "Scimitar SL-2" by Patrick Robinson (2009)
President Warrick John Ringo's novel "The Last Centurion" (2009)

President Matthew Bernstein "2030: The real story of what happens to America", novel by Albert

Brooks (2011)

President Jeff Warnock "Lockout" (film, 2012)

## Appendix II. Concordance Lines of 'Voted for (Someone)'

## There are 123 instances of voted for (a Democrat president):

- 4 year that showed 89 percent of Washington journalists voted for Clinton a study Alexander and several in the audience
- 5 presidential election and then thwart it. I mean, you voted for Clinton -- most of you who did -- the four out of 10 of
- 6 the poll's respondents -- roughly the percentage that voted for Clinton -- said they were more optimistic about their p
- 7 no voters made up 30 percent of the voters, 69 percent voted for Clinton and 29 percent for Obama. // This is the state
- 8 cation. Most are registered Republicans, but many also voted for Clinton and Gore. # For many, it's the' anti' 12 2004
- 9 think what I have a mandate to do from the people who voted for Clinton and Perot, and some of the people even who vote
- of the issues. # "I'm a registered Republican, but I voted for Clinton because I thought the country needed something
- 11 ed nearly three of every four votes from blacks. # "I voted for Clinton because I think he'll do the most for the econo
- 12 finding that 89 percent of the Washington press corps voted for Clinton four years ago, has offered a reason for this:
- 13 of course, they lost the war. The 48 percent that had voted for Clinton in 1992 stayed largely Democratic. But the 19 p
- 14 Democrats, Republicans and independents. All but a few voted for Clinton in 1992, but they have not decided whether to s
- 15 offered on Monday night. # Despite the fact that many voted for Clinton in 1992, the group gave him mediocre to poor gr
- 16 are women. # -- Four-fifths are Democrats; four-fifths voted for Clinton in 1992. # -- About half describe themselves as
- 17 , 45, a Bristol, Ind., postal worker, a Republican who voted for Clinton in 1992. # Clinton political adviser Paul Begal
- 18 nof, a 43-year-old independent from Newton, Mass., who voted for Clinton in 1992. Homonof, who was recently laid off fro
- 19 you know how'd you go? ED HOLLINGSWORTH, Republican: I voted for Clinton in 1992. TED KOPPEL: Haven't made up your mind?
- 20 ays Donna Wheelock, 40, a Preble, N.Y., Republican who voted for Clinton in 1996. # But Congress' failure to do more tha
- 21 women voted for Obama In 2008 Iowa caucus 30 of women voted for Clinton In 2008 Iowa 47 2008 SPOK NBC Today A B
- 22 women voted for Obama In 2008 Iowa caucus 30 of women voted for Clinton In 2008 Iowa caucus 57 of voters were female I
- 23 were women In 2008 New Hampshire primary 46 of women voted for Clinton In 2008 New Hampshire primary 34 of women vote
- 24 2008 SPOK NBC\_Today A B C primary 46 of women voted for Clinton In 2008 New Hampshire primary 34 of women vote
- o, was Jim Wengerd. The 57-year-old insurance man, who voted for Clinton last fall, says he's now disappointed. JIM WENG
- 26 Lakeland. #"I voted for Bush's daddy in 1992, but I voted for Clinton last time," she said as she stood outside the
- 27 ton, 5,593 jobs, all but 473 military. All four states voted for Clinton last year. # Most people were expressing shock

- the world is not in our best interest. # Ironically, I voted for Clinton on the basis he would not be as big a military
- 29 s abortion rights and stem-cell research. In 1996, she voted for Clinton over Bob Dole. But she can't envision crossing
- 30 die. # Though women in the 1996 presidential election voted for Clinton over Dole by a margin of 15 percent, and some p
- 31 d Kennedy. One poll found that 52 percent of those who voted for Clinton still harbor serious concerns about his capacit
- 32 t was George Bush that couldn't handle both. Myself, I voted for Clinton to do both, as the job dictates.
  # Additionally
- 33 linton presidency going. I -- and I -- I want to say I voted for Clinton twice and support 80 percent of the -- of his p
- 34 time job is mother of two. A registered Republican who voted for Clinton twice, this time Megan is undecided. MEGAN PHUC
- n New York, I believe I am a registered Independent. I voted for Clinton twice. But in Pennsylvania I'm probably still a
- 36 ck. Linda Fischer is another registered Republican who voted for Clinton twice. She's uneasy about both candidates. LIND
- 37 during the 1980s and Lewis says one reason minorities voted for Clinton was to change the federal judiciary. (Footage-o
- ask, if they got
- 39 might not have been sincere: Among the Republicans who voted for Clinton, "41 percent say they would be dissatisfied if
- 40 ers who professed no religious affiliation, 62 percent voted for Clinton, 18 percent for Bush and 20 percent for Perot.
- 41 nts voted for Obama; 24 are neutral whose constituents voted for Clinton, according to the 56 2008 NEWS Atlanta A
- nts voted for Obama; 24 are neutral whose constituents voted for Clinton, according to the AP review. // "Our nominee m
- 43 y. About half of the Perot people said they would have voted for Clinton, and about half said they would vote for Bush.
- 44 t say, the Clinton Republicans -- that is, people that voted for Clinton, but also a Republican House member, which seem
- 45 t a scientific sample of the country, but in 1992 four voted for Clinton, four for Bush and two for independent Ross Per
- 46 ed. But I think part of that may have been when people voted for Clinton, they were going back to people they knew down
- 47 I'm going to cut your taxes 15 percent. Instead, they voted for Clinton, who said I'm going to cut somebody else's taxe
- 48 uy has written a letter to the editor, Republican, who voted for Clinton, who thought we were mired in a terrible recess
- 49 "# At his first White House briefing, Gergen said he voted for Clinton. # 11. Louis Freeh, the FBI director-designate,
- 50 t? Nearly half, 48 percent, say they would indeed have voted for Clinton. 34 percent say they would have gone for Obama.
- 51 was actually a previous Edwards supporter, and today I voted for Clinton. But I also gave two delegates over to Obama. S
- 52 e for. I mean if it was a close election, I would have voted for Clinton. But it was not. (LAUGHTER) MORGAN: Coming up,
- 53 , about 140, said that they were Clinton-inclined, had voted for Clinton. Does that seep through? JOHN-PODHORETZ-TH: Wel

- 54 different," she said, "but it's politics as usual. I voted for Clinton. I wouldn't now." # Ms. Bloom asserted that an
- 55 bout this -- on all these rumors that President Reagan voted for Clinton. Some... Unidentified Man 1: Yeah, right, LIMBA
- 56 t bothers these people, folks? They love Clinton. They voted for Clinton. They think Clinton is their president. They ar
- 57 was -- and you just saw this. To review it: 89 percent voted for Clinton; 91 percent describe themselves as liberal or m
- 58 B C as mine, I'll hire' em, "says Egan.) Callaway voted for Clinton; Egan voted for Bush. Callaway is lean, dignifi
- 59 linois. GRAPHICS Three-quarters of them 75 percent voted for Clinton; only eight percent went for Jerry Brown; seven
- 60 creases on people like Bob. Listen, not one Republican voted for Clinton's budget or the tax increase, and people like B
- a, whose well-being relies on defense contracts -- all voted for Clinton's military budget. # Where did the peace divide
- 62 is problem. Is this the new Feinstein? Or someone that voted for Clinton's tax increase? # JOHN A. DERONDE Jr. # Fairfie
- 67 an outrage that Notre Dame invited him. But Catholics voted for Obama 54 percent. That's shocking. HANNITY: It really i
- 68 votes here in the next election." # Benjamin Abramson voted for Obama as well, but he says the president's statement on
- 69 vid on this. You talk to Republicans and they say they voted for Obama because Sarah Palin was John McCain's pick. That
- 70 n troop commitment to 60,000 or more. # Many Americans voted for Obama because we felt he would realize that Afghanistan
- 71 primary. // Heidi Johannesen, 33, of Fairfax said she voted for Obama even though she has voted for George W. Bush. "I
- ogers, 31, a technology consultant from Bellevue, Ky., voted for Obama four years ago and credits him with doing "some
- 73 large numbers of troops," said Foust, a Democrat who voted for Obama in 2008 and said he would again. "We've been the
- 74 her in Maricopa, Ariz., said she is an independent who voted for Obama in 2008 and would do so again if given the chance
- 75 . TEXT: Decision 2008 In 2008 Iowa caucus 36 of women voted for Obama In 2008 Iowa caucus 30 of women voted for Clinto
- 76 08 SPOK NBC\_Today A B C Iowa caucus 36 of women voted for Obama In 2008 Iowa caucus 30 of women voted for Clinto
- ther way." # Both men are Republicans, though Seymour voted for Obama in 2008, Saylor for Republican John McCain. A rou
- 78 anager and kayak fisher-woman from Lafayette, La., who voted for Obama in 2008, says she is angry, but not sure who she
- 79 e region is getting worse," said Joshua Schwartz, who voted for Obama in 2008. "However, I find his plan to return to
- 80 lic population, a majority of respondents- 60 percent- voted for Obama in 2008. Three years later, 75 percent of those w
- t Bush won in 2004 around security issues who have not voted for Obama in this campaign. And that is you know, you can
- picked a white woman. They're obviously targeting who voted for Obama last time around. Mr-JOE-KLEIN-1Tim: Right. It wo
- 83 owns a company that makes candles for dogs. Though she voted for Obama last time, she said she was disappointed in some

- 84 stick figure. And yet -- and yet, ten of these people voted for Obama last time. Only four of the group would commit to
- 85 can In 2008 Iowa caucus 72 of African-American voters voted for Obama Ms-SANCHEZ: Health care is related to that. And t
- 86 for Clinton In 2008 New Hampshire primary 34 of women voted for Obama Ms-SYLER: 3 2008 SPOK NBC Today A B C Iow
- 87 for Clinton In 2008 New Hampshire primary 34 of women voted for Obama Ms-SYLER: You know, as we all sort of move down t
- 88 d in and you take abortion. I'm not for abortion but I voted for Obama on the first go around. COATES: Absolutely. (CROS
- 89 ogram. Eleven of the 17, including California's Third, voted for Obama over Sen. John McCain in 2008. Moreover, support
- 90 out that way. A larger proportion of Jews (78 percent) voted for Obama than had for George W. Bush four years ago. In th
- 91 ways, I think it tells us more about where red states voted for Obama will be next year. But I also think you can't tak
- 92 supporters... BLANKLEY: Yes... HANNITY:... and 13 who voted for Obama, 13 that voted for McCain, but they were almost u
- 93 uine grassroots movement. But about 20 percent of them voted for Obama, about 5 percent black, about 10 percent Hispanic
- 94 o the smear campaign by Republicans. I'm a Democrat. I voted for Obama, and let's assume for a second that the statement
- 95 ils tell the story. Thirty-four percent of white males voted for Obama, but 5 1 of white females selected him while
- 96 mean to Hillary. You know, I don't understand that. I voted for Obama, but I still don't know why people have to be --
- 97 I was really excited to vote for the first time and I voted for Obama, but Im hoping to be, like, reengaged. REID: But
- 98 kson, a black Republican political consultant, says he voted for Obama, but remains a Republican. He wants to help the p
- 99 bly be dead from worrying. # She won't say whether she voted for Obama, but she feels his health plan may be the answer
- 100 he Republican candidates. Who leans towards Obama? Who voted for Obama, but won't be voting for him again? We've got 12
- 101 kumbiyah side of the story. But there were people who voted for Obama, even who wouldn't want to live next door to him
- 102 we have to have some type of jobs program. You know, I voted for Obama, I don't think he's presidential! I got ta tell
- 103 got her master's degree in education, Norris, 38, who voted for Obama, is just scraping by on \$75-a-day substitute-teac
- 104 e got granddaughters coming in. I've got people who've voted for Obama, liberals that are scared of losing their rights
- 105 a coffee cake from Grandma's of New England? "Or, "I voted for Obama." # Speaking of Obama, it looks like he's going
- 106 lawyer Michael Jordan, 67, a political independent who voted for Obama. # "The market is still slow," says real estate
- 107 I told the lady earlier, four months ago, I would have voted for Obama. But it's like one of the earlier callers was com
- 108 n's ideals may run counter to the large percentage who voted for Obama. Cain's decision, on advice from his father to si
- 109 me. No-I-think-you-jus# HANNITY: Because he admits he voted for Obama. He doesn't want to admit it any more. CUMIA: 34

- 110 eally was. It was this extraordinary sight. And he, he voted for Obama. He said he still believes in this president, but
- 111 most disastrous American president in recent times. I voted for Obama. He's a lot like Jack Kennedy they both have bi
- 112 ese, 56 percent voted for McCain while only 43 percent voted for Obama. In other words, she appears to have helped McCai
- a month ago showed that 20 percent of the Tea Partiers voted for Obama. More than 50 percent had a favorable opinion of
- 114 deral power over health care or anything else. Neither voted for Obama. Neither is sentimental about American enemies. B
- 115 e said. # Campbell, the city worker, is a Democrat who voted for Obama. She has a son-in-law in the Marine Reserves who
- 116 ican, over the decades. It also voted for Gore, and it voted for Obama. So you can never really pin it down. And that te
- 117 Obama; 42 percent of those who claim to be born again voted for Obama. That people whereas child-killing used to be a
- 118 of the devil, and by inference I am as well, because I voted for Obama. The debacle at Notre Dame when President Obama s
- 119 voters. He expanded the electorate. 71 of new voters voted for Obama. These voters are getting increasingly disillusio
- 120 egates back Clinton although their states or districts voted for Obama; 14 back Obama in states that went for Clinton. A
- 121 A B C are uncommitted, although their constituents voted for Obama; 24 are neutral whose constituents voted for Clin
- 122 delegates are uncommitted, although their constituents voted for Obama; 24 are neutral whose constituents voted for Clin
- 123 or 28 2009 SPOK NPR\_TalkNation A B C Catholics voted for Obama; 42 percent of those who claim to be born again v
- osion? Mr-TERRY: The fact that 55 percent of Catholics voted for Obama; 42 percent of those who claim to be born again v
- 125 00 billion. Unidentified Man 1: Congressman Joe Sestak voted for Obama's big government health care. Unidentified Man 2:
- 126 "He complained that she was a Democratic enabler who voted for Obama's Wall Street bailout and perpetuated the mind-se

## There are 135 instances of voted for (a Republican president):

- 5 unce the tens of thousands of Democrats in Florida who voted for Bush -- when twelve times more Democrats in Florida vot
- 6 acy, now worrying about where the Reagan Democrats who voted for Bush -- where they're going to go this time. Will they
- 7 n't been anything... for the domestic side." # Eliasz voted for Bush against Dukakis as " " the lesser of two evils."
- 8 ing again asked people coming out of the polls who had voted for Bush and Clinton,' If you thought Perot had a chance to
- 9 But for other swing voters, blue collar Democrats who voted for Bush and don't want to again, Perot is an appealing alt
- 10 ." Not many people live here, but most of them who do voted for Bush and for the Republicans running for the House and
- 11 d to conservatives and of conservatives," In 1988, we voted for Bush and got Dukakis. It's not supposed to work that wa

- 12 crat except Carter did anything to green up America. I voted for Bush and I am as green and environmentally correct as t
- 13 bers of fundamentalist Christians and evangelicals who voted for Bush and might otherwise have stayed home. # Constituti
- 14 rmsley and Jeannie McKeo. They're all Republicans, all voted for Bush and most expect to do so again. But for a variety
- 15 we focus on the large metropolitan core counties which voted for Bush and the several kinds of nonmetropolitan counties
- 16 ce Reagan was president," said Gloriann Beer, 48, who voted for Bush and thinks despair is now at an all-time high. # "
- 17 eople, blacks and Latinos, voted for him. The centrist voted for Bush and voted for his opposition in 1996. I think that
- 18 p, Seattle, "Bill, it's absurd to think all those who voted for Bush are dumb. Some who did are rich. The rest are dumb
- 19 h it is precisely the opportunity. A lot of people who voted for Bush are gonna love this movie. "WHEN PROULX'S SHORT
- 20 ay from them." # Her current theory is that Americans voted for Bush because he made them feel safe. But all that, she
- e to tell what voters meant by the term. Many may have voted for Bush because of what's generally called the coarsening
- 22 giance to Bill Clinton. TERTZAKIAN Dr. Garo Tertzakian voted for Bush but he's unhappy with high taxes and the economy.
- 23 , it can go on for years," says a worried Jarvis, who voted for Bush but sympathizes with Gore's position. #"I think
- 24 opes that they might be able to compete there. Georgia voted for Bush by 17 points. Now McCain is ahead in Georgia, but
- 25 ntered the writers' minds that perhaps those of us who voted for Bush did so simply because they believed he was the bes
- others me." # Bates said he is an independent, but he voted for Bush for president and Williams for governor. # East Te
- 27 he lunch crowd here at Dalton's Restaurant in Gonzales voted for Bush four years ago, even though many of them are Democ
- vid Jencks, who runs a small manufacturing company and voted for Bush four years ago, says he probably won't do so again
- 29 year-old Chrysler worker from St. Clair Shores, Ulrich voted for Bush four years ago. He probably will again. But right
- e?" Martinsburg Mayor Karos asks. He's a Democrat who voted for Bush four years ago. He doesn't plan to do so again. 5
- 31 sampled group were defined as "Democrats who say they voted for Bush in 1988 and independents with household incomes be
- 32 Bush? "Tired," said Joe Butler, 41, a Republican who voted for Bush in 1988 and said he reluctantly would do so again.
- would make it any better, "said Annamae Bechtel, who voted for Bush in 1988 but is now undecided.

  # "Bush is more
- 34 car whether you can afford it or not." # Although she voted for Bush in 1988, Avery has all but given up on the preside
- 35 B C out in taxes... it doesn't go very far." Greene voted for Bush in 1988, but Clinton holds some appeal for her. #
- luent," said Thomas, the telephone company worker who voted for Bush in 1988. "There's more of a chance of remembering
- 37 ng some new and good jobs for people WALLACE Well, you voted for Bush in 1988. Could you see supporting him again next t

- 38 registered to vote. 67 voted for Reagan in 1984. 62 voted for Bush in 1988. Interviewing, "Are women's issues still imp
- 39 last night with four other Orange County residents who voted for Bush in 1988. The speech did little to change their min
- 40 ival in Summerlin, Denise and Tim Haines say they both voted for Bush in 2000 but are strong Kerry supporters now. Den
- 41 mple, a math teacher at nearby Baker College, says she voted for Bush in 2000 but hasn't made up her mind this time arou
- 42 ote Democratic this year. # And one middle-agedman who voted for Bush in 2000 said he didn't plan to this time: "Usuall
- 43 ling of foreign policy. Hart and Mearsheimer, who both voted for Bush in 2000, have publicly announced their enthusiasti
- 44 red Republican from the Detroit suburb of Oak Park who voted for Bush in 2000, told FORTUNE that his concern over the de
- 45 ory, tend to be people who agree with them, people who voted for Bush in 2000. \*\*\* The central, basic assertion of the B
- 46 ttoo much government interference in business. And he voted for Bush in 2000. But this year Schaupeter is on the fence.
- 47 C Paul says no: He misled us in 2000.' "Asked if he voted for Bush in 2000. No, "I didn't vote for him then 12 200
- 48 would love to have sweet revenge by taking Florida. It voted for Bush in 2004 by five points, now it's tilting slightly
- 49 g lot. # Carroll County, in which Tamworth is located, voted for Bush in 2004, one of four counties in the state to do s
- 50 B C "All of us stood up," he said. # Samora, who voted for Bush in 2004, said the speech only strengthened his bel
- emocrats, mostly female, middle class, moderates. They voted for Bush in' 88 and Clinton in' 92 and they are also cool
- start with. He legitimized for a lot of people who had voted for Bush in' 88 that Bush's presidency was a failed preside
- 53 ez is an unemployed operating engineer, a Democrat. He voted for Bush in' 88, but says he won't this year and he 110 1
- 54 thousands of votes out. Quarter of a million Democrats voted for Bush in Florida. There is all kinds of thievery in Flor
- 55 Id me before that you mostly vote for Republicans. You voted for Bush in the last election. Could you see yourself votin
- 56 C, 'Oct. 5. # I am an American, a Republican and I voted for Bush in the last election. With that stated, I must add
- 57 a. Home is New York where is married with two kids. He voted for Bush in the last election. Does not believe in God and
- 58 r Missouri. He won the latter in the primaries, but it voted for Bush in the past two elections. // Privately, some Obam
- 59 ught of the deal-making Dole succeeding Reagan, and he voted for Bush instead of Kemp in the primary because he consider
- 60 Il the states we have been calling battleground states voted for Bush last time, which means John McCain is defending Re
- raq was Bush's biggest blunder. WERTHEIMER: Jane Moore voted for Bush last time. She works for the community newspaper,
- and Bush. Here are the responses of those who in 1988 voted for Bush or did not vote: # On Clinton: "Human." 97 199
- 63 who do not claim to be born again or evangelical. They voted for Bush over Kerry 56-44, McCain over Obama 54-44. It's wo

- 64 gby International, 70 percent of voters in states that voted for Bush say marriage should be between a man and a woman,
- 65 eir recruitment goals. Why aren't the young people who voted for Bush signing up? Why aren't the parents who voted for h
- 66 they went to the polls in historic numbers? Those who voted for Bush talked about his record. Unidentified Man 3: Well,
- 67 or Bush -- when twelve times more Democrats in Florida voted for Bush than voted 60 2004 ACAD Humanist A B C Dem
- 68 or Bush -- when twelve times more Democrats in Florida voted for Bush than voted for Nader/LaDuke. I've never witnessed
- 69 ar. Another self-described conservative Republican who voted for Bush twice, Anderson is a military booster who sells"
- 70 to organized religion. Fifty-five percent of those who voted for Bush were in the habit of attending church at least wee
- will vote for Bush and that there are many people who voted for Bush who will not vote for him this time, and that's ho
- 72 id Mark Alsentzer, a 49-year-old chemical engineer who voted for Bush, "but he's battle tested. He sticks to his guns
- 73 ion officials, he brings a map that shows which states voted for Bush," Morris said. The map showed solid Republican su
- 74 ignoring, to the peril of people like themselves. "I voted for Bush," said Jim Thomas, a telephone company worker, "
- went for Kerry by 66-33; 49 percent said no, and they voted for Bush, 70-29. # The support that the Republican Party ga
- 76 nt differences between women. While 55 of white women voted for Bush, 75 of women of color voted for Kerry; while 62
- 77 a half-century. #About half of those who participated voted for Bush, about half for Gore. All sometimes vote for Democ
- t the Americans deserved to be bombed because they had voted for Bush, and even Gore, rather than for Ralph Nader; Edwar
- 79 Bush and Gore. And more than 250,000 Florida Democrats voted for Bush, and not for Gore. Furthermore, Gore failed to car
- 80 Area standards. Although somehow one doubts any of you voted for Bush, and you raise civil libertarian issues, there's n
- 81 n is whether you're going to look down upon people who voted for Bush, as many of the columnists are doing now in the le
- 82 BREAK) BATTISTA: Couple of e-mails, Jessica says, "I voted for Bush, but I don't want him winning like this. This is
- for Clinton and Perot, and some of the people even who voted for Bush, is to try to make the government work again, to s
- 84 nk," says Nick Zeger, a young pharmacy technician who voted for Bush, outside a Nashville grocery store. "I'm disguste
- 85 mail him the news article as if to say, see, look, you voted for Bush, so you're responsible for this disaster. CONAN: M
- 86 bservations of the energy industry are any guide, they voted for Bush, support the Iraq war, think climate change is a l
- 87 or him encouraging their children to enlist? When they voted for Bush, they voted for the war. Obviously it was easier t
- 88 Agriculture Commissioner Bob Crawford, a Democrat who voted for Bush, took his place. # That, in any event, is 76 200
- 89 ker, 64, a beauty store owner from Novato, Calif., who voted for Bush. "We just have to wait for the process to be comp

- 90 y personnel, a healthy majority of whom appear to have voted for Bush. # Bush seemed to have given up little in dropping
- 91 his group prefer Clinton to Bush. In 1988, six of them voted for Bush. # Clinton's choice of Gore as a running mate was
- 92 emocrats voted for Kerry and 91 percent of Republicans voted for Bush. # For the first time in anyone's memory, the Demo
- 93 were their top issues, and 80 percent of those voters voted for Bush. # Gore wanted to make the election about issues 1
- 94 apers. Saw another batch today. Everybody's stupid who voted for Bush. All these faith-based people are fanatics. If you
- 95 Al Gore in 2000, compared with 43 percent of women who voted for Bush. And John Kerry received 51 percent of the female
- 96 s Lieutenant Little(ph). I'm from Bel Air, Maryland. I voted for Bush. And the main reason for Bush is he's a Christian
- 97 ring himself to admit that, alone in this foursome, he voted for Bush. Bernie maybe guesses it. He says, "After eight y
- 98 as never really something she questioned. In 2000, she voted for Bush. But as an ardent supporter of abortion rights and
- 99 # In the last presidential election, Steve Baker, 40, voted for Bush. But Baker said he told his wife, Cindy Maloney, 3
- 100 m? -- let's see, flirtations is I think that's why she voted for Bush. But like I said, I think this coming election tha
- 101 not. They clearly were Republican voters; they clearly voted for Bush. But the question is, was what that legal? And kee
- 102 re'em," says Egan.) Callaway voted for Clinton; Egan voted for Bush. Callaway is lean, dignified, handsome; Egan is no
- 103 t of Asians supported Gore, while 54 percent of whites voted for Bush. Fifty-three percent of men cast their ballots for
- 104 per stickers that say things like DO N'T BLAME ME -- I VOTED FOR BUSH. His would presumably say DO N'T BLAME ME -- I GAV
- 105 then voted for Dubya in 2000. Even Gore's home county voted for Bush. III DO N'T BOTHER THEM WITH FACTS; THEIR MINDS AR
- 106 inct that had only 800 votes -- voters in it, OK, that voted for Bush. Let's talk about the miracles of Diebold. BUCHANAN
- 107 re, but not as solidly. More than a third of Hispanics voted for Bush. MARIA CARDONA, NEW DEMOCRAT NETWORK: I would cert
- 108 s going to help Iraq. And those are the main reasons I voted for Bush. Mr-RICHARD-FEASEL-: My name's Richard Feasel(ph).
- 109 a no-brainer who I'm going to vote for. So last time I voted for Bush. Ms-COLCORD: I think most Democrats are more ferve
- 110 is," Burk continued. "The public is being cut out. I voted for Bush. Now I'm ashamed I did. They have betrayed the con
- 111 by the Nazis for 27 months, Poush said he and his wife voted for Bush. Now, they are ready to decide among the crop of D
- 112 power. In 2000, 84 percent of evangelical Protestants voted for Bush. Part of the spoils was the promise of \$8 billion
- 113 Where is Missouri right now? Of course last time they voted for Bush. Right now it's just about a tie. McCain can take
- ow the economy the people who cited it said mostly voted for Bush. So it was the anti abortion rights people rathe
- 115 nalists surveyed voted for Bill Clinton. Seven percent voted for Bush. Two percent said they're conservative. Four perce

#### Voters versus the Corpus

- 116 e for Gore while the more racially homogeneous regions voted for Bush. While the division between regions in voting beha
- 117 are lesbians, or who are married to white men, or who voted for Bush; or the very possibility of meaningful criteria or
- 118 A B C . # "Dad? # Nothing. # "Do you think Ted voted for Bush?" I said. # I knew the answer and so did 19 200
- 119 Brosnan, a 37-year-old housewife from Lakeland. # "I voted for Bush's daddy in 1992, but I voted for Clinton last time
- 120 ve up to Dean's standard of anti-Bush purity; Kucinich voted for Bush's education bill, the No Child Left Behind Act, wh
- 121 an he would endorse the man's son to succeed him if he voted for Bush's Medicare drug plan. # In 1999, the committee war





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# Deconstructing Academic Persuasive Essays by Constructing Argument Maps and Analysing Means of Persuasive Appeal

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## **ABSTRACT**

As Rider and Thomason (2008) argue, facilitating activities that focus on developing cognitive processes are commonly ignored in academic literacy classes, despite being crucial. In most programmes, reading for general meaning (gist) is the most common reading objective and little regard is given to activities that transfer directly to writing. This presentation of a classroom-based, action research project will demonstrate how students' academic persuasive essay literacy skills were enhanced through conducting argument mapping and analysing the means of persuasive appeal in text. Rhetorically-intensive academic papers commonly move from a major premise to a related specific statement, then to a conclusion, following the principles of Aristotelian syllogism; they also supply evidence to support claims, critique assumptions and rebut objections. Asking students to notice these patterns in a text and to organise them into a visual representation (argument map) facilitates transfer to their own writing. Following this activity, students can be asked to analyse the means of persuasion in the argument map. Aristotle divided these means into three categories: Ethos (credibility or ethical appeal); Logos (logic or the use of reasoning) and Pathos (eliciting the reader's sympathies and imagination). In order to persuade readers that their ideas are more valid than their counterparts', writers appeal to these means. When an analysis has been conducted, students can be asked to critically assess the effectiveness of the persuasive appeals and to compare authors' argumentation. Apart from deconstructing a text through critical reading, students can look to apply similar methodology in their own writing. Skills of this nature are not just common in academic tertiary courses (Kibler, Walqui, & Bunch, 2014), but

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also in other disciplines, for example, Law (Berger, 2010). Results from this research will be presented using examples from this researcher's undergraduate Ideas and Exposition writing courses at the National University of Singapore.

Keywords: Academic literacy, argumentative persuasive essays (APE), argument map construction, Aristotelian means of persuasion

## INTRODUCTION

Teng Poh Hoon (in 'Singteach', http:// singteach.nie.edu.sg/issue07-inspire01/) from the National Institute of Education, Singapore, stated that more critical thinking programmes were needed in Singapore. He referred to a local student who labelled students in Singapore as the Gen S, or the Generation of Sheep. In the same vein, the Singapore Ministry of Education (http://www.moe.gov.sg/media/ news/2013/06/praise-for-schools-thatencourage-creative-and-critical-thinking. php), refers to Senior Minister of State for Law and Education Indranee Rajah's comments about how schools need to encourage creative and critical thinking. It is argued that this is an essential factor in a good educational programme.

At the Centre of English Language Communication, National University of Singapore, there are a number of courses for first-year undergraduate students that focus on developing critical thinking skills through academic writing. These courses are taught in English by content specialists with PhDs in areas such as Film Studies, Popular Culture, Bioethics and Sociolinguistics. Modules are constructed with a view to enabling students to learn and use critical approaches to analyse texts related to these themes. The module presented in this paper is a sociological analysis of sport as a cultural global

phenomenon, with a particular focus on the emergence and growth of ultracompetitive, elite modern sports, including detrimental side effects such as the deviant subculture of doping.

One of the central rationales for providing these courses is the case for Content-Based Instruction. This field of language instruction holds the premise that through a specific academic field, both a language-acquisition-rich and a cognitively challenging environment can be provided (Baetens-Beardsmore, 2008; Marsh & Fregols, 2013). Using the specialist content, tutors develop students' critical thinking skills by stimulating reflection and discussion on issues while at the same time teaching how to best construct evidencebased arguments through the analysis and construction of academic persuasive essays (APE). One of the assessment tasks of the course is a Comparison Paper. Students are asked to formulate and investigate a research problem within the specific field, analyse data and draw conclusions from primary and secondary sources, and to focus on contestable elements from the topic selected. One contestable theme from the Sport and Competition module I teach is the ethics of doping, ranging from simple use of anabolic steroids to the practice of Fetal Gene Doping, also known as Germ-Line Genetic Modification (GLGM) to create super-athletes. Students read about the subject and assess arguments that experts in the field present on whether it should be condoned in sport.

A selection of 12 journal articles was used as a corpus for the course. Generic academic skills were taught such as how to research for and construct an APE exploiting both primary and secondary sources, in particular, how to construct and maintain a thesis throughout an APE using periodicity (Martin & Rose, 2005) through signposting with effective topic sentences and supporting evidence. In addition, guided peer reviewing and editing were encouraged to facilitate autonomous learning. Three assessment instruments were used: a summary-reflection (800 words); a summary-comparison-reflection (1000 words); and an APE (1500 words). This paper focuses on the second of these instruments, the summary-comparisonreflection. In particular, students were trained to identify the main purpose of two competing papers and to identify the main ideas, arguments and evidence to support those purposes. Similarly to the first task, the summary-reflection, students were asked to effectively take notes, summarise and paraphrase. However, as an extension to the first task, for the summary-comparison-reflection, students were also taught to analyse the persuasive appeals that writers employ when they write a rhetorically-intensive argumentative paper. This was done to ensure that students could compare author styles of writing and make sound evidential arguments about which authors they felt provided the most effective arguments in a debate.

Constructing Course Content for Students from Multidisciplinary Contexts

Students on the course were multinational (Chinese, Indian, Indonesian, Malaysian and Singaporean) and were studying in a variety of faculties (Science, Engineering, Arts & Social Science, Medicine, Business, Design & Environment, Computing and Law). To cater for the diverse interests of a group of this nature, the course content needed to have a broad content base. Sport as a leisure activity is common here at the NUS campus and doping as a phenomenon has the potential to interest diverse faculties as there is a strong scientific focus as well as a sociological one. Students from the Humanities would find topics about doping as a socialisation process or as a commodity industry interesting; Science, Engineering and Medicine students would find the phenomenon of health and technology in performance-enhancing drugs engaging. Other topics to cater for faculties such as Law could also be covered; for example, whether doping needed to be under Penal Law rather than policed by the World Anti-Doping Agency (WADA). As a general observation, many of the papers written about doping appear in medical ethics journals. For the summary-comparisonreflection assessment task, two papers were chosen to compare, one from the British Journal of Sports Medicine, which argued that doping should be legalized, and the other from Sports Med, which argued the contrary. These will be further elaborated on at a later stage in this paper. The

description for the summary-comparison part of the course reads as follows:

Does the obsession to win in professional sport create the need for performance-enhancing drugs? Should we legalise doping or further tighten control measures? We will explore these questions through close analysis of viewpoints expressed in both scholarly literature and popular media, ultimately developing our own positions in written arguments.

## Content-Based Instruction

Content-based instruction explicitly teaches subject-specific lexis and implicitly teaches general cross-curricular academic language. A well-known visual image to describe this has been provided by Dutro and Moran (2003). A bricks-andmortar metaphor is often used to present the interrelation between general crosscurricular academic language and subjectspecific language. This can be seen in Fig.1, taken from Zwiers (2008, p. 21).

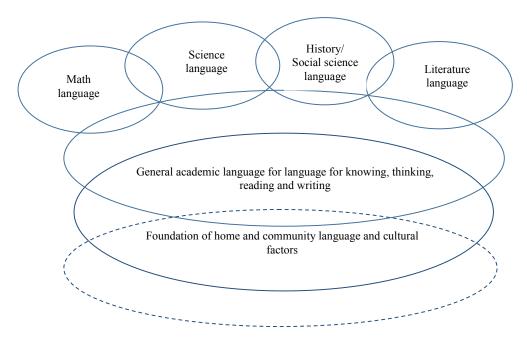


Fig.1: Overlapping variations of language that develop over time.

The dotted line is the foundation of language learned in the first three years. After that, the language an individual learns develops and increasingly becomes specialised in a particular knowledge area. Lexis that belongs to the mortar is general cross-curricular academic language and this

links the content-specific language from subject areas, or the bricks. Examples of general cross-curricular academic language are 'that is to say'; 'leads us to believe'; 'is dependent on'. A well-known source of 570 general cross-curricular academic word families is the 'Academic Word List'

compiled by Coxhead http://www.victoria. ac.nz/lals/resources/academicwordlist/. There are 10 sub-lists, the first being the most common words; examples for sub-list 1 are: 'analyse', 'major', 'structure', 'source', 'authority', 'significant', 'method', 'sector', 'legislate', 'section', 'assume', 'legal', 'vary', 'theory', and 'assess'. In order to write effective papers on a subject such as doping, learners need to utilise bricks and mortar effectively together.

## Genre-Based Pedagogical Cycle

A genre-based framework for academic English instruction is commonly used by various schools. Swales and Feak (1994) posited that it is effective in the teaching and learning of English for Specific Purposes; Martin and Rose (2005) argued that it is a good tool for the instruction of language using a systemic functional linguistics (SFL) position. The cycle links reading and writing, thus developing academic literacy. There is focus on specific and general academic language linked to texts. The basic notion of the approach is that academic literacy can be scaffolded by initially deconstructed text models and reconstructing them with various levels of support; normally this support decreases as learners become more competent with the genre. From a linguistic perspective a text is:

'An instantiation of language systems in texts; that is, each text is an instance of the entire language system, and each language feature in a text is an instance of one of the options in the language system.' (Martin & Rose, 2007)

The reference to the 'options of the language system' above refers to the genre or text type being written. As already noted, the genre type presented in this paper is the summary-comparison-reflection paper. The model used for this paper is from Paltridge (2001).

Each stage is designed to achieve different purposes and thus associated with different activities; for example, stage one focuses on tasks to help students explore the context, in particular to analyse the purpose of the text; why it was written; for whom; the relationship between writer and audience; as well as to build field-specific knowledge (vocabulary). Stage two is when the text is deconstructed by exploring the stages of a text (and their functions); analysing the argumentation and the language features chosen by the writer to persuade the reader. Stage 3 focuses on students producing the genre with scaffolded support; this might start as a whole-class writing task or group task. Stage 4 takes students from guided writing to independent production of the particular genre. Stages 3 and 4 normally involve peer evaluation, and a focus on process writing with drafts and revisions.

For this particular study, an explicit examination of the summary-comparison-reflection genre was undertaken. An aspect of stage two is presented. Two texts were chosen for comparison. After mind mapping and concept mapping, the texts were further deconstructed and analysed through argument mapping and analysing persuasive appeal, the two foci of this paper. These analyses occurred at the discourse level as they involve analysing whole clauses or groups of clauses.

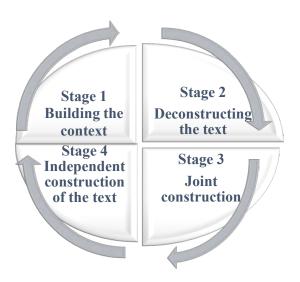


Fig.2: Genre-based pedagogical cycle.

## Defining the Summary-Comparison Genre

The summaries of a summary-comparisonreflection genre are quite similar to a descriptive report as the summary initially states the genre type being analysed. To do this, the writer sums up the main ideas, key argumentation and evidence provided. The summaries of the two papers are the basis from which the paper comparisons are written. Thus, it is important that the writer selects the necessary material required for this. In sum, the summarycomparison-reflection should be a standalone paper. That is, there should be no need to go back to the parent papers in order to understand the whole of the student's essay.

The comparison-reflection section of a summary-comparison-reflection follows

the basic premises of the exposition that presents a logically sequenced argument in favour of a judgement. The judgement should comprise a justification as to why one paper or summary in this case, is better than another. As the two papers used for this task were rhetoricallyintensive, the writer justified why one author was more persuasive than the other. By analysing the two summaries comparison-reflection offered. section should engage in evidence-based arguments that problematise aspects of one of the summaries in order to present which particular summary was found to be more convincing. Thus, the summary-comparison-reflection might be represented as a genre as shown in Table 1, where it is divided into discourse phases.

TABLE 1 Summary-Comparison-Reflection Genre

| Genre:<br>summary-<br>comparison-<br>reflection paper | Social purpose   | Schematic<br>stages   | Sub-stages  |
|---|--|---|---|
| Introduction  | To set the scene and prepare the reader for what is to come.   | Opening.<br>Contextualise<br>papers.                        | Opening: Statement of purpose and organisation. Contextualise papers: Details about authors, journals, articles, readers.   |
| Summaries   | In separate paragraphs, condense two bodies of information portraying their key ideas and sources in order to evaluate one over the other and advance an argument. | Present gist. Describe key claims and evidence illustrated. | Present gist: Authors' central ideas. Describe key claims and evidence: Present each paper's main content, the authors' points of view and argumentation as well as the evidence used as support.       |
| Reflection  | Present a logically sequenced argument and a position based on analyses of argumentation contained in both summaries.  | Thesis.<br>Argument<br>(implications).                      | Thesis: Orientations (topic priming), position (stand), preview (content overview).  Argument: Point (present key claim), elaboration (support with evidence), implication (state importance of claim). |
| Conclusion  | Sum up gist of summaries and state implications of reflection argumentation.   | Reiteration.  | Reiteration: Summarise arguments and implications. Crystalise main claims and emphasise interpretation.   |

Criteria Used to Guide the Assessment of the Summary-Comparison Paper

The framework used to assess the effectiveness of the students' summary-comparison-reflection paper was extracted from Rose *et al.* (2008). This language assessment model is constructed based on linguistics premises from systemic

functional grammar. It comprises 11 criteria, which are grouped in five categories: genre; register; discourse; grammar; and graphic features. A maximum of 6 points can be given for each item, as presented in the right column of Table 2. These, along with their related questions, are presented in Table 2.

TABLE 2 Academic Writing Assessment Criteria Adapted from Rose *et al.* (2008)

| Genre               | Is the genre appropriate for the writing task? Does it go through appropriate stages?  | 6 |
|---------------------|--|---|
| Register            | Field: Does the writer understand, interpret and/or explain the topic coherently?  |   |
|                     | Tenor: Are evaluations appropriately objective?  | 6 |
|                     | Mode: Is there an appropriate use of technical and/or abstract language?   | 6 |
| <b>.</b> .          | Phases: Is the text organised in an appropriate sequence of phases?  | 6 |
| Discourse           | Lexis: Is the field well-constructed by technical lexis and sequences of lexical relations?  | 6 |
|                     | Conjunction: Are logical relations coherently constructed between sentences and phases?  | 6 |
|                     | Reference: Is it clear who or what is being referred to at each step of the text?  | 6 |
|                     | Appraisal: Is appraisal used judiciously to evaluate ideas, arguments, people, things and texts?   | 6 |
| Grammar             | Are sentences organised to present information coherently? Are written grammatical conventions used appropriately?   | 6 |
| Graphic<br>Features | Is the layout clear, including paragraphs and sections? Are illustrations used appropriately and clearly? Is spelling accurate? Is punctuation used appropriately? | 6 |

Analysis for this paper only applies to genre and register levels as well as 'appraisal' at the discourse level. At the genre level, assessment of the schema of the text occurs, in particular, whether the appropriate stages have been followed, that is, whether there is a suitable introduction; two well-formulated summaries: comparison section of these summaries that justifies why one paper or author's argumentation is more effective than another; and a conclusion, summing up the task and restating the justifications developed in the comparison section. Three criteria at the register level are used to analyse a paper. These are field, tenor and mode. Field is used to analyse whether the student has understood the texts and the nuances of the argumentation. The tenor of the summary-comparison-reflection paper is applied to assess if the summaries are academically-written and also if the reflection is academically persuasive. The mode is used to examine whether the student is using technical and abstract academic language effectively or whether, as is often the case with inexperienced writers, the language sometimes appears closer to speech. Finally, 'appraisal' at the discourse level refers to whether the writer has evaluated ideas, arguments, people, things and texts judiciously.

## Argument Mapping

Argument mapping has been demonstrated to have a significant impact on undergraduate student critical thinking development (Twardy, 2004; van Gelder

et al., 2004). It is principally a visualising strategy at the discourse level. Students are asked to read a text and analyse the claims and the evidence presented by the author. There is normally a hierarchy to the propositions with a main claim accompanied by supporting claims and evidence related to these. The argument map follows the same hierarchical structure with the main claim numbered 1, and claims supporting or objecting to this claim provided as subsequent numbers related to the importance given to these by the writer in the text. The technique is effective in helping students to process and deconstruct complex argumentation as they can work in groups to create diagrams that capture the logical structuring of the reasoning in a text. Fig.3 presents a simple argument map constructed by students based on a short given text below.

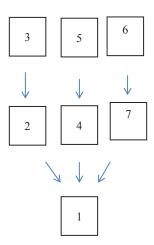


Fig.3: Argument mapping.

[1. Performance enhancing drugs (PEDs) should not be made legal in sport.] For one reason [2. athletes are

significant others for youth and as such symbolise important values in society such as dedication and mental toughness, not negative ones such as cheating and being deceitful. Second, [3. Many effects of PEDs are unknown because of genotypic differences. This is summed up by the President of the Council on Bioethics who argues that [4. biological agent that has the power to induce significant changes in one's bodily constitution cannot be trusted or is without serious side effects. Third, [5. Tannsjo (2004) argues that poorer nations might benefit from legalising PEDs as they are much cheaper than other athletic development programmes [6. However, this is improbable as athletes from richer nations would still have a much better medical entourage than the poorer nations working on creating the most effective substances for their athletes].

The argument proposes that PEDs should not be made legal in sport (1). At the first level, it is argued that athletes should represent positive, not negative values (2) because they are significant others for youth (3). There is also the contention that many drug effects are unknown (4) and this is supported with a quote from an expert in the field (5). Then, there is the presentation of an opponent's claim (7) and an objection to it, a rebuttal (6). As the argument map is based on the hierarchal categorisation of claims, point 7 goes before 6 as point 6 is the main claim.

## Analysing Persuasive Appeal

For the expository genre, in particular in rhetorically-intensive texts, authors seek to appeal to reason through the application of evidence and logic in order to be as persuasive as possible. Using logic to be persuasive can be called appealing to logos; seeking to persuade a reader by using emotionally-driven argumentation, appealing to pathos; and demonstrating that one has a good deal of knowledge about a certain field by using technical language and making one's text multi-voiced through authorial attribution, appealing to ethos. These three methods applied in developing a rhetorically-intensive persuasive text are essential as good writers employ them to control how their readers analyse an argument; in particular, judgements based on these appeals often dictate whether a reader sympathises with or is antagonistic towards a writer's ideas. These engagement strategies were often developed by ancient Greek writers, in particular Aristotle. Activities designed to explore these uses of persuasive appeal have been positively reported in ESL tertiary courses (Kibler, Walqui, & Bunch, 2014) as well as other fields, such as Law (Berger, 2010).

Once the argument maps have been constructed, analysing the kind of appeals employed by an author can be conducted as a follow-up activity to aid in the analysis of the effectiveness of the argumentation in a text. The information presented in Table 3 was constructed by students based on the argument above.

TABLE 3 Example of Analysing Persuasive Appeal from In-Class Activity

| Pathos                  | Athletes should symbolise important values in society such as dedication and mental toughness.   |
|-------------------------|--|
| Logos                   | Many effects of PEDs are unknown because of genotypic differences.   |
| Ethos & embedded pathos | This is summed up by the President of the Council on Bioethics who argues that [5. any biological agent which has the power to induce significant changes in one's bodily constitution cannot be trusted or is without serious side effects. |

Beginning by appealing to pathos, the writer sought to be provocative at the outset to draw in the reader. This was done by evoking the more subjective issue of the social role of athletes, and how youth were effected by them. The tone or tenor of this premise is emotive; it is language seeking an emotional impact on readers. Pathos was also appealed to as an embedded clause from an expert in the field, the President of the Council on Bioethics, using heavily emotive language such as cannot be trusted or is without serious side effects. In contrast, appealing to logos and ethos was not emotionally-driven; the references to genotypical differences relied much more on inductive reasoning using observational analysis and the power of a scientific discourse. This was done by citing the President of the Council on Bioethics, who was deemed a credible source.

### MATERIALS AND METHODS

## **Approach**

It has already been noted that the Sport and Competition course required learners to compare two academic papers, specifically, two experts' opinions on the issue of legalising performance enhancing substances in sport. The effective ways outlined to do this were not only to analyse the authors' premises and evidence but also their use of persuasive appeal. To facilitate the learning of this method of analysing rhetorically-intensive texts, a small-scale action research project was conducted. Therefore, the results were developed over time as an ongoing process rooted in trial and error in-class practice, experiential learning and reflection.

## **Participants**

Two groups of 12 undergraduate students, aged 18 to 21, from the National University of Singapore, co-participated in the research. As already noted, the students had differing linguistic and academic backgrounds. The small student population in each class facilitated the project as all 12 participants were given the opportunity to voice their ideas in the whole class environment; thus enabling this researcher to assess informally each participant's uptake of the sessions' foci.

## Research Questions

In-class observations of group work were conducted asking the following two questions: are students effectively deconstructing the texts to create argument maps? Are students effectively analysing the persuasive appeals of the claims pinpointed in the argument maps? After that, the same questions were asked to assess students' independent writing. In addition, at this later stage, as the assignments needed to be formally assessed, the effectiveness of the criteria from Rose *et al.* (2008) was also analysed. Also, a more overarching exploration was conducted to evaluate if the practice of assessing persuasive appeal was an effective way of comparing texts.

## Research process

The initial stage was to determine if students could manipulate the texts effectively to deconstruct them and build their argument maps. Having first presented the concept and conducted a detailed reading of an example argument mapping activity in a whole-class situation, students were asked to deconstruct a single text themselves in groups and then to share and compare their results. Once this initial stage had been conducted, two groups deconstructed separate texts and this was followed by a discussion about which of the authors was more persuasive. This discussion led to an interesting application of the process of analysing persuasive appeal and enforced participants' conceptual and practical understanding of analysing persuasive appeal. It also enabled this researcher to informally evaluate whether students were effectively creating argument maps and analysing persuasive appeals. An example

from a group of students at this stage was offered above in the literature review (see Fig.3 and Table 3).

The next phase was for students to write their summary-comparison-reflection tasks. As already noted, two texts were chosen for this. One of these texts was by Julian Savulescu (2004), Uehiro Chair of Practical Ethics at the University of Oxford, entitled 'Why We Should Allow Performance-enhancing Drugs in Sport'. The other was written by Professor and Chair of Medical Ethics at the University of Tübingen, Urban Wiesing (2011), entitled 'Should Performance-Enhancing Drugs in Sport Be Legalized Under Medical Supervision'? Weising, in his paper, refers several times to the content in the Savulescu text; it thus acts partially as a response article to the earlier publication.

## RESULTS AND DISCUSSION

Students effectively used argument mapping and they also analysed persuasive appeal well to present their views on the effectiveness of an author's argumentation. An extract from a student's final assignment to demonstrate how appeals were evaluated in the task is offered below:

Savulescu's central argument for the limited legalisation of PEDs is that it would make sport safer for athletes. This argument appears persuasive for it seems to adequately address the issue of safety. However, it is really an appeal to pathos that plays on one's concern for the welfare of the

athlete. Wiesing accepts Savulescu's recommendation of prioritising athlete safety, but takes the argument further to show that defining safety is difficult due to insufficient knowledge about the long-term effects of PEDs; without this, logically, it is impossible to define the boundaries of acceptable risk. Wiesing's argumentation clearly appeals to logos, comes across as grounded in practicality, and is therefore more convincing.

Similar to this one, appealing to pathos was signalled by all students to be common in the pro-legalisation text and logos more common in the antithesis. All the students recognised that Savulescu's points were persuasive and without exception, concluded that appeals to logos were more convincing than pathos-centric argumentation. This is perhaps where written language differs from spoken as very often speeches that are used for persuasion rely heavily on pathos. It can be seen from the extract that this method of analysing argumentation was very effective for a comparison paper as it enabled students to not only describe why they sided with the content of the argument but also with the style of the argumentation, opening up a further dimension with which to work. Therefore, it is this researcher's belief that using these Aristotelian means of analysis is a highly-sophisticated way to analyse argumentation because students must also understand the inferred meanings in the texts.

Employing the Rose et al. (2008) assessment framework, the text from which the extract above was taken received high scores at the register level and for appraisal. This is because the summaries and reflections of both papers were sound, extracting the main content of each to debate (field). The mode score was also high as students were not only required to use the technical language of the PED and ethics fields but also the analytical framework for describing inferred meanings in texts (logos, pathos and ethos). This means that the abstract academic language in the student's writing was complex. In addition, the language was appropriately objective (tenor) because 'argumentation', that is, the supporting claims and evidence viewed in terms of a whole package constructed through the argument mapping, was the theme or point of departure of the analysis. This automatically encouraged objective writing rather than subjective use of 'I think', providing the necessary distance a writer requires to assess objectively. Finally, regarding 'appraisal', the use of 'argumentation', as theme, boosted students' abilities with this linguistic resource. This was because they were required to demonstrate their ability to evaluate arguments judiciously by weighing the associated positive and negative meanings.

#### CONCLUSION

In feedback from students, one of the most positive notions highlighted was the strong enquiry-based methodological approach that text deconstruction through argument mapping and analysing persuasive appeal offers. That is, students were positive about working in groups to explore texts and the language used and to evaluate the arguments as well as inferred meanings conveyed by the authors. One student stated:

Communicating my views and giving critical analysis were skills that I picked up through this course.

#### Another wrote:

I have learnt how to read critically to identify key elements.

It is hoped that this paper might encourage other like-minded tutors to conduct similar explorations in developing critical thinking. Tasks, at the discourse level, such as argument mapping and analysing persuasive appeal facilitate the critical reading of field-specific texts of the nature presented in this paper, that is, ones that are particularly rhetorically-intensive. Students are guided to make informed judgements about these texts and their authors' premises and conclusions. These strategies hone important critical thinking skills such as analysing, associating, evaluating, comparing and conceptualising. They also aid in facilitating reconstructions. By raising awareness of the skills authors use to persuade, students can be guided to apply them in their own writing and, hence, develop their own academic persuasive voice.

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## **SOCIAL SCIENCES & HUMANITIES**

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## Perceived Credibility and Consumption of Homeland News among Diasporic Nigerians in Malaysia

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#### **ABSTRACT**

Increasing migration, powered by advanced transportation, information and communication technologies, has created huge diasporic communities around the globe. Through push and pull forces, citizens of countries across the world have migrated from their homelands to near and far locations in search of better socio-political and economic opportunities and possibilities. In their new milieu, these corps of transnational migrants maintain close attachment with their countries of origin via a plethora of cyber-powered homeland communication and media artifacts. The migration of homeland traditional print and electronic media to the Internet, however, offers news avenues for migrants' consumption of unadulterated news about events happening in their countries. While migrants' homeland media consumption has received tremendous attention among scholars, little concern has been accorded factors that predict the forms and types of homeland media attracting migrants' attention. This study, therefore, explored the relationship between perceived credibility and consumption of news from the online newspapers among Nigerian students in Malaysia (N=321). Findings revealed differential perceptions of three Nigerian online newspapers in terms of story depth, fairness, accuracy and trustworthiness. Perceived credibility of each online newspaper relates to reading the newspapers the most among the respondents. The study thus offered practical implications of perceived credibility of homeland newspapers for increased readership among diasporic audiences who could be valuable patrons of and contributors to homeland journalistic products.

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#### INTRODUCTION

Positive perception and evaluation of the media have contributed to audience reliance

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on them as vehicles of authentic information about the external environment on the one hand. Audience skepticism about veracity of media information, on the other hand, also emanated from audience perceptions of the media as biased umpires in public affairs discourse. Varying perspectives used in deciphering the trustworthiness of news media, therefore, are of great practical and theoretical significance (Kohring & Matthes, 2007). Members of the public rely on the news media to furnish them with news of events beyond their reach and touch. Believing the media is thus a function of bias-free perceptions of the media. "It was reasoned that people's expectations about source bias caused them to see media coverage as biased" (Choi, Yang, & Chang, 2009, p. 62). Hence, scholars and media professionals have considered credibility as one of important attributes the Fourth Estate of the Realm must possess if it is to be seen as a responsible societal sentinel (Choi, Yang, & Chang, 2009).

Bentele and Seidenglanz (2008,p. 49) defined credibility as "a feature attributed to individuals, institutions or their communicative products ... by somebody ... with regard to something ..." (Nah & Chung, 2012). In media parlance, credibility has been associated with believability, accuracy, completeness, fairness and trustworthiness, among others. The import of credibility lies on its centrality to attention the audience is likely to pay to information emanating from the media. The issue of credibility is paramount because it signals media relevance and responsibility, particularly with studies showing increasing public distrust of the media institution (Pew Center for the People and the Press, 2002).

Media credibility has attracted scholars' attention for a long time. The evolutionary nature of media landscape equally places on researchers the need to continually document the state of affairs of media role in society. Hence, a number of studies have explored perceived differential credibility of varying media formats (Kiousis, 2001; Moehler & Singh, 2011). The advent of the Internet and migration of legacy media to the virtual realm have blossomed research on media credibility. Scholars have not only explored how the new media platforms contribute to the resuscitation of interest among the hitherto apathetic media audience, they have also compared audience perceptions of the mainstream and new media credibility (Kiousis, 2001; Johnson & Kaye, 2010; Tsfati, 2010; Nah & Chung, 2012). While how media credibility impinges on media use of homeland nations' citizenry has received tremendous exploration and documentation, perceived credibility of transnational and diasporic users of homeland media seems to remain at the margin. The importance of theoretical examination of transnational media use is also apparent in Budarick's (2014, p. 139) submission: "Despite the central place of transnational media in understandings of diasporic communities, there is yet to be a sustained dialogue between theoretical understandings of diaspora and diaspora media studies." Hence, this study explored transnational and diasporic media use within the media credibility theoretical model.

With increasing transnational migration that expands the locales of homeland media consumption, the need to extend research on media credibility has emerged. Migrants and diasporic audiences whose knowledge of their homelands revolves around consumption cyber-powered homeland media products are becoming important factors in the contemporary media market. Studying the impact of perceived credibility on media use of these important nations' stakeholders, therefore, opens a new direction in media credibility scholarship.

#### LITERATURE REVIEW

Media Credibility

Meyer, Marchionni and Thorson (2010, pp. 104-105) defined media credibility as "a multidimensional construct that measures the perceived believability of a message (article), source (journalist or media company), or medium (newspaper, website, radio station, etc.)." Believability of media institutions and messages is an essential attribute that contributes to trust the audience reposes in the media system as a whole. Being the arbiter between the external environment and the pictures in our head (Lippmann, 1922), the media system must not only be unbiased but must be seen to be fair to every side in their narratives. As the watchdog of societal affairs, media are expected to be impartial umpires that present all sides of opinions, thus guiding members of the public in making important decisions. These

important expectations vis-à-vis the near absence of alternative societal information avenues that rival the media system make credibility the cachet of the media in the society. "Although credibility discussions hearken to Aristotle's Rhetoric, the topic has been important to contemporary mass communication researchers since the dawn of mass communication research" (Robert, 2010, p. 46).

Exploration of media credibility has a long historical antecedent. Media credibility research is associated with Carl Hovland who, in the 1920s, provided leadership for the Yale research team who were examining credibility of the source of government propaganda efforts during World War I (Kohring & Matthes, 2007; Johnson & Kaye, 2010). Subsequently, other dimensions of exploring media credibility were introduced. Pjesivac and Rui (2014), for example, submitted that credibility was usually explored via source, message and medium credibility in the United States. Elaborating further, the two scholars defined source credibility as attributes of an individual or organisation connected with the news; message credibility referred to characteristics of the news article (for example, balanced/ unbalanced), while medium credibility referred to the credibility of the news institutions (print, electronic, new media, etc.).

More recently, inter-media credibility has received tremendous attention of scholars (Kiousis, 2001; Johnson & Kaye, 2010). Being a comparative media

credibility research, inter-media credibility studies, pioneered by Burns W. Roper's seminal studies on the credibility of radio, television, newspapers, and magazines, asked the following question: "If you got conflicting or different reports of the same story from radio, television, magazines and the newspapers, which of the four versions would you be most inclined to believe the one on radio or television or magazines or newspapers?" (Kohring & Matthes, 2007, p. 233). Besides the Yale's team initial exploration of media credibility, and Roper's seminal study, Kohring and Matthes (2007) also documented a retinue of factor analytical studies exploring the multi-dimensionality of the concept. They concluded that each study contributed to increasing precision in validly tapping the concept of media credibility.

## Credibility and Media Trust

Differentiating media credibility and media trust is not only a herculean task; it is generating heated and complex polemics among media scholars. Robert (2010) aptly captured the contradiction in defining media credibility, averring that conceptualising credibility was a contradictory and confusing adventure given the problems associated with its mercurial nature. Media credibility and trust intuitively seemed to be attributes of audience and media respectively. However, a number of scholars held that the duo (media credibility and media trust) are synonyms (Kiousis, 2001; Kohring & Matthes, 2007; Tsfati, 2010; Nah & Chung, 2012). Hence, it is always a difficult task to disentangle media credibility from media trust and vice versa, though scholars have also been using the two concepts interchangeably or complementarily.

Nah and Chung (2012).example, believe that credibility is a sub-phenomenon of trust. Kohring and Matthes (2007, p. 232) also surmised that "in the field of communication, research concerning trust in news media has emerged almost entirely under the label of media credibility." Implicitly or explicitly, other scholars have also made allusion to the synonymous nature of media trust and media credibility. Given the consistency and coherence in interchangeable usage of these concepts among researchers, trust and credibility seem to have acquired a seamless existence in the literature.

Kiousis (2001) also deployed the two concepts in his study of trust and mistrust of media in the information age. In a study exploring trust in the mainstream media as a consequence of exposure to online media, Tsfati (2010, p. 32) operationalised mistrust (one of the main constructs of the study) as "the feeling that the mainstream media are neither credible nor reliable..." (emphasis intended). Lee (2010) also dwelt much on media credibility in his study of why members of the audience did not trust the media (emphasis mine). In view of this interchangeable usage, trust and credibility seem to have become synonymous concepts in media research.

#### Credibility and the New Media

The new media have revolutionalised virtually every facet of mass communication practice and scholarship. Scholars have not only explored the effects of the changing media landscape on the audience, they have also studied and documented differential uses and effects of mainstream and new media platforms. "The question about media credibility by news audiences is critical today as news readers are increasingly able to select from abundant sources" (Nah & Chung, 2012, p. 718). A number of studies have examined crossmedia credibility in the traditional media environment (Kiousis, 2001; Golan, 2010; Johnson & Kaye, 2010). The appearance of the new media landscape, powered by the new information and communication technologies, opens a new era in media credibility research. Thus studies have tested comparative perceived credibility of traditional media and the new media (see for example, Kiousis, 2001; Golan, 2010).

The need to explore and/or compare credibility of new media and traditional media stems from the growing mistrust of the traditional media to serve public information needs impartially. In addition to mistrust of the traditional media, the varying quality of online information is also a source of credibility evaluation (Lucassen & Schraagen, 2012). Mistrust of the mainstream media system and mendacity of online information have thus driven audiences to seek alternatives in online news sources (Tsfati, 2010). Being the functional equivalent of traditional

media, online news media have become attractive to the audience because of some added features that facilitate interactivity, immediacy, ubiquity, multimodality and hyper-textuality (Trappel, 2008). The new journalistic environment that facilitates increasing interactivity between the news organisation and the audience thus enhances the creation of social capital that boosts the credibility of the online media (Nah & Chung, 2012). These developments might explain why scholars have considered the comparative exploration of perceived credibility of traditional and online media.

While earlier studies have found that traditional media, such as newspapers and television, are the most credible sources of news (Nah & Chung, 2012), new findings from comparative studies of traditional and new media seem to be disproving the hypothesis of traditional media's superiority. Kiousis (2001), for instance, explored differential perceived credibility of traditional and online news sources. He found that the audience primes online news over television, but below newspapers. In a more elaborate study, Johnson and Kaye (2010) compared credibility of online newspapers, news magazines, candidate literature, issueoriented sources, television news and radio news with their traditional counterparts over three presidential elections (1996, 2000 and 2004) in the United States. They found incremental perceived credibility of online news sources from 1996 to 2000, but a decline in 2004. Findings thus far have shown that comparative cross-media credibility studies between traditional and online news media are far from being conclusive. Tsfati (2010: 26) also affirmed that "research regarding the credibility of Internet news information has yielded inconsistent results." However, perceived credibility of new media among some members of the audience, such as migrants and Diasporas, is yet to be explored.

Migrants, Diaspora and Homeland Online Media

Folarin (2010) defined a migrant as someone outside the country of his/her birth for over six months. Migrants consist of people who are outside the territorial entity in which they are deeply rooted by virtue of their origin (Hiller & Franz, 2004). Advances in transportation, information and communication technologies have been implicated in transnational movements of people across the frontiers of their places of birth (Peep, 2002; Panagakos & Horst, 2006; Thussu, 2007). Citing a number of scholars, Thurman (2007) averred that these movements have produced a cybercommunication culture where audiences are more dependent on interests rather than geographical locations, as the Web offers interactive global communication opportunities. The de-territorialisation of news by Web newspapers thus makes it possible for news to be accessible everywhere and anywhere, thus facilitating attachment to local communities of interest even from afar (Skogerbo & Winsvold, 2011).

Unlike in the past when migrants and diasporas waited on old copies of their homeland media artifacts, the presence of homeland newspapers on the Web and opportunities to participate in cyberspace have made homeland a daily living experience among transnational migrants and the diaspora. Thussu (2007) offerred how communication revolution had facilitated increasing connectedness to local culture, even as Hiller and Franz (2004) claimed that attachment to homeland in today's transnational communities was no more a matter of "memory supported by occasional contact." In this 'here' and 'there' presence, Web newspapers play a tremendous role. According to Hashim, Hasan and Sinnapan (2007), Web newspapers provided foreign residents with opportunities to monitor both global happenings and local events in their homelands. Alshehri and Gunter (2002) buttressed the claim by offering that online newspapers were central to appropriation of socio-political and economic conditions of migrants' homeland.

The dual nature of migrant homes (homeland and host land) conferred a sense of 'co-presence' on them (Panagakos & Horst, 2006). Through access to homeland local newspapers via the Internet, migrants developed some sorts of connections with socio-economic and political realities, which oftentimes precipitated their direct or indirect participation in homeland affairs (Mersey, 2010; Skogerbo & Winsvold, 2011). The fact that newspapers

inform, educate, entertain and adaptably fit into evolving technologies makes them important in every epoch (Ola & Ojo, 2006). This explains why newspapers' community building potential is linked to social capital formation. The combined power of financial and social capital, usually at the disposal of migrants and the opportunity to connect with their kith and kin, create a nexus between their homeland news use and social capital formation.

## Web Newspapers and Migrant Social Capital

Generally, ability the advanced communication technologies to create community has remained contentious. Not a few doubt the belief that decreasing social contacts have strong linkage with the form of new social communication infrastructures that skew in favour of personalised information consumption. Some scholars have, for example, claimed that Internet and its offspring, Web newspapers inclusive, have contributed to dwindling political participation among youths (Bimber, 2001; Andiuza et al., 2010; Christensen, 2011). A lot of studies also claimed community consensus, that is, the prime function of the agenda-setting role of the media is equally a fleeting encounter with the advent of newspapers on the Web (Althaus & Tewksbury, 2002; Schoenbach et al., 2005; Maier, 2010).

While much emphasis has been placed on audiences within the local territories to back their conclusion on the negative impacts of the new media, little attention has been given to transnational audiences whose use of Web media remains substantially positive. transnational audiences, by virtue of their dislocation from the homelands, are bound to be experiencing some social voids, which only information from and communication with their communities of origin can alleviate. In their study of the use of Internet in diaspora, Hiller and Franz (2004) found that "many participants read home newspaper every day on the internet not only as a way of staying in touch, but as a way of dealing with homesickness." This will no doubt facilitate attachment to migrants' community of birth.

For the most part, migrants always well educated people with access to contemporary technological facilities. These make them faithful users of the Internet and the media artifacts therein. The combination of their cognitive complexity and temporal dislocation also often make them an active audience. If the known axiom of the centrality of active and informed audience to democracy and community building is anything to go by, migrants, relying mostly on online newspapers of their communities, are bound to maintain a form of virtual community ties that can dovetail into active ties and connectedness when the opportunity affords. This mode of connectedness has brought huge social and political capital to bear at different times on Nigerian political trajectories.

#### Research Question

Based on the position taken in the literature and the belief that audiences would give attention to the media they perceived as credible, the ones whose information they perceived as believable, accurate, complete, fair and balanced, the following questions were posed:

RQ1: DidNigerianstudents in Malaysia perceive homeland online newspapers as credible sources of homeland information?

RQ2: Were homeland online newspapers perceived differently in terms of their credibility?

RQ3: Did perceived credibility relate with online newspapers read by Nigerian students in Malaysia?

#### **METHODOLOGY**

This study adopted a cross-sectional design, as data used were collected at one point in time. Data in this study were parts of elaborate data collected on online newspaper use among Nigerian students in Malaysia in respect of the 2011 Nigerian presidential election. The data were collected using the self-administered questionnaire and the locales of the study were some selected universities and university colleges in the Klang Valley of Selangor State, Malaysia. Data collection spanned the period between April 1 and April, 20, 2011, being the period of heightened 2011 general elections coverage, before the result of the presidential election was announced.

There is a total of almost 6,000 Nigerian students in Malaysian higher learning institutions; the fourth largest in the group of over one hundred nations' international students in Malaysia (Ministry of Higher Education Malaysia, 2011). However, the population of students in universities selected for this study was 2, 228. Based on 95% confidence level, 350 questionnaires (Krejcie & Morgan, 1970; Universal Accreditation Board, 2003) were distributed to randomly-sampled Nigerian students. Out of the returned questionnaires, 321, representing 87%, were valid for analysis.

Since the questionnaire contained elaborate items measuring respondents' demographics and many other constructs, only the parts that dealt with perceived credibility of online newspapers are presented in this paper. However, the questionnaire was pilot-tested and adjusted before the final data collection. All scale items in the questionnaire attained a Cronbach's alpha value of over 0.70, guaranteeing the reliability of the scale items.

#### **FINDINGS**

Demographic Profile

The main demographic characteristics in this study were respondents' age, gender, religious and geopolitical groups. Respondents aged between 21 and 30 constituted the bulk of Nigerian students in this study. Above two thirds (72.9%) of respondents in this study were males while females accounted for 27.1%. Muslims

accounted for slightly more than half (55.4%) of the population while Christians were 44.6%. Altogether, those from the Northern region accounted for 52.6% while Southerners were 47.4% of the respondents. These patterns reflected the patterns in the demographic distribution of Nigerian students' population in Malaysia (Ministry of Higher Education Malaysia, 2010).

### Online Newspapers Use

While there are many Nigerian newspapers on the Web, three major ones, the Daily Trust, the Punch and the Vanguard were selected for this study. Of the three online newspapers, respondents read the *Daily Trust* (40.4%) the most, while the Vanguard (14.7%) had the least readership at the time of conducting this study. While only 6.4% of the respondents avoided reading Nigerian online newspapers weekly, others (93.6%) read online newspapers for at least one day and at most seven days. Similarly, paying attention, in different degrees, to issues discussed in the online newspapers was a preoccupation of substantial majority of the respondents. Only one in 10 respondents (10.4%) seldom paid attention to content they read in the Nigerian online newspapers. Contents frequently consumed included politics, sport, finance, life style and foreign issues, with politics (50.3%), (13.3%) and lifestyle (11.7%) being the most significantly attractive issues to the respondents.

## RQ1: Perceived Credibility of Online Newspapers

Perceived credibility indicates the extent to which readers (the respondents) of Nigerian online newspapers perceived the selected online newspapers as credible sources of information. Table 1 presents the results of perceived credibility of the three online newspapers selected in this study in terms of in-depth reporting (telling the whole story), fairness (fair in reporting the news), accuracy (accurate in reporting the news) and trustworthiness (trustworthy in reporting the news).

On the whole, respondents generally agreed that the selected online newspapers were credible sources of news and information (the Daily Trust: M=3.22, SD=0.88; the *Punch*: M=3.17; SD=0.96; the Vanguard: M=3.11, SD=0.96). For the Daily Trust, two of the credibility variables with the highest means were "fair in its reporting" (M=3.28, SD=0.83) and "trustworthy in its reporting" (M=3.28; SD=0.91). Conversely, "telling the whole story" (M=3.13, SD=0.92) was the lowest. For the *Punch*, "fair in its reporting" had the highest mean (M=3.22, SD=0.96), while the lowest mean went to "telling the whole story" (M=3.07, SD=0.97). Telling the whole story (M=3.07, SD=0.97) had the lowest score. In the Vanguard, the highest mean came from "trustworthy in its reporting" (M=3.18; SD=0.92). This was followed by accurate in its reporting (M=3.14, SD=0.83). However, "telling the whole story" (M=3.02, SD=0.94) had the lowest mean

TABLE 1 Perceived Credibility of Online Newspapers

| Danasia d Cas dibilita                         | Level of Agreement*(%) |      |      |      |      |      |      | Overall |
|--|------------------------|------|------|------|------|------|------|---------|
| Perceived Credibility                          | 1                      | 2    | 3    | 4    | 5    | M    | SD   | (%)     |
| Daily Trust                                    |                        |      |      |      |      |      |      |         |
| Telling the whole story (In-depth)             | 5.1                    | 10.1 | 62.1 | 11.9 | 10.8 | 3.13 | 0.92 | 62.6    |
| Fair in its reporting (Fairness)               | 3.3                    | 5.1  | 60.6 | 21.9 | 9.1  | 3.28 | 0.83 | 65.6    |
| Accurate in its reporting (Accuracy)           | 4.5                    | 6.3  | 63.2 | 18.2 | 7.8  | 3.19 | 0.84 | 63.8    |
| Trustworthy in its reporting (Trustworthiness) | 4.4                    | 5.9  | 58.1 | 20.0 | 11.5 | 3.28 | 0.91 | 65.6    |
| Total  |                        |      |      |      |      | 3.22 | 0.88 | 64.4    |
| Punch  |                        |      |      |      |      |      |      |         |
| Telling the whole story (In-depth)             | 8.2                    | 9.8  | 57.6 | 15.3 | 9.0  | 3.07 | 0.97 | 61.4    |
| Fair in its reporting (Fairness)               | 6.7                    | 7.1  | 53.0 | 23.3 | 9.9  | 3.22 | 0.96 | 64.4    |
| Accurate in its reporting (Accuracy)           | 6.3                    | 9.1  | 52.8 | 22.6 | 9.1  | 3.19 | 0.95 | 63.8    |
| Trustworthy in its reporting (Trustworthiness) | 7.5                    | 7.1  | 56.0 | 18.3 | 11.0 | 3.18 | 0.96 | 63.6    |
| Total  |                        |      |      |      |      | 3.17 | 0.96 | 63.3    |
| Vanguard                                       |                        |      |      |      |      |      |      |         |
| Telling the whole story (In-depth)             | 7.2                    | 13.6 | 56.8 | 14.8 | 7.6  | 3.02 | 0.94 | 60.4    |
| Fair in its reporting (Fairness)               | 5.1                    | 10.2 | 61.0 | 17.8 | 5.9  | 3.09 | 0.85 | 61.8    |
| Accurate in its reporting (Accuracy)           | 5.1                    | 6.8  | 63.2 | 18.8 | 6.0  | 3.14 | 0.83 | 62.8    |
| Trustworthy in its reporting (Trustworthiness) | 5.2                    | 10.3 | 55.4 | 19.7 | 9.4  | 3.18 | 0.92 | 63.6    |
| Total  |                        |      |      |      |      | 3.11 | 0.87 | 62.2    |

<sup>\*</sup>Scale: 1=Strongly Disagree (1-20%), 2=Disagree (21-40%), 3=Slightly Agree (41-60%), 4=Agree (61-80%), 5=Strongly Agree (81-100%)

Perceived credibility of online newspapers was measured because credibility, according to scholars, led to reliance and eventual use of the medium for information about an orientation to the external environment (Kiousis, 2001; Miller, 2005; Johnson, 2010; Tsfati, 2010).

The results showed that the respondents perceived the selected newspapers as being credible. Specifically, they believed that the online newspapers were told the whole story (the *Daily Trust* 62.6%; the

Punch 61.4%; the Vanguard 60.4%), fair in their reporting (the Daily Trust 65.6%; the Punch 64.4%; the Vanguard 61.8%); accurate in their reporting (the Daily Trust 63.8%; the Punch 63.8%; the Vanguard 62.8%) and trustworthy in their reporting (the Daily Trust 63.8%; the Punch 63.6%; the Vanguard 63.6%). These high scores denote perception of the selected online newspapers as credible sources of information among Nigerian students in Malaysia.

## RQ2: Differences in Perceived Credibility of Online Newspapers

Differentials in perceived credibility of the three selected online newspapers were explored using a paired-sample t-test. The t-test examined whether there was significant difference in the perceived credibility of the online newspapers content. Table 2 presents the results of the t-test, which examined significant differences in the perceived credibility of the Daily Trust, the Punch and the Vanguard.

TABLE 2
Paired-Sample T-Test on Perceived Credibility of Online Newspapers

| Perceived       | Daih | Trust |      | Punc | ch   |      | Vans | guard |      | t      | Df  | p        |
|-----------------|------|-------|------|------|------|------|------|-------|------|--------|-----|----------|
| Credibility     | N    | Mean  | SD   | N    | Mean | SD   | N    | Mean  | SD   |        |     | <u> </u> |
| In-depth        | 242  | 3.66  | 1.22 | 242  | 3.57 | 1.34 |      |       |      | 1.035  | 241 | 0.302    |
|                 | 232  | 3.63  | 1.19 |      |      |      | 232  | 3.54  | 1.31 | 1.046  | 231 | 0.297    |
|                 |      |       |      | 233  | 3.58 | 1.33 | 233  | 3.53  | 1.30 | 0.512  | 232 | 0.609    |
| Fairness        | 241  | 3.97  | 1.15 | 241  | 3.85 | 1.30 |      |       |      | 1.259  | 240 | 0.209    |
|                 | 233  | 3.96  | 1.15 |      |      |      | 233  | 3.70  | 1.19 | 2.840  | 232 | 0.005    |
|                 |      |       |      | 232  | 3.87 | 1.30 | 232  | 3.69  | 1.19 | 1.973  | 231 | 0.050    |
| Accuracy        | 237  | 3.79  | 1.17 | 237  | 3.76 | 1.30 |      |       |      | 0.347  | 236 | 0.729    |
|                 | 228  | 3.77  | 1.16 |      |      |      | 228  | 3.72  | 1.18 | 0.522  | 227 | 0.602    |
|                 |      |       |      | 230  | 3.76 | 1.31 | 230  | 3.71  | 1.17 | 0.534  | 229 | 0.594    |
| Trustworthiness | 237  | 3.93  | 1.21 | 237  | 3.73 | 1.33 |      |       |      | 1.968  | 236 | 0.050    |
|                 | 228  | 3.92  | 1.20 |      |      |      | 228  | 3.92  | 2.72 | 0.024  | 227 | 0.981    |
|                 |      |       |      | 230  | 3.75 | 1.33 | 230  | 3.89  | 2.71 | -0.766 | 229 | 0.444    |

Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Slightly Agree; 4 = Agree; 5 = Strongly Agree

A paired sample t-test was conducted to find out whether or not there was significant difference in perceived credibility of the *Daily Trust*, the *Punch* and the *Vanguard*. The results as shown in Table 2 reveal that

there was no difference in the perceived credibility of the *Daily Trust* and the *Punch* on the one hand as well as the *Punch* and the *Vanguard* on the other, in terms of indepth reporting.

With regards to fairness in reporting, there was also no significant difference between the *Daily Trust* and the *Punch*. However, a significant difference existed between the *Daily Trust* and the *Vanguard* (t=2.840, df=232, p=.005). In the same vein, the *Punch* and the *Vanguard* differed in terms of fairness in their reporting (t=1.973, df=231, p=.050).

From an accuracy prism, perceived credibility of the online newspapers yielded no significant difference between the *Daily Trust* and the *Punch*. Similarly, no difference existed between the *Punch* and the *Vanguard* pertaining to accuracy of their news reporting.

In terms of trustworthiness, the results revealed a significant difference between the *Daily Trust* and the *Punch* (t=1.968, df=236, p=.050). However, there was no difference between the *Daily Trust* and the *Vanguard* as well as the *Punch* and the *Vanguard*.

Across the three online newspapers, the *Daily Trust* credibility index (M=3.22, SD=0.88) was higher than that of the *Punch* (M=3.17, SD=0.96) and the *Vanguard* (M=3.11, SD=0.87), while the *Punch's* credibility index was higher than that of the *Vanguard*. These results, perhaps, explain why the *Daily Trust* was read more than the *Punch* and the *Vanguard* on the one hand, and why the *Punch* was read more than the *Vanguard* on the other by Nigerian students in Malaysia.

## RQ3: Relationship between Perceived Credibility and Reading Online Newspapers

To ascertain whether perceived credibility relates with online newspapers read the most by the respondents, a series of Pearson Product Movement Correlations were carried out (Table 3).

TABLE 3
Relationships Between Perceived Credibility and Consumption of Homeland Online Newspaper News

| Perceived Credibility | Online Newspapers Reading |        |          |  |  |  |
|-----------------------|---------------------------|--------|----------|--|--|--|
|                       | Daily Trust               | Punch  | Vanguard |  |  |  |
| Daily Trust           | .653**                    | .338** | .351**   |  |  |  |
| Punch                 | .348**                    | .643** | .345**   |  |  |  |
| Vanguard              | .351**                    | .351** | .704**   |  |  |  |

<sup>\*\*</sup>Correlation is significant at 0.01 level (1-tailed)

Across the board, the results showed that there was a strong and statistically significant correlation between perceived credibility and reading a particular online newspaper than reading other newspapers. There were strong relationships between perceiving online newspapers as credible and reading the online

newspapers. Conversely, there were weak correlations between online newspapers perceived as less credible and reading such online newspapers. The results, therefore, revealed that there was strong relationship between perceived credibility and reading online newspapers.

#### **DISCUSSION**

This study explored the relationship between perceived credibility and consumption of homeland news from homeland online newspapers among Nigerian students in Malaysia. Results showed that perceived credibility had significant relationship with consumption of news from different media sources. Previous studies have explored relationship between perceived credibility and consumption of news from certain news organisations/platforms. However, the locale of production and consumption of news have been within national territories.

The increasing transnational migration, availability of homeland news artefacts on the internet and interest of transnational migrants and diasporas on events and happenings in their countries of origin provide a platform for examining how media credibility affects consumption of news beyond national frontiers and among nations' high profile foreign residents. The importance of transnational migrants and diasporas lies in their exposure, socioeconomic and technological remittances, which have increased their social capital. This group has great potential to contribute to the homeland in many respects, including to the media system. Olorunnisola (2000), for instance, opined that African media and content providers could enhance their visibility by targeting African transnational migrants in diaspora. It is therefore important for media outlets within the country to take advantage of interest of diasporas in their news production and

distribution as a means of expanding the seemingly moribund market.

In addition, the need for media organisations to feel the pulse of their perceived credibility among the audience is more auspicious in these days of exponential media evolution and cut-throat competition. Apart from public apathy, availability of numerous media outlets, particularly the new media that are both ubiquitous and free, could drive perceived discredited media out of the market. Therefore, surviving in the contemporary media market requires not only being innovative, professional, ethical responsible, but also being perceived as fair, balanced and unbiased producers of facts that could assist members of the public in making important and critical decisions in their daily lives. While several studies have raised the importance of credibility of news sources and outlets within the confines of a territory, this study has advanced the importance of media credibility in today's borderless world where patrons of media platforms can access news products everywhere and anywhere without time and geographical hindrances.

#### **CONCLUSION**

This study is predicated on the notion that perceived credibility is an important factor in media use among the audience. It is also the notion of these researchers that perceived credibility differs within and between media platforms. Previous studies have explored differential perceived credibility via cross-media

approaches. Differential perceived credibility among traditional media platforms (newspapers, radio and television) has, for example, received tremendous documentation. Similarly, disparity between perceived credibility of traditional media and the new media has been well-explored. This study used withinmedia approach to explore how perceived credibility relates to using different media in the same media platform.

Based on the belief that homeland media on the Web serve homeland information needs of transnational migrants and diasporas, we examined how perceived credibility acted as a filter that determined particular online newspaper which appealed to Nigerian students in Malaysia. We found that perceived credibility had strong, positive and significant correlation with reading certain online newspapers. The findings showed that mere availability of homeland newspapers on the Internet did not translate into their use among members of diasporic community. Despite the establishment of the role credibility played in making homeland media products appealing to high net-worth audience, this study suffered from some limitations.

First, data for this study were collected during an election period and many contingencies, such as political interest, ideological inclination and perceived bias of the online newspapers towards certain political groups may have informed how respondents perceived the online newspapers. Besides, election time is a period of increased need for orientation.

Hence, respondents may have been conditioned by the charged atmosphere in the political public sphere to hold a certain position on the role of the media.

Second, being one of a plethora of sources through which transnational migrants and diasporas acquire homeland information, using online newspapers alone might not account well for the role of perceived credibility in the consumption of homeland news among this group. Incorporating other media on the Internet, such as television, radio, as well as online news sites, Internet group and social media could offer a robust perspective on how credibility mediate or moderate media use of transnational migrants and the diasporas.

Third, the role of demographic differences need to be explored because different types of demographic classification may have impact respondents' perceptions. Ethno-religious differences among Nigerians critical contingencies in many of Nigeria's space, including media ownership and patronage. Therefore, exploring the impact of ethno-religious cleavages may explain why different media outlets are perceived differentially in terms of credibility.

These limitations notwithstanding, homeland media outlets should recognise that being credible could increase their patronage, not only among the citizens within the country, but also among nations' foreign residents. Given the centrality of homeland media to acquisition of homeland information among migrants and diasporas, homeland media on the Internet stand a better chance

of enhancing their fortunes at this time of declining readership and revenue. Therefore, homeland media outlets need to repackage and rebrand with a view to remaining credible sources of homeland information for their teeming diasporic audiences.

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## **SOCIAL SCIENCES & HUMANITIES**

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# New Media: Online Citizen Journalism and Political Issues in Malaysia

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#### **ABSTRACT**

Media and politics are inseparable; media play an important role in depicting the political lanscape within a country. It is well understood that in Malaysia, political parties are in control of mainstream media. Journalists are prone to write within the boundaries of the law that enforces a leash on the freedom of press. This causes a biased form of reporting where political issues are concerned. This may well also be one of the major reasons in the rise of various online media that are taking over the tasks of conventional journalists in this country, one of which is the advent of citizen journalism that consists of ordinary citizens writing about happenings around them. They, however, are without journalistic background and some, if not all, write based only on experience and interest. The question that arises as a result of this is: Does the emergence of citizen journalism carry enough influence to change the Malaysian political landscape?

Keywords: Media, politics, mainstream media, acts, citizen journalism

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#### INTRODUCTION

The emergence of various websites and weblogs is regarded in Malaysia as the birth of alternative media. New media or alternative media, depending on what one wants to call it, is one of the main media that can reach or penetrate the international community, especially after the spread of

internet websites, fora, blogs and e-mail. However, new media are diverse and not easy to define (McQuail, 2010, p.36).

The term 'new media' has been used since the 1960s and has covered without limiting the ways and methods of developing and diversifing the use of communication technology (McQuail, 2010, p.39). 'New' is defined as the means of transmission by cable, satellite and radio that enhances the ability to send communication. It also includes methods of storing and retrieving, including personal video recorders, CD-ROM, CD-ROM, DVD, iPod etc. (McQuail, 2010, p.39). Most technologies that are described as new media nowadays are digital by nature. However, new media does not include television programmes, films, magazines, books or paper-based publications (Bilal Ghaith, 2010). Its defining characteristics are digitality, interactivity, hypertextuality, sharing and virtuality (Lister et al., 2003, p.3).

In the wake of the development of globalisation and information communication technology around the 1960s, the Internet has become a media that is alternative to mainstream media such as television and radio (Nur Azween & Nidzam, 2008). One revolution from alternative media is citizen journalism. Citizen journalism is a new phenomenon in the field of journalism and is more widely studied by researchers in the field of science, politics, sociology and other fields (Rulli Nasrullah, 2012).

### Media in Malaysia

Conventional media in Malaysia are owned by political parties or individuals who have their own agenda to present to readers. According to Wang (2001), there is close relationship between the press and the political parties of the ruling coalition in the country. Smeltzer (2008) stated that most of the media in Malaysia may, in fact, directly or indirectly be owned by members of the ruling party or enjoy the political support of the economic elite. In fact, the Malaysian media are largely owned or indirectly controlled by the 14 political parties that form the ruling Barisan Nasional (Kenyon & Marjoribanks, 2007).

However, the remaining balance of other print and broadcast media in Malaysia are controlled by billionaires of politics in Peninsular and East Malaysia. Media policies in Malaysia are also under the spectrum of control of the state government and the traditional media serve as the voice of the government to show their political power (Dafrizal *et al.*, 2011). The focus of this not only limits the range of perspectives presented, but even allows the government to manipulate media coverage.

On the other hand, traditional media in Malaysia are governed by a number of Acts that directly contribute towards citizen journalism, made up of people who do not have a foothold in conventional media, but can participate in news reporting by taking advantage of the Internet. The motive of control of the media is based on the need to prevent or control subversive political reasons or moral culture, to combat cyber-crime and

to protect national security. However, the types of control being employed are such as content filtering, legal restrictions, control of infrastructure, economic way and self-censorship (McQuail, 2010, p.44).

By looking at what was outlined by McQuail, the Malaysian government uses the Acts of law to restrict the media in Malaysia. Implementation of these laws directly control the print and broadcast media in Malaysia as books and printed media are generally easy to monitor and block (McQuail, 2010, p. 43) compared to online publications. Content filtering is carried out by the Malaysian government for publications and broadcasts on the grounds of moral and cultural values.

However, most of the Acts have failed to prevent the emergence and movement of online media including online citizen journalism in Malaysia. It is difficult to expect that the extent of the government's ability to monitor the activities of Internet users in Malaysia (Tong, 2004) could be extensive. There are various laws enacted by the government to stop the advance of the people involved in online media such as the Malaysian Communications and Multimedia Act 1998, the Digital Signature Act 1997, the Postal Services Act 1991, the Computer Crimes Act 1997, the Copyright Act (Amendment) Act 1997, the Telemedicine Act 1997 and the Malaysian Communications and Multimedia Act 1998. The objective of establishing these laws was to serve as a framework for the supervision and restriction of communications and the multimedia industry in this country.

#### Citizen Journalism Malaysia

As the news industry is controlled entirely by the government, it is only natural that the people as much as possible try to find alternative ways to distribute and get news from a new perspective. This has led to a variety of news channels and various titles that are given to the work of individuals who take to citizen journalism such as network journalism, citizen media, public journalism, participatory journalism (Moeller, 2009), grassroots journalism (Gillmor, 2004), open source journalism (Bentley, 2007), democratic journalism (Baase, 2008), guerrilla journalism (Case, 2007), street journalism (Witschge, 2009), audience material, mixed media, collaborative journalism, community journalism, pro-am collaboration, crowdsourced journalism, interactive journalism, networked publishing, bridge media and random acts of journalism (Kelly, 2009). There are other titles such as community media, user-generated content, new media, digital journalism and social networking (Moeller, 2009).

Although each title has its own definition, the titles have the same functions in the area of communicating information to readers. Citizen journalism is associated with freedom of the press because of the nature of writing and developing stories freely and originally without restriction, and every citizen who works as a freelance journalist reporting on their favorite beat. The Internet is used by these journalists as a platform to reaching all of these intents and purposes.

The National Union of Journalists Malaysia (NUJ) provides the definition of journalist as a person who performs the tasks of journalism in reporting of news or events, but these new medaa individuals are neither full-time nor professional journalists. They are present at the scene or the scene of the news when no other newspaper reporters are at the scene. The definition also refers to a person who collects information on an incident and provides news online to the media or newspapers, but online journalists do not have a fixed salary (Chew, 2012).

Malaysian citizen journalism is actively developing online. However, the phenomenon of online citizen journalism in Malaysia can be thought of as being still new, looking for stability and trying to compete with traditional media, including electronic and print media. In terms of mainstream media, citizen journalist functions are seen as vague and are appreciated only after trained mainstream medis reporters fail to procure news. For example, during the mini-twister incident that occurred in Mata Air, Jejawi, Perlis on 30 October 2010, the front page of The Star newspaper published photographs taken by one of its readers, Ng Hock Hoo. Not only did Ng contribute to the image of the event, but was also able to provide a recount of the incident that was shared with the newspaper's readers from all over Malaysia (The Star, 2010). There are also newspapers such as Sinar Harian, a community newspaper that contains lots of local issues, that welcome readers to contribute stories about their community for publication. These include news, events and educational news and local sports.

Not only is the broadcasting industry in this country at the same level as the print media, it also does not have a wide range of materials produced by the community. The broadcast media only broadcasts audio sent by readers of scenes such as accidents, fires and natural disasters if the incidents recorded by trained journalists fail them in some way. However, there is a programme called U-Journalist on the news channel Astro Awani (Channel 501) that broadcasts news produced by the audience. The programme is intended to attract the younger generation on various current issues that get attention from inside and outside the country. Viewers are welcome to become citizen journalists by submitting views and interviews on video.

It can be surmised that traditional media, either print or broadcast, in Malaysia only accept contributions by citizen journalists as the situation may warrant. However, contributions of online citizen journalists are more prominent if they come without any restrictions throughout the publishing process and if standards maintained are as rigorous as those used for traditional media.

Online citizen journalism in Malaysia has been explored in depth by the news portal, *Malaysiakini*, since 2007. *Malaysiakini* collaborated with the International Centre for Journalists in the United States (US) to initiate a programme to train people to function as effective

citizen journalists in this country. The programme was the brainchild of the CEO of *Malaysiakini*, Premesh Chandran (CJ. MY, 2013). A citizen journalism news portal page known as CJ.MY is the first citizen journalism news site in Malaysia that officially allows people living in Malaysia to share and contribute information.

### Research Question

Malaysian citizen journalists, with guidance from CJ.MY, have been consistently producing news in Malaysia since 2007, by an average of 5 news items per day and 100 news items per month. However, according to the CEO of CJ.MY, Maren Perianan (2013), when there are major issues such as those related to the country's political situation or social issues such as the haze, the production of news for the month rises dramatically.

The two research questions explored in this study are: What kind of political news is favoured by citizen journalists in the country? and Is the writing of new online media practitioners able to bring about change in the political landscape of Malaysia?

#### RESEARCH METHOD

Two methods were chosen to discuss the issue of citizen journalism and politics in Malaysia i.e. content analysis and in-depth interview. The content analysis of 288 news samples were taken systematically by day, week and month from the web pages of CJ.MY. News items were taken on Mondays, Wednesdays and Fridays on the

first and third weeks, while on the second and fourth weeks, news items were taken on Tuesdays, Thursdays and Saturdays. This system continued for each month of the year 2011 and 2012. News items on Sunday could not be studied because there were fewer citizen news reporters contributing items on Sundays. In addition, the news of the day was not consistent. This was because citizen journalists, who were mostly volunteers, preferred to gather news during weekends and then write the news the days after.

News items were chosen each day at random i.e. they were chosen from citizen journalists from across the country regardless of who had written it and where the events had happened. This allowed researchers to do a content analysis based on fair and impartial or prejudiced against a party or an issue and thus affect the conclusions of the study.

The sample for the study was purposive; this explains why CJ.MY was chosen as a case study. Research on citizen journalism only focused on the CJ.MY web page because news items on this site were written by citizen journalists and the journalists were authentic sources as well as had a consistent message. In addition, CJ.MY was selected also due to the number of stories that were studied in large numbers, as the researchers needed a site that could provide the necessary number of news articles.

The second method used was the indepth interview. Interviews were conducted with five active citizen journalists who write and contribute for CJ.MY consistently every week. The five citizen journalists also hailed from different parts of Malaysia and were very interested in writing on a variety of issues that typically occur in Malaysia.

The logic behind the choice of this method was that the citizen journalist phenomenon is still new and academic writing in this area in Malaysia is scarce. Therefore, interviews conducted were to collect relevant data pertaining to citizen journalism in this country in order to offer more understanding. According to Boyce

and Neale (2006), in-depth interviews are useful when researchers want to explore new issues in depth.

#### **FINDINGS**

Frequency of Major Themes and Sub-Themes in CJ.MY

A total of 16 themes outlined in the review of the frequency of issues were contained in news generated by citizen journalists in CJ.MY. Studies have shown that political news ranked seventh in terms of main themes and eighth as sub-themes with each recording at 7.3% and 4.8%, respectively.

TABLE 1 Frequency of Major Themes and Sub-Themes in CJ.MY

| Theme                                | Frequency of major themes | Frequency<br>percentage for<br>major themes | Frequency of sub-topics | Frequency<br>percentage for<br>sub-topics |
|--------------------------------------|---------------------------|---|-------------------------|---|
| Social issues                        | 40                        | 13.9  | 29                      | 10.1                                      |
| Welfare                              | 33                        | 11.5  | 39                      | 13.5                                      |
| Crime and public safety              | 31                        | 10.8  | 14                      | 4.8                                       |
| Education                            | 27                        | 9.4   | 23                      | 8.0                                       |
| Politics                             | 21                        | 7.3   | 14                      | 4.8                                       |
| Culture                              | 21                        | 7.3   | 27                      | 9.3                                       |
| Environment                          | 20                        | 7.0   | 13                      | 4.5                                       |
| Activities of women / men / children | 15                        | 5.2   | 37                      | 12.8                                      |
| Entertainment                        | 12                        | 4.2   | 17                      | 5.9                                       |
| Sports                               | 12                        | 4.2   | 10                      | 3.5                                       |
| Religion                             | 12                        | 4.2   | 25                      | 8.6                                       |
| Food                                 | 8                         | 2.7   | 13                      | 4.5                                       |
| Opinion                              | 8                         | 2.7   | 6                       | 2.0                                       |
| Health issues                        | 7                         | 2.4   | 10                      | 3.5                                       |
| Economy                              | 7                         | 2.4   | 8                       | 2.8                                       |
| Other                                | 7                         | 2.4   | 3                       | 1.0                                       |
| Total                                | 288                       | 100   | 288                     | 100                                       |

Source of Political News by Citizen Journalists

The main theme was important topics discussed in the news generated by citizen journalists while sub-topics were political news that were embedded in other key topics; for instance, the headlines of the story may have referred to political discourse although the event was a dinner, which happened to have been attended by a politician.

Content analysis of 288 news items in CJ.MY showed 68.5% of political news generated by citizen journalists

were sourced from various factions of the opposition i.e. political parties like DAP, PAS and KEADILAN while news generated from government leaders came from parties such as UMNO, MCA, MIC, GERAKAN, PBB, SUPP, PPP, PBRS, UPKO, PBS, SPDP, PRS and other Barisan Nasional component parties. News was also sourced from independent parties that stood alone without joining the government or the opposition like PSM.

TABLE 2 Frequency of News Sources

| Sources                                     | Frequency | Percentage |
|---|-----------|------------|
| Top government leaders                      | 2         | 6.0        |
| Top opposition leader                       | 6         | 17.0       |
| Head of the branch / division of government | 3         | 8.5        |
| Head of the branch / division opposition    | 5         | 14.2       |
| Member Associations / Organisations         |           |            |
| / NGOs Pro government                       | 2         | 6.0        |
| Member Associations / Organisations         |           |            |
| / NGOs Pro opposition                       | 6         | 17.0       |
| Regular member parties of government        | 1         | 2.8        |
| Regular members of opposition parties       | 7         | 20.0       |
| Unaffiliated                                | 3         | 8.5        |
| Others                                      | 0         | 0          |
| Total                                       | 35        | 100        |

A total of 17.0% generated political news items was sourced from events involving top leaders of the opposition. Opposition leaders refers to party leaders of opposition parties who held government positions in the state. Sources from the ruling government party leaders who had positions in the party or state government numbered only 6.0%.

Citizen journalists also received news from sources from among ordinary members of opposition parties and the government. Usually, issues highlighted by ordinary members of parties reflected discontent with top leadership of the parties. CJ.MY also received news sourced from members of societies, associations and NGOs who were either pro-opposition or pro-government. Issues highlighted by these groups were in terms of objecting to certain policies and activities organised by opponents. For example, members of associations, organisations and NGOs may not have been satisfied with the activities or issues raised by the ruling government.

News sourced by branch chiefs or heads of division tended to focus on local activities organised among ordinary party members such as briefings of the party's policy to members and events carried out around the area led by heads of branches. News items also came from branch chiefs who took the opportunity to express pentup emotions or suppressed opinions. A percentage of 8.5% of members of the public provided comments and views on several issues of note.

## Types of News Produced by Citizen Journalists

When viewed from a smaller angle, citizen journalists covered a lot of news generated from talks and speeches by opposition leaders. Talks and speeches by opposition leaders were from various parties and were aimed at debating relevant issues that touched on Malaysian political life.

In addition, citizen journalists were also fond of writing about events attended

by politicians. The content analysis showed that events involving ruling political leaders were usually formal in nature. News regarding the opposition mainly revolved around news related to banquets that aimed to raise funds for the party or small gatherings organised at the branch level of the political parties. These included opposition programmes that focused on addressing the public through speeches only.

Citizen journalists also tended to write on public opinion related to politics. Journalists would raise local political issues and seek the opinion of the local community i.e. locals who showed interest in politics as well as those who did not.

Citizen journalists were also seen to be interested in holding interviews with opposition leaders regarding various issues such as party planning, future direction of the party and other issues relevant to Malaysian politics and life in general such as the rising oil prices.

TABLE 3
Types of Political News Frequency

| Types of political news                | Frequency | Percentage |
|--|-----------|------------|
| Talks / speeches by government leaders | 4         | 11.4       |
| Talks / speeches by opposition         | 14        | 40.0       |
| Interviews with government leaders     | 1         | 2.9        |
| Interviews with opposition leaders     | 3         | 8.5        |
| Opinions on political issues           | 5         | 14.3       |
| Political events                       | 8         | 22.9       |
| Political critique and opinions        | 0         | 0.0        |
| Others                                 | 0         | 0          |
| Total                                  | 35        | 100        |

#### DISCUSSION

The results showed that citizen journalists focused on other issues and were less interested in writing about political issues, especially politics related to the government. The percentage of political issues written by citizen journalists was very small and most of the issues written about concerned the opposition. Interviews with citizen journalists showed that their reports focused on news that was largely ignored by traditional media.

Citizen journalists felt the government had received a lot of attention from traditional media. Citizen journalists considered themselves responsible for writing and delivering news concerning the opposition to readers whom they felt were not getting balanced news from traditional media.

Citizen journalists also noted that their presence at a political event was by invitation from the local community or from political leaders themselves. Citizen journalists attended any event to which they were invited. However, most of the invitations were extended by the opposition and the opposition event organisers.

This was because the contribution of citizen journalists was recognised by the opposition. The ruling government, on the other hand, paid them little attention because they did not recognise citizen journalists as valid journalists and so focused their attention on reporters representing traditional media.

However, the news generated by citizen journalists was derived merely from what they had seen and heard, no more. Citizen journalists

tended not to write critical comments or opinions related to the programme or speech of any party. Citizen journalists only served to record what had happened, bringing this to the attention of the reader.

Political news by citizen journalists was also too localised and grassroots-based, tending to highlight trivial issues. However, citizen journalists did occasionally write about big issues.

Citizen journalists preferred to use sources from the opposition. Among the answers provided included: leaders of the opposition both at the top or at the grassrootd level were more approachable and happy to give feedback online or face to face.

The opposition has also been said to have taken the opportunity to publish news in various media including online media because they rarely got the attention of traditional media. Opposition groups have said they wanted to make information available to the public by whatever means and would also respond voluntarily when approached by members of the media.

On the other hand, the government was said to not have interest in the new media. This included online media, which the government believed was open to prejudice and capable of distorting and tarnishing its image as well as that of the parties represented. Members of the ruling government were described as not easily available for information because of obstacles in terms of public protocol. Furthermore, members of the ruling government were more likely to better trust traditional media than online media.

#### **CONCLUSION**

The study showed that although political writings by citizen journalists are a mere handful, they did contribute in terms of providing information to readers about what was happening in the world of national politics from the grassroots to the reader. Citizen journalists also gave space to readers to express and form opinions from the point of view of the readers themselves.

Their contribution could give a new twist to the political landscape of the country as readers are presented with the news related to the opposition as well as the government from various angles, namely, from the point of view of the grassroots, the nation as a whole, political and community leaders as well as activists ans all who care to speak out. Citizen journalists also publish news that was more transparent in nature and did not favour any group or political party.

This is a new concept for Malaysian politics because in traditional media of this country provides only members of the ruling government and their interest groups the opportunity to share and promote their dogma. Traditional media rarely provide opportunities for people at the grassroots level and representatives from the opposition to address matters of national concern. Traditional media also tend to avoid publishing news that is critical of the government.

However, citizen journalists should be more balanced in their reporting by including more news related to the government and by writing articles or news in a more objective manner. Writing in a more objective manner would give more positive impact to the country's political landscape. Although citizen journalists are transparent in conveying political issues, they must also be bolder in writing political investigative news. They should raise the dignity of citizen journalists and citizen journalism in this country to a level that is as powerful as that in the West and in other Asian countries.

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## **SOCIAL SCIENCES & HUMANITIES**

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## **Errors of Judgement in Reporting the MH17 Tragedy**

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#### **ABSTRACT**

Journalism is often called the news business – the gathering, processing and delivering of important and interesting information and further developments or follow-up stories by newspapers and broadcast media. It is undeniably and inextricably entangled in that giant, whirling entity often referred to as the media. The media, with all their idiosyncrasies often race to be the first at the scene of a story to fulfil the need to know of the public. The situation was no different with the violent shooting down of MH17. Malaysians were simply not ready for this tragedy. Journalism does not prepare anyone to catalogue the human drama arising from the rarest and weirdest of human tragedies such as this. The crash site of flight MH17 was like the set of a horror story, except that movies are never allowed to show what the journalists saw over that weekend. No matter what the situation, coverage of the news needs to be ethical. Foreign and local journalists alike were eager to cover the tragedy. Some were driven by enthusiasm, the magnitude of the story and the hunger for the truth. Nevertheless, some steered from being ethical and made serious errors of judgement. While presenting Sky's lunchtime coverage of the flight MH17 disaster, Colin Brazier stooped down to look at a piece of debris. It was a child's suitcase. He put his hand inside and lifted out a water bottle and a set of keys. As he did so his mental circuitbreaker finally engaged and he apologised instantly on-air for what he was doing. Some were too proud to admit their mistakes and had their news agencies do it for them; such was the case of Dutch current affairs show EenVandaag, which apologised after its reporter Caroline Van Den Heuvel picked up and read from a diary of one of the Malaysian crash

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victims on flight MH17 from Amsterdam to Kuala Lumpur. The actions of the Malaysia Gazette crew in eastern Ukraine when its chief reporter was filmed using a stick to poke at and turn over what appears to be a body part of an MH17 victim, might well be one of the most unconscionable acts

at the crash site thus far. Good journalism requires many elements and empathy is one of them; so is understanding the boundaries of decency and taste.

Keywords: Errors of judgement, news, MH17, tragedy, ethical

#### INTRODUCTION

Most journalists spend most of their time and their life covering stories in safe environments, Malaysian journalists included. So when MAS's Boeing 777 aircraft, the 9M-MRD, broke up in mid-air after allegedly being struck by a surface-to-air missile, creating a debris field stretching over 15 km, it was definitely a story every journalist wanted to cover.

Malaysians were simply not ready for this tragedy. Journalism does not prepare anyone to catalogue the human drama arising from the rarest and weirdest of human tragedies such as this. Many journalists, local and foreign, were also not ready for what they witnessed at the crash site. It was not merely a debris field; it was a crime scene, and every item of debris a potential piece of evidence that may help determine what brought the aircraft down and what happened to the airline and the people on board afterwards.

The crash site of flight MH17 was like the set of a horror story. Except that movies are never allowed to show what the journalists saw over that weekend. But no matter what the situation, coverage of the news needs to be ethical. Foreign and local journalists alike were eager to cover the

tragedy. Some were driven by enthusiasm, magnitude of the story and hunger for the truth. Nevertheless some steered from being ethical and made serious errors of judgement.

It is a well-known procedure in such investigations that bodies are removed from the crash scene, but that everything else should remain untouched. International investigators complained that the site, guarded by separatist militia, had been compromised by people being allowed to wander through it and pick up debris. Looting was also reported. What was certainly not expected was for journalists to be irresponsible or unmindful of proper behaviour under the circumstances.

## The Ethical Contemplations

Since the days of the ancient Greek, philosophers have tried to draft a series of rules or guidelines governing the making of ethical choices. In most ethical dilemmas, principles might also be needed to help determine what to do amid conflicting voices.

Patterson and Wilkins (2005) provided five guidelines that work well:

- i. Aristotle's Golden Mean moral behaviour is the mean between two extremes: at one end is excess, at the other, deficiency. Find a moderate position between those two extremes, and one will be acting morally.
- ii. Immanuel Kant the categorical imperative. Human beings have certain moral rights and duties. We should

treat all people as free and equal to ourselves, and our actions are morally right only if we can apply them universally. In other words, are we willing to have everyone act as we do? It is an absolutist view: right is right and must always be done, regardless of the circumstances.

- **iii. John Stuart Mill** the principle of utility. Our actions have consequences, and those consequences count. The best decisions have good consequences for the largest number of people: the greatest happiness for the greatest number.
- iv. Confucius's Golden Rule The Golden Rule or ethics of reciprocity is a maxim, an ethical code or a morality. A key element of the Golden Rule is that a person attempting to live by this rule treats all people with consideration, not just members of his or her in-group.
- v. John Rawls the aggregate good of many people outweighs the good of a few individuals.

In these cases, utilitarians seem committed to favouring the majority over the minority, even if doing so seems unfair or in violation of the individual's basic human rights and liberties.

#### METHODOLOGY

A case study is not a methodological choice, but rather a choice of object to be studied. Case studies can be both quantitative and qualitative but in this paper the term 'case study' is used to draw attention to the question of what can be learnt from a case, specifically the downing of MH17. A case study is both the process of learning about the case and the product of our learning. The choice of case is made because it is expected to advance our understanding of the research phenomenon (Stake, 1994; Ghauri & Grønhaug, 2002).

In this research, several cases were studied in detail using appropriate methods. While there may be a variety of specific purposes and research questions, the general objective was to develop as full an understanding of the cases as possible (Punch in Silverman, 2010).

This case study was done with the intention of optimising understanding of a particular situation rather than provide a generalisation. The main feature was, therefore, the depth and focus, whether the research object was an individual, group, organisation, culture, incident or situation. Sufficient information is needed characterise and explain the unique features of the case, as well as to point out the characteristics that are common to several cases. Finally, this approach relied on the integrative powers of research: the ability to study an object with many dimensions and then to draw the various elements together in a cohesive interpretation (Selltiz et al., 1976).

As Yin has famously said, case studies are a preferred approach when 'how' or 'why' questions are to be answered, when the researcher has little control over events and when the focus is on a current phenomenon in a real-life context (Yin,

1994). Also influential in the development of case study research is Eisenhardt's (1989, pp. 548-9) argument that case studies are:

Particularly well-suited to new research areas or research areas for which existing theory seems inadequate. This type of work is highly complementary to incremental theory building from normal science research. The former is useful in early stages of research on a topic or when a fresh perspective is needed, while the latter is useful in later stages of knowledge development.

However, this does not mean that case study research is only suited to exploratory and descriptive research. Case studies can, in fact, be used in all types of research: exploratory, descriptive or explanatory (Bonoma, 1985; Yin, 1994; Ghauri & Grønhaug, 2002).

For this particular research, the collective case study was used, where a number of cases were studied in order to investigate a general phenomenon (Silverman, 2010). These cases were taken from several countries but all concerned the same issue. The main idea was not to generalise but to extrapolate to show how the analysis related to matters beyond the material at hand (Alasssutari in Silverman, 2010).

#### LITERATURE REVIEW

Malaysian newsrooms have always used news from international news agencies as they are still far from propagating world peace. It can be seen that the option for peace journalism among local media practitioners is still at the infantile stage. Faridah (2010) quoting Galtung, 1986, put forth the concept of peace journalism acts as a timely and welcome antidote to much of what poses for war journalism. Galtung's classification of war and peace journalism was based on four broad perspectives: peace or conflict, truth, people and solutions. Hence, peace journalism is an alternative, not a polemic. The elements of peace journalism are not new, and are part political, part investigative journalism, part social responsibility and part advocacy journalism in the interest of peace (Galtung in Bunn Negara, 2003, p.6).

Faridah (2008) also proposed that in peace journalism, journalists took up the role as educators who could well inform and educate the public on the background, contexts and origins of global media content providing a multidimensional setting in their reports. These, of course, need training, media literacy and sanitisation programmes, conducted among journalists and the public.

Peace journalism is a relatively new concept that complicates ethical issues involved in reporting conflict in a conflict zone (Ninen, 2009). Consistent with Patterson and Warren (2008), traditional ethical journalistic codes must be reconsidered. Questions like "Should we run it?" when a cell phone captures a beheading and the image is posted on YouTube.

Peace journalism according to its proponents would also mean holding back on the reality on the ground to reduce tensions, or 'to put the brake on the truth'. Would a war correspondent consider it part of his or her brief to do that? Or would the ethics of telling the truth wherever possible, militate against that? (Ninen, 2009).

There are no absolutes in the ethics of conflict coverage. But being accurate, responsible, non-inflammatory, using language that does not pander to the objectives of any party, obtaining facts from more than one source and framing the conflict in a way that promotes understanding is a good set of objectives to keep in mind.

The ethical sphere in journalism also covers questions about journalism ethics, which are not reducible to questions about what is commonly done (etiquette), what is in the journalist's self-interest (prudence), what enhances profits (financial gain) or the law. Nor are ethical values reducible to 'craft' values, such as the aesthetic quality of an image, or how well a story is written.

A question about journalism conduct is ethical only if it evaluates the conduct in light of the fundamental ethical principles of journalism. These are the principles that express journalism's most important social functions. Journalism ethics depends on one's conception of the public functions of journalism as a professional practice and the principles and standards that promote those aims (Ward, 2014).

Using the code of the Society of Professional Journalists in the United States, we may divide the principles that support these functions into two categories:

- a. **Pro-active principles** and standards that direct journalists (or news media) to actively seek out and investigate truth, in an independent manner.
- **b.** Restraining principles and standards that direct journalists to use freedom responsibly, by avoiding unnecessary harm and by being accountable.

So what does that mean for journalism in a war zone? Is it a game of ratings, a game of public interest, a game of politics or is it a game of journalism? If we accept that the basic premise of journalism is to tell the truth and promote the public good, then we must look at how reporting is done and how effective it is in modern warfare.

Christopher Torchia (2010) was a journalist and his job was to observe without bias and not take part in the story that was unfolding, which he was recording. For him, it was a time for engaging instinct rather than circumspection, a time for making decisions geared towards survival. He spent four weeks reporting on the war in Afghanistan as a journalist attached to the US military. Torchia was confronted with many troubling questions about his role as a journalist in a warzone.

The experience for him was raw and instantaneous, as combat inspires introspection. Journalists do not take orders and do not assist in military operations but they are expected to adapt, and like it or not, they are part of the group. On balance, the access is a privilege, the antithesis of quick-hit journalism. Firsthand observations of combat are critical to telling the story.

Like all stories that come from the warzone, it required that the journalist fulfil the obligations stated above, which are the pro-active and restraining principles. Unfortunately, the four cases presented below did not only break several rules of the fourth estate but also committed errors of judgement that were very serious.

#### THE CASES

Case 1- MH17: My Error of Judgement, by Sky News Reporter, Colin Brazier

Colin Brazier is an experienced journalist who had covered many forays into warzones like Afghanistan, Iraq, Lebanon and Libya. Unfortunately for him, all that experience came to nothing that weekend of the MH17 disaster. It was the weekend that the world questioned his credibility as a journalist.

While presenting Sky's lunchtime coverage of the flight MH17 disaster, he stooped down to look at a piece of debris. It was a child's suitcase. He put his hand inside and lifted a water bottle and a set of keys (picture 1 and 2). As he did so his mental circuit-breaker finally engaged and he apologised instantly on-air for what he had done.

Within minutes, there was outrage on Twitter. Within hours, the story had gone viral. He was accused of rummaging through personal belongings, contaminating a crime scene and desecrating a sacred site.

It was without doubt a serious error of judgement. Brazier acknowledged that fact and so did Sky. Brazier's bosses issued an apology by tea-time but the damage was already done. Nevertheless, they were

supportive and keen to stress that they understood the context of the situation. What was that context? What can mitigate the seemingly indefensible act? What was the justification, if any, for such morally insolvent behaviour?

In his defence, Brazier had this to say: The crash site of flight MH17 was like the set of a horror story. Except that movies are never allowed to show what we saw over the weekend. As I type I can smell the nauseating scent of death that clings to me still. I have seen burnt bodies before — I was a 17-year-old football fan caught up in the Bradford football stadium fire — but nothing on this scale.

Having covered an aviation disaster story before about a DHL cargo plane colliding with a jet carrying a school party from Bashkortostan in 2002, he assumed that the Ukraine situation could not be very different. However, the so-called Ukraine situation was very different. There were no police to unspool yellow tape and cordon off sensitive areas. There were roadblocks manned by sullen-looking teenagers cradling AK-47s, but no meaningful law and order. It was a warzone with men in charge carrying guns and grudges.

Brazier and many other journalists walked around the crash site at will. According to Brazier's report, "The sights were shocking. I could not comprehend what we seeing. Bodies and body parts everywhere. It's a butcher's yard." They began broadcasting, not short reports, but long, thorough background pieces with

interviews with their correspondents in Moscow and elsewhere. There was no studio and, at the crash site, no obvious frame of reference. He and his cameraman took an instant and simple decision to avoid pointing the live camera anywhere a corpse could be seen

Brazier saw other journalists, some well-known broadcasters, handling belongings and speaking to the camera and foolishly took that as a precedent. During that lunchtime broadcast he stood above a pile of belongings, pointing to items strewn across the ground. Consistent with Brazier's report, he said he spotted a pink drinking flask. It looked familiar because his six-year-old daughter, Kitty, has one just like it.

He bent down and picked it up and realised too late that he had crossed a line. His apology was instant but the damage was done. This was undoubtedly a powerful example of journalistic vulturism: to get a story at all cost.

Case 2 - Dutch Reporter Violates MH17 Victim's Privacy, Reads Diary on Air – Caroline Van Den Heuvel

In another related scenario, reporter Caroline Van Den Heuvel picked up and read from a diary of one of the Malaysian crash victims on flight MH17 from Amsterdam to Kuala Lumpur. According to the station, Caroline's intention in picking up and reading the book was so she could better describe the "chaos as accurately as possible" but unfortunately she went too far (picture 3).

Van Den Heuvel was criticised by tweeters for being "disrespectful" and "disgusting," according to *The Epoch Times*. Van Den Heuvel has remained silent on Twitter; there has been no apology.

Een Vandaag, however, issued an apology on its website stating that she was "an experienced reporter", but had acted "in the heat of the moment" and had not intended to hurt anyone's feelings. "She was touched by the book that lay on the ground and only had the intention to describe," the website wrote in Dutch. "On behalf of the editors, we offer this apology."

Een Vandaag identifies itself as "the current affairs programme on Radio Netherlands 1" and broadcasts on radio and TV.

Case 3 - MH17 Crash Victims' Belongings, ABC Australia Reporter Also Tampers with Crime Scene – Phil Williams

Australian reporter Phil Williams of the Australian Broadcasting Corporation also poked around the wreckage at the crash site, the *UK Mail* reported.

Williams apparently lifted a piece of cloth, presumably a scarf, attached to the wreckage of the plane. He also picked up and lifted a seat from the crash as well (picture 4). However, he did question "if the crash site was a proper crime scene and [was being] treated as a proper investigation?"

His justification however was that, "I am guilty of picking up, touching a scarf on the ground and that's because, there

are piles of people's belongings that have just been collected and dumped on the roadside, they've been picked through, it's not as though it's a crime scene, an uncontaminated crime scene there." He added,"the evidence is everywhere you walk."

In contrast with Williams' defence, Sky News apologised when its reporter, Colin Brazier, went through victims' belongings on air. Brazier also wrote a column explaining what he had done and apologised. Despite Williams' remarks attempting to justify his actions, ABC reedited Williams' report to remove the clip showing him tampering with luggage. The ABC told iMediaEthics by e-mail:

The ABC has reminded its journalists of their responsibilities when reporting from an air crash scene such as MH17 and an online report has been re-edited to avoid any distress to our audience.

## Case 4 - What Gazette Crew Did at MH17 Site – Khairuddin Mohd Amin

The actions of the Malaysia Gazette crew in eastern Ukraine when its chief reporter was filmed using a stick to poke at and turn over what appeared to be a body part of an MH17 victim (pictures 5, 6 and 7), might well be one of the most unconscionable acts at the crash site so far, especially in view of the fact that there were 44 Malaysians on board, of whom 15 were crew and two were infants.

The Malaysia Gazette crew was not the first to go through the area. With the site lying within a combat zone contested by

the Ukraine government and pro-Russian separatists, they were also probably not the last.

That or the fact that they were merely at work in search of a story cannot and does not in any way justify or excuse what they did

#### **DISCUSSION**

In a conflict zone, a perfect storm of obstacles converges to limit the reporting that occurs before, during and after the guns or bombs have gone silent and the dead have been removed and buried. Reporters on the ground struggle with the chaos of conflict, access to dangerous areas, conflicting facts and claims and the limits of their own knowledge and perspective.

For the brutal downing of MH17, everything at the crime scene was a personal belonging – MAS stewardesses' scorched batik uniforms, broken laptops, open diaries and strewn scarfs. They all brought home the poignancy of the tragedy. They told a story of lives snuffed out in an instant while the bodies were left to rot in the sun.

However, what these journalists did at the crime scene amounts to:

- i. Desecration of the dead
- ii. Tampering with criminal evidence
- iii. Compromising the integrity of the crime scene

Although these journalists did practise the pro-active principle and standards that direct journalists (or news media) to actively seek out and investigate truth in an independent manner, what they failed so glaringly to do was to exercise the restraining principles and standards that direct journalists to use their freedom responsibly, by avoiding unnecessary harm and by being accountable for their actions. Brazier apologised personally on air, while Een Vandaag and ABC Australia made apologies for their staff. Unfortunately, there was nothing from the Malaysian Gazette. It would have been better and ideal if they had taken the liberty to follow any of the ethical guidelines that come with the job: Aristotle's Golden Mean, Immanuel Kant's categorical imperative, John Stuart Mill's principle of utility, Confucius' Golden Rule or John Rawls' aggregate of good. If they had, the outcome of the coverage would have been different. The use of at least one ethical guideline would have made a difference. Mill's principle of utility would have been the most suitable for this situation: the greatest happiness for the greatest number. Sadly, this was not done. The Malaysian Gazette turned the MH17 recovery mission into a fiasco.

Vast years of experiences did not count for much, as was clearly depicted by Colin Brazier from Sky News. Caroline Van Den Heuvel, in picking up and reading the diary so she could describe the "chaos as accurately as possible", went too far. Phil Williams' justification in poking around the wreckage that "the evidence is everywhere you walk" was unacceptable. What Khairuddin Mohd Amin from the Malaysia Gazette did, using a stick to poke at and turn over

what appeared to be a body part of an MH17 victim, was perhaps the most unconscionable act at the crash site.

Crash forensics expert, Kirsty Wright, told the *Sydney Morning Herald* that no one should alter a crash scene:

In any forensic investigation you don't know what item, or items, are going to contain the most critical pieces of evidence. For this reason all items within a crime scene, no matter what they are or whether they seem relevant or not to the investigation at the time of recovery, should be treated the same. That is, they should not be handled or moved by people who aren't trained experts.

Another approach to handling oneself when reporting at a warzone could be what another inexperienced reporter, Haliza Hashim Doyle, displayed at the MH17 recovery mission. She was focused specifically on the villages, meadows and fields of crops that might not have been searched at the time by the Ukrainians as it was the early days of the crash. She received continuous warnings about the pro-Russian separatists from shopkeepers to officials, from taxi drivers to editors. This is what she had to say at the end of her news piece dated August 17, 2014 in the News Straits Times online version:

Yes, I was new to the scene but I was sensible. I kept reminding myself that what the victims' families want to know is about their loved ones, about their lost relatives, about the search mission, and not about me.

#### CONCLUSION

Four months after Malaysia Airlines Flight MH17 was violently brought down from the skies over Ukraine, at the time of writing, there is still no definitive answers to what caused the tragedy. Civil conflict in the area prevented international experts from conducting a full and thorough investigation. The wreckage should have been collected and scrupulously re-assembled to identify all the damage, but this standard investigative procedure has not been carried out up to now. Until that is done, evidence can only be gleaned from pictures of the debris, the flight recorders or black boxes and eyewitnesses' testimonies.

Breaking news, of course, moves quickly. Real-time reporting tools, social networks and the vast satellite system helps speed it along. Local and international news organisations have developed, in a fairly short time, standards for navigating this newfound swiftness. They know they need to verify facts before publishing or putting them on air. They also know that getting the story first is not as important as getting it right. The press criticism show *On the Media* recently published a guide to breaking news. One of the points raised was: "*In the immediate aftermath, news outlets will get it wrong.*"

This is true when it comes to reporting. It is also true when it comes to ethics, when it comes to the question of what readers actually need to know and see about unfolding tragedies: the plane exploding, the mutilated corpses, people falling from the sky. There is

always a fine line between journalism and sensationalism. The higher the speed, the higher the stakes.

The good and professional news outlets spend a lot of time rationalising about the best way to present information as it unfolds in their follow-ups. Part of their thinking respects the fact that images, once revealed, cannot be unseen. As with ethics, the errors of judgement made at a crime scene cannot be undone.

Speed in reporting new details is everything, even when the facts on the ground are still up in the air. This means that there is a lot of interesting ethical work happening in a short amount of time. We need to ask ourselves as journalists and media practioners: What is necessary to tell the story? Where do we draw the line between gruesome or descriptive, sensationalism and journalism? As we devour more and more news on this current crisis or any crisis for that matter, these are questions worth asking.

Even with the best intentions, competent journalists can do their valuable work better and more confidently if they are made aware of the kinds of problems that can arise within this profession. If journalists encourage thinking about tough matters of ethical choice in reporting the news, then they can provide for themselves a practical moral philosophical framework, which they can use to consider the many different shades between morally permissible and morally objectionable journalistic conduct.

Link to view the crash site: http://rtd.rt.com/films/mh-17-the-untold-story/#part-1

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#### **APPENDIX**





Picture 1 Picture 2

Picture 1 and 2: Case 1- MH17: My Error of Judgement, by Sky News Reporter - Colin Brazier



Picture 3

Picture 3: Case 2 - Dutch Reporter Violates MH17 Victim's Privacy, Reads Diary on Air - Caroline Van Den Heuvel



Picture 4

Picture 4: Case 3 - MH17 Crash Victims' Belongings, ABC Australia Reporter Also Tampers with Crime Scene - Phil Williams



Picture 5



Picture 6



Picture 7

Picture 5, 6 and 7: Case 4 - What Gazette Crew Did at MH17 Site - Khairuddin Mohd Amin



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# Matching Types of Social Media Sites (SNS) to Motives and Profiles of Youths in Malaysia

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#### **ABSTRACT**

Social network sites (SNS) have been used to bring people across the globe closer to each other, especially youths. It is important to match the types of SNS to the motives for using them as well as to acquire a profile of youth users. Specifically, this study tries (1) to find out the types of SNS subscribed to by youths, (2) to gauge the frequency of their using the SNS per week, (3) to rank their motives for using the SNS, and (4) to study and compare the differences or variance in the profiles of youths using the SNS. A survey was conducted nationwide among youths aged 17-40 years old using a self-developed questionnaire. A total of 703 respondents were identified for the study. Data were analysed using the Statistical Package for Social Sciences (SPSS) WIN 20. There were more male respondents than female, and they were mainly Malay, single, Muslims, adolescents and undergraduates. Results of the youth profiles revealed that there were differences among the youths' demographic characteristics and the types of SNS they subscribed to. The top three SNS identified were Facebook, Yahoo and Skype. Almost one third used them daily. Most of the SNS were used for social, followed by education and communication motives. Specifically, Twitter is also used for social, communication and entertainment motives while blogs were used for the religious, education, business and politics motives. The study applied both the social network theory and information-seeking theory with the purpose of finding out how youths could be motivated to draw on the vast knowledge available and accessible in the SNS for their own benefit, and not merely for social networking.

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#### INTRODUCTION

Social network sites (SNS) have become a popular platform worldwide for people to communicate and share information with each other. In Malaysia, the adoption of SNS has shown a significant growth in the last few years in conjunction with the progress and development of iPad, iPhone and the like, facilitating easy access any time and anywhere for the search of information. The top five SNS in Malaysia are Yahoo, Facebook, Google, YouTube and Blog (Subramaniam, 2014). According to Subramaniam, Facebook is the most visited SNS with 10.4 million users, of whom 3.5 million are youths between 18 and 24 years old, i.e., those of studying age.

SNS complements the established mass media, i.e., TV and newspapers in the seeking of current news. However, SNS main use is not information-seeking; rather it is used for information-sharing and relationship-building in addition for education. As long as students use SNS for positive reasons, their academic performance should improve. Users should make use of their time wisely. This study sought to discover: Who are the users of the specific SNS?; How frequently do they use the SNS?; What are their motives for using SNS?; and Are there differences among users for each type of SNS?

#### **OBJECTIVES OF THE STUDY**

The objectives of the study are:

(1) To identify the types of SNS subscribed to by youths,

- (2) To gauge the frequency of their use of the SNS per week,
- (3) To rank their motives for using the SNS.
- (4) To compare the differences among youth profiles relating to their use of the SNS, and
- (5) To predict the motives for their use of any particular SNS.

#### LITERATURE REVIEW

Uses and Gratifications Approach to Social Media

It is becoming increasingly difficult today to explain the various ways of communication, for instance, one-to-many and many-to-many, as communication has become multi-dimensional. However, in studying the use of social media, the Uses and Gratifications Theory (Katz, Blumler, & Gurevitch, 1974) may be applied to explain the process precisely as its approach is user-centred. The Uses and Gratifications (U&G) Theory is helpful in explaining the power of users in using media to their own advantage and for their own need.

Generally, the Uses and Gratifications perspective focuses on explaining the social and psychological motives that drive people to use the identified technologies and motivate them to select certain technologies in order to gratify a set of psychological needs behind those motives (Katz, Blumler, & Gurevitch, 1974; Rubin, 1994). Choice is made by the user based on goal and the act of use has to satisfy needs as well (Katz *et al.*, 1974). The

second assumption of this approach is that media users are aware of their needs and select the appropriate media to gratify those needs.

The Uses and Gratifications Theory may be used to explain people's motivation for engaging in specific technology, in this case, the social media sites (Newhagen & Rafaeli, 1996; Ruggiero, 2000). The technology has emerged from just newspaper, radio, television, and the Internet, thus, it is interesting to identify people's motivation to use these most influential sites among youths, which are the social media sites.

The increasing popularity of social media sites such as Facebook and Twitter can be attributed to the social needs of youths for interaction and sharing of ideas with peers. Furthermore, the virtual community can generate new ideas through responding and exchanging content, which reinforces dynamic content creation (Shao, 2009; Quan-Haase & Young, 2010).

Two relevant theories that could explain SNS use are the the Social Exchange Theory (Homans, 1956) and the Information-Seeking Theory (Ellis, 1989).

#### The Social Exchange Theory

The Social Exchange Theory, established by sociologist George Homans (1956), is rooted in psychology, sociology and economics. Homans introduces his theory in his work entitled 'Social behavior as exchange'. He defines social behaviour as "an exchange of goods; both material goods and non-material ones, such as the symbols of approval or prestige" (Homans, 1956, p. 606). The theory postulates that human interaction is bound by costbenefit considerations. This means that in an interaction a person is involved in an exchange with others, whether the exchange is tangible or non-tangible, based on his/her analysis of costs and benefits. Therefore, an individual selects an approach from which he/she can gain the most benefit and at minimal cost. In the area of social media, people would engage in certain activities and relationships based on their calculation of the costs and benefits involved in the exchange.

#### The Information-Seeking Theory

Information-Seeking Theory about the approaches, modes and reasons for seeking information. It can be a purposive or an unintentional seeking of the information. Ellis (1989) suggested six approaches of information-seeking behaviour based on a sample of social scientists: starting, chaining, browsing, differentiating, monitoring and extracting. A number of information-seeking models are proposed; these models provide a detailed description of the activities, causes and consequences involved in the information-seeking behaviour (Wilson, 1981). The models serve as "a theoretical lens to analyze the contextual and dynamic nature of information-seeking at micro and macro levels" (Kim, 2013, p. 2).

## The Information-Seeking Theory and Motive

Merged with the Uses and Gratification Theory, the Information-Seeking and Network Analysis is useful in explaining the motives of youths in using social media sites. According to Wilson (1981), motive is a gist in the study of information-seeking behaviour. The general assumption here is that motive is a stimulus for someone to do a certain act. Therefore, youths basically use social media for a particular motive. Information need is believed to be the motive leading to youths engaging in social media activities. In particular, the notion of motive can be seen in terms of the audience having complex needs that require gratification; to gratify these diverse needs, the audience actively seeks information through social media sites (Rubin, 1986; Fiske, 1990).

#### Social Media

Social media sites are online services focusing on creating networks or social relationships. These sites enable any kind of information-sharing activities such as sharing interests, business endeavours and current issues. The main body of a social media site is the representation of the user, which consists of the user's profile while some may post pictures and use social links and a variety of other applications (Shin, 2010). Lukes (2010) stated that one must not overlook the potential of social media. Social media sites are the most preferred media by youths to connect to each other and to share information, both positive and negative in nature.

#### Social Media and Youths

Social media and youths cannot be separated. It is believed that social media sites are not just booming in Malaysia but all around the globe. Teenagers have ranked such sites as one of their preferred methods of communication, along with cell phones and Instant Messengers (Rhoades, Thomas, & Davis, 2009; Lenhart, Purcell, Smith, & Zickuhr, 2010). A study of youth usage of social media sites in America showed significant results. The percentage of American teens that use social networking sites has significantly increased to 73%. Additionally, the percentage of young adults is almost similar to the percentage of those using social networking sites. Facebook is currently the most commonly used online social network site among these youths (Lenhart et al., 2010). It was found that older teens aged between 14 and 17 years were more likely to use Twitter than younger teens (aged 12-13 years old). High school female students also preferred to use Twitter compared with high school male students (Lenhart et al., 2010).

AstudybytheAustralianCommunications and Media Authority, 'Trends in Media Use by Children and Young People', based on the study previously done by the Kaiser Family Foundation (Kaiser, 2010) of the US, lists factors for the increase of usage of social media as the expansion of higher-speed home internet access and the great appeal of these social media sites to young people. The research also found that in 2009, the most popular activities for Americans between eight and 18 years old were surfing social

networking sites, playing online games and watching videos on social media sites, for example, YouTube.

Youths in Nigeria also use social networking for friendship. They motivated and goal-orientated to preserve their self-confidence. Their main sharing activities are entertainment and friendship. From most of the research, it can be concluded that Facebook currently is among the most preferred social media site for youths (Anderson, Fagan, Woodnutt, & Chamorro-Premuzie, 2012). Studies in Malaysia show that Malaysian youths primarily share their thoughts and feelings through social media sites. Moreover, youths use social media sites because they also represent freedom (Latiffah et al., 2009; Levi & Samsudin, 2010; Saodah et al., 2012).

#### Motives for Social Media Usage

Youths share everything via social media sites. Youths are motivated by various motives in using social media sites such as religious, educational, social interaction, communication and entertainment.

The motive to use social media sites is both positive and negative (Saodah *et al.*, 2012). For example, people use Facebook specifically to maintain friendship and initiate new relationships (Subrahmanyam *et al.*, 2008). However, Yang and Brown (2013) claimed that the need for social media sites is motivated by not just social reasons but also educational. Youths, especially students, use social media for sharing knowledge, scanning journals and sourcing for the steps to conduct good research.

Some research shows that adolescents become involved in social media relationships in order to increase their self-esteem or because they see social media as a sort of 'show-off media'. Social media is also used for the motives of addressing loneliness, seeking entertainment such as playing online games and keeping updated on the recent activities and status of their colleagues (Joinson, 2008; Sheldon, 2008; Tosun, 2012).

Brocke, Richter and Riemer (2009) explained two main motives in relation to the use of social media sites by university students in Germany: the social motive and the interest motive. The social motive basically revolved around contact maintenance and social searching while the interest motive revolved around contact interest and topic interest.

Youths depend highly on social media because they face difficulty in expressing their true self in face-to-face interactions. In particular, according to Yang and Brown (2013), social adjustment as a student is the motive for students to cling to their gadgets to know the latest update in their social media sites (2013).

In addition, Boyd (2014) claimed that youth engage in social media activities for the motive of developing self-identity. Social media is a recent subject in relation to the study of culture. Although complicated and not obvious, motives for social media use are emerging/changing in line with the different atmosphere of the social media sites. New or updated versions of social media sites can cause a change of motives;

for example, youths can now post their personal videos via Facebook or Twitter and make it viral as everyone shares the videos with others.

In this study, several motives of social media use were presumed such as the religious, education, business, social interaction, communication, politics and entertainment motives.

#### **METHODOLOGY**

#### Research Design

The study employed a quantitative research design using the survey method. It used the questionnaire as the research instrument for data collection. This design was chosen because it is a scientific and logical method that produces quantifiable, reliable data that can be generalised to the population. At the same time, deductive reasoning was also used and thus, simplicity in data summarisation could be done. Above all, the results were easily interpreted and could easily predict the outcome of the study.

#### Population and Sampling Procedure

Youths make up 45% of the 28.3 million population of Malaysia. The population of the study consisted of youths aged between 17 and 40 years old nationwide. Youths at that age can understand the need of the study and can respond to the questionnaire individually. The youths were randomly selected, initially, from among the students of the Department of

Communication at the main campus of the International Islamic University Malaysia (IIUM), at different levels of their programme. The department currently has a student population of 297 students

#### Measurement of the Variables

The focus variables of the study were motives of using the social media sites (SNS). There were seven motives for using the SNS: religious (6 items), education (7 items), business items), social interaction (6 items), communication (5 items), politics (7 items) and entertainment (5 items). All items were measured using a 5-point Likert scale, where 1=strongly disagree, 2=disagree, 3=slightly agree, 4=agree and 5=strongly agree. Each motive item was subjected to a reliability test. The results of the reliability tests for all variables are presented in Table 1. All the items were excellent because the Cronbach's Alpha exceeded .70, the standard comparison value for the homogeneity of the items for each variable. The Cronbach's Alpha ranged from .835 to .941. Therefore, no item for each variable was deleted. Each variable concerned was created to form a construct based on its mean value. Further analyses were based on the created mean of each construct.

TABLE 1 Reliability Test for Motives for Using SNSs

| Variable                  | No. of<br>Items | Cronbach's<br>Alpha | Mean | SD   |
|---------------------------|-----------------|---------------------|------|------|
| Religious motive          | 6               | .941                | 3.35 | 1.02 |
| Education motive          | 7               | .940                | 3.58 | 0.93 |
| Business motive           | 5               | .930                | 2.89 | 1.15 |
| Social interaction motive | 6               | .890                | 3.83 | 0.86 |
| Communication motive      | 5               | .835                | 3.55 | 0.81 |
| Politics motive           | 7               | .854                | 2.80 | 1.10 |
| Entertainment motive      | 5               | .906                | 3.26 | 1.11 |

#### Data Collection

The collection of data began at IIUM main campus in Gombak during a regular semester and each Malaysian student later collected 10 questionnaires to be distributed to the identified respondents. Each foreign student also took 12 questionnaires for data collection. All attended a training session prior to data collection. Each questionnaire took 10-20 minutes to complete. The questionnaire was developed in English. The data collection process took two months.

#### Data Analysis

The data were coded according to the master code prepared by the researcher. Data were analysed using the Statistical Package for Social Sciences (SPSS WIN 20) for both the descriptive and inferential statistics. The descriptive statistics included frequency, percentage, minimum, maximum, mean and standard deviation. The inferential statistics used for the study were cross-tabulation with a Chi-square test to assess the differences between proportions of the samples under study

and the discriminant analysis since the dependent variable was coded as a dummy variable having a value of 0 and 1. The discriminant analysis was complementary to the Chi-square test. As the created variables for the different motives were classified according to scale measurement, a discriminant analysis was the most appropriate for the study. Both methodenter and Step-Wise discriminant analysis were conducted to discover the predictors for each SNS and for the best variable(s) in the equation for each SNS.

#### **FINDINGS**

The findings of the study are presented according to the demographic characteristics of the respondents, followed by the findings that help answer the objectives of the study.

# Demographic Characteristics of the Respondents

Demographic characteristics of the respondents of the study are as follows. There were slightly more males (58.8%) than females (41.2%). Almost three quarters of

the respondents were Malaysians (74.2%) while the rest were foreigners (25.8%), comprising mainly Indonesians, Somalis and Sudanese nationals. Malaysians were represented by 61.6% Malay/Bumiputra, 22.3% Chinese and 15.9% Indians, and this roughly represented the nation's population distribution. Almost three quarters of the respondents were single (74.3%) while the rest were married, divorced or widowed.

This distribution pattern was typical among the youths. Almost three quarters of the respondents (73.4%) were Muslims while the rest (26.6%) subscribed to other religions. In terms of age, the respondents were rather young, aged mainly 25 years old and younger (64.1%) while the rest were between 26 and 40 years old (35.9%). The youths in the study were still studying and they declared that their highest level of education was first degree (38.3%). This was

followed by those with certificates: MCE/SPM (20.9%) and diploma holders (17.4%). Based on the level of education and the age category, therefore, it was not surprising to find the youths in the study to be students (58.6%), followed by those working in the private sector (16.4%) and finally, those working in the public sector (11.4%).

#### Types of SNS Subscribed to by Youths

Almost all of the youths had social media sites and subscribed to Facebook (95.3%), followed closely by subscription to Yahoo mail (75.1%) and Skype (42.0%). Others had Twitter (34.1%), Blog (22.6%) and Friendster (21.0%) accounts. This means that the most popular new social media among youths in this sample was Facebook and Facebook was not the only site subscribed to. Many had more than one SNS.

TABLE 2 Social Media Sites Used by Youths

| Social Media Sites (N=634)       | Frequency | Percentage |
|----------------------------------|-----------|------------|
| Facebook                         | 604       | 95.3       |
| Yahoo mail                       | 476       | 75.1       |
| Skype                            | 266       | 42.0       |
| Twitter                          | 216       | 34.1       |
| Blog                             | 143       | 22.6       |
| Friendster                       | 133       | 21.0       |
| Frequency of Using SNSs per Week | Frequency | Percentage |
| Never (0 day)                    | 5         | 0.8        |
| Rarely (1-2 days)                | 109       | 17.3       |
| Sometimes (3-4 days)             | 181       | 28.8       |
| Often (5-6 days)                 | 133       | 21.1       |
| Always (7 days)                  | 201       | 32.0       |

<sup>\*</sup>Multiple responses

**Total** 

100.0

629

#### Frequency of Using SNS per Week

When asked how often they used the social media sites in a week, many (32.0%) claimed that they used it daily. Others indicated that they used it less consistently: 3-4 days (28.8%) in a week while many used it 5-6 days per week (21.1%). Surprisingly, there were five respondents who subscribed to it and yet did not use it at all.

#### Motives for Using SNS

Further, each type of SNS was then analysed in relation to the seven motives. Table 3 shows the overall means for all types of SNS. It was found that the highest mean (M=3.44) went to Twitter and Blog. Within each type of SNS, the results showed that Twitter was mainly used for social interaction (M=3.44). Similarly, across the board, the social interaction motive (M=3.93) recorded the highest use for all types of SNS: Twitter (M=4.05), Facebook (M=3.85), Skype

(M=3.89), Yahoo (M=3.85), Friendster (M=3.99) and Blog (M=3.96). In addition, each motive was also checked for the type of SNS used the most. It was found that the Blog was used for religious motive (M=3.51) the most. Education motive (M=3.69) was also obtained from the Blog. For business motive, too, the youths used the Blog (M=3.09) the most. However, for the social interaction motive, Twitter (M=4.05) was used the most. Similarly for the communication motive, Twitter (M=3.75) was used the most, too. For the politics motive, the Blog (M=2.83) was also used by the youths sparingly but the highest. Finally, the entertainment motive was widely used through Twitter (M=3.59). It can be implied that youths used Twitter for social interaction, communication and entertainment motives while Blog was used for the religious, education, business and politics motives.

TABLE 3
Types of SNS by Motive

| No. | Motive             | SNSs*           |                     |                  |                  |                       |                 | Mean |
|-----|--------------------|-----------------|---------------------|------------------|------------------|-----------------------|-----------------|------|
|     |                    | Twitter (N=216) | Facebook<br>(N=604) | Skype<br>(N=266) | Yahoo<br>(N=476) | Friendster<br>(N=133) | Blog<br>(N=143) |      |
| 1   | Religious          | 3.28            | 3.35                | 3.33             | 3.41             | 3.35                  | 3.51            | 3.37 |
| 2   | Education          | 3.68 (9)        | 3.57                | 3.64             | 3.64             | 3.66                  | 3.69 (8)        | 3.65 |
| 3   | Business           | 2.95            | 2.89                | 2.86             | 2.90             | 3.00                  | 3.09            | 2.95 |
| 4   | Social interaction | 4.05(1)         | 3.85 (5)            | 3.89 (4)         | 3.85(6)          | 3.99(2)               | 3.96(3)         | 3.93 |
| 5   | Communication      | 3.75 (7)        | 3.57                | 3.59             | 3.58             | 3.59                  | 3.67(10)        | 3.63 |
| 6   | Politics           | 2.80            | 2.79                | 2.82             | 2.81             | 2.73                  | 2.83            | 2.80 |
| 7   | Entertainment      | 3.59            | 3.26                | 3.32             | 3.23             | 3.49                  | 3.35            | 3.37 |
|     | Mean               | 3.44            | 3.33                | 3.35             | 3.35             | 3.40                  | 3.44            |      |

<sup>\*1=</sup>strongly disagree, 2=disagree, 3=slightly agree, 4=agree, 5=strongly agree

To simplify the findings, ranking was done according to the types of SNS. The most popular SNS in sequence was Twitter and Blog, followed by Friendster, Skype and Yahoo, and finally, Facebook. In terms of motive, the social interaction motive was the most used, followed by the education motive, communication, religious, entertainment, business and finally, the politics motives.

The ranking was also done by motive. The top three SNS used for the religious motive were Blog, Yahoo and Facebook. For the education motive, Blog, followed by Twitter and Friendster, was used. Blog, followed by Friendster and Twitter, was mainly used for the business motive. For the social interaction motive, Twitter, Friendster and Blog were the three most popular SNS, in that order. For the communication motive, Twitter, followed by Blog and finally Skype, was widely used. The politics motive revealed a different perspective where Blog, followed by Skype and Yahoo, was used. Finally, for the entertainment motive, Twitter, Friendster and Blog were used, in that order.

In addition, the study also identified the top 10 SNS based on the means, and they were translated into the rankings. It seemed that the most popular SNS for social interaction motive was Twitter (1), followed by Friendster (2), Blog (3), Skype (4), Facebook (5) and Yahoo (6). Again, Twitter was ranked 7th for the communication motive and 9th for the education motive while Blog was ranked 8th for the

education motive. Blog, too, was placed in 10th position for the communication motive. The religion, business, politics and entertainment motives were not the top motives for the youths sampled. The findings revealed a disturbing trend, as the social interaction motive was used for all the six SNS. Religion was not a top priority. The authorities should take heed of this because religion provides positive guidance for youths for life in this world and in the hereafter. What more, since a majority of the youths were Malay, and therefore, Muslim, the religious motive should be a priority as religious knowledge can ensure that they do not go astray in this ephemeral world.

# Comparison Between Youth Profile for Using SNS

Comparisons for each type of SNS were made according to gender, nationality foreigner), (Malaysian and ethnicity (Malay/Bumiputra, Chinese, Indian/ other), marital status (single and married/ other), religion (Islam and other religions), age (teenage, adolescent, young adult, adult, older adult), highest educational achievement (primary/secondary education and tertiary education) and designation (students, employed and others).

**Twitter.** With regards to Twitter there was no difference between male and female for its use ( $\chi^2$ =2.907, p=.088). However, Twitter usage was significant between Malaysian and foreigner usage ( $\chi^2$ =72.674, p=.000), for marital status between single and married ( $\chi^2$ =101.407, p=.000), in

terms of religion between Islam and other religions ( $\chi^2=225.028$ , p=.000) and between age groups where those aged between 21 and 25 years old used it more frequently than the rest of the groups  $(\chi^2=171.256, p=.000)$ . Ethnicity also played a part: Malay/Bumiputra and the other races gave the scores  $\chi^2=22.583$ p = .000. Similarly, those tertiary education (diploma and higher qualifications) used Twitter more frequently than did school children ( $\chi^2$ =68.907, p=.000). In terms of designation, students used it more frequently than those who were employed and others ( $\chi^2=146.583$ , p=.000).

Facebook, Facebook, being the most popular, had its own use. Specifically, males tended to use it more frequently than females ( $\chi^2=12.552$ , p=.000). In addition, Malaysians used it more frequently than foreigners ( $\gamma^2=163.781$ , p=.000). Single respondents used it more frequently than those who were married ( $\chi^2=182.490$ , p=.000). Muslims used it more frequently than the followers of other religions  $(\chi^2 = 763.391, p = .000)$ . Young people aged between 17 and 30 years old tended to use it more frequently than the older group aged 31 and above ( $\chi^2$ =284.819, p=.000). However, in terms of ethnicity, the Malay/ Bumiputra and the Indian/other used it more frequently than the Chinese ( $\chi^2=95.825$ , p=.000). Education played an important role in the use of Facebook as holders of diploma and higher qualifications used it more frequently than school students  $(\chi^2=193.649, p=.000)$ . With regards to designation, students and employed staff used it more frequently than those with other jobs ( $\chi^2$ =305.427, p=.000).

**Skype.** Skype was not widely used by the respondents. Only 266 used it. Specifically, the number of males to females was similar in terms of usage ( $\chi^2 = 2.751$ , p=.097). However, Skype was more widely used among Malaysians than foreigners  $(\chi^2=28.562, p=.000)$ . In addition, single respondents seemed to use Skype more than the married ones ( $\chi^2$ =96.241, p=.000). Muslim respondents tended to use Skype more than those of other faiths ( $\chi^2=360.802$ , p=.000). Those aged between 21 and 25 years old stood out in terms of Skype usage compared to those in the other age categories  $(\chi^2=161.736, p=.000)$ . Malay/Bumiputra and Indian/other were Skype users rather than the Chinese ( $\chi^2 = 28.541$ , p=.000). Education was an important indicator of Skype usage: those with a diploma and higher qualifications used Skype more than those with HSC and lower qualifications  $(\chi^2 = 121.805, p = .000)$ . This coincides with their designation, as students used Skype more than those employed or with other job types ( $\chi^2=182.895$ , p=.000).

**Yahoo mail.** Yahoo mail use showed distinct groups of users. There were more male than female users ( $\chi^2=13.813$ , p=.000). Yahoo users comprised more Malays compared to foreigners ( $\chi^2=131.857$ , p=.000). Single Yahoo mail users overtook married users ( $\chi^2=135.538$ , p=.000). More Muslims tended to be Yahoo mail users over users professing other religions

( $\chi^2$ =651.148, p=.000). In addition, there were more users of the 17-25 age group compared to their older counterparts ( $\chi^2$ =248.295, p=.000). Malay/Bumiputra and Indian/other tended to use Yahoo mail more compared to the Chinese ( $\chi^2$ =88.063, p=.000). It was also found that those with diploma and higher qualifications used Yahoo mail more than those with HSC and lower qualifications ( $\chi^2$ =169.445, p=.000). Students and employed staff used Yahoo mail more compared to those with other work ( $\chi^2$ =253.618, p=.000).

Friendster. Friendster was not a very popular SNS among the respondents (N=133 out of a total of 702 respondents). Specifically, there was no difference between male and female users of Friendster ( $\gamma^2=0.068$ , p=.000). However, there were differences between Malaysian and foreign users ( $\chi^2=78.818$ , p=.000); Malaysians tended to use Friendster more than the foreigners. In addition, single respondents used it more than the married respondents ( $\chi^2$ =76.699, p=.000). Muslims used Friendster more than those of other religions ( $\chi^2=140.788$ , p=.000). Respondents aged between 21 and 25 years were the most frequent users of Friendster compared to those in the other age groups ( $\chi^2=150.424$ , p=.000). Malay/Bumiputra tended to use more Friendster than either the Chinese or the Indians ( $\chi^2$ =33.940, p=.000). Those with tertiary education used Friendster more than those with secondary education ( $\chi^2=31.767$ , p=.000). Students used Friendster more compared to the employed and other groups  $(\chi^2=90.511, p=.000)$ .

**Blog.** There were only 143 users of Blog in the study. The number of male and female users were close ( $\chi^2 = 2.282$ , p=.131). Malaysians use more Blog than the foreigners ( $\gamma^2$ =64.901, p=.000). Similarly, singles used Blog more than the married respondents ( $\chi^2=74.189$ , p=.000). Muslims also used Blog more than believers of other religions ( $\chi^2$ =230.063, p=.000). In terms of age group, those between 21 and 25 years of age were the biggest number of users of Blog compared to those in other categories  $(\chi^2=119.197, p=.000)$ . There were more Malay/Bumiputra users that those of other races ( $\chi^2$ =57.664, p=.000). Diploma and degree holders use Blog more than those with secondary education ( $\chi^2=35.252$ , p=.000). Finally, students used Blog more than the employed and those of other groups ( $\chi^2$ =115.818, p=.000).

Discriminating Types of SNS with Motives Below are the discriminant analysis results for each SNS.

**Twitter.** The results showed that there were differences ( $\chi^2$ =42.767, p=.000) between those using Twitter (centroid=.382) and those who did not use it (centroid=-.216). Based on the centroid and the F-test (df=1, 540), it can be noted that those who used it did so mainly for entertainment (F=31.090, p=.000), social interaction (F=21.766, p=.000), communication (F=19.939,p=.000) and education (F=4.717, p=.030). The percentage gave a discrimination of 64.2%. The equation for predicting use for Twitter: y=-3.202 + .543 entertainment + .494 communication +.343 education + .125 social interaction - .06s0 business - .153 politics - .426 religious motives. Nevertheless. when the Step-Wise Discriminant Analysis was used to detect the best predictor(s) to be included in the equation, it was found that Twitter was used for entertainment and communication motives but not for religious motives. They were significant contributors either positively (entertainment communication) or negatively (religious), based on the direction in the equation.

Facebook. As for Facebook, the results showed discriminating differences  $(\gamma^2=16.276, p=.023)$  between those using it (centroid=.037) than those not using The (centroid=-.832). percentage of discrimination was 69.7% for right allocation. Based on the centroid and the F-test (df=1, 540), it was found that Facebook was mainly used for social interaction (F=11.605, p=.001). equation for predicting use for Facebook: y=-3.028 + 1.270 social interaction + .356 religious - .020 business - .083 entertainment - .187 education - .218 communication -.446 politics motives. When Step-Wise Discriminant Analysis was used to detect the best predictor to be included in the equation only the social interaction motive was found to be a significant contributor.

**Skype.** There was no difference ( $\chi^2$ =9.301, p=.232) between those using Skype (centroid=.152) than those not using it (centroid=-.115). Based on the centroid and the F-test (df=1, 540), it was found that there was no single predictor for Skype. The percentage explains correct allocation as

55.5%. The equation for predicting use for Skype: y=-2.930 + .851 education + .274 social interaction + .268 communication + .198 entertainment + .075 politics - .406 religious - .554 motives. Further analysis using Step-Wise Discriminant Analysis confirmed that there was no predictor that could contribute significantly for use of Skype.

Yahoo mail. Use of Yahoo mail, on the other hand, was able to be predicted for users (centroid=.095) and non-users (centroid=-.307) with the Chi-square value equal to 15.454 (p=.031). The discrimination and correct allocation for both groups was explained by 57.6%. Based on the centroid and the F-test (df=1, 540), therefore, Yahoo mail was used for education (F=8.813, p=.003) and religious (F=5.039, p=.025) motives. The equation for predicting use for Yahoo mail: y=-3.611 + .792 education + .532 communication + .236 social interaction + .156 religious - .026 politics - .146 business - .619 entertainment motives. Nevertheless, when Step-Wise Discriminant Analysis was used to detect the best predictor to be included in the equation, only the education motive was found to be a significant contributor.

**Friendster.** On the contrary, there was no difference in the use of Friendster ( $\chi^2$ =11.815, p=.107) between users (centroid=.279) and non-users (centroid=-.079). The correction prediction for users was only 54.2% correct. Based on the centroid and the F-test (df=1, 540), it was found that Friendster was used for entertainment (F=6.705, p=.010) and

social interaction (F=4.691, p=.031). The equation for predicting use for Friendster: y=-2.066 + .672 social interaction +.545 entertainment + .227 business + .218 education - .112 religious - .465 politics - .573 communication motives. When Step-Wise Discriminant Analysis was used to detect the best predictor to be included in the equation, only the entertainment motive was found to be a significant contributor.

**Blog.** Similarly for Blog, there was no significant difference ( $\chi^2$ =10.428, p=.166) between users (centroid=.249) and nonusers (centroid=-.079). The correction predicting percentage for Blog users was 55.9%. Based on the centroid and the F-test (df=1, 540), hence, Blog was used for communication (F=4.893, p=.027), social interaction (F=4.223, p=.040) and business

(F=3.934, p=.048) motives. The equation for predicting usage for Blog: y=-4.293 + .506 religious + .497 communication + .463 business + .192 social interaction + .016 education + .008 entertainment - .466 politics motives. Further analysis using Step-Wise Discriminant Analysis was used to detect the best predictor to be included in the equation. It was found that only the communication motive was a significant contributor for Blog.

In sum, different SNS were used for different motives (Table 4). Specifically, Twitter was used for entertainment, communication and religious motives, Facebook for social interaction motive, Yahoo mail for education motive, Friendster for entertainment motive and Blog for communication motive. There was no specific motive for Skype.

TABLE 4 Summary of SNS Usage and Motive

| SNS        | Motive             | Nature of Contribution |
|------------|--------------------|------------------------|
| Twitter    | Entertainment,     | Positive               |
|            | Communication,     | Positive               |
|            | Religious          | Negative               |
| Facebook   | Social interaction | Positive               |
| Skype      | -                  | -                      |
| Yahoo Mail | Education          | Positive               |
| Friendster | Entertainment      | Positive               |
| Blog       | Communication      | Positive               |

<sup>\*</sup> Significant variable in the equation for discriminant analysis result using the Step-Wise Method \*\* Critical value for Chi-sq. (df=7)=14.067, p=.05

#### DISCUSSION AND CONCLUSION

A total of 702 respondents participated in the study. They were mostly single Malay, Muslim males aged between 21 and 25 years old, were students and held degrees from universities. They tended to subscribe to Facebook, Yahoo mail and Skype. Many used their favourite SNS daily while others used it 5-6 days per week. Therefore, Facebook remains the most popular SNS among Malaysians, following its global trend (Ostrow, 2011; Protalinski, 2012; Alexa internet, 2014; Facebook, 2014).

A comparison of users' overall mean scores across motives revealed that Twitter was the highest rated SNS for its motive usage, despite the fact that it was not the most popular compared to Facebook. Yahoo mail was the second highest rated SNS for its motive usage i.e. the education motive. This was in line with the results reported by Vascellor (2011), where he found that Yahoo mail was most popular webmail in the USA. Such findings can be attributed to the fact that respondents were mainly students and they sought information to do their work. Therefore, the Information-Seeking Theory (Ellis, 1989) could contribute in explaining the popularity of Yahoo mail usage. Twitter was used specifically for the entertainment and communication motives while Blog was for the communication motive only. So, communication made the two SNS popular. This may be explained by the Social Exchange Theory (Homans, 1956), which states that communication, being a two-way process, demands a complementary and mutual benefit from each party involved.

The most frequently cited motive by Malaysians was the social interaction motive followed by the education, communication, religious, entertainment, business and politics motives. So, Facebook was the main SNS used by the youths in Malaysia for social interaction. However, the youths sampled did not select the business and politics motives from the SNS as these motives were not included in the motives for each SNS usage.

The study also tried to compare youth profiles for using the SNS. It was found that Twitter and Skype did not show any differences between male and female users. Overall, the study indicated that there were differences between other users' attributes. Specifically, the users were more likely to be male, Malay, single, aged between 21 and 25 years old, pursuing a degree and they were students.

In matching the type of SNS and motives for using it, it was found that Twitter was used for the entertainment and communication motives; Facebook for the social interaction motive; Yahoo mail for the education motive; Friendster for the entertainment motive; and Blog for the communication motive. It can also be concluded that SNS was not used for business and politics motives by the respondents. Another interesting finding that emerged from the study was that Skype was not used for any specific motive.

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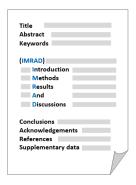


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# IICON201

International Infrastructure Conference 2014 3rd-4th December 2014 Sunway Resort Hotel and Spa, Bandar Sunway, Malaysia

Infrastructure Innovation and Transformation for the 21st Century and Beyond'

A Family of 4 Satellite Conferences:

ICBE
International Conference on Built Environment

ICBM

International Conference on Business and Management

International Conference on Engineering, Information Technology and Science

LANCOMME

International Conference on Language, Communication and Education

Organized by:

Sponsored by:







# **IICON2014**

3rd-4th December 2014 Sunway Resort Hotel & Spa, Bandar Sunway, Malaysia International Infrastructure Conference 2014
ICBE . ICBM . ICEITS . LANCOMME

### NTERNATIONAL CONFERENCE ON BUILT ENVIRONMENT

"Building Sustainable Infrastructure in Built Environment"

ICBE 2014 will provide a setting for deliberations on relevant and related issues in Built Environment and other related areas of this interdisciplinary field. This conference will be a platform for researchers to share their latest findings on emerging trends, threats, and challenges and bring them to the forefront for action by various parties and stakeholders from industry or academia.

Topics discussed during this conference will address the design, construction, management, and use of man-made surroundings that provide settings for human activity in a sustainable built environment, enabling people to live well over an extended period of time, within specified and conducive environmental limits.

The primary objective of ICBE 2014 is to gather together professionals, experts, practitioners, and industry movers from various fields and backgrounds throughout the world to disseminate their knowledge and share their expertise and vast experience with the other conference participants. The secondary objectives of the conference are:

- 1. To integrate knowledge and progress among academicians, researchers, industries, corporate organizations, and interest groups.
- 2. To enhance global academic, scientific, and professional networking.
- 3. To materialize the importance of infrastructure engineering and green technology.
- 4. To promote integration between built environment and infrastructure engineering in the usage of green technology.

ICBE 2014 encourages the submission of papers that deal with, but are not limited to, any of the following topics:

Town and Regional Planning
Occupational Safety and Health
Architecture
Landscape Architecture
Interior Architecture
Project Management in Construction
Heritage and Building Conservation
Tourism Architecture
Building Surveying
Geomatic and Land Surveying

Geoinformatic Science
Virtual Visualisation and BIM
Real Estate and Property Management
Park and Amenity Management
Urban Design
Facilities Management
Fire Safety in Architecture
Quantity Surveying
Other related fields





# **IICON2014**

3rd-4th December 2014 Sunway Resort Hotel & Spa, Bandar Sunway, Malaysia International Infrastructure Conference 2014
ICBE . ICBM . ICEITS . LANCOMME

# INTERNATIONAL CONFERENCE ON BUSINESS AND MANAGEMENT

"Current Trends and Future Challenges"

The overall aim of ICBM 2014 is to provide a platform for scholarly discussion among researchers, practitioners, and academics from various areas of business. Conference participants will present and discuss current trends and future challenges in the context of business infrastructure management, innovation, and transformation.

It is intended that participants of ICBM 2014 will become an inclusive community that represents and reaches policy makers, practitioners, and researchers worldwide. This inclusivity will allow various voices, points of view, and perspectives to emerge. This will also ensure that the conference becomes a learning community which will foster debate and discussion, promoting new understanding and knowledge. This conference will provide a forum for all academics from both local and foreign institutions of higher learning associated with the field of business and management as well as foster a culture of research among junior researchers and postgraduate students.

In light of the above and in conjunction with the launching of ICBM 2014, the objectives of the conference are:

- 1. To ensure that the conference provides rewarding experiences for our academics in enhancing their academic and professional skills.
- To ensure that the conference provides a platform for our academics and postgraduate students to present their research ideas and to learn from their counterparts from other institutions.
- 3. To ensure participation of practitioners from industry and the corporate world.

ICBM 2014 encourages the submission of papers that deal with, but are not limited to, any of the following topics:

Business and Management
Human Resource Management
Sustainable Business
Innovative Ideas for Business
Business Communication
Future Business Technology

Finance
Accounting & Corporate Governance
Globalisation
Marketing
Other related fields

To register, please visit our website at : http://iicon2014.iukl.edu.my/icbm.php

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# IICON2014

3rd-4th December 2014
Sunway Resort Hotel & Spa,
Bandar Sunway, Malaysia

International Infrastructure Conference 2014
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# NTERNATIONAL CONFERENCE ON ENGINEERING, NFORMATION TECHNOLOGY AND SCIENCE

"Innovation in Advanced Technology Implementation and Transformation of Advanced Material in Green Environment"

Participants of ICEITS 2014 will engage in presentations and discussions on topics related to Infrastructure as an underlying base or foundation for an organization or system. This may include the basic physical systems of a country or community's population, such as roads, utilities, water, and sewage. Topics for this conference will focus on the importance of well-planned infrastructure to meet the basic needs of society and how these systems are essential for enabling productivity in the economy.

It is increasingly clear that a whole set of more integrated and coordinated actions are needed to steer nations toward a more sustainable future. This conference will address both infrastructure challenges and opportunities to ensure sustainable nation-building in the 21st century and beyond.

The primary objective of ICEITS 2014 is to ensure that the communities of Engineering, Applied Science, and Information Technology become more familiar with the many important application areas that have great social impact and that arise from real-world problems. Such areas range from practical applications in infrastructure to the usage of green technology.

ICEITS 2014 encourages the submission of papers that deal with, but are not limited to, any of the following topics:

#### **Engineering and Infrastructure**

Aeronautical Engineering
Building and Infrastructure
Coastal and Offshore Engineering
Construction Management
Engendering Management and Safety
Engineering Applications
Material and Process Engineering
Mechanical Engineering and Automation
Modelling and Simulation
Power Plants
Public Facilities and Housing
Software Tool Development
Sustainable Nation Development
Transmission Lines
Transportation Systems
Visualization and Virtual Reality
Other Related Topics

### Information Technology and Infrastructure

Physical Infrastructure
Resource Infrastructure
Organizational Infrastructure
Information and Communication Infrastructure
Ubiquitous Computing
Networks and Information Systems
Multimedia and Visualization
Middleware and Operating Systems
Security and Privacy
Data Mining and Artificial Intelligence
Software Engineering
Web Technology
Convergence Content
Other Related Topics

### Pure and Applied Sciences and Infrastructure

Biotechnology and Bioscience Agricultural Science Sports Management Mathematics Chemistry Physics Other Related Topics





# IICON2014

3rd-4th December 2014 Sunway Resort Hotel & Spa, Bandar Sunway, Malaysia International Infrastructure Conference 2014 ICBE . ICBM . ICEITS . LANCOMME

# INTERNATIONAL CONFERENCE ON LANGUAGE,

"Charting Innovative Pathways and Future Directions"

LANCOMME 2014 will provide a setting for discussion of current trends in the fields of language, communication, and education, which are changing rapidly with developments in technology and human capital.

This conference will provide insight on how various effects of globalisation and huge investments in the IT industry have transformed methods of communication and changed the future of language, communication, and education. Because of the needs for development of human capital to be in sync with swift developments in the world of communication, balanced approaches in the fields of language and communication are needed to scaffold global growth and advancement in a wide range of fields related to IT, engineering, architecture, and business.

Participants in LANCOMME 2014 will share insights into the crucial importance of language use and development and effective teaching of language in the diverse current environment of global communication.

This conference aims to explore the changes in the evolving fields of language, communication and education for the betterment of our future generations by:

- 1. Providing a broad-based and neutral platform for academic and professional discourse.
- 2. Identifying pathways for future innovations and success in research and practices.
- 3. Deliberating on emerging trends, threats, and challenges.

LANCOMME 2014 invites papers that engage exclusively with language or communication, as well as education papers that combine the disciplines. Papers may address (but are not limited to) the following topic areas:

#### Language

Survival of Language Language, Culture, and Society Gender and Discourse New Englishes

#### Communication

Media and Society New Media International and Intercultural Studies Inventions and Innovations

**Ethics and Professionalism** 

#### **Education**

Teaching and Learning Performance and Best Practices Global Literacy Efforts Interdisciplinary Knowledge

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