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EDITORIAL

Greetings from IAARHIES and the Conference organizing Committee!

At the very outset, we extend a warm welcome to all our distinguished guests, speakers and the participants who have joined us for the IAARHIES 15th & 16th International Conferences in Jaipur, India & Kuala Lumpur, Malaysia.

We are happy to receive the research papers from all part of the world and some of the best papers published in this proceedings. The current edition of the proceedings brings out the various research papers from diverse area of Business, Economics, Management, Engineering, Technology, Science and Humanities. The IAARHIES conferences are an attempt to provide a platform to the researchers, educators and professionals to present their innovative thoughts and discoveries and to explore future trends and applications in the field of Engineering and Technology. However, this conference will also provide a forum for dissemination of knowledge on both theoretical and applied research on the above said area with an ultimate aim to bridge the gap between these coherent disciplines of knowledge. Our final goal is to make the Conference proceedings useful and guiding factor to audiences involved in research in these areas, as well as to those involved in design, implementation and operation, to achieve their respective goals.

We once again are thankful to all the delegates participating in these events in Jaipur, India & Kuala Lumpur, Malaysia. We are sure about the contributions to be added by the participating authors to the research community and rapidly growing field of education throughout the globe. We are also thankful to all the International advisory members and reviewers for making these events a successful one.

We are specially thankful to **Ms. Manjari Singh,** Associate Professor, Department of English, Keshav Mahavidyalaya, University of Delhi, New Delhi, India**, Dr. Mohammad Jafari,** Assistant Professor, Department of Economics, Lorestan University, Khoramabad, I.R. of Iran and **Dr. Akbar Khodabakhshi,** Assistant Professor, Department of Economics, Bu Ali Sina University, Hamedan, I.R. of Iran for joining and chairing the IAARHIES events in Jaipur, India & Kuala Lumpur, Malaysia. We wish them all the success in life ahead.

Sandeep Kumar
(Chairman, SAR)

Dr. Hardev Sharma
(Gen. Secretary, SAR)

CONTENTS

Food in Select AncientIndian Philosophical Thought

Ms. Manjari Singh
Associate Professor (Department of English)
Keshav Mahavidyalaya
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ABSTRACT : The present paper explores the place accorded to food and food practices in select ancient Indian philosophical thought. It seeks to trace the ancient Indian meditationson food as a key component in engineering ideological formulations on caste, gender, and the nature of ultimate the reality, that is, Brahma. The Upanishads consistently elaborate the cogency of food in the physical, psychological and moral life of human's.

METHODOLOGY : The methodology followed is devoted to the textual analysis of Ancient Indian literatures ranging from the Vedas and Upanishads, to the Ayurvedic formulations. These are interrogated for their reflections on food and its practices as they influence various aspects of the social, corporeal and moral life of humans. The analyses offered is in keeping with the best practices in qualitative research and post facto analysistechniques.

Keywords : Ancient Indian Philosophy, Food, Veda, Upanishad, *Purusukta*, Brahma, Ayurveda, *Guna*, *Vrata*, *Kacca*, *Pakka*.

Food and food practices are allocated a central space in the ancient Indian literatures starting as far back as the Vedas, which are a celebration of life and earliest known available record of Indian history and civilization. The broad term Veda stands for all the early strata of Vedic literature and can be divided into four strata. The earliest Vedic booksare called the *Sanghitas* andthesecond books *Brahmanas*,contain the explanation of these books and instructions on how to perform the yagyas. The *Aranyakas* form the third strataand contain the philosophical meditations of sages in the forests which resulted in the simplification of the rituals on conducting*yagyas*. The Upanishads settled down as the last strata of the Vedic literature. It was mandatory for each Veda to have an Upanishad towards its conclusion which would summarize the spirit of the Vedic thought. The upanishadic speculations were about life, its origins and subsequently dwelt on after life. Outlining the Philosophy of Upanishad'sHume postulates, "The Upanishads are the first recorded attempts of the Hindus at systematic philosophizing. These ancient documents constitute the earliest written presentation of their efforts to construe the world of experience as a rational whole" (2)

Food finds much attention given to it since the earliest civilizational record of itin the Vedas. The *Rigveda*devotes one full hymn to food and the rishi there addresses food as a *devata* and an important subject of consideration in human life. He says that life is created and maintained by food and goes on to mention certain fooditems including various grains like barley and the Soma plant concoction. *Rigveda* gives a lot of space to Soma plant explaining how the entire process of Soma extraction is accomplished.An entire hymn is devoted to food in general, as well as,tothe praise of Soma, "Now will I glorify Food that upholds great strength, /By whose invigorating power trita rent vrta limb for limb. / O pleasant Food, O Food of meath, thee have we chosen for our own, / So be our kind protector thou." And "Whatever morsel we consume from waters or from plants of earth, O Soma wax thou fat thereby. / What, Soma, we enjoy from thee in milky food or barley-brew, Vatapi, grow thou fat thereby" (267).This hymn does not restrict itself to Soma alone but payshomage to various types of foods and grains which support human existence. It celebrates the efficiency of food in enabling life and amplifies its cogency.

Themes on the centrality of food in the life of humansar eexpanded in the Upanishads, which are enquire on matters regardingthe nature of life and substances. Food is analyzed herein in the context of a search for the ultimate truth and gist of life. The Upanishadinterrogatesthe beginnings of life, death,as well asthe life after death. In the considerations of the upanishadkaras,there are two

concepts which sustain life, namely, *prana* and *rayi*. *Prana* is the system of the breath which cannot be physically identified. *Rayi* includes, food, wealth and sundry materials which breathe life into the *prana*. As a result,food becomes the foremost life (*prana*) bestowing entity.The rishis,interrogate one by one, the various materials inan effort to discover the ultimate truth about the nature of Brahma, who is an abstraction. Validating food as the primary life giving substance, the upanishadic rishisays, "*Annam Brahma hava*", that is, food itself is Brahma and therefore the central life principal. Food which provides sustenance for life, is itselflife. In the spiritual speculations of the Vedic rishis food acquires anunequivocal ratification forbeing a tool of self-realization.The *Taittiriya Upanishad*, in itssecond *Anuvakya*, celebrates food as the supporting material of all life forms and constructs it as a reflection of Brahma himself:

> From food, verily, creatures are produced
> Whatsoever [creatures] dwell on the earth.
> Moreover by food, in truth, they live.
> Moreover into it they finally pass*
> For truly, food is the chief of beings;
> Therefore it is called a panacea**
> Verily, they obtain all food
> Who worship Brahma as food.
> For truly, food is the chief of beings;
> Therefore it is called the panacea.
> From food created things are born.
> By food, when born, do they grow up.
> It is both eaten and eats things.
> Because of that it is called food. ***

The Upanishads elevate food to the highest level in the hermeneutics of the self. Food iseaten and is also simultaneously the eater.It is imagined as the omnipresent substance enabling life all while engineering theabsorption of alllife in its self. The eater himself becomes food for something else. In the *Prasna Upanishad* six questioners seeking the answer to the truth of Brahma from a teacher, are answered thus: "Food verily is the Lord of the creation (Prajapati). From this, verily is semen. From this creatures are born" (380).The shlokas in the*Brihadarika Upanishad* accord analogous divination to foodstuffs in its shloka, "*Anna bhootani Jayanti/ Anna deva poshayanti/ Anna eva abhisamivishyanti"*that is; all living beings grow from food, it is food which nourishes them, and it is in food that all things merge. All entities dissolve into food thereby becoming food for something else.The *Maitri Upanishad*states, "This, verily, is the highest form of the soul(Atman), namely food; for truly this life (prana, breath) consists of food….For thus it has been said…. From food, verily, the creatures are produced,/ Whatsoever [creatures] dwell on the earth./ Moreover by food, in truth, they live./ Moreover into it also they finally pass" (432). The task before the upanishadkaras was how to prepare the aspirants for the realization of unity of all cosmos. Thus in the *Chhandogya Upanishad's*formulation, Virat, the cosmic person, is thought of in terms of food. Everything is seen to merge in it, who is the eater of food. Everything has been reduced to Virat and thus duality is erased from the cause and effect. Food, identifies itself as the non-dual *Virat*.

These formulations fit in with the ancient Indian philosophical precepts onthe singular nature reality or truth. Contiguous ideas linking food to Brahma are found in the *Bhrigu Valli*. Bhrigu's progressive learning ends in the realization of the interconnectedness of all creation and the recognition of Brahma himself as food, "He performed austerity. Having performed austerity, [2] he understood that Brahma is food. For truly, indeed, beings here are born from food, when born they live by food, on deceasing they enter into food" (290).Food,which is partaken of in different forms and stages,iseventually declared to be 'Brahma' itself. It is during the investigation of the nature of 'Brahma' that it is argued that all living beings originate from food, as well as sustain themselves through food, and towards the end they enter into food becoming food for something else. This fits well into the metaphysical thinking of the '*Karyakarani Bhava'*, or the cause and effect system. Therefore, food becomes the core of any discussion on the ethics of consumption.

Another tradition which is integral to the ancient Indian philosophic reflections onthe centrality of food to human life and death is the custom of *Shraddha*. In the Hindu philosophy there are supposed to be five debts or *Rinas*.

Man is envisioned to be born of the divine or the *Devata* and that is the first debt, the second debt is owed to the learned rishis who impart the knowledge of the Vedas. Furthermore, we are indebted to our all our ancestors and this constitutes the third debt of genealogy. Absolution from these debts is sought by feeding the Brahmin during *Pitri Paksha* or the *Shraddha* days. Food functions as a tool of social organizationas important in death as in life, forging ties of relational accountability much beyond worldly existence.

Food is visualized as a sentient entity deeply implicated in the physical and moral well-being of people. Ancient *Ayurvedic* traditions tether themselves to inherent connections between bodies and the food they ingest. They tend to transpose on food the power to transmit salient physiological and psychological qualities to the human body. Deriving a descending scale of purity, traditional *Guna* conceptions of *Ayurveda* divide food stuffs into categories of the *Satvika, Rajasika*, and *Tamasika*. These are conflated with peculiar qualities and offer a choice of sorts towards the promotion of desirable peculiarities. These injunctions worked to consolidate hegemonic structures, especially with regard to caste hierarchies.The*Tamasika*traits arehallmarked by lethargy and ignorance which is believed to be the quality of unclean and ignorantmen, in other words, the Sudras.

A key Hindu social phenomena which is fashioned through prohibitions on interdining and multiple other food related injunctions is the institution of caste. Though one finds no reference to caste formations or discrimination in the *Rigveda*, the *Purusha Sukta* in the 10th *Mandala* of the Rigveda describes how the castes came into existence, from different parts of *Purusha*, the Cosmic Soul. In the Second verse of the *Purusha Sukta* Prayers, it is explained that the *Purusha* expands with foodwhere food is indicative of the worship.For any society to reach the full spiritual potential, all must cooperate in working together in prescribed domains just as the different parts of the body work together to nourish the body or else it would become weak and die. It is this injunction to sustain life (or life sustaining food) through immutable and incessant labour in the prescribed caste domains which is at the heart of the caste hegemony. Food representations in the Vedicliteratures provide the rationale for the hierarchical and immutable stratification of society and deeply entrench the caste system into its social organizations. The caste discourse is primarily practiced through caste endogamy and interdining prohibitions. Of the two types of food: *Pacca*, which is food prepared with ghee and *Kachcha*, which is food prepared with water, a Brahman can accept only *Pacca* food from a Shudra, but *Kachcha* food can be accepted from a person of one's own caste or of a higher caste. Food therefore is the philosophical pivot around which Indian society organized itself into a hegemonic and hierarchized structure.

Demarcations linked with purity and pollution, are also imagined along the lines of cooked and raw foods in the ancient Indian alimentary meditations. Raw food is acceptable from anyone irrespective of their caste, class or creed as the receiver can cook the raw food himself/herself and maintain the purity thereof. Cooked food on the other hand is considered to be contaminated and it is in this respect that the potentially contaminatingbody/ body politic of the cook couldenter the eater through the culinary. In order to maintain purity, the virtuous eater must eat alone or at least in conterminouskinship groups. However, within the category of cooked food, fried or pakka food is considered to be purer than the kachcha food which is cooked plainly with water. *Ghee*which is considered the purest food item and is capable of endowing similar qualities on the foods it touches or processes. Things prepared in ghee are considered unsullied and therefore food offering to the deity consist always of ghee or things prepared in it. Khare, in *Culture and Identity: Essays on Hindu Systems of Managing Foods*, Juxtaposes and embroils the categories of the Deity's leftovers (*Prasada*), Scraps (*jootha*), and human excreta (*gu*). He justifies this clubbing together because these categories represent several important cultural principals that bear directly on the conception of food among Hindus (98). The social function of *Prasada* is mainly to produce bonds of social tenacity among devotees across caste and class (99). In partaking the *Prasada*, or the *Joothan* of the deity, is exaltedabove

thebinaries of purity and pollution engineered by metonymies of*Kacca* (raw) and *pakka* (cooked) foods. Here even intercaste associationis of no consequence. Khare states; "While 'Prasad' and 'jutha' belong to the same category of leftover- "eaten" -foods, they illustrate the principal that the rank of the leftover food is directly proportional to the rank of the eaters…. If the first category illustrates the process of sacred transformation, the second stands for biological (more precisely, physiological) reduction" (105).

The ancient Indian ideations food and its related practices clearly demarcate it as a site implicated in manufacturing religious and social significations far beyond its nutritional ambit. In its presence and absence, food is a sign which impartstranscendental significations. Within the western philosophical traditions anchored on the 'Cartesian divide', food indulgences are synonymous with gluttonous, bodily, sensorial pursuits tethered to baser needs. A commensurate philosophical take is evident within the Hindu philosophical traditions. The path to salvation or*moksha* entails a giving up of all that sustains the gross body or *sthoola sharira*, that is, primarily food and focus on the spiritual body, or the *sookshma sharira*. Traditions and injunctions on fasting and giving of alms instruct the householder towards socially and environmentallyresponsible behavior.Commensurate value of piety is attached to fasting bodiesfood becomes a site of performance of this piety.

In the ancient Indian philosophical traditions, fasting embeds the virtue inherent in the withdrawal from materiality andfood is fashioned as the most essential 'material' on which the human life hinges.The virtue of fasting is principally manifested through abstaining female bodies seeking virtue and status within a group. In traditional Indian patriarchal discourses, women are the designated torchbearers of tradition and culture and therefore bear the burden of transmitting the virtue of culture to posterity.Elaborating on the significance of fasting or*Vrata* Sila Basak summarizes it as a ritual which is primarily performed by women, at a particular time, and in a particular manner, as they constitute domestic observances of religion and a continuation of the ancient beliefs in magic (13). In many a household the first food portions are reserved for the crow, cow, dog. Through these practices the *Annapurna* helps the household pays its environmental and moral debts, simultaneously enabling a holistic approach in food consumptions. It is imperative to map the nuances ofthese philosophicalconstructions on food in order to develop a quintessential Indian feminist perspective and investigate how they impinge on women's bodies, identities and lives. The gender discourses obtained in the ancient Indian philosophical traditions, mainly mediated by the injunctions in the *Manusmriti* tend to offer women an economically disempowered and socio-politically marginalized location. The disenfranchisement experienced by womenis primarily engineered through food and its practices. Gendered prohibitions on consumption of rich and intoxicating foodstuffs are analogous with the normative social codes appropriate to female behavior.The food entitlements of women are envisioned as directly proportionate to their conjugal status and childbearing and lactating phases. Though it is women who are the preparers of food, their task was to focus on the production of the household and family by prioritizing the desires and needs of others. Accordingly, the women ate last and least, suppressing theconsumptive instinct. Thehousehold women, particularly widows, were permitted to consume only *Satvika* foods and prohibited from *Rajasika* and *Tamasika* foods, as a corollary to the pious life of celibacy and renunciation they were supposed to lead. Both menstruating women and widows were left out of sex and food in polygamous households (Inglis Gimlin Thorpe Vol I 19). For pregnant women *Satvika*and *Rajasika* food prescriptions were followed in order to engender appropriate traits in the fetus.

Integral to the ancient Indian meditations on the centrality of food in the householder's life is the *Annapurna* myth. It reiterates the importance of *Anna* or food as the essence which animates all. Though primarily a product of the illusory world or *Maya*, *Anna* transcends it in its capacity as the primary material which sustains life and therefore is envisioned as Brahma itself. In keeping with the highest of values accorded to *Anna* in Hindu religion, *Annapurna's* role as the one who performs the task of fulfilling food's destiny by preparing it and providing it for consumption,

elevates her as the mainstay in the figuration of the household. The construction of the *Annapurna* myth goes a long way in structuring the designated gendered roles in the Hindu household. As Letendre argues, "images of deities reflect and shape understandings of sexual difference and the cultural meanings attached to biological sex and sacred imagery functions are socially constructed and instructive illustration of expected gender roles and in an androcentric culture they reflect men's power" (191).

The deeply genderedHindu household is constructed through the binaries of the *Annapurna* and *Annadata*. The male head of the household is fashioned as the '*data*' or the chief provider of *anna*. The female is merely as an appendage to execute the male prerogative of the giving of the *anna* and is therefore envisioned the *Annapurna*. In the household she is imagined as the '*ardhangini*', always the supplementary, required to complete the whole. Letendre posits, "female deities are typically worshipped as life-givers and sustainers and revered for their regenerative power. In this view of gender, women are associated with fertility, matter, embodiment, and feeling, whereas men are connected with the spirit, action, mind, and reason" (192). The Annapurna myth constructs powerful social roles and hierarchies whichimpinge on the discourses of patriarchy.

Significations attributed to food in the ancient Indian philosophical reflections map the multiple domains of social structures, gender discourses and cosmic reflections on the meaning, destiny and valuation of human life. Food isat the kernel of socio-cultural conventions. It functions as the foremost marker and endower of identities and entitlements.It can simultaneously reflect solidarity and inscribe deep inequalities.However, in the average Indian psyche it is accorded the highest status and is endowed with rejuvenating capacities far beyond the bodily ambit. These philosophical outlooks highlight the importance of the ethics of eating. In today's consumptive day and age, the significance of valuing food as a moral substance cannot be overemphasized. Food bridges the distinctions between the carnaland thecerebral.It can animate that which cannot be thus brought into consciousness. The ancient Indian philosophical textscoherently inscribe the powers which inhere in food and can be valuable resources to mine for a richer, more human andequitable existence.These ponderings may be read as interdictions towards a Buberian 'I' 'Thou' humanitarian existentialism and as anethical imperative for a more sentient approach towards all that we consume and all that consumes us.

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End Notes

Hume, Robert Ernest. *The Thirteen Principal Upanishads: Translated from the Sanskrit*. London: OUP. Second Edition Revised. 1937.

God

Diacritical marks are not applied anywhere in the text of this paper.

Griffith, Ralph T.H. Trans. *Hymns of the Rigveda*. Vol 1. New Delhi: Munshiram Manoharlal Publishers Pvt. Ltd. 1987. Hymn CLXXXVII. *Vatapi* is further explained as the fermenting Soma and according to Sayana, the body.
Sage

Hume, Robert Earnest. 284. *These first four lines are quoted in Maitri 6.11. **sarvausadham, literally 'consisting of all sorts of herbs.'***The last four lines recur at Maitri 6.12.
Ibid.
Ibid.

Chhandogya Upanishad. Trans. Swami Gambhirananda. Calcutta: Advaita Ashrama. 1983. Xxxvi.
'Chapter concerning Bhrigu'. Hume, Robert Ernest.
Khare, R.S. *Culture and Identity: Essays on Hindu Systems of Managing Foods*. Simla: Indian Institute of Advanced Study.1976.

Brata is the tradition of fasting in India, followed mainly by women. This voluntary abstinence from food or water or both is practiced towards the achievement of some goal, desire or piety.

Basak, Sila. *Women's Brata Rituals*. Gyan Publishing House: New Delhi. 2006.

Ancient Indian legal text containing injunctions on the organization of society.
Inglis, David, Debra Gimlin, Chris Thorpe. Eds. *Food: Critical Concepts in the Social Sciences.* Vol 1. London: Routledge. 2008.

Parvati, who is construed as the goddess of food herself, gets upset when Shiva tells her that the entire world including food is a mere illusion or *maya*. In an attempt to make Shiva acknowledge the significance of food she makes all the food on the earth disappear and relents only on the unequivocal acknowledgement by Shiva of food's importance, and offers him food from her own hands.

The highest status has been accorded to *Anna* in the Vedanta. Many references equating it to Brahma abide in the Upanishadic literature also. The *Aranyaka Upanishad* clearly states "*Annam Brahma Hava*", that is food itself is Brahma.

Similar constructions are evidenced in Western philosophical ideations of female deity's vis-a-vis 'Cornucopia' or 'The horn of plenty' is another image which echoes the Annapurna mythos with linkages with female deities like Amalthea (Zeus' goat who is envisioned as the nurturing goddess), Abundantia and Fortuna (goddesses of good fortune) particularly because they are associated with harvest, prosperity and spiritual abundance.
Letendre, Denise R. "Deities, Gender Images and" in Jodi O'Brien. *Encyclopedia of Gender and Society*. Thousand Oaks: Sage. 2009.

The influential Buberian idea of communication and relationality emphasizes the personal relation which should be real relation between man and man. In his book *I and Thou* he urged man to live in an I-thou relation with god and universe, a personal reverential relation rather than the more common I-it relation. He states "the primary word I –thou can be spoken with the whole being. The primary word I it can never be spoken with the whole being" (3). Buber, Martin. *I and thou*. New York: Charles Scribner's Sons. 1958.

BRITISH PROTECTIONISM AND OIL INDUSTRY PRIOR TO THE ESTABLISHMENT OF PETRONAS

By Saiful Khairi Kamarudin

1. Introduction

This paperexamines the existence of protectionism policy in Malaya and Borneo practised by the British specifically in oil industry during the colonialism era in thenineteenth and twentieth century prior to the establishment of Petroliam Nasional Berhad (PETRONAS), a national oil corporation owned by the Malaysian government.

Even though the British strongly practiced free trade policy after the Industrial Revolution in thenineteenth century, the practice was not materialized in its colonies. In fact, the British strongly propagated closedmarket practice or monopoly through protectionism policy. The reason behind the British protectionism policy was to prevent the Standard Oil Company, the largest American oil corporation,from dominatingthe oil market in Southeast Asia.

In order to stem the expansion of Standard Oil business operationsin Southeast Asia, two British oil companies, the Anglo-Saxon Company and Shell Company completed their business relationship with the Dutch oil company, the Royal Dutch Company by forming a partnership in Southeast Asia known as the Royal Dutch Shell Petroleum Company. This formation of oil partnership was to control directly the oil-related economic activities of colonies under British and the Dutch administrationin Southeast Asia.

Prior to the First World War, the British protectionism policy in theoil industry reached its height when the British government granted security of oil supply to its oil producer colonies through their oil company. The Royal Dutch Shell Petroleum Company was responsible for providing continuous oil supply to the British Navy and expanding oil exports during the First World War.

2. British Protection for Oil Domination

America dominated the international petroleum industry in the nineteenth century when they were able to produce oil in large quantities to justify commercial exploitation and monopoly. Five of seven major international oil companies in the early 1900s were American – Standard Oil (New Jersey), Texaco, Gulf, Mobil, and Standard Oil of California; then there was British Petroleum, which is almost half owned by the British Government, and Shell, which is Anglo-Dutch with twin headquarters in London and the Hague.

By the end of the nineteenth century, Standard Oil had already expanded abroad by marketing oil in several continents, and before World War I, it was already producing in other countries.

In the later decades of the nineteenth century, the oil industry was not seen as a particularly strategic asset for the British. However, the colorful, cut-throat world of Rockefeller's Standard Oil, Marcus Samuel's Shell, Henri Deterding's Royal Dutch and the Nobel and Rothschild interest in the Caucasus attracted more public interest when the British sensed the enormous contribution oil could make to naval power, and as European Great Power rivalry grew over the tempting oil rights to be prised from the Ottoman Empire.

In the early twentieth century, oil became Britain's principal energy source. The need for great oil consumption by the British created great competition of oil business between the British and American capitalists. For them, cheaper oil should be produced at lowest operation cost. The cheapest oil production could be generated in the Far East and Southeast Asia through strategic partnership with the local people and other Foreign Oil Company (FOC).

The competition of producing cheaper oil supply was an issue for the British when the American oil corporation, Standard Oil, was dominating the oil distribution industry in Southeast Asia. As a result, Standard Oil's presence drove the British capitalists into a partnership alliance with

the Dutch oil company as a business strategy to dominate the oil market share in the Far East and Southeast Asia.

2.1 Standard Oil in Malaya and Singapore

In Malaya, during early British colonialism, oil exploration and production activities were yet to be established. The area was used only as the center of oil distribution in Southeast Asia. Singapore and Penang were used to keep thousands of oil cases in the warehouses where they were placed near the harbors. Oil was mainly imported from America, Russia, Burma and Sumatera. In the 1870s the Standard Oil Company, an American giant oil corporation and oil marketing rival to the Royal Dutch Oil Company, used Singapore as a center of oil distribution. Cased oil from the United States was kept in warehouses near the harbor, for distribution around the peninsula. Trading bulk of oil using cased oil was introduced by Standard Oil after realizing that carriage in barrels proved difficult and expensive. Standard Oil kerosene in its distinctive blue tins soon spread throughout the world.Cases of American oil would have reached Singapore in small quantities in the1860s.

Standard Oil of New Jersey had a significant impact on oil trading in Singapore with Tanjong Pagar as storage of fuel oil distribution. Jersey Standard's principal product in the 1920s was gasoline after kerosene which used to be their principal product in the early 1910s. In 1922 they began to retail gasoline in Singapore. The demand for gasoline in 1930 grew with the start of commercial air traffic and the aviation fuel market. Subsequently, the automotive industry expanded and the need for gasoline to replace kerosene contributed to the increase of oil distribution in Southeast Asia. In 1921, Jersey Standard Oil established its first service station in Kuala Lumpur. The single hand-operated pump would serve nearly 2,000 vehicles in the Klang Valley.

2.2 Shell and Standard Oil Rivalry

Shell and Standard Oil rivalry in Southeast Asia started when the domination of oil supply in the region was controlled by Standard Oil in the 1870s. At that time, Standard Oil used Singapore as a center of oil distribution. Twenty years later, the first Standard Oil products made their debut in 1893 in Malaya with the arrival of the *SS Calm* in the Butterworth docks. Their primary products at the time consisted of oil as fuel for light, lubricants, paraffin and solvents. Two years before 1893, the development of oil storage in Singapore was initiated under Shell's establishment of bulk storage. This marked the beginning of oil industry rivalry between Shell and Standard Oil in Southeast Asia.

In 1891, Marcus Abraham, a nephew of Marcus Samuel arrived in Singapore to build storage facilities at Pulau Bukom to support Shell's oil distribution operation in Asia. In addition this also supported Samuel's tanker which came from Russia to Singapore via the Suez Canal. Then, later, also in 1898 Standard Oil opened a Singapore office and began to build storage on Pulau Sebarok.

Nevertheless, Samuel still could not compete with Standard Oil in the Asian market because Standard Oil's kerosene cans and products were much preferred by their Asian customers. In 1897, the Shell Transport and Trading Company under Marcus Samuel were registered. At the dawn of the new century, it was already a formidable rival to Standard Oil in the Asian region, owning thirty ships and a whole network of depots in the East.

The competition of Asian oil trade began to grow because of the growing participation of major oil companies in the region. The impact was oil export activities in Singapore significantly contributed to the domestic economy in the 1930s. In 1950 about 20 percent of all vessels going through the port were involved in the oil trade.

The oil distribution rivalry between Shell and Standard Oil was declared by Heinreich Riedeman, Standard Oil's chief executive in Europe who had a lifelong desire to crush Shell, which he claimed was a principal rival to them. From 1920-1930, Shell was expanding rapidly under Henri Deterding, the Royal Dutch Shell Company's second Managing Director after August Kessler. During his time, Shell's exploration was the biggest in the world. Under Deterding's leadership, he introduced the Policy of Straight Line which consequently gave the edge to Shell to market oil cheaply. More than that, he introduced the

autonomous policy for Shell's subsidiaries to act as an integral part of the country rather than just producing profit. This generated openness to its shareholders and increased joint ventures with local governments.

2.3 Anglo-Dutch Oil Partnership

In the early twentieth century, the British and the Dutch oil companies came into contact to develop oil concession cooperation and agreements. In the late nineteenth century, the Royal Dutch Company, Anglo-Saxon Petroleum Company, 'Shell' Transport and Trading Company, initiated an oil business strategy to combine their oil exploration interests and thus, formed Shell Petroleum Company.

The cooperation was to maintain and dominate oil resources in the Far East and Southeast Asia. Other than that, the British tried to inspire the local people in its colonies to acknowledge British rule by giving industrial management share, providing employment in the oil fields and leveraging concession oil agreements with important local leaders. This was to prevent the Standard Oil Company of America from penetrating the oil market in the Far East as local leaders would be loyal to the British and the Dutch.

This strategy did not only happen in the Far East and Southeast Asia, but also in the Near East. In the beginning of the twentieth century, the British Anglo-Saxon oil company gained bigger oil concessions in the Middle East. At that time, oil was struck in Iran by British explorers. The discovery immediately prompted Britain's more ardent interest in Iran's internal affairs.

Just before the First World War, a joint British-Dutch oil company was set up to explore for oil in the then Turkish Iraq. British oil interests were decisive for the dismemberment of the Ottoman Empire and the ensuing political fragmentation of the Arab lands. The British oil interest in the Middle Eastern was already predominant. A new concession company was formed, the Anglo-Persian Oil Company in 1909, due to the discovery of oil in Iran at Abadan.

2.4 Royal Dutch and Shell in the Far East

One of the earliest British state oil corporations which penetrated the Far East was the Anglo-Saxon Petroleum Company. Its head office was in London; it cooperated with the Royal Dutch Company which was owned by the Dutch whose head office was in The Hague.

Both oil companies were responsible for operation activities. The Anglo-Saxon Petroleum Company managed transportation and storage activities, whereas the Royal Dutch Petroleum Company managed exploration and production activities. At the same time, they served the British and the Dutch government in terms of providing oil logistics and supply for state defence departments.

In 1903, the Royal Dutch, Anglo-Saxon Petroleum Company, 'Shell' Transport and Trading Company and the French trading house of Rothschild combined their marketing interests in the Asian market and formed the Asiatic Petroleum Company. The marketing activities in Borneo remained in the hands of the Asiatic Petroleum Company. The Asiatic marked the beginning of oil commercialization in the Far East and Southeast Asia.

It was Marcus Samuel, the son of an East London Jewish merchant, who became the first European who traded oil in the Far East and Southeast Asia. He was the founder of Shell Company. He became the first man who invested in the oil business in Sarawak when he reported that oil was found in Miri in 1909.

In 1878, Samuel and his brother set up their own trading commodities in the orient, specializing in trade with Japan. One of the many commodities that they traded was Japanese coal through the Far East and this in turn led them to think of oil. In 1898 he set up the Nederlandsch-IndischeIndustrie – en Handel Maatschappij, with its own oil concession in Borneo. Subsequently, the famous oil complex of Balikpapan was to be created. During that time, Standard Oil of America was dominating the oil distribution market in Asia.

2.5 Cheaper Oil in Colonies

The consumption of oil into new mechanism of machine

invention and innovation in factories created substantial operating costs and as a result, decreased operating profits. The oil must be produced at low cost to boost factory operation performance, efficiency of product delivery and effectiveness of capital employed for business results.

To achieve these, cheaper oil can be found outside Europe. Fortunately, for the British, they had colonies in the Near and Far East where oil can be produced easily through political and economic intervention of colonial supreme power in its colonies.

As a result, the British capitalists and industrialists' oil hunger persuaded the government to add new colonies to acquire new revenue for their countries as well as avenues for creating cheaper oil production. Meanwhile, the British had to compete with other European countries that were also looking for oil in the East.

3. British Oil Industry in Sarawak

Sarawak was the principal state of oil exporters for the British colonial empire; it marks the beginning of Malaysian history in petroleum production. The entire activities of oil productions in Sarawak were actively operated by the British through the help of Rajah Brooke. Oil businesses in Sarawak became prosperous under Rajah Brooke's rule. His policy of free market system that enabled exploitation of oil deposits by FOCs in Sarawak caused him to decrease the indigenous people's role in the oil industry.

By supporting the British, he managed to formulate oil labor policy for the benefit of Foreign Oil Companies (FOCs) by pushing the cheap Chinese and Javanese labor from the rubber industry to the petroleum industry. This was to ensure FOCs reduced operating costs efficiently in the oil business.

In the late nineteenth century, Brooke's free market policy changed to protectionism policy. British proxy oil companies such as Anglo-Saxon Petroleum Company and the Royal Dutch Petroleum Company held the dominant market share in oil activities in the Far East and Southeast Asia after facing aggressive oil distribution by StandardV Oil, owned by the United States.

3.1 Rajah Brooke's Social Economic Policy

Sarawak owes its inception as a state to the ambition of a middle class English adventurer, James Brooke (1803-68). Brought up in India, Brooke was fascinated by life in the East and was also imbued with Raffles's vision of a benevolent English administration which protected the trader while fostering native welfare. He was accorded the title Raja of Sarawak in 1841; Brooke set up his capital at Kuching, a small Malay village, and established a dynasty of 'White Rajas' which was to rule Sarawak until the Second World War.

The Brooke style of government, the personal nature of authority and the opposition to major change, helped establish a unique identity for Sarawak. However, some aspects were shared with the later colonial administrations in the Peninsular Malay states, most significantly the tendency to view the population in terms of ethnic communities.

The Brookes divided the range of linguistic and cultural groups in Sarawak into three basic categories, each with distinct roles. To initiate economic activity, Chinese migration was encouraged and the Chinese would then trade, cultivate or mine. Under Charles Brooke, James Brooke's son, the Chinese community grew considerably, and without any European competition they were able to assume a dominant position in Sarawak's economy.

This development was encouraged because during the 19th century, the British free market system viewed that commercial activities were inappropriate for anyone involved in the government. Like the British, the Brookes therefore believed that Malays employed in the administration should abstain from trade. Malay peasants should take on the roles for which they were deemed best suited, and become agriculturalists and smallholders rather than traders.The Brooke's social economic class was based on free market policy which was propagated by the British. When oil was discovered in Miri, it was the free market policy that proved the oil industry cannot be run commercially by the local people because oil was

expensive and only limited for local usage.

Cheap labor from China could help to reduce oil business operating expenses. However, it can only be successfully done with the strong intervention of Britain's economic policy to promote enterprise of extension of oil usage, not only for local usage but also for the international industry as well as the British military growth. Therefore, cheaper labor force in considerable quantity which supported British economic policy was an issue for the oil capitalists. In return, the British government opened access for the cheaper Chinese immigrants to help them to realize their oil business objectives.

3.2 Oil Discovery in Sarawak

Initial crude exploration in Sarawak began in 1882 when petroleum was discovered in Miri by the British Resident of Baram District when he noticed that oil was collected by local Malays and used mainly for medicinal purposes, lighting lamps and used as a resin mixture for caulking boats.

A. H. Everett, a member of North Borneo Chartered Company or British North Borneo Company, predicted that Miri was rich in oil. His observation in Miri during 1870s was "…a small native industry flourished in the area, oil being obtained for local use from shallow surface wells."

Meanwhile, in Sabah J. H. Menten was the first man who made an oil concession in 1888 at the mouth of the Mahakan River and near Balikpapan. Perhaps he was the first foreigner who commercialized the industry in Borneo. Nevertheless, the distribution of oil production was still limited to local usage. In Kudat, only seismic data were collected and it was estimated that the field would turn out 100 gallons (about 3 barrels) a day with proper machinery.

Oil exploration in Sabah did not grow rapidly unlike in Sarawak. Prior to the early exploration of Anglo-Saxon Petroleum in Sarawak, the company operated as the British Borneo Petroleum Syndicate, a subsidiary company to British Borneo Exploration Company who took over exclusive rights to potential oil in the Borneo islands. Unfortunately, many attempts at drilling involving heavy expenses were made without fruitful results. As a consequence, they soon redirected their intention to a field near Brunei.

However in Sarawak, it was a different scenario. Shell Company was responsible for the rapid growth of oil production in Sarawak. Shell began oil exploration in Sarawak together with the coming of Anglo-Saxon Petroleum Company after the Royal Dutch Company (later known as Royal Dutch Petroleum Company) established an oil company with 'Shell' Transport and Trading Company in 1898. Early on before 1889, in the East Indies, Royal Dutch successfully penetrated the oil pool in East Sumatra. This was comparable to the British in Borneo which succeeded in huge oil exploration in Sarawak some time later.

3.3 Charles Brooke invited Shell

James Brooke's successor Charles Brooke became attracted to the Baram district when he was informed by A. H. Everett that the area was a potential strategic area in helping the British East India Company gather more dominance in the oil industry. During the early 1900s, it was evident that the oil industry had supported Charles Brooke's mission when the increase of oil demand in the European market contributed to Sarawak's earnings.

Following Everett's prediction and expectation, Charles Brooke forced himself to participate in the industry by directly taking the first step in subjugating Baram district in 1882. Prior to his intention about the industry**,** Charles Brooke, for several years, continued to press the British for the Baram concession to be purchased because the British seemed far more reluctant to become directly involved.

In August 1881, the British assigned the North Borneo Chartered Company to administer Sabah as a British Protectorate. The North Borneo Chartered Company was also involved in sponsoring an equally expansionist trading company with the British East India Company in North Borneo. Later in 1882, the British permitted the

purchase of Baram district from Brunei to Sarawak. However, local people in Baram rebelled and it forced Charles Brooke to interfere in the dispute. Sultan Brunei agreed to leave the district of Baram to the British in lieu of an annual gratuity to the Sultan.

Sarawak's oil industry owed much to Dr Charles Hose, a British zoologist who also succeeded De Crespigny as the Resident of Baram District in 1888. Hose was certain that with proper management and skill, the oil could be worked commercially. His advice to Rajah Brooke had compelled granting a concession agreement in 1909 between the Government of Sarawak and Anglo-Saxon Petroleum Company which was known as Shell. Hose persuaded Anglo-Saxon Petroleum to employ capital on oil exploration in Sarawak that was represented by Asiatic Petroleum.

The grant to exploit the oils in Miri in 1909 proved to be successful when the Chairman of Asiatic Petroleum, Marcus Samuel reported finding oil at Miri and employed a capital of £500,000. The Anglo-Saxon Petroleum or Asiatic Petroleum succeeded in having the sole right to explore for oil throughout the State. On October 1910, oil was struck at a depth of 447 feet and the well produced 4 tons per day. This was the first time in Malaysian petroleum history that recorded Miri as a significant oil producer in the British Empire.

When the drilling went much deeper at 805 feet, the oil could produce 90 barrels per day. In 1920, the oil yield increased production of 2,200 barrels at 1,700 feet. The production continuously increased to 13,000 barrels per day in 1924 from just 90 barrels at the beginning of exploration.

During this time, Sarawak was placed in the list of British Empire oil producing countries. Prior to that, Sarawak's oil production used to obtain oil at their refineries in Sumatera, and was making the first shipment of crude oil to Egypt. The worldwide petroleum production was increasing every 10 years until the oil price increased in 1973. The year 1913 was the earliest "boom" production in the world, producing 51 million tons and Miri played a part in it.

4. Protectionism of Oil Producer Colonies

In the early twentieth century, British's protectionism policy began to be imposed over its oil producer colonies. This new policy was due to the British Empire facing the threat from the unification of Germany. The British also witnessed the defeat of France in the Franco-Prussian War that completed the unification of Germany. The concern of the British over the unification of Germany proved correct when it created the European wars that led to the First World War in 1918.

Prior to the First World War, the British strategized to subjugate and consolidate its Eastern colonies rich with oil, including Sarawak, to prevent them from falling into Germany's hands. As a result, the British government had to tighten national security, improve military equipment and foster its economic system. To address these, oil was the vital resource to pay for maintaining British supremacy.

The British government strengthened its naval forces with formidable speed from the ousting of coal by petroleum and improved ammunitions through the by-product of petroleum consumption. The opportunities to consume more oil came into place when the British used its colonies, including Sarawak, to serve energy sources from oil to further reinforce its naval forces.

Protectionism policy continued in the mid twentieth century when the British Empire and the Alliance met the threat from Nazi German and European Fascists. Most importantly, the threat in the Far East and Southeast Asia came from Japanese military occupation in Manchuria and China and expanded to Singapore when the Second World War broke out in 1941.

With the outbreak of the Second World War, the British sought oil alliance with Standard Oil to protect their petroleum property in the Near East and Far East as well as Southeast Asia. British protectionism policy widened following the consolidation of oil partnership in their colonies with Standard Oil's strength in its oil domain.

4.1 The Fuel Forces for British Navy and the First *World War*

Policy that promoted oil business expansion in the Far East

became easier under the patronage of the British Empire. Politically, the principal purpose was to serve the British Navy by securing oil supply. The policy was similar in Sarawak where Shell was asked by Rajah Brooke to store a certain amount of oil for the use of the British Navy and he also insisted that a clause should be inserted in the concession.

British policy made it compulsory that oil must be accumulated by oil companies in the colonies to be allotted for the purpose of strengthening British military equipment and operations. If the British oil companies did not supply enough for the military's fuel consumption, then collaboration with other nations could help produce more oil through the consolidation of colonies with allies.

This effort was initiated by Marcus Samuel who had equal enthusiasm with the British Admiral, Sir John Fisher for developing markets for fuel oil which later made him eager to come to an arrangement with the Navy. Indeed, at various times during the period from 1902-1911, Samuel had suggested putting a British government director on the Shell board to make it easier to gain the Navy contract.

Oil distribution in the developing market share for Shell in the Far East was formed through Asiatic Petroleum Company. In 1902, Frederick Lane was responsible for the Royal Dutch and Shell to together buy the interests of Shell and the Paris Rothschild's with Royal Dutch as a joint company with equal shares. The Asiatic Petroleum Company was formally incorporated in 1903 with Deterding as its managing director. Deterding was not slow to take advantage of Asiatic to use Shell's facilities to increase the market for Royal Dutch oil. Samuel had to develop his European plans; he approached the British Admiralty to get them to convert their fleets from coal to oil and to use his Texan oil from Russia.

4.2 British Royal Navy's Conversion to Oil

The Royal Navy first experimented with fuel oil in 1899. Admiral Fisher in a public address in September 1882, argued to anyone in the British establishment who would listen that Britain must convert its naval fleet from bulky coal-fired propulsion to the new oil fuel. Fisher and a few other far-sighted individuals began to argue for adoption of the new fuel. He insisted that oil-power would allow Britain to maintain decisive strategic advantage in future control of the seas.

In 1885 a German engineer, Gottleib Daimler, had developed the first workable petroleum engine to drive a road vehicle. The economic potentials of the petroleum era were beginning to be more broadly realized by some beyond Admiral Fisher and his circle.

By 1904 Fisher had been named Britain's First Sea Lord, the supreme naval commander, and immediately set to implement his plan to convert the British navy from coal to oil. One month into his post, in November 1904, a committee was established on his initiative to “consider and make recommendations as to how the British Navy shall secure its oil supplies.” At that time it was believed the British Isles, rich in coal, held not a drop of oil.

The thought of abandoning the security of domestic British coal fuel in favor of reliance on foreign oil was a strategy embedded in risk. The Fisher Committee had been dissolved in 1906 without resolution of the oil issue on the election of a Liberal government pledged to work for arms control. By 1912, as the Germans began a major Dreadnought-class naval construction program, Prime Minister Asquith convinced Admiral Fisher to come out of retirement to head a new Royal Commission on Oil and the Oil Engine in July 1912.

In 1910, Fisher wrote to Winston Churchill pressing his point about the urgent need to convert to oil. He wrote, 'Your old women will have a nice time of it, when the new American battleships are at sea burning oil alone and a German Motor battleship is cocking a snook at our Tortoise”.

Two months later, on Fisher's recommendation, the first British battleship using only oil fuel, the Queen Elizabeth, was begun. Fisher pushed the risky oil program through with one argument: “In war speed is everything.” When Churchill was supportive of Fisher's idea, the world was facing an oil shortage. A Royal Commission into Fuel and

Engines was appointed in June 1912 with Fisher at its head to point it in the right direction.

Churchill had by then replaced Fisher as First Lord of the Admiralty and was a strong advocate of Fisher's oil conversion. Churchill stated in regard to the Commission finding, "We must become the owners or at any rate the controllers at the source of at least a proportion of the oil which we require".

From that point, oil conversion of the British fleet dictated national security priority to secure large oil reserves outside Britain. In 1913 less than 2% of world oil production was produced within the British Empire.

4.3 Oil Factor for War

By the first decade of the twentieth Century securing long-term foreign petroleum security had become an essential factor for British grand strategy and its geopolitics. By 1909, a British company, Anglo-Persian Oil Company held rights to oil exploration in a 60-year concession from the Persian Shah at Maidan-i-Naphtun near the border twith Mesopotamia. That decision to secure its oil led England into a fatal quagmire of war which in the end finished the British Empire as the world hegemon by Versailles in 1918, though it would take a second World War and several decades before that reality was clear to all.

The hunger for oil by the British became a Churchillian endeavor to promote the interests of the British Navy and the British Empire. He relied on Fisher to get the oil; on how it can be stored cheaply as well as how it can be purchased regularly and cheaply in peace, and with absolute certainty in war.

War did indeed break out later and the British Prime Minister at that time, Winston Churchill was proven right. Oil was the vital ingredient. By 1918, the tank had demonstrated its worth as had mechanized transport for the infantry. The Allied armies had over 150,000 trucks in use, 60,000 of them British. The aircraft had come into its own sense and the Royal Navy had converted almost its entire fleet to fuel oil. The British had gained victory over Germany.

5. Conclusion

When American Standard Oil Company dominated oil distribution and trading in the Far East and Southeast Asia, this phenomenon led the British and the Dutch to control oil exploration and production in their colonies in Southeast Asia in order to prevent StandardOil's access to cheaper oil supply. This marked the beginning of oil protectionism policy by the British in the Southeast Asia.

When the British-Dutch oil company was formed in 1903, it became the Royal Dutch Shell Petroleum Company, a coalition to supersede Standard Oil's supremacy in Southeast Asia. In the late nineteenth century, Royal Dutch Shell succeeded in dominating the oil supply in Southeast Asia after implementing the partnership strategy with local people and the British government. The Royal Dutch imposed the Straight Line policy where cheaper oil could be produced in Borneo by establishing total operation of oil production close to oil deposits and conducting exploration activities.

When oil was found in Sarawak, the partnership strategy proved to be a success. This new oil discovery was a potential oil deposit for future massive production. It was proven that in theearly twentieth century, Sarawak was placed in the British Empire list of oil producing countries. As a result, the British oil capitalists could maintain the production of cheaper oil supply in Southeast Asia. This overshadowed Standard Oil's dominance over oil distribution in the region.

The success of Shell in obtaining oil market share in Southeast Asia was due to the implementation of protectionism policy where the colonies in Malaya, Borneo and Sumatera were in the hands of the British and the Dutch Empires.

In Borneo particularly, the Brooke government made an agreement with the British Protectorate to supply most of the oil discovered to the British navy. In order to secure this relationship, only the Royal Dutch Shell had full control over petroleum exploration and oil supply in Southeast Asia. This protectionism practice had denied the advocacy of the British free market policy in its colonies. In addition,

the British protectionism policy resulted in a realization to bring back a 'pseudo-mercantilism' policy.

The First World War demonstrated a stronger British protectionism policy. Winston Churchill consolidated oil producer colonies through his Admiral, John Fisher. The war time policy was to prevent oil supply from going to the Axis countries. It was a strong measure to tighten British security by elevating the British Navy's ammunitions so that it would be stronger than theAxis armies.

When the British declared thedecolonization policy, the Malay States and Sarawak got their independence later. The new independent government maintained oil concession agreement with Foreign Oil Company (FOC) which was practiced by the British during colonialism. Shell and Esso (previously known as Standard Oil) were allowed by the new government to continue their oil business operations in Southeast Asia.

FOC early engagement with the new government after Independence was for a new concession agreement to explore and search for new oil fields. Shell was the first FOC that discovered new oil fields offshore. The offshore West Lutong oil deposit in North Borneo yielded huge oil production in the late 1960s. Later, the new government produced more concession agreements for the FOCs to explore more offshore oil deposits in Borneo as well as in Malay Peninsula.

When the new government realized oil was the principal income source for the nation, the formation and establishment of the National Oil Company (NOC) was an important national agenda that had to materialize. It was PETRONAS that became the key player for this agenda and thus, became the sole representative of the oil industry in Malaysia, under the NOC plan.

This has shown that by introducing the idea of NOC, the legacy of oil protectionism during colonialism existed again as a common practice intheoil industry as previously practiced by the British. A method of oil strategic business was successfully implemented by the British that denied its advocacy of free market policy.

Christopher Tugendhat and Adrian Hamilton, *Oil: The Biggest Business*, (London: Eyre & Spottiswoode Ltd, 1968), p. 4

Louis Turner, *Oil Companies in the International System*, in The Royal Institute of International Affairs, (London: George Allen & Unwin, 1978), p. 25

Muhammad Anuar Adnan, 'The Petroleum Industry in Malaysia', Ph.D. diss., University of London, The British Library, 1978, p. 16

Oil Standards Company founded by John D. Rockefeller and his partners began to manufacture kerosene in the largest refinery in Cleveland. Exxon, Mobil and Socal are its offspring. The 1911 antitrust case resulted in the dissolution of Standard Oil into thirty-four companies, nine of which had foreign operations.

Paul Horsnell, *Oil in Asia, Market, Trading, Refining and Deregulation*, Oxford Institute for Energy Studies (Oxford University Press: 1997), p. 134
Ibid.
www.exxonmobil.com.my/History of Esso in Malaysia
Muhammad Anuar Adnan, p. 87

Deterding called it from the pre-1907 era. The policy was that it produced its own oil and its production was much closer to its market. Supply crude by purchase or production from low cost sources to market.

Oystein Noreng, *Crude Power, Politics and the Oil Market* (London: I.B Tauris Publishers, 2002), p. 56

A Hundred Years of Unity in Diversity, Royal Dutch Petroleum Company 1890-1990, p. 32

Daniel Yergin, *Oil, the Prize of Power,*(New York: Free Press, 2008),p. 33
Ibid., p. 128
Ibid., p. 131-132
Ibid.
Muhammad Anuar Adnan, p. 35
Ibid., p. 39

Ibid., p. 43

Protectorate presented as indirect rule of the British over the colony. It was a formal label that the colony was under the protection of British Government. In Malaysian historical context, this system resulted from the Pangkor Treaty of 1874, which recognized Abdullah as Sultan of Perak in return for his agreement to accept a British Resident. The Resident's advice must be asked and acted upon all questions other than touching Malay or local religion and custom. This system was also imposed on four other British protectorate states, Selangor, Johor, Negeri Sembilan and Pahang.

Barbara & Andaya, *A History of Malaysia* 2nd ed., (Hampshire: Palgrave Publisher LTD, 2001), p. 187

Muhammad Anuar Adnan, p. 40

See Gerard M. Koot, 'Historical Economics and the Revival of Mercantilism Thought in Britain, 1870-1920', in Mercantilist Economy, ed. Las Magnusson, (Boston: Kluwer Academic Publishers, 1993), p. 187. "A century after Adam Smith's critique of mercantilism, and a mere quarter century after the triumph of free trade in Britain, some economists and economic historians began to question the wisdom of free trade policies for a Britain that now faced the competition of a united Germany and a dynamic United States, both of which turn to protection. For many, the repeal of the Corn Law in 1846 had seemed to usher in an age of unprecedented freedom of movement of capital, goods and labor. It was fervently hoped that free trade would be adopted by other nations."

Muhammad Anuar Adnan, p. 48

Ibid., p. 38

Ibid., p. 39

Peter Slulgett, *Britain in Iraq: 1914-1932*, (London: Ithaca Press, 1976), p. 103-104.

Eric J. Dahl, 'Naval innovation: from coal to oil,' *Joint Force Quarterly*, Winter, 2000. The details on oil versus coal powered ships are found in Anton Mohr, *The Oil War*, (New York: Harcourt, Brace & Co., 1926), p. 113-115. Anton Zischka, *Oelkrieg: Wandlung der Weltmacht Oel*, Leipzig, Wilhelm Goldmann Verlag, 1939) 293 for additional comparative data of oil over coal.

Ibid.

Ibid., p. 42

A Long-Run Relationship between Foreign Direct Investments, Economic Growth and Export for D8 Countries

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ABSTRACT : This study investigates the relationship between exports, foreign direct investments (FDI) and economic growth in D8 countries in the period 2000-2014. Using the recently developed mean group and pooled mean group estimation techniques on cross-country panel data. The empirical analysis reveals that there is a positive long-run relationship between FDI, EXPORT and economic growth. By using the PMG (pooled mean group estimation) methods the elasticity of GDP with respect to FDI is 0.137% and 0.170%, respectively. The results also indicate that the foreign direct investment and export is a significant factor that positively affects economic growth in the D8 countries.

Key Words: economic growth, foreign direct investments, exports, panel analysis, pmg method
JEL Classification: C22, E31, E50

1.Introduction

The relationship between foreign direct investments (FDI), exports and economic growth hasbeen the focus of a considerable number of academic studies.Recent literature has highlighted the role of both exports and FDI in the context of economic growth. As proposed and supported by Hsiao (2006) there exists a triangular relationship among FDI, exports and economic growth. This means that FDI has both direct and indirect effects on economic growth through exports.Endogenous growth theory emphasizes the role of exports on economic growth highlighting that exports can increase long-run growth by allowing innovations growth in sectors of research and development.Nevertheless, the results obtained by empirical studies, which recently have applied causality tests to examine the nature of a causal relationship between exports and economic growths are also mixed.Although some studies have found a positive association, others resulted in reverse conclusions. It is not clear in the literature to what degree is the positive relation between trade and growth due to the fact that trade is simulative of growth and to what degree does it reflect the fact that growth leads to trade.The purpose of this paper is to examine the links between FDI, exports and economic growth in D8 countries.The structure of the paper is as follows: Section 2 briefly reviews the theoretical literature. Section 3 presents the recent empirical literature. Section 4 presents the analytical framework, the econometric methodology and the empirical results. Concluding remarks are given in the final section.

2.Reviews the theoretical literature

In the neoclassical growth model, technological progress and labor are exogenous factors of foreign direct investments that simply increase the rate of investments and afterwards lead to an increase to per capita income, without having any effect on long-term growth. The new model in the theory of growth that was developed in the 1980s considers technological progress as an endogenous factor and foreign direct investments to have a permanent effect on the development through technology transfer.

The issue of exports and economic growth has been discussed thoroughly since 1960, in many studies. The results have showed that there is no obvious agreement on whether economic growth has led exports or exports have led economic growth. However, the relationship among foreign direct investments, exports and economic growth has received less attention in academic community. The relationship between trade and foreign direct investments are positively related (complementary) between asymmetric countries and negative (substitutes) between symmetric countries (Markusen and Venables, 1998). Thus, the relationship can be positive or negative.On the other hand, when exports increase foreign direct investments will pave the way for new investments,

reducing the transaction cost of investors with the knowledge of the structure of the market in the host country.We can conclude that the empirical evidence on FDI and economic growth is ambiguous,although in theory FDI is believed to have several positive effects on the economy of the hostcountry (such as productivity gains, technology transfers, the introduction of new processes,managerial skills and know-how, employee training) and in general it is a significant factor in modernizing the host country's economy and promoting its growth. Especially for the developingcountries, the recent global changes in the 1992's, have led them to look favourably at the variousFDI's because it is believed that they can contribute to the economic development of the hostcountry. Hence, we focus on this subject in our present study to investigate further the effects ofFDI on the host country's growth.To our knowledge very few studies have taken into consideration these three variables together and have used the causality analysis of panel data. In terms of econometric methods, this study investigates the causality relations among foreign direct investments, exports, and GDP (a proxy for economic growth) for the D8 Member countries.

3. Review of Recent Empirical Literature

Syed Imran Ali Meerza (2012) investigated the casual relationship between FDI, trade and economic growth for Bangladesh over the period 1973-2008. This study found that there is a long run relationship between the examined variables. In addition, there is a unidirectional a causality relation between FDI and exports with direction from exports to FDI.Mehmet Eryigit (2012) examined the relationship between FDI, exports, and GDP for Turkey through cointegration tests for the period of 2000-2010. The results of the study showed that there is a long-term relationship between FDI and export volume, FDI and GDP, and export volume and GDP(Acaravci Ali, Ozturk, Ilhan, 2012) investigated the causal relationship among economic growth, exports and FDI for ten European countries over the period 1994-2008. Their study revealed that there is causality relation among FDI, exports and economic growth in four out of ten countries.Nishiyama and Yamaguchi (2010) investigated FDI inflows from developed countries to developing countries. They found that FDI leads to an increase in GDP of developing countries.Yongkul, Won and Frank, Hsiao (2008) examined the causality relations among GDP, exports and FDI in first generation Asian industrializing economies (Korea, Taiwan, Singapore) and in second generation industrializing economies (Malaysia, Philippines, Thailand, China) using panel data over the period 1981-2005. The results of the study showed that there are bidirectional causality relations among all variables for the first generation countries. Also, there is a unidirectional causality relation between exports and GDP for the second generation countries.In general, the empirical literature suggests that the causality relations depend on econometrics methods and the period the studies were carried out. The results can be unidirectional causality, bidirectional causality or no causality relation. In any case, the results seem to indicate a positive relation among exports, economic growth and FDI.

4.Empirical analysis

4.1 data

This study used a panel data set, which includes D8 countries, for the period 2000-2014 .Eight Islamic developing countries (D8), also known as Developing-8, is an organization for development cooperation among the following countries: Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan and Turkey. The establishment of D8 was announced officially through the Istanbul Declaration of Summit of Heads of State/Government on June 15, 1997. The objectives of D8 Organization for Economic Cooperation are to improve member states' position in the global economy, diversify and create new opportunities in trade relations, enhance participation in decision-making at international level, and improve standards of living.D8 is a global arrangement rather than a regional one, as the composition of its members reflects. Organization for Economic Cooperation (D8) is a forum with no adverse impact on bilateral and multi-lateral commitments of the member countries, emanating from their membership to other international or regional organizations.Description of the variables used, such as GDP, FDI and EXPORT is shown in **Table 1**. The data used in this paper is yearly and were obtained from WDI (World Development Indicator) .

Individual data were calculated by logarithm before the

testing. Calculation by logarithm was performed for the purpose of the time series smaller dispersion and consequently to ensure stationarity of the time series. Individual time series calculated by logarithm are market with capital letter "L" before the each time series' title.

Table 1: Description of variables

variable	Description of variables
LGDP	gross domestic product
LFDI	foreign direct investment
LEXPOTR	export

4.2 Methodology and Models

It has become conventional to view long-run parameters as reflectingco-integrating relationships among a set of I(1) variables. The standard methodology insuch cases first establishes the order of integration of the variables in question, andthen - having established that the variables are of the same order of integration – testswhether there is at least one linear relationship among these variables

.

Our analysis follows a different approach. This can be justified by two facts.First, there are only a few (and even fewer statistically satisfactory) tests of co-integration in a panel data context, while it is also well known that tests of order ofintegration in panel data do not reliably distinguish between series that contain a unitroot and those that are stationary with a "near-unit root". Second, long-runparameters may be consistently estimated using the traditionalautoregressivedistributedlag (ARDL) approach (Pesaran and Shin, 1998).Moreover, as Pesaran,Shin and Smith (1999) have shown, this approach yields consistent andasymptotically normal estimates of the long-run coefficients irrespective of whetherthe underlying regressors are I(1) or I(0). Further, it compares favourably in MonteCarlo experiments with conventional methods of cointegration analysis. Therefore, our estimates were obtained using two recently developed methodsfor the statistical analysis of dynamic panel data: the Mean Group (MG) and thePooled Mean Group (PMG) estimation. These methods are particularly suited to the analysis of panels with large time and cross-section dimensions. MG estimationderives the long-run parameters for the panel from an average of the long-runparameters from ARDLmodels for individual countries (see Pesaran and Smith,1995). For example, if the ARDL is the following

$$a_i(L)\,y_{it} = b_i(L)x_{it} + d_i z_{it} + e_{it}$$

for country *i,* where $i=1,....,N,$ then the long-run parameter for country *i* is:

$$\theta_i = \frac{b_i(1)}{d_i(1)}$$

and the MG estimator for the whole panel will be given by:

$$\theta = \frac{1}{N}\sum_{i=1}^{N}\hat{\theta}_i$$

It can be shown that MG estimation with sufficiently high lag orders yields super-consistent estimators of the long-run parameters even when the regressors are I(1) (see Pesaran, Shin and Smith, 1999). The PMG method of estimation, introduced by Pesaran, Shin and Smith (1999) occupies an intermediate position between the MG method, in which both the slopes and the intercepts are allowed to differ across country, and the standard fixed effects method, in which the slopes are fixed and the intercepts are allowed to vary. In PMG estimation, only the long-run coefficients are constrained to be the same across countries, while the short-run coefficients are allowed to vary. Setting this out more precisely, the unrestricted specification for the ARDL system of equations for $t=1,2,...T$ time periods and $i=1,2,...N$ countries for thedependent variable *y* is:

$$y_{it} = \sum_{j=1}^{m}\lambda_{ij}y_{i,t-j} + \sum_{j=0}^{n}\delta'_{ij}x_{i,t-j} + \mu_i + \varepsilon_{it}$$

where *xij*is the *(k´1)* vector of explanatory variables for group *i* and *mi* represents the fixed effects. In principle the panel can be unbalanced and *m* and *n* may vary across countries. This model can be re-parameterised as a VECM system.

$$\Delta y_{it} = \theta_i(y_{i,t-1} - \beta_i' x_{i,t-1}) + \sum_{j=1}^{m-1} \gamma_{ij} \Delta y_{i,t-j} + \sum_{j=0}^{n-1} \gamma_{ij}' x_{i,t-j} + \mu_i + \varepsilon_{it}$$

Where *bi* s are the long-run parameters and *qi* s are the error correction parameters. The pooled group restriction is that the elements of *b* are common across countries, soThat

$$\Delta y_{it} = \theta_i(y_{i,t-1} - \beta' x_{i,t-1}) + \sum_{j=1}^{m-1} \gamma_{ij} \Delta y_{i,t-j} + \sum_{j=0}^{n-1} \gamma_{ij}' x_{i,t-j} + \mu_i + \varepsilon_{it}$$

All the dynamics and the ECM terms are free to vary. Estimation of this model is by maximum likelihood. Again it is proved that under some regularity assumptions, the parameter estimates of this model are consistent and asymptotically normal for both stationary and non-stationary I(1) regresses. Both MG and PMG estimations require selecting the appropriate lag length for the individual country equations. This selection was made using the Schwarz Bayesian Criterion.

4.3 Panel Data Unit Root Tests

We begin by testing the stationarity of three variables (real FDI, real EXP and real GDP). The recent literature proposes several methods for unit root tests in panel data. Since these methods may give different results, we selected Breitung (2000), Levin, Lin and Chu (2002) (LLC), Im, Perasan and Shin (2003) W-test (IPS), ADF Fisher Chi-square test (ADF-Fisher), PP Fisher Chi-Square test (PP-Fisher) Maddala and Wu 1999 and Hadri (2000) to perform panel data unit root tests**.**

In all these tests except Hadri, the null hypothesis is that the variable contains a unit root (i.e., it is not stationary).The results of level and first difference unit root tests for the three variables are provided in **Table 2.**

Table2: Panel unit root tests

With individual intercept in equation				
Variable	**LLC**	**IPS**	**ADF Fisher**	**PP-Fisher**
LGDP	11.327(0.000)*	4.3425(0.000)*	44.896(0.000)*	-2.877(0.000)*
LFDI	1.81470(0.035)	0.92907(0.176)	23.9602(0.09)	-0.9337(0.17)
LEXPORT	0.0990(0.539)	1.0246(0.8472)	9.6909(0.887)	1.1873(.886)
LDGDP	-1.4539(0.073)	-3.352(0.000)	43.013(0.000)	-3.6546(0.000)
LDFDI	9.7243(0.000)*	5.5083(0.000)*	60.769(0.000)*	-4.733(0.000)*
LDEXPORT	3.3944(0.000)*	3.9606(0.000)*	40.609(0.000)*	3.433(0.000)*
With individual intercept and trend in equation				
LGDP	1.9710(0.024)*	7.568(0.000)*	32.857(0.007)*	-1.459(0.072)
LFDI	3.0565(0.006)	0.6249(0.2660)	23.582(0.09)	-0.4076(0.341)
LEXPORT	2.426(0.007)	0.6937(0.243)	19.587(0.2394)	-0.8283(0.203)
LDGDP	1.6909(0.95)	0.6717(0.25)	27.800(0.033)	-1.5045(0.066)
LDFDI	7.778(0.000)*	2.8011(0.002)*	47.174(0.000)*	-3.341(0.000)*
LDEXPORT	4.409(0.000)*	2.456(0.007)*	32.930(0.007)*	-2.679(0.003)*

Not:

1. * Indicate rejection of the null hypothesis at 1%
2. Panel data include all countries
3. The numbers in parentheses denote p-values.
4. The null hypothesis of these tests is that the panel series has a unit root (nonstationary series) .
5. Lag length selection automatic based on Schwarz criterion.

As can be seen from Table 2, most of the test results showed that GDP is stationary in levels, while the other two variables contain a unit root. Most of the test results indicated that FDI and EXPORT variables are stationary in their first differences.

5. The MG and PMG estimation results

MG estimation method proposed by Pesaran and Smith(1995) is obtained from autoregressive distributed lag models for each unit consisting of (ARDL) long-term average by using the coefficients of the long-term. Table 4shows the results of Hausman Test conducted in order to test the hypothesis of the long-run elasticity. Hausman Test was also conducted to test the homogeneity in long-term. According to the results in Table 4, null hypothesis is not rejected and thus, Pooled Mean Group Estimation (PMG) is a valid estimator. PMG and MG estimators of this paper

are made for the short (SR) and long term (LR). MG estimator seems not to be valid. The estimation results from MG methods are presented in Table 6. FDI and EXPORT co-efficients are not statistically significant, in the short and long term. According to PMG in LR while all co-efficients are statistically significant, LFDI and LEXPORT only in the short term are meaningless.

Table(4): Hausman Test

	h	p-val
Hausman Test	**0.70**	**0.000**

Table(5): Pool mean group and estimations of ARDL.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
	Long Run Equation			
LFDI	0.137094	0.028005	4.895402	0.0000
LEXPORT	0.170775	0.059572	2.866706	0.0059
	Short Run Equation			
COINTEQ01	-0.7685777	0.197056	-6.524918	0.0000
D(LGDP(-1))	0.493751	0.255919	1.929322	0.0591
D(LFDI)	0.077720	0.176519	0.440293	0.6615
D(LFDI(-1))	0.235136	0.086764	2.710073	0.0090
D(LEXPORT)	-0.821606	1.344237	-0.611206	0.5437
D(LEXPORT(-1))	-0.299553	0.438767	-0.682716	0.4978
C	0.535571	0.088005	6.085703	0.0000

Not:

1.SBC (Schwarz) has been used to select the lag orders for each group.

2.The pool mean group estimates have been used as initial estimate(s) of the long-run

3.parameter(s) for the pooled maximum likelihood estimation.

Table(6): mean groupestimations of ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
	Long Run Equation			
LFDI	-0.002216	0.059194	-0.037440	0.9702
LEXPORT	0.471056	0.018067	26.07278	0.0000
	Short Run Equation			
COINTEQ01	-.285777	0.197056	-6.524918	0.0000
D(LGDP(-1))	-0.023992	0.273107	-0.087849	0.9302
D(LFDI)	0.537851	0.318373	1.689375	0.0950
D(LFDI(-1))	0.561495	0.269724	2.081736	0.0405
D(LEXPORT)	-2.060879	1.407757	-1.463946	0.1471
D(LEXPORT(-1))	-1.000932	1.377556	-0.726599	0.4696
C	0.235571	0.088005	6.085703	0.0000

Not :

SBC (Schwarz) has been used to select the lag orders for each group.

The mean group estimates have been used as initial estimate(s) of the long-run parameter(s) for the pooled maximum likelihood estimation.

6. Conclusion

In this paper we employed a Keynesian demand model in an open economy to examine the relations among foreign direct investments, exports and economic development in PMG and MG model. in this paper we examined the long- and short-run relationship between GDP, FDI and EXPORT using a panel of D8 countries over a 15 year period. The MG and PMG estimation techniques that we used together with more traditional methods are at the forefront of panel dataeconometrics. There are many theoretical and empirical studies on the bivariate causality between exports and economic development, exports and imports, trade and foreign direct investments. However, there are few studies that deal with the causality relations among exports, economic development and foreign direct investments.The estimation results from PMG methods are presented in Table 5. The PMG estimates provide further evidence to our previous finding of a positive relationship between FDI and GDP, and there is a positive long-run relationship between EXPORT and economic growth. By using the PMG (pooled mean group estimation) methods the elasticity of GDP with respect to FDI is 0.137% and 0.170%, respectively. The results also indicate that the foreign direct investment and export is a significant factor that positively affects economic growth in the D8 countries.

From the results of Table 5 we can infer that in the long-run an increase of 1% on GDP will lead to an increase of 0.137% on exports, while an increase of 1% on foreign direct investment will lead to an increase of 0.170% on exports . In addition, the estimation results show that the correction factor to the long-term equilibrium (balance) quickly adjusted, so that in 76 percent of imbalance, adjusted.we can say that in economic frame it is generally accepted that FDI has a acceleration effect by; know- how, technology, business experience, connection to the foreign markets, increase socail and environmental standards channels. It also supports competition globally. However

it shouldn't be misunderstood that FDI is the main channel of the solution to the economic growth problems. It could and should be a contribution value instead of a primary sourse of finance. future research can investigate whether the growth effects of FDI depend on the level of education of the host country, the levels of economic and financial development of the host country and its trade openness.From our results of the analysis, there is a positive long-run relationship between export growth and economic growth. Depending on the model selection criteria, it can be seen that the growth rate of exports has an insignificant effect on the rate of economic growth of the examinedcountry in long run. This insignificance in short run may imply that the effect of growth inexport is a long run effect rather than short run.

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Pattern Recognition Approach in Multidimensional Databases: Application to the Global Terrorism Database

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Abstract— This paper presents a pattern recognition approach in multidimensional databases. The approach is based on a clustering method using the distance measurement between a reference profile and other database observations. Two distance measurements will be proposed: an adaptation of the Khi^2 formula to the multidimensional context, extracted from the Multiple Correspondence Analysis (MCA), and the Euclidean distance. A comparison between the two distances will be provided to retain the most pertinent one for the multidimensional clustering context. Our approach will then be applied to a real case study dealing with armed attacks worldwide stored in the Global Terrorism Database (GTD).

Keywords—clustering; pattern recognition; multidimensional databases; distance measurement; Khi^2 formula; Euclidean distance; Multiple Correspondence Analysis;

1. INTRODUCTION

Data Warehouses (DW) [1] are centralized huge databases used to store heterogeneous data collected from disparate sources. Specific *Data Mining* techniques, such as clustering, are applied to analyze these structures for patterns recognition. Graphically, these data sets can be represented by cubic multidimensional data structures called OLAP cubes that are considered as an interesting analysis to study [2]. Given a population of *N* observations described by a set of *m* attributes, clustering them into distinct groups allows identifying interesting patterns to analyze.In machine learning and applications of Data Mining, the data usually arises in matrix format [3]or huge data tables**.** The data tables then obtained are composedof a large number of rows and columns and are considered as fundamental in Data Mining for knowledge discovery and interesting pattern extraction.

In this paper, we propose our clustering approach using two distance measurements: the Khi² formula adapted to the multidimensional context, and the Euclidean metric. The KHI² formula is commonly used to reduce the number of columns and lines in a dataset by evaluating similarities between observations and attributes. Reducing the lines or columns of a data table helps reducing the amount of data in the data table and consequently computation costs and resources consumption. However, the Euclidean distance, specially used for geometric computations, allows calculating the distance between two distinct points.

In this paper, the next section presents related works previously presented in the field of pattern recognition using clustering approaches. In the third section, we present our approach to multidimensional databases clustering and the corresponding algorithm. In section four, we present a case study representing terrorist attacks records in the year 1993, that we propose to cluster and interpret the results and we finish by giving our interpretation, conclusion and perspectives.

2. RELATED WORKS AND MOTIVATIONS.

Clustering is an analytical exploratory *unsupervised* method to classify observations into a finite and a small number of groups called *clusters* based upon two or more variables. The clustering process finds most similar observations among aset of untagged data according to the specified patterns. A clustering $\mathcal{C}$, is a partition of a *data set*$\mathcal{D}$ containing n elements, into different subsets $\mathcal{C}_1, \mathcal{C}_2, \dots, \mathcal{C}_K$ with respectively $n_1, n_2, \dots, n_k$ elements called *clusters*.Formally we have the following findings:

- $\mathcal{C} = \{\mathcal{C}_1, \mathcal{C}_2, \dots, \mathcal{C}_K\}$ where $\mathcal{C}_k \cap \mathcal{C}_l = \emptyset$ and $\bigcup_{k=1}^{K} \mathcal{C}_k = \mathcal{D}$
- $n = \sum_{k=1}^{K} n_k$

However, two clusterings $\mathcal{C}$ and $\mathcal{C}'$ of the same data set $\mathcal{D}$ can lead to different clustering results $\mathcal{C}_1, \mathcal{C}_2, \dots, \mathcal{C}_K$ and $\mathcal{C}'_1, \mathcal{C}'_2, \dots, \mathcal{C}'_K$ depending on the technique and algorithms used. An evaluation of the clusterings obtained is then required in order to identify the most suitable clustering technique proposed.In a clustering process, elements belonging to the same group are given the same label and are similar but are dissimilar to elements belonging to other groups.In the literature of clustering, many clustering methods were proposed and developed [4].These approaches are either:

−Hierarchical: A hierarchical algorithm uses a *dendrogram* representing the grouping of patterns and similarity levels at which groupings change. However, most of the hierarchical clustering algorithms are variants of the *single-link* [5], where the distance between two clusters is the *minimum* of the distances between all pairs of patterns, and *complete-link* [6], where the distance between two clusters is the *maximum*of the distances between all pairs of patterns.

− Partitional: A partitional clustering algorithm obtains a single partition of the data instead of a clustering structure, such as the dendrogram produced by a hierarchical technique. For this method, the choice of the number of desired output clusters is problematic [7].

− Polythetic: Most algorithms are polythetic which means that all the features enter into the computation of distances between the patterns.

− Monothetic : A simple monothetic algorithm reported in [8] considers features successively to divide the given collection of patterns. The limitation of such an approach is the number of clusters generated (2^d clusters where d is the dimensionality of the patterns). The number of clusters obtained may be so large that the data set is divided into uninterestingly small and fragmented clusters.

Efficient clustering of large data sets into homogenous clusters is a fundamental problem in Data Mining. Almost all the proposed clustering algorithms use the measurement of themathematical distance between individual observations or groups of observations. The objective of this study is clustering the initial set of elements using distance measurement to evaluate the similarity between elements.

In [9],the authors describe the limits of K-means algorithm, which is a well known clustering algorithm, in dealing with only *numeric* (quantitative) data and its effects on the quality of the outputs. The algorithm optimizes an objective function defined on the Euclidean distance measure. Although this algorithm gives promising results, it is often limited to numeric data and the quality of clusters produced depends on the initialization of clusters and the order in which data elements are processed in the iteration.

In [10], the author proposes four distances for clustering using distance measurements: Russel/Rao, Jaccard, Matching and Dice. The results show that over 90% of the cases were correctly grouped together.

In [11]and[12],the authors conduct a clustering analysis with binary data. Two individuals should be viewed as similar to the degree that they share a common pattern of attributes among the binary variables. Observations with more similar patterns of response on the variables of interest are seen as closer to one another than are those with more disparate response patterns.

In our approach, it is proposed to use the KHI² distance extracted from the MCA for clustering qualitative data and compare it to the Euclidean distance.

A. Similarity measures

Distance measurement is used in many clustering algorithms to evaluate the similarity between two observations. The most known distance measurement is the Euclidean distance defined as follows:

$$d^2(x_i, x_j) = \sum_{k=1}^{d} (x_{ik} - x_{jk})^2$$

x_i, x_j are two individuals (observations) with d attributes. The total number of modalities is k and each observation is defined by vector as follows: $x_{ik}(x_{i1}, x_{i2}, \dots, x_{i(k-1)}, x_{ik})$ where x_{ik} corresponds to the modality $k$of the individual i. The Euclidean distance is usually used for quantitative variables with varied values and wasn't previously used in a binary computation context and produces compact or isolated clusters [13].

The use of metrics to measure the distance is reduced to the computation of a symmetric matrix of $\frac{n(n-1)}{2}$ pairwise distances values for the n patterns to simplify the computation process and complexity. However, major clustering approaches are provided for quantitative (numerical) data and fewer techniques are proposed for qualitative (continuous) data. Some methods were developed to measure the proximity for heterogeneous type patterns: [14] proposes a combination of a modified Minkowski metric for continuous features and a distance for nominal attributes. A variety of other metrics have been reported in [15] and [16] for computing the similarity between patterns represented using quantitative as well as qualitative features.

Pattern Recognition Approach in Multidimensional Databases: Application to the Global Terrorism Database

A. Multiple Correspondence Analysis (MCA)

Multiple Correspondence Analysis (MCA) is a statistical method initially used to reduce either the number of columns or lines of a huge data set table by measuring the similarity between the profiles. In our approach, we propose to use the KHI² distance, provided by this method to measure the similarity between the observations in the data of our case study for clustering purposes. This method was also used in [17] to reduce the dimensions of a DW and has provided remarkable results.

A DW, which can be considered as a large data table, containing *I* observations (facts) and *J* variables (dimensions) will be then represented by a matrix *IxJ*, called the *Complete Disjunctive Table (CDT*) [18] where x_{ij} represents the modality of the variable *j* possessed by the individual *i*. If k_j is the number of modalities of the variable *j*, and *K* the total number of modalities, then we have $K = \sum_j k_j$. This table permits transforming the initially discrete (qualitative) data of the DW into a binary data table to compute it using the Khi² formula. If the patterns contains the considered modality, we will affect 1 in the corresponding k_{ij} of the CDT table else we affect the value 0. The form of the CDT is presented in the following Table 1:

TABLE 1 MATRIX OF THE CDT TABLE DATA.

CDT=		…	J	…	
	1		⋮		
	⋮		⋮		
	i	…	k_{ij}	…	…
	⋮		⋮		
	n		⋮		

In our approach, the formula to be used corresponds to the Khi² formula and is given by the following Equation 1. However, another adapted formula derived from the Khi² will be presented and considered for the computation in our approach:

$$d^2(s,s) = \sum_{i=1}^{n} \frac{1}{f_{i.}} \left(\frac{k_{is}}{n_s} - \frac{k_{is}}{n_s}\right)'' = n \sum_{i=1}^{n} \left(\frac{n_{is}}{n_s} - \frac{n_{is}}{n_s}\right) \quad (1)$$

3 PROPOSED APPROACH TO MULTIDIMENSIONAL DATABASE CLUSTERING.

A. The adapted KHI² formula.

In this paper, a clustering qualitative data approach is proposed using both: the Khi² and the Euclidean distance formula. An experimental comparison between the two distances is also provided. The adapted Khi² formula deduced from the previous equation 1 is then given by the following Equation 2:

$$D^2(x,x') = \frac{1}{p} \sum_{\mu=1}^{\alpha} \frac{(x_i - x'_i)}{m_\mu / n} = \frac{n}{p} \sum_{\mu=1}^{\alpha} \frac{(x_i - x'_i)}{m_\mu} \quad (2)$$

- *x* and *x'* are two observations (elements);
- *p* is the number of dimensions;
- *n* the number of observations in the dataset (lines);
- m_μ number of occurrence of a modality μ;
- αa number of modalities of a dimension.

B. Data pretreatment: data cleaning and multidimensional structure extraction.

The transformation from qualitative to binary values of the initial dataset is an important step in this approach. Each observation of the table (row) represents a K-dimensional vector profile, where K represents the total number of modalities. Each observation will then have the following form:

$obs_i(x_{i1}, \dots, x_{ik}, \dots, x_{iK}), \forall i \in \{1, \dots, I\}, \forall k \in \{1, \dots, K\}$, where *I* is the number of observations and *K* the number of modalities. This vector is a row from the CDTtable where $x_{ik} = 1$, if the corresponding modality exists for the observation and 0 otherwise.

On the other hand, *J* represents the total number of dimensions in the DW and we should verify the following findings;

- $\forall j \in J, \mathcal{D}_j$ represents the dimension *j* of the DW and $\mathcal{U}_\mathcal{D}$ the universe of dimensions, i.e the set of values taken by the dimensions and $card(\mathcal{U}_\mathcal{D}) = J$its cardinality.
- Each dimension $\mathcal{D}_j$ contains a set of modalities $\mathcal{M}$, $\mathcal{U}_\mathcal{M}$ is the universe of the modalities and $card(\mathcal{U}_\mathcal{M})=K$ and $\mathcal{M}(\mathcal{D}_j)$represents the modalities taken by the dimension $\mathcal{D}_j$;

$$\mathcal{U}_\mathcal{M} = \bigcup_{j \in J, k \in K} \mathcal{U}_{\mathcal{M}_k(\mathcal{D}_j)}$$

- $\forall i \in \{1, \dots, I\}, \sum_{k=1}^{K} card(x_{ik} \setminus x_{ik} = 1) = J$

The algorithm corresponding to such a process is given by:

TABLE 1 KHI² CLUSTERING AL GORITHM.

Algorithm **DIST_COMPUTE**

FUNCTION GEN_CDT

1. for each $fact_{ij}(1 \le i \le I, 1 \le j \le J)$**do**
2. if $fact_{ij} = aux_k(1 \le k \le K)$ then $CDT_{i,k} \leftarrow 1$
3. else $CDT_{i,k} \leftarrow 0$
4. end for

END GEN_CDT

FUNCTION COMPUTE

5. occ← 0, som← 0
6. for each $CDT_{k,i;1 \le k \le K, 1 \le i \le I}$ **do**
7. if $CDT_{i,j} = 1$ **then** occ++
8. end if
9. end for
10. for each $CDT_{i,k;1 \le i \le I, 1 \le k \le K}$ **do**
11. A= math.pow(($TDC_{k,l}$- ref)),2)/occ
12. som←som+A
13. end for

END-COMPUTE

4. CASE STUDY: GLOBAL ARMED ATTACKS IN THE YEAR 1993.

In our approach, it is proposed to present a case study based onpublicly available information collected onarmed attacks in the year 1993. The objective is to apply our clustering approach on this dataset to identify groups with interesting profiles and characteristics especially based on the number of elements in each group. The data set initially contains a large amount of *qualitative* and *quantitative*data. However, in this context, we propose to apply the two considered formulas only for binary values; therefore, a preliminary pretreatment step is required.In this step, the initial dataset is filtered in order to keep only the most relevant attributes for our analyzing objectives.

A. The Global Terrorism Database (GTD).

The Global Terrorism Database (GTD) [19] is a vast collection of terrorist activities reported around the globe. The database incorporates more than 27.000 terrorist incidents, provided by the National Consortium for the Study of Terrorism and Response to Terrorism (START), a United States department of Homeland Security of Excellence based at the University of Maryland. The data set is assembled from public sources including media, articles, electronic news, books, journals and legal documents. The GTD contains data about terrorist attacks that occurred worldwide between 1970 and 2014 with detailed information. By using clustering, it would be very interesting to identify the terrorist activities patterns correlated with each other. The purpose of GTD is to provide detailed information about the events of terrorist activities and is a vital instrument to consider such investigation [20, 21].

B. Multidimensional structure extraction.

The proposed data table of GTDcontains 748 observations associated with 123 qualitative and quantitative variables to characterize armed attacks that took place in the world in 1993. These data are presented in MS EXCEL table without any specific structure. In this context, we propose in our approach to define a multidimensional structure to represent this table. We first start by reorganizing the entire data table and identify all possible dimensions that can be extracted and then select three dimensions or axes to conduct our study.A study of this data table identifies, among the represented variables, the following dimensions with the associated attributes as follows:

−TIME (*year, moth, dayapproxdate, extended, resolution*);

−LOCATION *(country, region, provstate, city, latitude, longitude, specificity, vicinity, location);*

−FEATURES *(summary, crit1, crit2, crit3, doubter, alternative, multiple, succeed, suicide);*

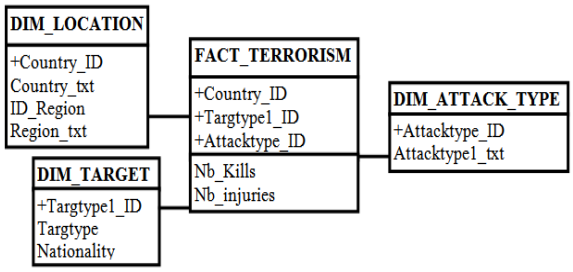
−ATTACK_TYPE *(attack_type1, attack_type2, attack_type3, nbpers);*

−TARGET *(target_type1, corp1, target1, nationality, target_type2, corp2, target2, nbkills, nbwounded);*

−WEAPON *(weapon_type1, weapon1, weapon_subtype, weapon_details, target_type2, corp2, target2);*

−TERRORIST_GROUP *(group_name, group_subname, motivation, claimed);*

In our study, an initial phase of integration was carried out in order to only keep the most relevant data. A 3-multidimensional DW was identified with the associated dimensions and fact table represented in the following Figure1:



The three dimensions we propose to consider are {***LOCATION***, ***ATTACK_TYPE, TARGET***}. The DW contains *qualitative* data where each dimension has a limited and fixed number of possible values. The

dimensions and the measures are presented as follows:

−**LOCATION** {*EUROPE*, *MIDDLE EAST & NORTH AFRICA*, *ASIA*, *AMERICA*, *RUSSIA*};

−**ATTACK_TYPE** {*ASSASSINATION, ARMED ASSAULT, BOMBING, HOSTAGE TAKING, FACILITY*};

−**TARGET** {*CIVILIANS, GOVERNMENT, MILITARY, BUSINESS, OTHER*};

−Total number of fatalities **NB-KILLS;**

−Total number of injuries **NB-INJURIES;**

Each observation in the CDT table is represented by a profile containing five information: three dimensions and two measures. An example of two observations is given by the following Table3:

TABLE 3:INDIVIDUAL REPRESENTATION IN THE DW FACT TABLE.

	LOCATION	ATTACK_TYPE	TARGET	NB_KILLS	NB-INJURIES
IND 1	*ME & NA*	*ARMED ASSAULT*	*MILITARY*	x_{11}	x_{12}
IND 2	*AMERICA*	*BOMBING*	*CIVILIANS*	x_{21}	x_{22}

The transformation of the qualitative data observations in Tab 3 to binary representation is given by the following Tab 4:

TABLE 4 BINARY FACT TABLE REPRESENTATION: CDT.

	LOCATION					ATTACK_TYPE					TARGET				
	EUROPE	*ME & NA*	*ASIA*	*AMERICA*	*RUSSIA*	*ASSAS*	*ARM_ASS*	*BOMBING*	*HOSTAGE*	*FACILITY*	*CIVILIANS*	*GOV*	*MILITARY*	*BUSINESS*	*OTHER*
OBS 1	0	**1**	0	0	0	0	**1**	0	0	0	0	0	**1**	0	0
OBS 2	0	0	0	**1**	0	0	0	**1**	0	0	**1**	0	0	0	0

In the CDT, each individual has an encoding of 15-bit representing its whole characteristic profile. The encoding of the individuals in this table is not random; it should respect the following findings to preserve the integrity of the table:

- The number of bits encoded 1 in a line is equal to the number of dimensions;
- The number of occurrences *m* for each dimension is equal to the number of elements in the sample.
- The total number of occurrences of all modalities in a dimension is equal to the total number of observations;

4. RESULTS INTERPRETATION.

A. Clustering using the KHI² distance.

The clustering results performed in this approach are shown in fig 2 and 3 below: clusters are represented according to the computed distances (D^2) and the number of items in each cluster. Each point in the figure represents a cluster. The computation was performed according to two reference profiles represented in the following Table 5.

TABLE 5. REFERENCE PROFILES REPRESENTATION.

	LOCATION					ATTACK_TYPE					TARGET				
	EUROPE	*ME & NA*	*ASIA*	*AMERICA*	*RUSSIA*	*ASSAS*	*ARM_AS*	*BOMBIN*	*HOSTAG*	*FACILIT*	*CIVILIA NS*	*GOV*	*MILITAR Y*	*BUSINES S*	*OTHER*
x_{ref1}	0	**1**	0	0	0	0	**1**	0	0	0	0	0	**1**	0	0
x_{ref2}	0	**0**	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0

It is then proposed to measure the distance between this reference profile $_{ref}$ and all the other individuals $_{Xi}$ of the dataset. This method helps identifying the elements in the dataset that are similar to the reference profile. The second reference doesn't represent a specific profile to identify, it is just used in order to experiment the results obtained in the case if the reference is modified.

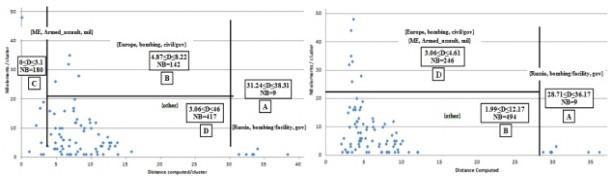


Figure 2: Clustering results with profile 1.
Figure 3: Clustering results with profile 2.According to the experimental results, 86 distinct groups were identified based on the number of calculated distance values (0 to 38.3).

TABLE 6 PROFILE 1 AND PROFILE 2 COMPARISON.

	NB clusters	NB super groups	NB elements / cluster			
			A	B	C	D
Profile1	86	4	9	141	180	418
%			1.2	18.85	20.06	55.88
Profile2	85	3	9	246	494	
%			1.2	32.88	66.04	

In the previous figure 2, we identify four groups containing all clusters (and therefore the corresponding elements) having similar profiles. It is also proposed to introduce another parameter representing the number of common modalities between each individual and the reference. If the distance computed increases, the number of common modalities decreases, which explains that the elements become more and more dissimilar.

TABLE 7. DISTANCES COMPUTED WITH THE NUMBER OF RETAINED MODALITIES.

D^2 ()	0	1,08	2	2,03	2,63	2,76	2,82	2,83	3,10
NB (same modalities)	3	2	2	2	2	2	2	2	2

The following table presents the characteristics of the groups identified in relation with the distance computed and the number of elements in the groups.

TABLE 8. CLUSTERS IDENTIFICATION.

		A	B	C	D
Distance computed (D^2)		High	**Low**	**Low**	Medium
		High	**Low**	**Low**	
NB elements		Low	**High**	**High**	Low/Medium
		Low	**High**	**High**	

The four groups identified in fig 2 and fig 3 can be interpreted as follows:

−*Group A*(in both figures) contains only five clusters (1.09% of the total number of clusters) with maximum distances from the reference. The characteristic profile of this group is {*RUSSIA, BOMBING, FACILITY / GOV*}. It concerns armed attacks that occurred in Russia against either governmental or facility targets using bombs. These clusters, given their small number, are not representative of a specific behavior of armed group attacks in the country. The attacks mainly targeted the state and not the military or civilians which can be explained by the policy of the country and clarify the claims of the attacks that may have political backgrounds.

−*Group C*(in both figures) is the most interesting super cluster of all; it contains clusters with minimum distances to the reference and consequently most similar to the initial profiles defined. This clusteris then an interesting profile to study in order to identify the reasons explaining such results. Further information extraction and analysis from the database could provide more remarkableinformation such as the most active armed groups in the region or even the relation between these groups.

−*Group B*(in both figures) contains elements with medium distances (< 10) with relatively high cardinality (> 25 elements) by the maximum cluster distance to our reference, this is a result of groups containing more dissimilar elements.

−*Group D* represents various clusters that are compact and even close the distance between clusters is sometimes reduced which means that the results and profiles are quite similar.

The following Table 9 represents the different labels that could be assigned to each cluster with the corresponding groups:

TABLE 9 CLUSTER LABELS.

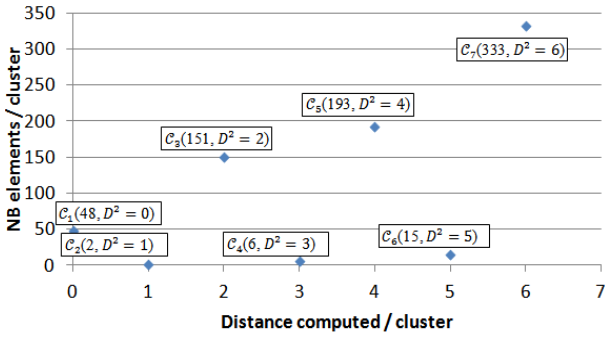
CLUSTER	Label	Nb clusters	Nb elements
A	RUSSIA, BOMBING/FACILITY, GOV	**7**	**9**
B	EUROPE, BOMBING, CIVIL/GOV	5	142
C	ME, ARMED_ASSAULT, MIL	9	181
D	OTHER	62	416
		TOTAL= 748	

We note that during the year 1993, Europe and ME & NA are the most concerned regions by the armed attacks. These results indicate that criminal activities are very relevant in these countries and that armed groups have been very active there. The total number of observations corresponding to the profile *{MIDDLE EAST & NORTH AFRICA, ARMED ASSAULT, MILITARY}*is 181 attacks and the total number of observations corresponding to the profile *{EUROPE, BOMBING, GOVERNMENT}* is 142 elements.According to these results with corresponding clusters, we obtain interesting facts to study. This result can have great importance for specialists in the counter-terrorist or criminal investigation services. Besides, according to fig 2 and fig 3, we notice that the corresponding clusters are easily identifiable. Additional efforts should be led in order to strengthen the military intelligence services in the ME & NA countries while general intelligence for private government representatives should be considered in the European countries. Besides, attacking the governments and anofficial representative can be explained by the political issues declared by the government and these attacks may have political reasons. However, targeting the army and law enforcement agencies can be seen as an attempt to weaken the government capabilities in facing terrorism for more reasons not essentially political issues which is happening actually in these regions where Islamic groups are targeting military and police in order to widespread their jihadist beliefs.

According to the previous Tab 10, most of thearmed attacks in the year 1993 occurred in Europe and ME& NA with a total of 492 attacks (65.77%). Given the geographical proximity between the two continents, it would be possible to conclude that links may exist between these attacks especially if the same armed group conducts attacks on both territories which can contribute to the spread of terrorism in both continents. Actually, it is determinant that many armed attacks happening in Europe wereplanned by terrorist groups adherents from the Middle East and North Africa. This means that, more and more attention should be given to these groups and additional bilateral collaboration between these two continents should be taken into consideration.

B Clustering using the Euclidean distance.

The objective of this study is to conduct a clustering using both: the Euclidean and KHI² distances. The fig 4 below shows the clustering resultsobtained by the Euclidean distance.



The total number of clusters obtained using the Euclidean distance represents 8.13% (7/86) groups compared to those obtained with the KHI² distance. This indicates that some distinct groups, initially identified with the KHI² formula, were assembled with the Euclidean distance. The KHI² distance provides better clustering results compared to the Euclidean distance: The clusters are more visible and the results are better exposed. These results are due to the fact that the KHI² formula takes into consideration additional parameters that are not identified with the Euclidean distance, including the occurrence *m* of each modality, the total number of observations *N*and the number of dimensions *P*.

Letsconsider the cluster computed with the Euclidean distance where $D^2 = 2$.The cluster contains all other groups previously identified with the Khi² formula (11 groups)and having the distances around $D^2 = 2$. This result presents one of the limits of the Euclidean distance: it is possible to group many observations that may have different profiles in the same cluster while they are distinguished with the KHI² distance.

C Further data analysis: armed groups identification

The following Table10 represents the number of occurrence *m*of each modality in the data set. The *m* parameter is part of the KHI² formula and can provide interesting additional information concerning the most frequent modalities. Data integrity is verified because the total number of observations for each dimension is the same:

TABLE 10 NUMBER OF OCCURRENCE OF THE MODALITIES IN THE DW.

	LOCATION					ATTACK_TYPE					TARGET				
	EUROPE	ME & NA	ASIA	AMERICA	RUSSIA	ASSAU	ARM_ASS	BOMBING	HOSTAGE	FACILITY	CIVILIANS	GOV	MILITARY	BUSINE	OTHER
Occ (M)	227	265	115	132	9	36	230	270	43	148	199	237	157	97	59
%	30	36	15	18	1	5	32	37	6	20	26	32	21	13	8
Total	748					748					748				
Nb_Kills	2668														
Nb_Wounds	5399														

The previous Tab10 identifies the most frequent modalities in the DW expressed by the parameter *m* which are {*ME & NA, BOMBING, GOV*}. The number of corresponding observations is only 17 which doesn't represent an interesting profile to study despite it represents the most frequent modalities. Furthermore, the results provided by our approach, do not identify the profile {*ME & NA, BOMBING, GOV*} as an interesting profile with a great number of elements. This highlights the value of using reliable analytical techniques such as clustering for discovering interesting patterns.

There are various armed organizations identified in the GTD dataset where more than two thousand different groups of terrorists have been recorded. The following fig 5 presents the most common identified groups according to the number of attacks, the number of kills and injuries

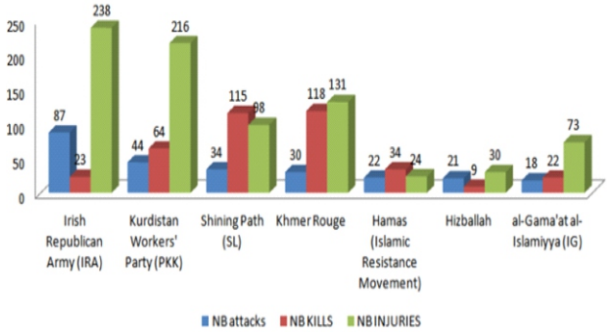


Figure 5: Statistics of damages caused by armed groups.

The following Table11 presents the countries where the attacks happened according to each group:

TABLE 11 ACTIONS OF GROUPS BY COUNTRY.

Groups	NB attacks	Region	Place of attacks
IRA[1]	87	Europe	Great Britain / Northern Ireland
PKK[2]	26		Germany / Great Britain/Switzerland / France/Denmark / Austria
Hamas [3]	22	The Middle East& North Africa	West Bank and Gaza Strip Israel
Hezbollah	21		Lebanon / Israel
IG[4]	18		Egypt
PKK	18		Turkey

According to the previous Table 11, we identify the number of attacks by region and by country associated with the most identified armed groups. Seeing the results provided, two categories of the most active groups are distinguished:

Groups operating in one geographical area such as "*Irish Republican Army (IRA)*" in Europe and "*Hamas (Islamic Resistance Movement)*", "*Hizballah*", "*al-Gama'at al-Islamiyya (IG)*" in the Middle East & North Africa.

Groups that act on two different continents including

"*Kurdistan Workers Party (PKK)*" in Europe (26 attacks) and Turkey (18 attacks).

The results obtained presents information of great importance for intelligence services and law enforcement agencies. These results help giving more intelligence about the behavior of these groups to understand the motives and reasons for their actions: Generally, an attack to foreign boundary includes locals from the same country. Similarly, the domestic attacks involve a national or a group of nationals who attack their own homeland.
While the world may confront extraordinary terrorist threats today, experts can explore a lot of things about today's dangers by investigating the practices of terrorist groups in the recent past and the effects that these terrorist actors, and the terrorist vents they executed, have had.

6. CONCLUSIONS AND PERSPECTIVES.

Data mining is a fundamental tool that has been widely used to model crime detection problems, detect unusual patterns, terrorist activities and fraudulent behaviors. It has great effectiveness and high influence in law enforcement studies or investigations for crime prevention, detection and analysis. Our approach is based on clustering armed attacks events to identify interesting patterns such as the main regions and countries concerned, targets and kind of attacks. The approach is based on the use of the KHI² distance extracted from the MCA and the Euclidean distance, to express the similarity between the observations. According to the study, we conclude that using the KHI² distance measurement is more effective than the Euclidean distance and can provide better discernible results. However, the approach is proposed for qualitative data and a pretreatment procedure is required to switch from the qualitative data to the binary one. Experimental results with quantitative data should also be presented to compare the effectiveness of the approach. Evaluating the effectiveness of the approach based on a specific method is also needed especially when using different clustering methods providing almost comparable data. This issue will be taken into our consideration in our following publications.

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Composition Writing Ability of Pre-Service Special Education Students: An Analysis

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ABSTRACT: Thestudy aimed to analyze the composition writing ability developed through the process approach following both free and controlled exercises formats of the 84 junior pre-service special education teachers of the Leyte Normal University for AY 2014-2015. It adopted the descriptive cross-sectional survey research design and had used Jacobs' English as a Second Language Composition Profile as the instrument of the study. For valid and reliable interpretation of data, the mean and t - test were used. Results showed that the level of the respondents' composition writing ability developed through free-exercises in terms of organization, vocabulary and language component were rated to be at "average good" level. In terms of content and mechanics; the respondents' compositions were both rated "poor to fair"by the four raters. On the other hand, the level of the respondents' composition writing ability developed through controlled-exercises in terms of content, organization, and language were at the average to good level while their vocabulary and mechanics components were rated poor to fair level. The over-all or general level of the respondents' composition writing ability developed in both free and controlled exercises is at the average to good level. The raters noted that the respondents committed errors the most in mechanics, vocabulary and language use.

1. Introduction

The curricular landscapes of the various teacher education programs offered by the Teacher Education Institutions (TEIs) in the Philippines explicitly require students to write extensively. This is so as numerous studies point out that writing is the best platform to which thoughts and ideas are best structured. Likewise, the ability to write is the most salient manifestations of learning in higher education Hartshorn (2011). Researches also revealed that writing, which was considered the domain of language arts, has become an essential tool in today's global community Ru-Wang et.al, (2011). Further, El-Sayyed Sanad (2014) posited that that writing is one of the primary cornerstones on which content learning is built.However, of the four macro-skills of language learning, writing seems to be the most unpopular. Studies also reveal that this skill remains a dilemma to both the learners and the teachers. This is evident in the way it has been neglected and / or treated poorly in the past (Manguerra (2001); Zara-ee (2011)).

In its strictest sense, students in the tertiary level are often times bombarded with a myriad of activities requiring them to write. With the changing platforms of the world's economic affairs; various challenges to educational processes including teaching and learning engagement have emerged. Baraceros (2009) argued that the recent merging of economies of the member states of the Association of Southeast Asian Nations (ASEAN), in which the Philippines is a signatory state, would require graduates of higher education institutions, to have mastery in the verbal and written use of English language to ensure success in their interaction or networking as well as global competitiveness. In the same manner, Hansen, Randall and Hansen, Katharine (2015) posited that most potential employers of job seekers do care about writing skills. They care so much that they bemoan the poor preparation of the entry-level pool of grads. They further stressed that, in a labor force full of mediocre writers, someone who writes well is bound to stand out and succeed. Yet, a steady erosion in the writing abilities of graduates was noted by the academicians and business people.

If Teacher Education Institutions (TEIs) would want its graduates to keep at par with their counterparts in the ASEAN region; then, they should graduate writing virtuoso.As such, college students in general and pre-service teachers in particular must be writing - literate.

These firm grounds prompted the researcher to conduct this study.

2. Literature Review

2.1 The Flower and Hayes Writing Process Model

Dujsik (2008) posited that The Flower and Hayes (1981) writing process Model is cognitive by nature. The model has three major elements: task environment, writer's long-term memory, and writing processes. The task environment refers to the information related to the writing assignment (e.g. topic, audience, and motivating clues) and text that the writer has created so far that has an impact on the writing performance. The writer's long-term memory includes the information such as knowledge of topic, audience knowledge, and various writing plans which the writer retrieves and refers to during the writing process. The writing processes consist of planning, translating, and reviewing, all of which are controlled by a monitor that "functions as writing strategist which determines when the writer moves from one process to the next". The model further claims that planning comprises three sub-processes: generating ideas, organizing information, and setting goals. While writing, writers take ideas from planning, information from the task environment and from long term memory, and convert them into written forms corresponding to information in the writer's memory (translate), and read/edit (review) to improve the quality of the text it added. Dujsik (2008) further noted that writing classrooms practice which typically involves planning, drafting, revision, and editing manifest the model.

2.2 Relative research on writing ability

Manguerra (2006) quoted Preciosa Soliven who pointed out that the writing ability of an average College student in the Philippines is just equal to that of a high school student graduate in China. In the same study, the late Bro. Andrew Gonzalez likewise emphasized that the quality of the country's College graduate is poor and that only few schools and research institutions are providing intellectual elite. These remarks are alarming since one of the measures in enhancing competitiveness is equipping students with adequate knowledge of the English language to cope with the demands of globalization. Thus, the ability to communicate in both written and oral English is imperative.

Undeniably, writing is essential to a learning process. It is regarded as a "unique mode of learning". It is anchored on the idea that the learner acquires the skill when writing form part of the total learning process. Likewise, it is deemed as the most difficult challenge of a student's manifestation of learning as it requires coming up with a response that are structured and concise. Furthermore, it must provide context for an audience that is not part of the environment but that exists apart from the learner as immersed in the writing process. Students are also compelled to be more careful and more engaged as learner-participants in the learning process (Raimes, 1987; Dizon, 1994; Manguerra, 2006; Hadley, 2014).Xuefeng (2010) argued that writing is a powerful means of learning because the more students manipulate content the more likely they are to remember and understand the content and reading process. Consequently, Alinsunod (2015) posited that writing is one of the most powerful tools to demonstrate what we know. Writing problems appear due to the different expectations of writing at tertiary level and that students need to be aware of the expectations of the readers, the content of writing, degree of formality in writing, and contextual elements in writing. Moreover, Viel-Ruma (2011) contested that writing is an essential skill for academic success across all curricular areas. Researches also posited that poor performance on writing tasks can lead to: decrease student achievement in all subject areas; difficulty in gaining admission to postsecondary educational institutions; and limited employment opportunities. On the other hand, **(Valenzuela, 2014) argued that writing is always a political and sociocultural practice. Learning and teaching how to write are never neutral. Drawn on the notion of cultural capital, the researcher noted that some scholars argue that writing well in English as a second language requires the acquisition of such**

valuable capital. Writing in English comes with prestige. The study further stressed that, in the Philippines, students born into middle-class families are one step ahead of those from working-class families. Easier access to more valued linguistic resources at home and school means a more powerful linguistics currency, which afford middle-class students almost exclusive membership in elite communities in practice. Cabansag (2013) found that high school students in aLaboratory High School in a State University in Cagayan Valley, Philippines are very proficient in structure and grammar but not so much in mechanics. The study also revealed the persistent errors committed by the respondents in their written compositions namely: use of verbs, verb tenses and proper use of capitalization. Attempting to determine the relationship between the reading habits and the English writing proficiency of the selected First Year High School students of Colegio de San Juan de Letran Calamba, AY 2009-2010; Gonzales et. al. (2011) pointed out that most of the selected first year high school students have moderate reading habits while they have below average both in grammar and paragraph writing as far as their total scores in the English writing proficiency are concerned.A similar study posted on-line examined the writing proficiency of the students enrolled in the programs BSED and BEED in Catanduanes State University S.Y. 2013-2014 .The study revealed that the BSED and BEED students in Catanduanes State University S.Y. 2013-2014 have an advance writing proficiency. This means that they can write routine, informal and some formal correspondence, narratives, descriptions and summaries of a factual nature in all major time frames in connected discourse of a paragraph in length. They also have good vocabulary and good control of the most frequently used structures. The results also showed that only 5 of the 27 respondents are leveled superior. This means that the 5 respondents can produce formal and informal writings on topics related treated on both abstractly and concretely. They can present well-developed ideas, opinions, arguments, and hypotheses through extended discourse; can control structures, both general and specialized vocabulary, spelling, punctuation, cohesive devices and all other aspects of written form and organization with no pattern of error to distract the reader. (http://www.slideshare.net/tinmay/remedial-research-final-na-to)

3. Research Method

3.1 Participants

Participants were eighty four junior students of Leyte Normal University enrolled in theprogram Bachelor in Elementary Education in Special Education during the second semester AY 2014 - 2015.

3.2 Measures and Procedures

3.2.1 English as a Second Language Composition Profile by Jacobs To determine the level of the composition writing ability of the students, the researcher adopted the English as a Second Language Composition Profile by Jacobs, taken from English Teaching Forum, Vol. XVI, No.3, circulated in July 1983. The instrument was likewise used in a parallel study conducted by Solayao (1998) for his master's thesis submitted to the Philippine Normal University-Manila. The instrument basically examines a writing composition in terms of content (30%), organization (20%), vocabulary (20%), language use (25%), and mechanics (5%).

3.2.2 Demographic information.Participants provided some demographic information, including gender, and age, types of students.

3.3 Data analysis

For valid and reliable interpretation of data, the mean and t - test were used. The mean for independent data was used to describe the level of composition writing ability of the respondents. The t - test of independent samples on the other hand was used to compare the level of composition writing ability of the two groups in terms of content, organization, vocabulary, language use, and mechanics based on the free and controlled

exercises given to the respondents. The 0.5 level of significance was used as basis for rejecting or accepting the null hypotheses.To obtain the desired data, the respondents were asked to write four compositions anchored on the themes: (1) **Surviving the Wrath of Super Typhoon Yolanda and (2)Travelling is Learning** for the controlled exercises and "**My Most Unforgettable Christmas Break" and "On Becoming a Special Education Teacher"** forfree exercises.The compositions were used to determine the level of the respondents' composition writing ability in terms of: content, organization, vocabulary, language use and mechanics. They are likewise used to determine the composition writing ability of the respondents in free and controlled exercises as well as the linguistic units frequently committed. A copy of the table of equivalence of this profile was attached to each of the eighty four compositions. The compositions were then given to a panel of raters composed of two master teachers in English, a college instructor and the researcher himself.

4. Results

4.1 Mean Scores in the Different Components for Two Compositions

Table 1: Mean Scores in the Different Components for Two Compositions in Free Exercises as Evaluated by Four Raters

Components	Content	Organization	Vocabulary	Language Use	Mechanics
Percentage	30%	20%	20%	25%	5%
Raters	Mean Scores in the Different Components for Two Compositions in Free- Exercises as Evaluated by Four Raters(N=84)				
R_1	21.20	18.22	18.35	22.21	2.98
R_2	18.32	19.24	17.45	20.24	3.12
R_3	17.29	17.12	14.22	19.21	3.34
R_4	17.01	17.26	15.23	23.32	2.68
Total	73.82	71.84	65.25	84.98	12.12
Grand Mean	18.46	17.96	16.31	21.25	3.03
Descriptive Level	P-F	A-G	A-G	A-G	P-F

In table 1, the mean scores obtained by the junior pre-service SPEd students were on the average to good level in organization, vocabulary and language use components as reflected in the mean scores of 17.96, 16.31, and 21.25 respectively. The respondents' content and mechanics were both rated poor to fair by the four raters. Reflecting against Jacob's ESL Profile; to be rated average to good level in organization means that theircompositions weresomewhat choppy, lousy organized but main ideas stand out with limited support and logical but incomplete sequencing. On the other hand, an average to good rating in vocabulary means that the compositions of the respondents have occasional errors of words /idiom form, choice, usage, but meaning not obscured. Further, an average to good rating in language use means that their compositions' use of languageis effective but simply constructed, has minor problems in complex constructions, with several errors of agreement, tense, number, word order function, articles, pronouns, preposition but meaning seldom obscured.

Table 2: Mean Scores in the Different Components for Two Compositions in Controlled Exercises as Evaluated by Four Raters

Components	Content	Organization	Vocabulary	Language Use	Mechanics
Percentage	30%	20%	20%	25%	5%
Raters	Mean Scores in the Different Components for Two Compositions in Controlled Exercises as Evaluated by Four Raters(N=84)				
R_1	22.32	16.27	12.23	23.31	3.20
R_2	20.21	17.21	12.24	21.23	3.23
R_3	23.43	15.23	11.22	18.19	3.45
R_4	23.24	16.51	11.34	24.31	2.77
Total	89.20	65.22	47.03	87.04	12.65
Grand Mean	22.30	16.31	11.76	21.76	3.16
Descriptive Level	A-G	A-G	P-F	A-G	P-F

Table 2 shows the mean scores obtained by the respondents for two compositions developed through controlled writing method. When taken in isolation, the scores of the junior pre-service SPEd students were on the average to good level in content, organization, and language use components as reflected in the mean scores of 22.30, 16.31, and 21.76 respectively. On the other hand, the respondents were rated poor to fair level in both vocabulary and mechanics in which they obtained the mean scores of 11.76 and 3.16 respectively. Reflecting against Jacob's ESL Profile; having been rated poor to fair in vocabulary means that their compositions were non-fluent; ideas confused or disconnected; lacks logical sequencing and development; frequent errors of word / idiom form; and choice usage meaning confused or obscured were noted

by the raters. In addition, to be rated poor to average in mechanics means that their compositions have frequent errors of spelling, punctuation, capitalization, paragraphing, legible handwriting, as well as meaning confused and obscured.

Table 3: Joint Mean Scores in the Different Components for Two Compositions Developed through Free-Exercises as Evaluated by Four Raters

Components	Content	Organization	Vocabulary	Language Use	Mechanics	Jointly	Descriptive Level
Percentage	30%	20%	20%	25%	5%		
Raters	**Joint Mean Scores in the Different Components for Two Compositions in Free Exercises as Evaluated by Four Raters (N=84)**						
R_1	21.20	18.22	18.35	22.21	2.98	82.96	A-G
R_2	18.32	19.24	17.45	20.24	3.12	78.37	A-G
R_3	17.29	17.12	14.22	19.21	3.34	71.18	A-G
R_4	17.01	17.26	15.23	23.32	2.68	75.5	A-G
					Total	308.01	
					Grand Mean	*77.00*	*A-G*

The third table shows the joint mean scores of the two compositions of the respondents developed through free-exercises rated by four raters. Jointly, if language components are not taken / interpreted in isolation; the respondents' composition writing ability is at the average to good level as reflected in a grand mean of 77.00.

Table 4: Joint Mean Scores in the Different Components for Two Compositions Developed through Controlled-Exercises as Evaluated by Four Raters

Components	Content	Organization	Vocabulary	Language Use	Mechanics	Jointly	Descriptive Level
Percentage	30%	20%	20%	25%	5%		
Raters	**Mean Scores in the Different Components for Two Compositions in Controlled Exercises as Evaluated by Four Raters (N=84)**						
R_1	22.32	16.27	12.23	23.31	3.20	77.33	A-G
R_2	20.21	17.21	12.24	21.23	3.23	74.12	A-G
R_3	23.43	15.23	11.22	18.19	3.45	71.52	A-G
R_4	23.24	16.51	11.34	24.31	2.77	78.17	A-G
					Total	301.14	
					Grand Mean	*75.29*	*A-G*

The fourth table shows the joint mean scores of the two compositions of the respondents developed through controlled-exercises rated by four raters. Jointly, if language components are not taken / interpreted in isolation; the respondents' composition writing ability is at the average to good level as reflected in a grand mean of 75.29.

In terms of linguistic unit/s does/do students committed the most by the pre-service junior special education students; the raters noted that the respondents committed errors the most in mechanics, vocabulary and language use. Jacob's ESL Profile interpreted the compositions to have incurred the following:

A. Mechanics: Frequent errors of spelling; punctuation, capitalization, paragraphing, legible handwriting, meaning confused and obscured

B. Vocabulary: Non-fluent; ideas confused or disconnected; lacks logical sequencing and development. Limited range; frequent errors of word / idiom form; and choice usage meaning confused or obscured

C. Language Use: Major problems in simple complex constructions, frequent errors of negation, agreement, tense, number, word order/functions articles, pronouns, prepositions and or fragments, run-ons, deletions, meaning confused or obscured.

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Integration of Developed and Asian Developing Stock Markets: Implications for Portfolio Diversification

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ABSTRACT The study is conducted to investigate the short term as well as long term dynamic interactions between the developed stock markets (i.e. United States, United Kingdom and Japan) and the Asian developing stock markets (i.e. Pakistan, India and Sri Lanka) for the period from January 1998 to December 2012. To accomplish the objective of the study, Johansen & Juselius (1988) cointegration test and Pairwise Granger Causality Test (1969) are used. The result of Johansen & Juselius (1988) cointegration techniques indicated that the only Bombay stock exchange has a long run dynamic interaction with the well-developed stock markets. Moreover, results of Granger Causality test demonstrated that there is a unidirectional casual linkage between Tokyo and Karachi stock exchange. Colombo stock exchange has also unidirectional casual relationship with the New York and London stock exchanges.

Keyword : Integration, Developed Stock markets, Asian Developing Stock markets, Portfolio.

1. Introduction

Integration of stock markets is significantly increasing since 1980 around the world. Globalization of investment is a key factor that providing opportunity of portfolio diversification for an international investors as well as provide potential for high rate of return. Simultaneously, many of countries are encouraging to capital inflow by taking apart restrictions and deregulating local stock markets (Jain and Bhanumurthy, 2005). The financial specialists and policy makers have great attention about the integration of stock markets. Several reasons of stock markets integration are discussed by different authors. Firstly, integrated stock markets provide risk sharing opportunities for investors. Secondly, integrated stock markets allocate the resources efficiently that may cause a better financial stability. Thirdly, integration of markets is also a channel for international investors to trim down the capital cost (Tai, 2007). Fourthly, it persuades and gives confidence to the investors for the adoption of modern technology and to access the payment system to obtain cost effective intermediation services. The international stock markets integration can support economic growth by encouraging improvement in the domestic markets (Levine, 2001). Integration among stock markets may pose different type of risk such as the Asian financial crisis during late 1990s; the contagion and troubles of financial activities is evidence (Raj and Dhal, 2008). The liberalized and integrated stock exchanges may also put a lot of pressures on the international investors due to unstable political and macroeconomic variables which are usually experienced in Pakistan. For examples, the rapid increase in an inflation rate and changes in political system in Pakistan like after death of Benazir Bhutto 2008, the price of KSE 100 index performance badly experienced (Kanasroet al., 2011).

Stock Markets Integration Based On Asset Pricing Theory

Sharpe (1964) and Lintner (1965) developed the Capital Asset Pricing Model (CAPM) which basically is an extension of Markowitz's (1952) portfolio selection theory that suggest that the investors should make an investment in those markets which are not cointegrated rather than invest all resources in one market. The CAPM concluded that there is a positive and linear association between expected return and systematic risk of a security. Furthermore, CAPM assumed that the capital markets are highly efficient, there are no taxes and restriction on international investment and the transaction cost will be zero. Arbitrage Pricing Theory (APT) developed by Ross (1976), like CAPM, is an equilibrium model which is applied to scrutinize how the stock prices are determined. Competitive financial markets were the based in this theory which ensure the arbitrage those less risky assets give the similar expected return. On the other hand, unlike CAPM that recognize the market portfolio return as the factor; APT model does not particularly recognize these risk factors in application. These several factors comprise inflation, changes in interest rates, growth in GNP, and major political disturbances.

Co-movement and interdependency is a main dilemma for international investors for the portfolio diversification. According to portfolio theory, if the markets are interacted then there are no benefits of diversification. However, if the developing stock markets of Asia is integrated and depending on developed stock markets then the investors will not encourage themselves to include the Asian developing stock markets in their portfolio diversification. So, the study is conducted to identify whether the Asian developing stock markets are isolated markets or there is any existence of co-movement and interdependency. Moreover, the study is also carried out to investigate the short run as well as long run dynamic interactions between developed and Asian developing stock markets.

2. Literature review

The asset pricing models is used by (Stehle, 1977) to test the market integration and the domestic and international assets pricing model both were the base of the test. His findings concluded that if the international markets are integrated then the risk should be priced by diversifying through international diversification. (Bekaert, 1995) identified various kind of barriers to investment has a significant relationship with the integrated stock market returns. The unstable macroeconomic variables such as poor credit rating, high rate of inflation, exchange rate etc. are effective hurdles to international capital market integration.(Yang et al., 2003) inspected the short run and long run dynamic linkage among the US, Japanese and ten emerging stock markets of Asia with the special consideration of Asian financial crisis 1997-1998. Their study investigates the effects of financial crisis on stock market integration. The results indicated that these integrated stock markets have a long run and short run linkage during the crisis. Further, they also found that after crisis these markets have more integrated as compared to before the crisis. (Lamba, 2004) find out the short run as well as long run associations between developed and South Asian stock markets. His cointegration test result disclosed that the United States, Japan and United Kingdom stock markets influenced the stock markets of India only while the stock markets of Pakistan and Sri Lanka relatively isolated with the developed markets. (Wong et al., 2004) carried out the study which determined long run relationship among the stock markets of well developed countries and emerging stock markets of Asia. Their studies found that some developed countries' stock markets has a positive relationship with the some Asian developing stock markets, but some of Asian emerging markets are vary from the some stock markets of well developed countries which they make a long run relationship. (Yang et al., 2006) determined the effects of financial crisis on both short and long run relationship among the US and some European stock market. They found that both the short run and long run relationship among the US stock markets and European integrated stock markets were increased significantly after the crisis. (Raj and Dhal, 2008) discussed the Indian stock market integration with the worldwide and local stock markets and they found a short run as well as long run active interactions between Developed and Bombay stock exchange. The study conducted by (Iqbal et al., 2011) to examine the dynamic relationship between the stock market of US and emerging markets of Pakistan and India for the period 2003 to 2009. The study found that there is no cointegration among the stock markets of US, Pakistan and India. Unidirectional causal relationship has found between New York to Bombay and Karachi Stock exchanges. Moreover, (Mushtaq and Shah, 2011) examined the possible benefits for American investor in south Asian equity markets. They show lower correlation between US and south Asian equity markets. (Kanasro et al., 2011) described that stock markets are providing vary investment opportunities for the local and foreign investors especially in equity investment. According to them the better stock market development has a positive relationship with the economic growth. They also studied that the economic and political instability put lots of pressure on investors to make an investment in the stock markets. (Sriyalatha et al., 2012) find out the Causal linkage and interdependency among the six countries' (US, Japan, UK, Germany, Singapore and Sri Lanka) stock markets for the period pre and post Asian Financial crisis (1990-2010) by using Vector Autoregressive (VAR) and Vector Error Correction Model (VECM). The results demonstrated that the interdependency among the stock markets are increased after financial crisis particularly the

Sri Lankan stock market is affected by all developed markets. (Tahir et al., 2013) investigated to find out the relationship between South Asian markets and well developed stock markets. Their finding indicates that Colombo, Karachi and Dhaka stock exchanges have no interactions with New York, London, Tokyo and Australian Stock exchanges while the Bombay stock exchange has found correlated with only New York Stock exchange. The cointegration results of their study have shown that the developed markets are not integrated with the South Asian stock markets.

3. Data and Econometric Methodology

To accomplish the objective of the study, we took three developed stock markets as independent variable (New York, London and Tokyo Stock Exchange) and three developing stock markets of Asia as dependent variable (Karachi, Colombo and Mumbai Stock Exchange). To represent the equity indices of selected stock markets we have taken S&P 500 index, TOPIX 100 index, FTSE 100 index as independent variables and KSE 100 index, S&P BSE 100 index and ASPI index as dependent variable. The monthly stock pricesfor the period 1998-2012 from the yahoo finance and the websites of stock markets. All indices are converted into natural logarithms for statistical analysis purpose.

Well Developed Stock Markets

The New York Stock Exchange (NYSE) is the largest stock exchange by market capitalization in the world located in United Stated which was established in 1792. At the end of year December 2012 the total market capitalization of its 1867 listed companies reached US $ 14,085 billion. The S&P 500, or the Standard & Poor's 500, is an American stock market index based on the market capitalizations of 500 large companies having common stock listed on the NYSE or NASDAQ.The oldest stock exchange of the world is London Stock exchange (LSE). The end of year 2012 it market capitalization of listed companies reached US $ 3396 billion. The FTSE 100 consists of the largest 100 qualifying UK companies by full market value. FTSE 100 companies represent about 81% of the entire market capitalization of the London Stock Exchange.The Tokyo Stock Exchange (TSE) was established in 1878 and now it placed as a third largest stock exchange in the world due to high market capitalization. The Total market capitalization of 2,292 listed companies in TSE US$3478 billion in December 2012.Tokyo Stock Price Index, commonly known as TOPIX, along with the Nikkei 225, is an important stock market index for the Tokyo Stock Exchange (TSE) in Japan, tracking all domestic companies of the exchange's First Section.

Developing Stock Markets

The biggest first established stock exchange in Pakistan is the Karachi Stock Exchange (KSE). KSE is now the most modern stock exchange in Pakistan with 600 plus listed companies and its market capitalization are equal to US $ 41.0 billion on May, 2012. KSE is the best performing world stock market in 2002 which was declared by the international Magazine "The Business Week". Karachi Stock Exchange 100 Index (KSE-100 Index) is a stock index acting as a benchmark to compare prices on the Karachi Stock Exchange (KSE) over a period. The selection criteria for stock inclusion in the existing KSE-100 Index is based on three main filters, namely Sector rule, Capitalization rule and Default rule. Bombay Stock Exchange (BSE) is an oldest stock exchange in India which was established in 1875. The world no 1 stock exchange is BSE in terms of listed companies. With an over 5000 listed companies it totals market capitalization US $ 1263 at the end December, 2012.S&P BSE 100 Index is a broad based Index. This Index has 1983-84 as the base year and was launched in 1989. In line with the shift of the S&P BSE Indices to the globally accepted Free-Float methodology, S&P BSE 100 was shifted to Free-Float methodology effective from April 5, 2004. The method of computation of Free-Float index and determination of free-float factors is similar to the methodology for S&P BSE SENSEX. The Biggest Stock exchange in Sari Lanka and most modern stock exchange in South Asia is the Colombo Stock Exchange (CSE) with 287 listed companies and at the end of December, 2012. It has combined market capitalization US $18.3 billion.The All Share Price Index is one of the principal stock indices of the Colombo Stock Exchange in Sri Lanka. ASPI

measures the movement of share prices of all listed companies. It is based on market capitalization.

Cointegration Test

A Cointegration test is required a unit root test to confirm that whether the variables are certainly stationary. Therefore, to convert the non-stationary variables into stationary, we used most reliable tests, Augment, Dickey and Fuller (ADF) test (1981) and Phillips and Perron (PP) test (1988). The ADF and PP unit root tests state that if the series data stationary at level then it's designed as I (0). Series which becomes stationary at first difference called I(1)

Johansen and Juselius (1988) Cointegration Test

In order to find out the long run dynamic interaction between the variables, Johansen and Juselius (1988) cointegration test is used. Generally, Johansen cointegration proposed two test statistics through vector auto-regression (VAR); one is trace and other is maximum eigenvalue test. The null hypothesis to be tested for the case of trace test is: there is at most" r "number of co integration vectors while the null hypothesis for the eigenvalue test is there "r" co integrating vectors against the existence of alternative r+1. The null hypothesis of no co-integration against the presence of co-integration is checked by Johansen and Juselius (1988) test. The trace test and eigenvalue can be constructed as:

λ????????(q) = - T ? ln ?1 - λ?? (1)

$$\lambda max\ (q) = -T ln(1 - \lambda_{q+1}) \quad (2)$$

Whereas, T is the number of usable observations. The *trace* statistic tests the null hypothesis that there are at most r cointegrating vectors against the alternative that H_1: $r = q+1$. The max tests the null hypothesis that show the number of cointegrating vectors is r, against the alternative of q+ 1. Critical values for the *trace* and max statistics are provided by MacKinnon, Haug, and Michelis (1999). Before investigating the long run relationship through co-integration, VAC process is required for the selection of lag length. The Johansen cointegration test is based on the following vector auto regression equation:

$$X_t = \mu \sum_{i=1}^{P} {}_i X_{t-i} + {}_i, t = 1,2,3,..,T \quad (3)$$

Where is a vector of constants and $_i$ is a normally and independently distributed n-dimensional vector of innovations with zero-mean non-singular covariance matrix . Moreover, X_t is a vector of endogenous variables.

Vector Error Correction Model

In order to correct errors between the integrated variables we apply the Error Correction Mechanism. The residuals (e_t) will be acquired by regressing Y on X that will be stationary, if variables X and Y are cointegrated.e_t I(0)

The relationship between X and Y will be expressed in the form of Error Correction Mechanism as:

$\Delta Y_t = b_1 + \Delta X_t + \pi e_{t-1} + V_t$ (4)

Whereas, b_1 captures the short run impact of x on y.V_t = is the error term.π is the coefficient term (e_{t-1}).

Pairwise Granger Causality Test

Pairwise Granger Causality test is a technique introduced by Granger (1969); it describes the causal relationship between variables A and B. Granger causality test that a variable A cause variable B if variable B can be better forecast with the historical data of both A and B, then it can be predicted using the history of B only alone. This is indicated that if the anticipation of B specified the history of A is unlike from the unconditional anticipation of B.

$E(B/BA_{t-k}) \neq E(B/B_{t-k})$ (5)

IV. Empirical Results and Discussion

Correlation Coefficient

Table 1 shows the result of coefficient of correlation between well developed and Asian developing stock markets. Result indicates that the only LKSE has a significant and positive relationship with LLSE, only positive relationship with LNYSE and negative relationship with LTSE. The result also shows that LBSE and LCSE have positive relationship with the LNYSE and LLSE While negative linkage was detected with LTSE.

Correlation Matrix of Stock indicesTable 1

	LBSE	LCSE	LKSE	LLSE	LNYSE	LTSE
LBSE	1					
LCSE	0.914649	1				
LKSE	0.908575	0.926628	1			
LLSE	0.264485	0.070550	0.027835*	1		
LNYSE	0.33120	0.195030	0.224840	0.88868	1	
LTSE	-0.09814	-0.337681	-0.175501	0.295421	0.135053	1

* Indicates Significance at 5% level

Unit Root Test

Table 2 shows the results of ADF and PP unit root test for index of stock exchanges. Both ADF and PP unit root test results reject the H (0) because monthly indices of stock exchange are not stationary at levels but after first difference they became stationary. The t values of index of all stock exchanges are smaller than the critical values (at 1% significant level) that show the rejection of H (0) of unit root at 1% significant level.

Unit Root Test of Various Stock Exchange Indices Table 2

Variables	Augment Dickey Fuller		Phillips-Perron	
	Level	First Difference	Level	First Difference
LNYSE	-2.085669	-11.77550*	-2.45023	-11.77451*
LLSE	-1.828985	-12.62941*	-2.03847	-12.60425*
LTSE	-1.319208	-11.43177*	-1.31921	-11.37113*
LKSE	-0.507845	-12.72840*	-0.52583	-12.72994*
LBSE	-0.679635	-12.09388*	-0.90588	-12.18805*
LCSE	-0.084599	-11.81040*	-0.25999	-11.91394*

Indicates Significance at 1% level

Johansen and Juselius (1988) Co-integration Test

We find out the cointegration between the South Asian and well developed stock markets by using Johansen and Juselius cointegration test. According to results of both table 3 (based the Trace test) and table 4 (based on the Maximum Eigen value test) LKSE and LCSE have no integration equation with the well developed markets while the LBSE has found one cointegration equation with the developed markets. The cointegration results of studies (Raj and Dhal, 2008; Tahir et al., 2013 and Ali et al., 2011) justified our results that LKSE and LCSE have not while LBSE has a long run relationship with the developed markets.

Johansen and Juselius cointegration test (Trace Statistics) Table 3

Variables	Hypothesis	Trace Statistic	Critical Value 0.05	Remarks
LBSE	None*	76.86283	63.8761	1 cointegrated
	At most 1	30.7711	42.91525	
	At most 2	16.5402	25.87211	
	At most 3	8.031066	12.51798	
LKSE	None*	36.94462	47.85613	No cointegrated
	At most 1	20.01158	29.79707	
	At most 2	8.822454	15.49471	
	At most 3	1.684029	3.841466	
LCSE	None*	53.92085	63.8761	No cointegrated
	At most 1	30.7742	42.91525	
	At most 2	13.58212	25.87211	
	At most 3	6.034207	12.51798	

* Denotes rejection of the hypothesis at the 0.05 level

Johansen and Juselius cointegration test (Maximum Eigen value)Table 4

Variables	Hypothesis	Trace Statistic	Critical Value 0.05	Remarks
LBSE	None*	46.09173	32.11832	1 cointegrated
	At most 1	14.2309	25.82321	
	At most 2	8.509133	19.38704	
	At most 3	8.031066	12.51798	
LKSE	None*	16.93304	27.58434	No cointegrated
	At most 1	11.18912	21.13162	
	At most 2	7.138425	14.2646	
	At most 3	1.684029	3.841466	
LCSE	None*	23.14665	32.11832	No cointegrated
	At most 1	17.19209	25.82321	
	At most 2	7.547911	19.38704	
	At most 3	6.034207	12.51798	

* Denotes rejection of the hypothesis at the 0.05 level

The finding is providing potential of portfolio diversification in the equity market of Pakistan and Sri Lanka for international investors. Moreover, the Pakistani and Sri Lankan investors can also reduce the risk of international portfolio diversification while investing in the equity markets of USA, UK and Japan. However, Indian equity market is integrated with the equity market of USA, UK and Japan that means the Indian investors cannot minimize the risk while investing in these equity markets.

Vector Error Correction Model

In vector error correction model we included only one error correction term because the only LBSE has a cointegration relationship with the developed stock markets. The long run relationship between LBSE and developed markets for one cointegrating vector is displayed as:

$LBSE=(LBSE_t-24.4-148.8LNYSE_t+147.4LLSE_t-$

$27.6LTSE_t)_{t-1}$
(-1.40) (-0.254) (0.499) (-0.036)

The coefficient ECM (-1) explain how much of the short run disequilibrium will be eliminated in the long run. Table 6 shows the result of Vector Error Correction Model. We can conclude that, in case of disequilibrium, LBSE adjustment process quite fast with LTSE (3.6%) and with LNYSE (25%).

Vector Error Correction ModelTable5

	ΔLBSE	ΔLNYSE	ΔLLSE	ΔLTSE
$(LBSE_t$-24.4-148.8$LNYSE_t$+147.4$LLSE_t$ -27.6$LTSE_t)_{t-1}$	-0.001 (-1.40)	0.0010(2.70)	0.0003(0.83)	-0.0003(-0.69)
Intercept	0.004 (0.46)	0.002(0.47)	-7.00(-0.02)	-0.003(-0.57)
$\Delta LBSE_{t-1}$	0.053 (0.66)	0.024(0.74)	-0.007(-0.22)	-0.053(-1.17)
$\Delta LNYSE_{t-1}$	-0.254 (-0.72)	0.042(0.29)	0.24(1.84)	0.115(0.58)
$\Delta LLSE_{t-1}$	0.499 (1.26)	0.067(0.42)	-0.175(-1.19)	0.099(0.45)
$\Delta LTSE_{t-1}$	-0.036(-0.26)	0.052(0.93)	0.062(1.22)	0.140(1.84)
R-squared	0.028	0.060	0.031	0.043
F-statistics	0.99	2.19	1.11	1.55

Values in the small parentheses are t-values

Granger Causality Test

We used the pairwise Granger Causality Test, after determining the lag length, to ascertain whether the variables are caused or effect to each others. Table 6 showed the result of Granger Causality test of developed stock markets (LNYSE, LLSE and LTSE) and Asian stock markets (LKSE, LBSE and LCSE). The result of Granger Causality test indicates that there is a unidirectional relationship between Tokyo and Karachi stock exchange. This implies that any change in Japan's stock prices effect the stock price of Pakistan in short run. Colombo stock exchange has also unidirectional relationship with the New York and London stock exchanges. This denotes that any change in the stock prices of US and Japan Granger causes the stock price of Sri Lanka. Furthermore, there is no short run relationship of India's stock markets with the stock markets of US, UK and Japan. This implies that any change in the India's stock markets does not change in the stock market US, UK and Japan.

Granger Causality testTable 6

Direction of Causality	Obs.	F-Value	Causality	Prob.	Lags
LLSE Granger Cause LBSE	179	2.30369	No	0.1309	1
LBSE Granger Cause LLSE		0.93112	No	0.3359	1
LNYSE Granger Cause LBSE	179	0.25303	No	0.6156	1
LBSE Granger Cause LNYSE		0.72453	No	0.3958	1
LTSE Granger Cause LBSE	179	1.49873	No	0.2225	1
LBSE Granger Cause LTSE		0.03846	No	0.8447	1
LLSE Granger Cause LKSE	179	2.41004	No	0.1224	1
LKSE Granger Cause LLSE		0.52923	No	0.4679	1
LNYSE Granger Cause LKSE	179	0.60362	No	0.4382	1
LKSE Granger Cause LNYSE		0.38707	No	0.5347	1
LTSE Granger Cause LKSE	179	4.86322	Yes	0.0287*	1
LKSE Granger Cause LTSE		0.0231	No	0.8794	1
LLSE Granger Cause LCSE	179	7.44366	Yes	0.007*	1
LCSE Granger Cause LLSE		1.04903	No	0.3071	1
LNYSE Granger Cause LCSE	179	8.30277	Yes	0.0045*	1
LCSE Granger Cause LNYSE		1.12745	No	0.2898	1
LTSE Granger Cause LCSE	179	0.39614	No	0.5299	1
LCSE Granger Cause LTSE		1.26339	No	0.2625	1

*Significant level at 0.05

V. Conclusion of the Study

Integration of stock markets play a critical role to providing opportunity for international investors to reduce the portfolio diversification risk. Different Assets Pricing Models such as Markowitz portfolio theory presented by Markowitz's (1952), CAPM presented by Sharpe (1964) and Lintner (1965) and Arbitrage Pricing Theory presented by Ross (1976) for the perspective of portfolio diversification strategies. These theories suggest that if the markets are integrated then the risk should be priced through diversification. This study carried out to examine the dynamic interactions between the well developed stock markets (United States, United Kingdom and Japan) and the Asian developing stock markets (Pakistan, India and Sri Lanka). The correlation results indicate that only Karachi Stock Exchange has significant and positive relationship with the London stock exchange. The Result of Johansen & Juselius cointegration test found that only Bombay stock exchange is integrated and having the dynamic long run interaction with the developed stock markets. On the other hand, Karachi and Colombo stock exchange are not integrated. Hence, there exists no long run relationship. Our findings match with the results of (Raj and Dhal, 2008; Tahir et al., 2013), they also found that the only Bombay Stock exchange has a significant long run relationship with the developed stock markets. The Granger Causality test has found a unidirectional relationship between Tokyo and Karachi stock exchange.

Colombo stock exchange has also unidirectional relationship with the New York and London stock Exchange.

Policy Implication for Portfolio Diversification

It is possible for the investors to avail the international diversification opportunities to reduce the risk, if the stock markets are integrated. Our study proposes some favorable policy implications for both local and international investors regarding portfolio diversification:

First**,** our study results suggest that the international investors significantly condense their portfolio risk by including Karachi and Colombo Stock exchanges in their portfolio because both the KSE and CSE have no long run interaction with the Developed markets.

Second, our local investors can trim down the undiversified local market portfolio risk by including the developed markets in their portfolio. The Pakistani and Sri Lankan investors may invest in all developed stock markets because they are not cointegrated.

Lastly, the evidence of our findings suggest that the international investors should not include the Bombay and developed Stock exchanges jointly in their portfolio and neither Indian investor should purchase both the Bombay and developed markets assets at the same time because Bombay Stock Exchange is integrated with the developed stock markets.

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Secure Hybrid technique for Image Steganography

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ABSTRACT— In the recent years due to advancement in technology, security of data is a major concern when data is transmitted through the internet. From a security point of view Cryptography and Steganography are fields used for secure communication. The work focuses on a more secure technique by hybrid of the cryptography and steganography techniques. Firstly encryption of data is done using Hill Cipher algorithm, after that two pattern Z and Alpha are used for data hiding. The hybrid technique has been designed and simulation has been done in MATLAB 2013ausing 20 images and results of few have been shown.The results have concluded that the hybrid approach is better than other existing technique in terms of security as one more step of security has been added.

Keyword - Hiding, Encryption, Pattern.

1.INTRODUCTION

Due to globalization, online activity is increasing, and daily lots of confidential data are transmitted through internet. Hence, for providing security for confidential data, two important fields were cryptography and steganography that are in use. In Cryptography the main motive is data confidentiality, so no one can interpret the message. On the other hand, in steganography the main motive is hiding of data in some media so that no one gets any attention that the data is beingcommunicated [1-3].

In other words Steganography means cover writing. Steganography word is derived from Greek Words "Steganos" means cover and "graphy" mean writing [4]. The Steganography system consists of three main elements.

1. Cover Object
2. Message
3. Stego Object

In Steganography we take any cover object for data hiding like images, audio, text and video files etc.Also message of any type can be hiding in cover object. The resultant object produced after hiding the data in cover object is called Stego Object.

1.1 Classification of Steganography

Steganography is classified into two types:

1. Spatial Domain Steganography
2. Transform Domain Steganography

1. **Spatial Domain Steganography:** In Spatial Domain Steganography directly data are hiding in each pixel, so hiding capacity is high on this domain.

2. **Transform Domain Steganography:** In this domain, firstly cover image transforms is taken either by DCT, DWT then data is hiding. The transform domain operations are complex in nature. They have lower data capacity as compared to spatial domain.

The remaining part of the paper is organized as follows: In section 2 describes the related work is done in this field and motivation for hybrid technique. Section 3 outlines the hybrid technique algorithm involving both encryption as well as steganography. In Section 4, we have defined the result of hybrid technique.Qualitative and quantitative analysis as well as comparison with the existing technique have been done.In the last section, conclusion has been described briefly.

2. RELATED WORK

2.1 Literature Survey

As technology advances so for high security of data cryptography and Steganography are combined. Sreeparna et al. [5] introduced a key based encryption text algorithm for data security. They used Fibonacci numbers for encryption of text data. Lin et al. [6] gave a novel hiding scheme with distortion tolerance because in conventional data hiding, the main motive is how to reduce noise but when data is communicated over internet it has to face different faces like compression and transformation. Mani et al. [7] introduced a technique that allows the sender to embed the secret message into the hierarchically divided subsections. It uses a pattern of 'Z' and 'alpha' in an image in order to increase the security. In the first stage the cover image is divided into 25x25 windows and makes a Z pattern. After that each window is divided into 5x5 subsections. In the second stage, within each subsection select alpha pattern and hides the least significant bit of message in alpha pattern. This hybrid technique highly secures but capacity is less because data hide only windows which come under Z pattern.

2.2 Motivation

The studies Mani et al. [7] indicate that for higher security we should focus only on two different patterns for data hiding. So in our hybrid techniquea more secure approach is used for data encryption and then hiding data using pattern based technique. The data is highly secure because for encryption in place of single key we are using a key matrix for data encryption.

3. DATA ENCRYPTION AND STEGANOGRAPHY ALGORITHM:

The hybrid technique involving both encryption as well as steganography has been described below:

The hybrid technique follows the algorithm which involves firstly encrypting the data and then hiding it using 'alpha' and 'Z' pattern, which is stated below:

3.1 Read the Cover Image.

3.2 Read the data and data is encrypted using Hill Cipher Algorithm[8].

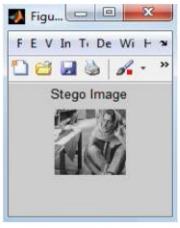
3.3 Calculate the maximum capacity of Z and alpha Pattern[7].

3.4 Compare the data size with maximum capacity of pattern technique. If data size is less than or equal to maximum capacity then encrypted data hide in Z and alpha pattern. Otherwise embedding is not possible[7].

3.5 Qualitative and Quantitative analysis is done. For Quantitative analysis MSE (Mean Square Error) and PSNR (Peak Signal to Noise Ratio) is calculated and compared with existing results. As we know in Steganography higher PSNR and zero MSE is required and in image processing up to 30 dB PSNR is acceptable.

4. RESULTS and DISCUSSION:

The simulation has been done in MATLAB 2013a using 20 images and the results of 3 images i.e Lena.jpg, Barbara.jpg and Monalisa.jpg as been shown w.r.t its qualitative as well as quantitative analysis. The qualitative as well as quantitave analysis has been shown in Table 1 and Table 2 respectively.

Pattern Based Steganography Results[7]	Cover Image	Stego Image
Lena		
Barbara		

Monalisa		
Proposed Work Results	**Cover Image**	**Stego Image01**
Lena		
Barbara		
Monalisa		

4.2 Quantitative Analysis

The Mean Square Error, Peak Signal to Noise Ratio and Correlation are the parameters used for quantitative measure of proposed technique. These two parameters (MSE and PSNR) basically error matrices to compare the original cover image with the output Stego image. The third parameter Correlation is used to measure the level of security of encrypted information.

4.2.1 Mean Square Error

MSE measured the error between original and Stego image[5].

$$\mathbf{MSE}=\frac{1}{AX\ B}\sum_{A,B}[f1(A,B)-f2(A,B)]^2$$

Where f1(A,B) represent the Original image and f2(A,B) represents the Stego image. A X B denotes the size of the original image. In Steganography low value of MSE required so output image looks similar to input image.

4.2.2 Peak Signal to Noise Ratio

PSNR measures the maximum noise, the signal tolerate. PSNR is given as[5]

$$\mathbf{PSNR}=10\log_{10}\frac{(2^t-1)^2}{MSE}$$

Here, 't' represents the bits per sample. In image processing, low MSE and High PSNR are preferred. In Steganography up to 30dB PSNR is acceptable.

i. Correlation Coefficient[8]

Correlation is used to measure the level of security of encrypted information. Correlation is given as [8]

$$r(x,y)=\frac{Cov(x,y)}{\sqrt{var(x)}\sqrt{var(y)}}$$

Cov(x,y): Covariance between Input and Encrypted Text

Covariance given as:

$$Cov(x,y)=\frac{1}{N}[(x(i)-E(x))(y(i)-E(y))]$$

E(x) and E(y): Mean value of x and y

In ideal case there is zero correlation between plain text and Encrypted text.

Table 2: Quantitative Analysis

An Innovative Approach for Pattern based Steganography[7]	MSE	PSNR	Correlation coefficient[8] (between input and encrypted image)
Lena	0.0167	65.89dB	1
Barbara	0.0167	65.89dB	1
Monalisa	0.0167	65.89dB	1
Hybrid Technique	MSE	PSNR	Correlation (between Original and encrypted Data)[8]
Lena	0.0168	65.86dB	0.16
Barbara	0.0168	65.86dB	0.16
Monalisa	0.0168	65.86dB	0.16

So, According to qualitative results, the technique should have minimum MSE and maximum PSNR. In digital image processing, technique with PSNR value 30 dB is acceptable. The hybrid technique has PSNR of 65.86dB,which has small variance with PSNR value of existing technique[7] i.e 65.89dB. It is clear from the table 2 that Mean Square error for Existing technique and hybrid technique is almost the same with a little variance of 0.0001.Also the MSE and PSNR values depends on how much data is hidden in cover image. In existing technique it had small Z pattern and under Z pattern block made alpha pattern, but there is limitation of existing technique that it is very complex in nature because for each pattern they used different iterations for data hiding.So, in this paper we have madea big Z pattern and the under Z pattern, inside that block makes alpha pattern. So, this technique becomesmore easy without much variance in the PSNR value.

Also to measure the security we calculated the Correlation factor. As we know Correlation defines the how much output data Correlated with input data. Ideally, the correlation 0 for Cryptography and 1 for steganography. So in this paper Correlation between Original data and Encrypted data comes out to be 0.16, which shows that hybrid technique is better than existing technique as one more level of security i.e encryption has been added whereas no encryption has been done in existing technique.

So we conclude that our security increases 1 level more as compared to existing technique and approximate 0.03 variation in PSNR, the hybrid technique is more secure because in place of single key we taking a matrix of random keys. So,the hybrid technique is better in terms of security as the MSE and PSNR values for existing technique and hybrid technique are approx. same

6. CONCLUSION

In this paper, the higher security mechanism usinghybrid of Cryptography and Steganography has been described.The paper emphasizes on firstly encrypting the data using Hill cipher algorithm and then hiding the data using steganography by making alpha and Z pattern. The hybrid technique has higher security as compared to existing technique which has been shown using the correlation coefficient as one more step of security has been added. Qualitative as well as Quantitative analysis has been done, which shows that the hybrid technique has very low MSE and high PSNR and higher security.

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Human Resource Planningand Use of Technologyto Company Efficiencyand Employment Creation Case Study: PT. Go-Jek Indonesia

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Abstract—Times certainly followed by the development of technology. The economic and business sectors too, did not escape the influence of technology. In a business, the role of technology was already entered in the various sectors, including human resource. The role of technology is used not only to meet the needs of fast-paced in the organization, but also to achieve the objectives of the organization in terms of efficiency. This process is the role of human resources planning in the organization. This study is an attempt to determine the relationship between the use of technology by the human resource planning in the organization for the purpose of efficiency in the organization and creation of new jobs. A qualitative approach was considered the most appropriate approach to the study objectives. Researchers used a qualitative approach to the design of case studies with the respondents with a position as a human resource planner in the PT. Go-Jek Indonesia. The study found that the use of technology has an impact on the efficiency and the creation of new employment in the e-commerce company's in Indonesia (PT. Go-Jek Indonesia)

Keywords: Human Resource Planning, Technology, Efficiency, Employment Creation

1. INTRODUCTION

Labor is one of the most important element in the organization. It can be said that the good or bad of an organization depends on the quality of the people who work or are in the organization. However, the presence of these workers will not mean anything if the organization is not able to use it properly. An organization must have a strategy related to how to make the most of the workers in the organization. It is considered very important in order to support the creation of sustainable strategic success which is the goal of the organization for the survival of the company or organization.

One of the main problems in managing the workforce is the cost that is issued by the organization. A sum of money with a very large number and willingly facility issued by the organization as compensation and benefit. The huge costs are considered commensurate with the contribution to be granted. In addition, many organizations assume that if they lose a good worker organization will spend more on labor costs to get a replacement. Costs incurred will be much greater for the recruitment, training, and development of the candidate's ability to improve the performance of the organization. Therefore, it takes the role of human resources planning. Part human resource planning is useful to define talent management related processes, systems, and components based support of the goals of an organization (Smith, 2011). In general, human resources planning has the function to define the purpose of the organization, create a strategy to achieve these goals, and develop plans and comprehensive strategies to integrate and coordinate the activities of the organization (Robbins & Judge, 2013). Planning human resources also have a responsibility in making rules and useful programs to provide benefits to the performance of an organization (Koch & McGrath, 1996) which also has a link with efficiency in an organization. The amount of costs to be incurred by the organization and also a high risk of losing talent that makes some companies racked his brain as a solution to these problems. According to Ogden (2010) organizations must maximize limited resources among unlimited needs such as capital construction, technology upgrades, and expansion of facilities. In order to survive with limited capital, then organization prosecuted for being able to dynamically creative in order to survive in the midst of intense competition (Himam, 2002; Cappeli 2008; Garrow & Hirsch, 2008).

One solution to these problems is to increase the efficiency of the organization by replacing the role of the technology talent. Prosvirkina (2013) says that the technology has a role to assist in the efficiency of human resources.

Examples such as making systems, store systems, manipulation, analysis, and distribute obtain information related to human resources, personal activities, as well as the characteristics of the organization. It is confirmed that the technology sector have a role in human resources and processes within the organization. Kalpakjian (1989) said that the use of this technology is called the "Automation". Automation has several objectives, such as (1) improving productivity, (2) reduce or eliminate the routine work is manual, (3) improve safety for workers, (4) improve product quality of service, (5) reducing production time, (6) do work that can not be done manually, (7) avoid the high costs, and (8) anticipate a labor shortage. Automation is starting to be done in some companies. For example, The New York Times media have already started using the technology in the fields of their wedding announcement. At the wedding column, readers can freely enter all sorts of relevant information which would then be packed by a system that has been created. Another example is Tawabo, a robot owned by Tokyo Tower, one of the tourist destinations in Japan. Tawabo replace the role of a customer service to provide any information to assist the tourists during a visit to Tokyo Tower. The retail sector was not immune from the phenomenon of transfer of human resources with technology. It is related to changing the format of a physical business into the digital age or technology. In the UK for example, the state of the Queen Elizabeth according to the British Retail Consortium (2016) showed that the number of employees in the retail sector fell from 3.2 million employees in 2008, to 3 million people by 2014. It is believed to be the result of a physical store 40,000 are turning to online. And the process of buying and selling through online media above can be referred to e-commerce. According to Laudon and Laudon (1998), e-commerce has the definition of the process of buying and selling a product electronically by consumers or from company to company with a computer as an intermediary in the transaction of business. According to Baum (1999), e-commerce is a combination of technologies, applications, and business processes dynamically connecting businesses, consumers, and communities through electronic transactions and electronic exchanges of goods, services, or information. E-commerce is not only happening in the retail business sector, but also in the transportation business sector. Today many developing e-commerce which is engaged in the transportation sector. Started by Uber, a four-wheeled transportation businesses that use the application for their booking process. In Indonesia, e-commerce businesses in the transport sector is started by Go-Jek, Grab bike, as well as other companies engaged in the same field.

On the other hand, the use of technology not only has the role of the company's efficiency in reducing the number of workers who have an impact on the cost burden to the administration of salaries, but also have contributed to the creation of new jobs. Data from The Boston Consulting Group in PR Newswire (2013) shows that the technology has a role in the creation of 6.2 million new jobs in small and medium-sized businesses. As an example we can see from the cases of Uber, Grab and Go-Jek. The use of technology-based application that is able to create new job opportunities in the transportation sector in Indonesia.

Based on the above discussion, this study investigates the influence of human resource planning in the process of technology utilization efficiency in the sector of human resources and the opening of new jobs. Using a sample of the e-commerce company engaged in the field of transportation in Indonesia, namely PT. Go-Jek Indonesia. This study aims to identify the relationship sector human resource planning to the efficiency, the use of technology in human resources in the organization, and the effect of the use of these technologies on the efficiency in the sector of human resources and the creation of new jobs in the company's e-commerce in Indonesia

2. LITERATURE REVIEW

A. Human Resource Planning

Human resource planning is a process to identify, define and plan the human resource needs of the organization in the short term and long term. Bulla and Scoh (1994) said that human resource planning is a process for determining the need for human resources within the organization to identify and plan all kinds of things related to human resources to meet the demand for human

resources. According to Prashanti (2013), human resource planning is useful for determining how much and people like what is needed to support an organization. Prasanthi also divide human resource planning into two kinds, namely (1) hard human resource planning and (2) soft human resource planning. Human resource planning has the responsibility to determine how many employees are needed in the organization and behavior, motivation and commitment of these employees. Whereas soft human resource responsible for the establishment of a culture based on the organization's objectives. Casson (1978) argues that human resource planning process must be in accordance with business needs based on the problems and changes in circumstances that have an effect on the policies and actions of the organization. Perishanti (2013) divides the purpose of human resource planning into five objectives:

1) Attract and retain workers with the knowledge, skills, and competencies appropriate
2) Anticipating the problems of shortage or surplus of workers
3) Developing through good training and flexible work force to contribute to the organization's ability to uncertainties and changes in environment
4) Reduce dependence on external recruitment process to develop a repository as a development strategy
5) Improve the utilization of labor by introducing more flexible working system.

Human resource planning also has a relationship with the determination of strategies that will be done by the organization, including the determination of the use of technology in the human resources sector. according to Keep (1989), human resource planning in a strategy aimed at getting the raw materials in the form of work style with quality, expertise, knowledge, and the potential to be developed through training in the future. This includes how many people are needed in the short and long term, the type of skills needed in the future, a way to discover the needs of the existing resources, where to find them, things that are needed to develop basic capabilities, identify employees with potential and capabilities, attract and retain key employees, expanding opportunities to maximize placement of employees by increasing flexible working, and that harm reduction organization. Nankervis and colleagues (1996) defines that human resource planning has a function to form a long-term strategy in organizations that include recruitment to training, development and career management, to resignation. Human resource planning also has a relationship with the strategy and objectives of the organization.

B. Human Resource Planning to Technology and *Efficiency*

One strategy that is conducted by the human resource planning is the use of technology. The use of technology to replace the role of a man or automation was first introduced and used by Henry Ford in 1908 in the company of his automobile manufacturers ie Ford. According to Ford (in Zarbo and D'Angelo. 2006), there are some characteristics of automation, ie without operator assistance mechanism, a transfer tool, machining operations are performed sequentially, objects moving by themselves, high utilization, and in the form of special purpose the establishment of the engine block. This automation using technology such as pneumatic, electrical, and computerize. The core of the automation itself is to replace the role of humans in organizations using the machine. ,Kalpakjian (1989) said that the use of this technology is called the "Automation". Automation has several objectives, namely (1) improving productivity, (2) reduce or eliminate the routine work is manual, (3) improve safety for workers, (4) improve product quality of service, (5) reducing production time, (6) do work that can not be done manually, (7) avoid the high costs, and (8) anticipate a labor shortage.

Ellitan (2002) examines the fundamental changes in the business environment which causes a shift in the practice of human resources for the realization of a sustainable competitive advantage. This has resulted in the need for unskilled labor declined and many clerical jobs were taken over by automatic machines and technologies. Changes in the business environment makes the resource sector become a critical asset, therefore the company should do the calculations in the development and management of

human resources. One is with the use of technology. The rapid development of technology in support of a businesses growth to survive in the competition as a strategic role in ensuring the performance demanded as a function within the organization. Li and Ye (2015) examines the role of technology in the form of an electronic human resource management of the human resources sector. Li and Ye say that human resources are the most valuable resource in an organization. Therefore, the use of electronic technology in the form of human resource management can help companies in the efficiency and strategically in achieving the goals set by the company. Electronic management resources help to facilitate the functions of human resources to create and open up new opportunities to achieve organizational success. Electronic human resource management functions as meeting the needs of the organization in the form of a knowledge-based economy. It is useful to maximize the potential and productivity of employees that must be owned by a company to survive in the market competition. Banerji (2013) conducted a study on the issues and challenges as well as the implementation of information technology in the human resources sector. Banerji said that human resources is a vital sector in the organization and management together with the interplay of technology and co-exist in the functions and processes of the organization. Researchers used the methodology of collecting data from multiple sources such as journals, books, and some of the articles obtained from the website or the internet. In this study, researchers get the fact that the technology to assist and encourage human resource management to achieve effectiveness and efficiency in the organization. However, use of this technology should be accompanied by the implementation of human resources traditionally incorporate the expertise, knowledge, and capabilities of the HR professionals in applying their knowledge through technology.

C. Technology to Employment Creation

Not only have a role in the efficiency of the organization, the technology also has a role in opening up new jobs. Rigdon (1994) found the technology not only eliminate jobs available, but also able to create new jobs. Researcher shows data taken from Bureu of Labor Statistics in 2005, there has been an increase in employment by 55%. PR Newsware (2013) are also shown in the fact that the technology has a role in the creation of 6.2 million new jobs in the small and medium business industries with a revenue growth of $770 Billion in five countries with the largest economy in the world. Cole et al (2015) from Deloitte said that the growth of technology also has impact on the creation of new jobs. Researchers say that the technology is not only able to reduce the number of cost in production and employees, but also able to create new job opportunities. Nosbuch and Bernaden (2012) says that information technology has the role of the organization in optimizing the efficiency, productivity, and compliance with networks in business processes. Researchers reveal that in the 20th century, many organizations seek to minimize the direct role of the human in all lines on their business chain. It is not only having an impact on the efficiency, but also open up new jobs. Researchers showed that in the US alone, the use of technology responsible for the creation of 800,000 new jobs in the manufacturing sector.

Through literature review above explanation, the researchers tried to prove the role of human resource planning and utilization of technology to the efficiency made by organizations that have an impact on the creation of new jobs. This study focuses on a case study in PT. Go-Jek Indonesia as the sample of respondents research.

3. RESEARCH MODEL

Based on the above discussion, the study sought to investigate the role of human resource planning to the decision to use the technology with the goal of efficiency in e-commerce company engaged in the field of transport, namely PT. Go-Jek Indonesia that affect the creation of new jobs within the organization.

This study aims to answer some of the questions that will be submitted. That is:

1) Do the human resource planning has a role in determining the use of technology in PT. Go-Jek Indonesia?

2) What factors were the reason for human resource planning in the use of these technologies?

3) What role are replaced by technology in the organization of PT. Go-Jek Indonesia?

4) What is the role of technology in helping the efficiency in the sector of human resources within the organization PT. Go-Jek Indonesia?

5) Is there any influence of efficiency caused by technology to the creation of new jobs?

4. PROFILE RESPONDENT

This study uses PT. Go-Jek Indonesia as the focus of research. PT. Go-Jek Indonesia or better known as "Go-Jek" e-commerce company that is engaged in the transportation of two-wheeled vehicles such as motorcycles or can be called the "Go-Ride". Use application that can be downloaded by means of using a smartphone. Go-jack not only offer services such as taxis, but also a delivery service of food or can be called the "Go-Food", massage services call or called "Go-Massage", services to clean the house or room cleaning service calls called " Go-Clean ", services of beauty treatments call or" Go-Glam "delivery services or" go-Send ", services to grocery shopping day or" go-Mart ", services to provide information about the existence of Transjakarta buses or" Go -Busway ", and also transport services in the form of a four-wheel truck to transport goods or can be called a" Go-Box ". PT. Go-Jek Indonesia uses a system of partnership with the motorcycle in the area. On the island of Sumatra, the services of Go-Jek can already be found in Palembang and Medan. On the island of Java can be met in Jakarta, Bogor, Depok, Tangerang, Bekasi, Semarang, Bandung, Surabaya, and also the latest in DI Yogyakarta. Go-Jek addition we were able to meet also in other areas such as Bali, Balikpapan and Makassar. This partnership system means that the driver has the authority and its own decision to take or not an existing order, but the PT. Go-Jek Indonesia still provide a minimal amount of orders that need to be secured by the motorcycle taxi driver. Has the tagline "An Ojeks for Every Need", Go-jack made with vision and purpose to alleviate and reduce unemployment in Indonesia.

PT. Go-Jek Indonesia selected as respondents by the researchers with the consideration that PT. Go-Jek Indonesia is one of the innovators and originators of e-commerce in the field of transport services in Indonesia. In addition, PT. Go-Jek Indonesia also indicated to have a business strategy by using the use of technology in their business.

5. RESEARCH METHOD

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This study used a qualitative research by conducting interviews with the relevant sections. The interview was conducted by Mr. Agung Setiawan as Vice President of Human Resources PT. Go-Jek Indonesia. Mr. Agung Setiawan selected for the study because it is considered the most understand the themes raised by the researcher. Implementation of this research was conducted as researchers and respondents agree with the time and place of the interview. Type of this research is descriptive analysis, which describes what the result of collecting data and information on the case became the focus of the study which will then do the analysis in such a way as to answer the purpose of research

6. RESULT AND DISCUSSION

A. Human Resource Planning and Use of Technology

According to the information through interviews with Mr. Agung, the efficiency and the use of technology in PT. Go-Jek Indonesia also have an influence in the creation of new jobs at PT. Go-Jek Indonesia. According to him, customer satisfaction plays an important role in this regard. The efficiency and the use of technology has a major influence on consumer satisfaction PT. Go-Jek Indonesia. This can be evidenced by the increasing consumer demand for services is on offer regional coverage of PT. Go-Jek Indonesia. With the increase of services on offer and coverage by PT. Go-Jek Indonesia, PT. Go-Jek Indonesia need to add workers in the company. Currently, PT. Go-Jek Indonesia have expanded their

business in 15 regions across Indonesia. From the number of employees of PT. Go-Jek Indonesia was increasing very quickly. Recorded increase in number of employees amounted to 1400 employees with details of the total employees of 200 people in January 2015 to 1,600 in December 2015 and continues to grow today. In addition, "Go-Jek" partner of PT. Go-Jek Indonesia was increased until reaching 200,000. It is confirmed that the efficiency and the use of technologies by PT. Go-Jek Indonesia have an impact and influence on the creation of new jobs

B. Technology to PT. Go-Jek Indonesia Effciency

The use of technology has an influence on the efficiency of the company, including PT. Go-Jek Indonesia. According to Mr. Agung, use Linkedin website that has a huge impact on cost efficiency and time spent in the recruitment process PT. Go-Jek Indonesia. Efficiency is done in the form of cost reduction to attend job fairs or similar events for the recruitment process. The exciting discovery was the focus of efficiency that is done by human resources planning section PT. Go-Jek Indonesia not through the use of technology, but with the strategy of choosing a region to get talent. In 2015, PT. Go-Jek Indonesia chose Yogyakarta as an area to build their talent development centers, especially in the IT field named Go-Jek Tech Valley. Yogyakarta was chosen because, according to Mr. Agung area is rife young creative talents. Besides filled with young creative talents, the costs incurred in the form of salaries and benefits was fairly cheap associated with the Provincial Minimum Wage (UMP) is low. The use of technology in the application form will be undertaken by PT. Go-Jek Indonesia also have an impact on the time efficiency standpoint fleet of two-wheeler riders partners and other fleet. With the use of the application, partners rider can more easily and quickly to get consumers. In contrast to conventional motorcycles should shop around to get the consumer which means it takes time and a greater cost. In the interview, the researcher also get an exciting new findings. According to Mr. Agung, with the use of these technologies not only have an impact on efficiency, but also have an impact on consumer satisfaction of PT. Go-Jek Indonesia.

C. Eficiency and Use of Technology to Employment *Creation in PT. Go-Jek Indonesia.*

According to the information through interviews with Mr. Agung, the efficiency and the use of technology in PT. Go-Jek Indonesia also have an influence in the creation of new jobs at PT. Go-Jek Indonesia. According to him, customer satisfaction plays an important role in this regard. The efficiency and the use of technology has a major influence on consumer satisfaction PT. Go-Jek Indonesia. This can be evidenced by the increasing consumer demand for services is on offer regional coverage of PT. Go-Jek Indonesia. With the increase of services on offer and coverage by PT. Go-Jek Indonesia, PT. Go-Jek Indonesia need to add workers in the company. Currently, PT. Go-Jek Indonesia have expanded their business in 15 regions across Indonesia. From the number of employees of PT. Go-Jek Indonesia was increasing very quickly. Recorded increase in number of employees amounted to 1400 employees with details of the total employees of 200 people in January 2015 to 1,600 in December 2015 and continues to grow today. In addition, "Go-Jek" partner of PT. Go-Jek Indonesia was increased until reaching 200,000. It is confirmed that the efficiency and the use of technologies by PT. Go-Jek Indonesia have an impact and influence on the creation of new jobs.

7. CONCLUSION

One of the strategies undertaken by the planning department of human resources is to replace the role of humans with technology. Changes over the function of the human or manually by the technology or can be called by automation has a role within the organization to achieve efficiencies. By using the technology, organizations can not only minimize the outlay in terms of compensation and other facilities to the members of the organization by reducing the role of humans manually within the organization, but also to maximize the performance as a competitive advantage within the organization in order to meet customer satisfaction. Customer satisfaction plays an important role in the development of the organization. Consumer satisfaction can attract new customers who use the services of the organization means to create new jobs within the organization. With increasing the market also means increased revenue and profits of the organization

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The Interaction Between Human Ecology in Khmer Pagoda Communities in Tra Vinh Province of Vietnam's Mekong Delta

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ABSTRACT :Biodiversity, community culture and conservation education - three of many issues which related to development and those are anxious. In the context of climate change seriously today, the preservation and conservation of biological diversity and enhance the value of the humanities to the community iare essential and the multi-stakeholder needs to be involved. In each community, the interaction between ecosystems is exchanged firmly, they desmonstrate in the socio-economic and environment aspects, and this is bidirectional. In the Mekong Delta of Vietnam, the Khmer Pagoda communities formed into the Vietnam's society long time ago, the relationship between human and the environment in the communities of the study areas is a swap which is together positive benefits, local authoriry is willing to intervene the activities in order to protect the ecosystems and the environment. Moreover, the indigenous communities cultural of Khmer Ethnicity Group is very well aware of preservation of their own culture for future generation. Futhermore, the communities are managed well their natural resource, both quality and quantity, a huge ammount of fauna and flora species in the Khmer Pagoda communities still maintain weathily, it can be seen that Khmer Pagoda communities are thorough spaces which develop spiritual tourism and conservation education for students, community and tourists.

Land degradation and Its Solution in Riau Province, Indonesia

Dr Elviriadi
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ABSTRACT : Characteristic of Land degradation in Riau Province in the study can be viewed as any change or disturbance to the land perceived to be deleterious or undesirable area, loss of the biological and loss of natural vegetation, local economic productivity and complexity of rain-fed cropland, urban sprawl, irrigated cropland, forest and commercial development combination of processes arising from company/human activities. The conclusion was based on peat in Riau severe damage as a result of the drying system with the creation of canalization that followed the burning of forests and massive land over the last 17 years. As a result, a decline in Riau land of which 90% is the deepest tropical peat swamp in the world. Data analysis based on the results of the observation that has been going on for one year found severe damage to turf conditions Riau has been uneven in some areas. Damage to peat mainland Riau impact on the soil surface as is the case in Kalimantan, which is about 2 centimeters (cm) per year.

Result and discussion revealed some of solutions to address the threat of damage due to the sinking of Riau burning peat. 1). "Rewetting" technique. 2) Back to traditional ecological knowledge management from the indigenous people. 3) Reformation policy mindset; from the economic (oil palm plantation) oriented to promote the balance of nature and sustainability development

Keyword: Burning peat, smog pollution, rewetting technique, traditional ecological knowledge

Real-Time Flood Monitoring Using Ubiquitous Mobile Scada Based On Multiple Nature Inputs

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ABSTRACT : Flood is considered as a serious natural disaster in Asia. Flood has affected millions of people in Asia in the recent years including Malaysia and its neighboring countries. The severity of problem resulted from flood have significantly affected the government in terms of economic and social. Department of Irrigation and Drainage,Malaysia, (DID) has the responsibility in enhancing flood warning system and developing it every now and then. Flood alert systems face several challenges in terms of warning dissemination that is not timely, people centred, accessible and explainable. This research proposes a real-time flood monitoring using mobile scada based on multiple nature inputs in order to alert the occurrence of flood. Conventional scada has found to be costly to install at various potential flood area in order to increase timely and precise forecast result. Thus, this paper is aimed to propose real-time flood monitoring using remote mobile scada for the input data of water level, animal behavior, and climate change detection at the river site of flood potential area. The concept of easily updating the nature's condition prior to flood and alerting the occurrence of flood can reduce the risk of lost of lives and property. Basic application of sensors that shoots the data to the server and mobile make the information easily access and desseminate.

Keyword: scada, mobile scada, flood monitoring

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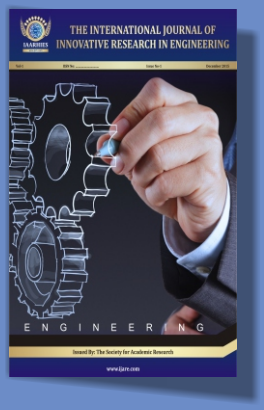

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