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BANGKOK, THAILAND

Editors
Rajendra Kumar
Rohit Khokher
R. C. Singh

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The Proceedings of the International Conference on

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Disclaimer

The Society for Research Development

After long deliberations, it was decided by a group of academicians and philanthropists to establish the Society for Research Development in 2015. A draft of the constitution was framed in consultation with the founder members, to enroll members and to get the Society registered. During the first meeting Dr. R C Singh was elected unanimously as President of the Society and it was decided that the Society would organize an International Conference on Science, Technology, Humanities and Business Management (ICSTHBM-16) in Bangkok, Thailand on 29-30 July 2016. The Proceedings of this Conference is published with McGraw Hill Education, India.

The objective of the Society is Scientific, Technical, Managerial, Literary, and Educational in nature. The Society strives to advance the theory, practice, and application of Science, Technology, Social Sciences, Humanities, Education and Management and maintains a high professional standing among its members.

The basic purpose of the Society is to bring together academicians and experts from different parts of the country and abroad to exchange the knowledge and ideas at a common platform by organizing National and International Conferences, Seminars and Workshops that unite the Science, Social Sciences, Language, Emerging Technologies, Fashion Design and Architecture, Management, Financial Engineering, Humanities, Literary, Cultural, Education and topics which are not mentioned here for the empowerment of research and development. The Society promotes the original, innovative ideas for betterment of the world and seeks to propagate the results of the interdisciplinary field across research communities and to the general public.

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Preface

We are very pleased to introduce the proceedings of the International Conference on Science, Technology, Humanities and Business Management (ICSTHBM-16), held in Bangkok during 29-30 July 2016.This volume of proceedings from the conference provides an opportunity for readers to engage with a selection of refereed papers that were presented during ICSTHBM-16.

Out of 67 papers submitted for publication, 23 have been selected in this proceeding after peer review. The conference received a huge response and the researchers from USA, Egypt, Germany, Iran, Oman, India, Indonesia, Malaysia, China, Korea, Thailand, Australia, Japan, etc. submitted and presented their papers in the conference. Based on the subject matter of the selected papers, we have divided them into three parts: Part A contains the papers related to Science and Technology by national and international experts who have made valuable contributions in their fields of research; Part B comprises of the papers related to Management and Operation Research by scholars actively engaged in the study of related areas at national and international level; Part C includes papers related to Humanities by the researchers who have made significant contribution in their area of research interest.

One of the unique and valuable dimensions to the ICSTHBM-16 was the way the conference brought educators together from around the world to discuss ways to serve learners better. All in all, the ICSTHBM-16 was very successful. The deliberations provided a better understanding of the development in science, technology, management and humanities, making it possible for non-experts in a given area to gain insight into new areas. Also, included among the speakers were several young scientists, namely, postdocs and students, who brought new perspectives to their fields.

We would like to thank all participants for their contributions to the Conference and for their contributions to this proceeding. We take this opportunity to thank the efforts of all the reviewers whose efforts enabled us to achieve a high scientific standard in this proceeding. We also thank the members of the Technical Committee for extending their help and co-operation from time to time in organizing this conference. The success of this conference means that planning can now proceed with confidence for the next event. We would also like to thank all the members of technical committee for their support and suggestions to make this conference a huge success.

Valuable cooperation of Mr. Kunal Adhikari, McGraw Hill Education (India) Pvt. Ltd. is highly appreciated.

Rajendra Kumar
Rohit Khokher
R. C. Singh

Keynote Address

Declining Oil Price: Opportunities for Change in GCC Countries

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Esteemed Participants, Distinguished Guests

It is my honor and pleasure to speak to you.

At the outset, I would like to welcome and thank Society for Research Development Members in organizing International Conference on Science, Technology, Humanities and Business Management (ICSTHBM-16). In this conference, we will be analyzing declining oil price: opportunities for change.

This is an important topic that has aroused renewed interest in recent years, particularly in light of the 2008 global financial crisis. The primary economic challenges facing the Gulf States are an overreliance on commodity exports and a lack of diversification. In spite of, relatively high levels of state spending, meant to ensure social stability while overcoming geographic constraints to development, Gulf Cooperation Council (GCC) members countries have struggled to expand their economies beyond the realm of oil and gas. The underlying geography of the region and demographic limitations have stood in the way of diversification efforts, along with a general lack of resources to support manufacturing and other value-added exports unrelated to the hydrocarbons industry.

These problems have been endemic to regional economies for decades, but the recent Arab uprisings have brought them back into the spotlight. From late 2013 onward, Gulf Cooperation Council meetings have become more earnestly engaged with the idea of coordinated reforms in areas such as taxation. This has led to the creation of working groups and research teams to prepare assessments and recommendations. Individual members, including Kuwait and the United Arab Emirates have pursued a variety of independent measures, including the slow scaling back of government payments and some social development spending. Whereas, the economies and domestic strategies vary by country, the key issues and potential reform solutions broadly fall into very similar categories.

The Oil prices plunged from over USD 130 barrel a few years ago to below US 30 in 2016. The decline in oil price is good for consumers and major oil importing countries faced problem and signals to deflationary pressure on the country's economy. Some of the emerging economies have projected to grow above 6.5 per cent in 2016 but many fear the global impact of a slowdown. Meanwhile, the recent interest rate hike by the US Federal Reserve has been taken a sign of global economic recovery through many investors' remains nervous about the end of the Fed's quantitative easing policy. Sinking oil prices are expected to continue through to 2017 with some predicting a fall to below USD 30 per barrel. The oversupply of oil is expected to persist and have a major impact on the global economy. First, low oil prices are an indicator of deflationary pressure and a potential deflationary trap. Second, low oil prices set a low benchmark at which renewable energy and lean technology become economically viable. Fossil fuel consumption may increase in the short term, but nationality mandated energy diversification and political leadership will ensure the sustained investments and uptake of alternative sources.

Opportunities for Change

Tax Reform

The Gulf States have some of the most lenient tax structures in the world, both for domestic individuals and businesses and for foreigners. Individual tax codes vary, but none of the GCC states impose a domestic income tax on their citizens though Saudi Arabia does collect a 2.5 percent religious tax or zakat. Foreigners also pay no local taxes while working in the GCC and locally owned businesses pay only a minimal tax in Kuwait, Qatar and Oman. Moreover, the foreign businesses are also largely exempt. In particular, the countries like Saudi Arabia and Dubai levy a 20 percent tax on foreign corporate entities, a much lower tax rate than in other parts of the world.The GCC members need to tread lightly in any attempt to pursue reforms, not only to avoid raising the risk of domestic dissent but also to not discourage foreign companies and workers from operating in the Gulf.

None of the GCC members are likely to impose new tax schemes till 2015, but Oman could make the biggest strides toward one. Oman has been one of the most outspoken Gulf monarchies about the possibility of raising royalties on mineral exports and potentially imposing a tax on remittances sent by foreign workers. Oman has the smallest body of foreign workers as a percentage of the population, which gives it more leeway than its neighbors. It also suffers from dwindling energy reserves and a more pressing economic situation. Bahrain and Dubai will be less likely to impose higher taxes given their positions as financial and banking centers, but Kuwait and Qatar may well follow Oman's lead in the coming years.

Fuel and Power Subsidies

The Gulf monarchies also provide their citizens with some of the cheapest gasoline and diesel in the world. Saudi Arabia subsidizes the crude oil and gas that is produced for refiners, domestic fertilizer use and power generation a practice mirrored throughout the Gulf. In recent years prior to falling oil prices, Saudi Arabia had the highest fuel subsidy bill in the world, spending more than $50 billion annually to provide cheap petroleum and byproducts to its residents. Fuel subsidies have historically been very difficult to reform, for countries such as Venezuela, Jordan, Iran and India. Lower oil prices may give Gulf countries like Saudi Arabia an advantage, though, which could help ease the transition from subsidized fuel costs to market rates. India's government deregulated the price of diesel in 2014 and prices actually fell because of lower global oil prices. The same year, Jordan, Egypt and Iran all reduced fuel subsidies and were largely able to manage the resulting outcry, despite facing more precarious social conditions than the GCC. All of the Gulf States have been careful to show neither institutional weakness nor the financial impact of falling oil prices. But, even if oil prices remain low through 2015 and into 2016, the Gulf monarchies likely will be able to implement some sort of subsidy reduction with limited direct impact to consumers. A decline in the growth of domestic demand for oil could also help Gulf countries allocate more of their production toward exports.

Saudi Arabia has the highest per capita consumption of oil in the world, and rising domestic demand has meant that upticks in Saudi output are increasingly being directed to the domestic market rather than to foreign consumers. By disincentivizing excess consumption, exporters like Saudi Arabia could help secure more future barrels for the export market for a longer period of time, thereby reducing subsidy burdens on the state budget. The subsidies also extend to input energy costs for power generators another challenge for the Gulf monarchies, considering that they have some of the highest concentrations of petroleum-based power generation facilities in the world. With the exception of Qatar and sometimes Oman, the GCC runs natural gas deficits most years. Subsidizing the oil for power plants as well as the cost of electricity has double the impact on state budgets; a similar subsidization scheme in Iran ultimately proved unsustainable. Since fuel, water and electricity subsidies are almost uniformly the largest segment of state subsidy bills in the Gulf, even a modest reduction would help lower state spending in the future.

Employment and Labor Reform

The Gulf States are dependent on foreign labor. The extent of their dependence ranges from a relatively low 28 percent of the population in Oman to a whopping 85 percent in Qatar and the United Arab Emirates. Though conditions are often difficult, the lack of income tax and remittance restrictions as well as relatively high salaries have made the GCC one of the largest sources of remittances in the world. The IMF figures estimate that GCC states accounted for some $93.4 billion in remittances in 2013, equal to 5.7 percent of their collective GDP. The foreign workers make up 47 percent of the GCC's total population, creating unique challenges for countries such as Qatar and the United Arab Emirates. The abundant inexpensive labor has largely fueled the construction booms in the Gulf, especially in Doha and Dubai, but for decades imported labor has also dominated the service, technical, energy, medical and manufacturing sectors of Gulf economies. Gulf States have created a system in which locals are heavily employed by the state in inefficient, bloated bureaucracies while expat workers send tens of billions of dollars outside the host economies. Additionally, Gulf governments are obligated to spend billions on developing transportation infrastructure, housing, water and electricity systems to support populations of foreign workers several times the size of their native populations. Saudi Arabia's large and growing native population, which rose from a little over 3 million in 1950 to over 28 million in 2015, also creates its own logistical complications, since not all Saudis can be employed through state and government organs.

Offering foreign companies lucrative tax codes is meant to encourage them to hire more local employees, an effort that has had mixed results. Saudi Arabia and many of its neighbors, including Qatar and Oman, essentially impose quotas on foreign companies that specify the number of locals they must hire or necessitate partnerships with local companies. The goal behind such measures is to reduce the domestic population's economic reliance on the state, but practices have become corrupt, inefficient and concentrated among a small number of locals. Saudi Arabia has been slowly pulling back from its Saudization policies and implementing other reforms in the labor market, such as allowing limited expansions of the roles of female employees in the kingdom, but the process has been slow. Other Gulf States, such as Kuwait and Oman, have begun more stringently enforcing labor laws and restrictions on the number of illegal immigrants. The stated motive behind these moves has been security, which may very well be legitimate, but the new level of enforcement has also helped reduce the growth of the countries' expat populations and set plans in place to shrink those expat communities in the coming decades. Saudi Arabia has followed suit, working directly with governments in India, Pakistan, the Philippines and Bangladesh to set more enforceable quotas to help wean the Gulf off its dependence on foreign labor. This will require a slow, managed process to reverse a deeply ingrained cultural aspect of the Middle East, and it will be much easier to implement in some parts of the GCC such as in Oman than in others, such as Qatar and the United Arab Emirates. Still, immigration reform has been one of the GCC's more successful policy initiatives in recent years, and relationships between the Gulf and the countries that receive the bulk of remittance outflows have helped facilitate the process with limited pushback from workers.

Infrastructure, Education and Defense

State spending on infrastructure, education and defense is also high. These will be the last areas to which governments make cuts; much of the GCC budget deficits anticipated in 2015 will be caused by continued spending in infrastructure and development projects. The Gulf States also interpret several geopolitical conditions in the region such as instability in Yemen and the ongoing U.S.-Iranian nuclear negotiations as security threats; therefore, state spending will be maintained, though it may slow in the future as the buildup of equipment slows. Saudi Arabia replaced India as the top purchaser of foreign military equipment and technology in 2014, while Qatar and the United Arab Emirates also significantly increased their purchases of military systems. These changes in defense spending reflect the shifting attitudes of Gulf member states toward their region. The Gulf monarchies will also maintain spending on education, which they see as critical to managing their growing youth populations and keeping them occupied and away from potentially radicalizing influences. States justify spending on education and training as an investment that will create future labor pools and shift their economies toward the services sector, though this approach has had mixed results.

Fiscal pressure caused by falling oil prices may ultimately prove to be temporary; for the short to medium term, the Gulf has ample financial resources and opportunities to borrow abroad to help manage budget deficits. But there is a growing consensus among Gulf leaders, who are themselves experiencing a generational shift, that the state largesse that defined life in the Gulf for much of the 1990s and 2000s is no longer sustainable. The GCC is likely to embark on reforms. However, it will be on its own terms and in its own time. Social stability is of paramount concern, and given the interconnectivity of many of members' concerns, large changes over a short time could negatively impact growth and economic activity.

The GCC is likely to begin the process while it is in a relatively strong financial position, just as it recently decided to maintain high production for long-term gain even though global oil prices were low. Fuel subsidies and tax reforms will likely be among the first issues tackled by some within the GCC, as early as 2016 if oil prices remain low. Iran may very well prove to be a model of some of these changes, implementing a fixed cash payment system to help manage society's frustration with shrinking subsidies. Ultimately, the Gulf States are unlikely to try and institute long-term changes to state subsidization schemes soon, especially as they deal with unrest in Syria and Yemen and manage the emerging relationship between the United States and Iran.

Future Global Growth Drivers

Over the next 15 years will be good years for the global economy as the growth of emerging markets will likely be driven by China, India and Southeast Asia. This is due to three growth drivers: a positive demographic dividend where more people join the workforce; huge catch up opportunity in productivity for emerging markets compared to the US; and surplus of capital, high saving rates and low debts.

Distinguished Guests,

The structural changes and regulatory reforms on various issued on Science, Technology, Humanities and Business Management will be discussed in length over the next two days by academicians and policymakers in sessions. I believe that this conference will produce fruitful and beneficial outcomes for Science, Technology, Humanities and Business Management.

I would like to thank our participants and distinguished guests for their contributions and for being here with us.

CONTENTS

Part A:
Science and Technology

Optical Simulation of Organic Photovoltaic Device

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***Abstract* - The bulk heterojunction organic photovoltaic device (solar cell) has been optically simulated by OPVDM software at different active layer thickness. Organic bulk heterojunction photovoltaic device consists of mixture of P3HT and PCBM as active layer materials, ITO is a transparent electrode, PEDOT:PSS is electron blocking layer and Al is a back electrode. In this study the optical simulation has been done (wavelength 150-750 nm) at different active layer thickness 160 nm, 180 nm, 200 nm, 220 nm, and 240 nm respectively. We observed that absorption is affected by the thickness of active layer and the best absorption is obtained at the thickness of 180nm and 200 nm.**

Keywords: Organic photovoltaic device, Optical simulation, Bulk heterojunction, Organic Photovoltaic device model software.

I. INTRODUCTION:

Organic photovoltaic (OPV) devices attract more and more interest in last few years. OPV devices yield an energy conversion efficiency of around 6% to 7% for single junction cell [1] as well as tandem cells [2]. This is much less compared to already established silicon photovoltaic devices which has efficiency above 20%. But OPV devices have several advantages like, flexible substrates, the possibility of low cost production [3], room temperature processing and thin film structure. OPV's can be classified into the planar heterojunction devices, where donor and acceptor materials are deposited one after the other and bulk heterojunction (BHJ) devices where two organic materials are diluted in the same solvent and spin coated as one layer. Organic photovoltaic's based on bulk heterojunction (BHJ) composites of conjugate polymers P3HT: PCBM have shown rapid improvement in the past few years [4-5]. The main advantage of the BHJ structure is that most of the generated excitons reach a nearby donor acceptor interface where they are dissociated into electrons and holes. This efficient exciton harvesting gives higher power conversion efficiencies for BHJ devices. The dark J-V characteristics of heterojunction solar cell are affected by active layer thickness [6].

Numerical models for organic bulk heterojunction (BHJ) devices allow for device structure optimization. Simulation of OPV devices can be divided into two parts, firstly there is a coupling of light into a multilayer structure which needs optical model and secondly the extraction of charges which needs an electrical model. The absorption of light within the multilayer structure is crucial process and thus one main area is numerical simulation. Optical modeling has also been performed on classical solid state semiconductor solar cells and modules where angular dependent light trapping by multiple internal reflections through surface texturing has to be taken into account [7-14]. Lacic et al. [15] uses analytical models and compares them to measured photocurrent spectra. Transfer matrix formalism has been used by Kotlarski et al. [16], to calculate the absorbed optical energy within the multilayer structure. This formalism is widely used to optimize layer structure for single junction [17] as well as tandem cells [18]. Here we operated optical simulation of bulk heterojunction (BHJ) solar cell using OPVDM (Organic photovoltaic device model) software at different active layer thickness.

II. BULK HETEROJUNCTION STRUCTURE

Bulk heterojunction is a mixture of interpenetrating mixture of electron donor and electron acceptor conjugated polymers that allows absorption of light, the generation of excitons, splitting of excitons at donor-acceptor interface, and transport of positive and negative charges to opposite electrodes.

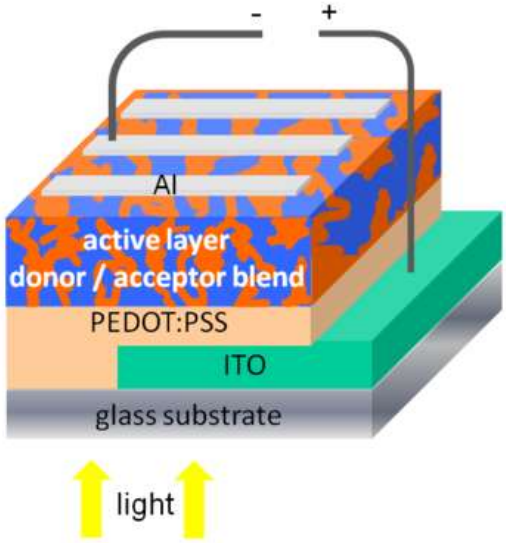

Figure 1. Bulk Heterojunction solar cell

Bulk heterojunction (BHJ) are mostly created by forming a containing the two conjugate polymers, casting and then allowing separating the two phases, usually with the help of annealing process. The two conjugate polymers will self assembled into an interpenetrating network connecting the two electrodes [19]. The structure of bulk heterojunction solar cell is shown in figure 1. After the capture of a photon, electron move to the acceptor domains, then carried through the device and collected by the one electrode and holes moves in opposite direction and collected at other side. If the dispersion of the two materials is very large, it will result in poor charge transfer through the layer. In charge transfer, both donors contribute to the generation of charge carriers

In ITO/PEDOT: PSS/P3HT:PCBM/Al organic bulk heterojunction solar cells, P3HT (3-hexyl thiophene) is an electron donor material that effectively transports positive holes, PCBM ([6,6]-phenyl C_{61}-butyric acid methyl ester) is an electron acceptor materials. It effectively transports electrons from molecule to molecule. The ITO (Indium Tin Oxide) film is used as a transparent electrode. Since, it has high transmittance in visible region and ability of good conduction. PEDOT:PSS or poly (3,4-ethylene dioxy thio phene) poly (styrenesulfonate) is an electron blocking layer. PEDOT:PSS may be used as buffer layers between the transparent electrodes and active layer to block the electron and hole transfer in the wrong direction.

III. OPTICAL SIMULATION

Bulk heterojunction solar cell ITO/PEDOT: PSS/ P3HT: PCBM/Al is simulated by the OPVDM software at different active layer thickness. OPVDM software is specifically designed to simulate bulk heterojunction organic solar cells, such as those based on the P3HT: PCBM material. The model contains both an electrical and optical properties, enabling both current- voltage characteristics to be simulated as well as optical properties. The optical model simulation usually includes the glass substrate, the contacts and layers such as PEDOT: PSS. The electrical simulation usually only carriers, the active layer of the device, thus a typically optical simulation is much bigger than electrical simulation window. The optical model feeds the calculated optical profile of the light into the electrical simulation. We must therefore explain the optical model, which layer in the optical simulation represents the active layer. This is done by placing a 'yes' in column (active layer) in the figure 2.

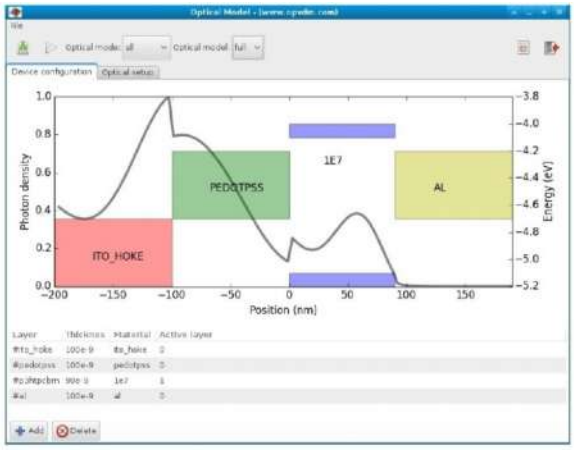

Figure 2. Optical Simulation Window

IV. RESULT AND DISCUSSION

In this paper, we have studied the optical properties of ITO/PEDOT: PSS/P3HT: PCBM/Al bulk heterojunction solar cell, which is designed by the OPVDM software. It is found from the result that the absorption of P3HT: PCBM active layer are more effective for the wavelength from 350nm to 750nm. The optical simulation (wavelength 150-750 nm) is made at different active layer thickness, ITO thickness 20nm, PEDOT: PSS thickness 20 nm, Al thickness 20nm and the active layer thickness are 160nm, 180nm, 200nm, 220nm, and 240nm. The absorptions at different active layer thickness are shown in the figures 3-7.

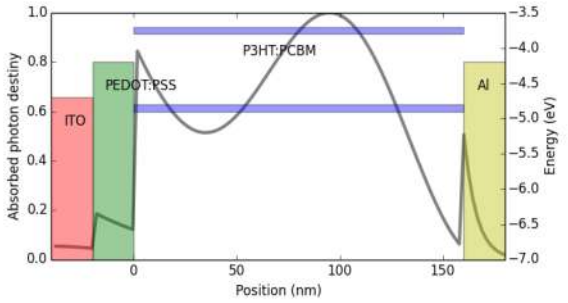

Figure 3. Active Layer Thickness 160 nm

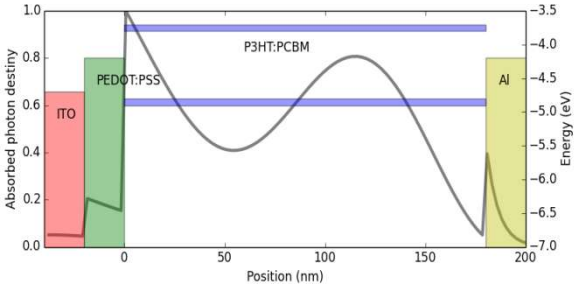

Figure 4. Active Layer Thickness 180 nm

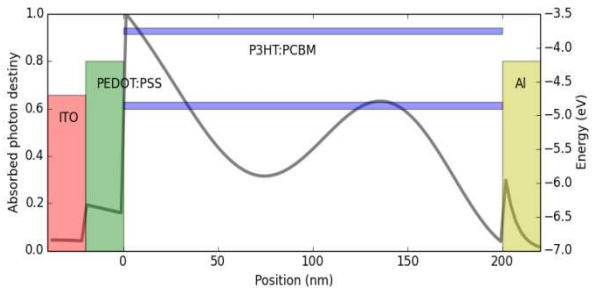

Figure 5. Active Layer Thickness 200 nm

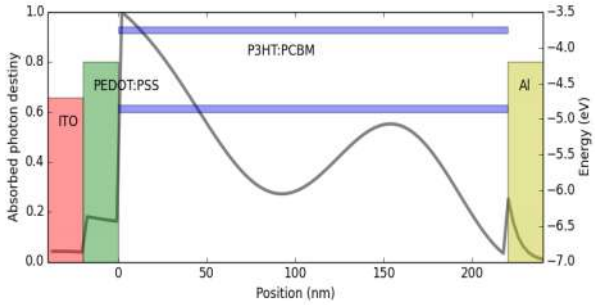

Figure 6. Active Layer Thickness 220 nm

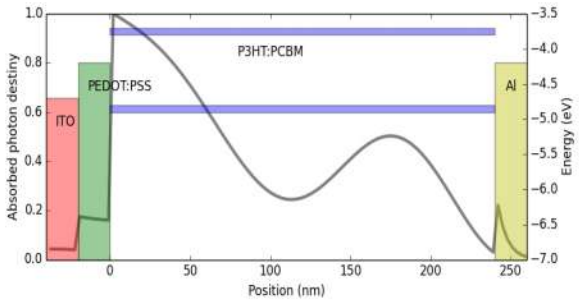

Figure 7. Active Layer Thickness 240 nm

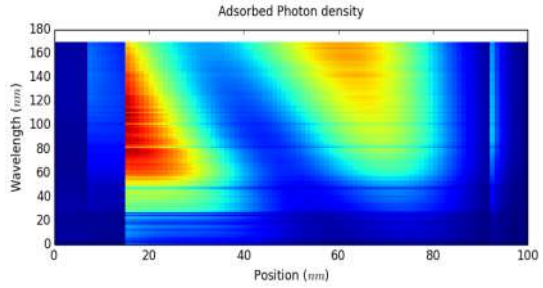

Figure 8. Absorbed Photon distribution at thickness 200 nm

The absorbed photon distribution at 200 nm is shown in figure 8. The best absorption is obtained at the thickness 180 nm and 200 nm and the absorption of photons is maximum near the electrode and the reflection is minimum near the electrode and maximum at the middle of the active layer. As we vary the thickness of active layer of bulk heterojunction solar cell. We found different absorption patterns, below 180 nm thickness; an absorption peak is obtained at the middle of the active layer. As the thickness increased the absorption peak moves towards the electrodes. At 200 nm thickness absorption peaks are obtained near the electrodes (ITO and Al). Above the 200nm thickness, the absorption peak decreases towards the Al electrode. It is concluded that at 180nm and 200nm more photons are absorbed by the active layer nearer the electrodes and more excitons are generated nearer the electrodes. Due to low mobility of the charge carriers in organic solar cell, it is difficult for the carriers dissociated from the middle of the active layer to diffuse to the electrode. Therefore, the electron-hole pairs dissociated in the active layer nearer to electrode contribute to the effective absorption. For electron-hole pairs generated in the middle of the active layer, electrons or holes must travel a long distance to reach electrodes which are mostly difficult. The photo-generated carriers' width short distance to electrodes can be collected effectively. Facilitating hole collection from donor towards device anode improves the photovoltaic response [20].

V. CONCLUSION

In this study, we have presented optical simulation of the P3HT: PCBM based bulk heterojunction solar cell. For different active layer thickness, the absorption pattern of the active layer of organic solar cell varies with thickness. At 200 nm we get absorption peaks near the electrodes. Thus by tuning the active layer thickness, the effective absorption of P3HT : PCBM based solar cells can be optimized.

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Quantitative Estimation of Different Organic Metabolites in Root Knot Nematode (*Meloidogyne Incognita*) Infested and Organically Treated Spinach

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Abstract **- The phytonematodes are mostly responsible for treacherous disease symptoms in different crops frequently and extensively resulting in huge losses. Nematodes may damage plants directly or indirectly. In general, the nematode infestation in fields is poly specific, however, depending upon the agro-climatic conditions, one or two species dominates over the rest. *Meloidogyne incognit*a is universally destructive to almost all the plants including vegetables, fruits and some cereal crops. Spinach (Spinacea oleracea) is also found infested by the same. Biocontrol with peels of *Citrus aurantifoli*a (kaghzi neemboo) proved beneficial in controlling the infestation. Various organic metabolites were estimated in root knot nematode infested spinach. Amongst organic metabolites chlorophyll, total carbohydrates, total free amino acids were estimated. Root knot nematode infested spinach was treated with peels of lemon which proved beneficial in terms of increased chlorophyll content. Altered total carbohydrate and total free amino acid content was found with S/4 of lemon peels treated spinach plants.**

Key Words: Chlorophyll content, Total carbohydrates, Total free amino acids, Root knot nematode (*Meloidogyne incognita),* Spinach (*Spinacea oleracea*), peels of kaghzi neemboo (*Citrus aurantifolia)*

I. INTRODUCTION

The phytonematodes are mostly responsible for treacherous disease symptoms in different crops frequently and extensively resulting in huge losses. Nematodes may damage plants directly or indirectly In general, the nematode infestation in fields is poly specific, however, depending upon the agro-climatic conditions, one or two species dominates over the rest.Accordingly, control efforts have been made for prevention of nematode entry, suppression of its population, reduction in its effects on the crops or combination of these principles. Literature reveals that root knot nematodes *(Meloidogyne incognit*a) are universally destructive to almost all the plants including vegetables, fruits and some cereal crops. Economically important species in India are *M. javanica, M. incognita,* M. g*raminicola* & *M. exigua.* The principal symptoms, galls or knot produced on roots are diagnostic of the root knot nematode (M. incognita) infection. With this idea the present study had been taken to observe and control the root knot infestation on spinach *Spinacea oleracea* (spinach) belongs to Chenopodiaceous family and is extensively cultivated in India for its nutritious leaves. It is unique among vegetable crops because of its extremely high yield in a relatively short period of time. Besides an important source of Vitamin K, spinach is a good source of minerals, Vitamin *B* complex, ascorbic acid and carotene. It is being attacked by various other agents viz. bacteria, fungi *etc*. besides nematodes causing necrosis, curling and patches on its leaves, which affect its overall growth followed by production. Amongst various nematodes viz. *Tylenchorynchus sp. Tylenchus sp., Heterodera sp., Meloidogyne sp.,* root knot nematode (*M. incognita)* and found to parasitize roots of spinach exhibiting heavy gall formation and loss to this crop.

In nematology, new control technology tools are being worked out on the pattern of those developed for insect pest control. Research in these areas is picking up and possible efforts may yield some useful alternatives. These practices include pheromone communication, steroid or hormone activity, sensory stimuli, use of avermectins which have potent anthelminthic and insecticidal activities & are in wide spread use, especially as agents affecting parasitic nematodes. However, it is universally realized that integrated nematode management is the best option for keeping the population levels of the pests below economic threshold by combined use of different control practices.

A solution to this problem is also by the use of phytotherapeutic substances, through which nematode management is expected to be highly practicable from the point of view of cost effectiveness, environmental safety and socio-economic viability. Aqueous and organic extracts of many plants have been reported to contain nematicidal or nematostatic compounds [10] : [13] : [5] : [9] : [16] : [2] and [18] reported that flower extracts of *Bauhinia variegata, Ixora parviflora,*

Moringa oleifera, *Tagetes eracta, Argemone maxicana* & others were highly toxic against J2's of *M. incognita.*

II. MATERIALS AND METHODS

Seeds of spinach were seeded in three replicas each of Normal-Control, Infested Infected–control, and chopped peels of *Citrus aurantifolia* (lemon) and were amended in 100%, 50% and 25% w/v of autoclaved soil and named as S, S/2 and S/4 respectively. After 60 days plants were uprooted and following parameters were estimated-

A. Total Carbohydrate Content

Total carbohydrate content was determined as:

1. 100 mg of plant sample was neutralized with 5 ml of 2.5 N HCl in water bath for 3 hrs.
2. Neutralized further with Na_2CO_3.
3. The volume was made up to 100 ml and centrifuged.
4. 4 ml of Anthrone reagent was added to 1 ml supernatant.
5. The test samples were kept along with control in water bath for 8 minutes.
6. It was cooled and optical density was measured at 630 nm against glucose as 'blank'.
7. A standard curve was drawn using different concentrations of standard glucose (0.2, 0.4, 0.6, 0.8 and 1 ml respectively).

The results were expressed as the amount of total sugar present in 100gm of plant sample.

B. Total Free Amino Acid:

Method of [6] was followed for the estimation of free amino acid:

1. Ca++, Mg++, Na+ ions1. 500 mg of plant sample was extracted with 10 ml of 80 % ethanol.
2. After centrifugation, 0.1 ml of supernatant was taken and in it 0.1 ml distilled water and 2 ml of ninhydrin solution was added.
3. It was kept in water bath for 15 minutes.
4. Test samples were cooled and 2 ml of ethanol was added.
5. Purple color develops.
6. Optical Density of sample was measured at 575 nm against leucine as 'blank'. Total free amino acid was expressed as percent equivalent to leucine.

C. Chlorophyll Content:

1. Total chlorophyll was estimated by the method of [4].
1. 1 gm of finely cut leaves were ground in 20 ml of 80 % ethanol and centrifuged at 5000 rpm for 5 minutes.
2. Supernatant was separated and residue was again ground with 80% acetone till it become colorless and again centrifuged at 5000 rpm.
3. The volume of supernatant was made up to 100 ml with 80 % acetone.
4. The absorbance of solution was read at 645, 663 and 652 nm against 80 % acetone as blank.

III. RESULTS AND DISCUSSION

Total Chlorophyll Content:

The data presented in Table I revealed that chlorophyll content got altered in the normal, infested and treated spinach.

A. Chlorophyll content in spinach after amendment of peel of Citrus aurantifolia.

Total chlorophyll content in spinach leaves amended with peels of *Citrus aurantifolia* showed increase in chlorophyll content as compared with infested-control (I-C). Spinach treated with concentrations of S, S/2, S/4 contained 1.34, 1.29, 0.88 mg chlorophyll/gm tissue when compared to 0.79 mg chlorophyll/gm tissue of I-C and 0.94 mg chl/gm in normal-control (N-C). However, amendment with S and S/2 concentration showed more increase over infested-control and normal-control spinach. Data presented in Table I revealed that amendment of peels alter chlorophyll content of spinach.

Total chlorophyll deteriorated in infested-control which have 0.45 mg chl/gm tissue as compared to 0.82 chl a/gm of normal-control spinach S, S/2 and S/4 have 0.75, 0.82 and 0.84 mg chl/gm tissue S/4 contains more chlorophyll than S and S/2. Chlorophyll b in I-C, N-C spinach is 0.18, 0.45 mg chl b/gm tissue. S, S/2, S/4 contain 0.43, 0.44, 0.45 mg chl b/gm tissue. S/4 showed increase over S, S/2. Treatments showed much increase Chl b content over infested-control.

B. Total Carbohydrate content

Increased content of total carbohydrate had been recorded in the diseased roots of spinach as compared to normal-control spinach (Table II). Infested spinach showed 137.5% carbohydrate content over normal. Kaghzi neemboo amended spinach contains lower carbohydrate than normal-control. Rate of carbohydrate contents were found to be inversely proportional to the rate of extracts concentrations as S/4, S/2 and S showed 92.5%, 55% and 37.5% increase over normal-control spinach. [15] reported

increased sugar content in the root knot nematode inoculated roots, which may be due to the movements of various metabolites towards the infection site from the other parts of plants. [13] also found increase in total sugar content on increasing concentrations of nutrients in root knot nematode infested cotton.

However, several other workers [19-21], and [22] reported decrease carbohydrate content in the diseased root as compared to normal. [11] , [12] and [17] agreed with the increase sugar levels to high metabolic activity in diseased tissues.

C. Total free amino-acids

Increased total free amino acid had been found in the infested-control spinach as compared to normal-control spinach. Infested-control spinach contained 3.70 mg/ml whereas normal spinach had showed only 0.38 mg/ml total amino acid content, S, S/2, S/4, kaghzi neemboo treated spinach contained 0.51, 3.30 and 4.87 mg/ml total amino acid content.

Similar conditions had been met by several workers, ([3]; [14], [15]. [8] noticed increased amino acid content due to enhanced turnover for the benefit of nematode into easily assailable form of amino-acid. They also co-related the increased level of soluble proteins and amino acids with high protease activity in infected tissue.

The proteases are secreted by the nematode into host tissue for such a proteolytic degradation. [1] also observed similar changes that increase level of protein content as a result of inhibition of rootknot infestation in Okra and brinjal plants. [7] also reported increased protein concentration at initial stage of infection.

TABLE I
ESTIMATION OF CHLOROPHYLL (MG/GM) OF *SPINACEA OLERACEA* (SPINACH)

Sr. No.	**Amendment**	**Normal control**	**% I/D**	**Infested control**	**% I/D**	**S**	**% ID**	**S/2**	**% ID**	**S/4**	**% ID**
1.	Peels of *Citrus aurantifolia*)		--								
2	Total cholorophyll mg/gm	0.94	-	0.79	-15.95	1.34	+42.53	1.29	+37.23	0.88	-6.81
3	Cholorophyll a mg/gm	0.38	-	0.31	-18.42	0.57	+50.00	0.56	+47.36	0.35	-7.89
4	Cholorophyll b mg/gm	0.60	-	0.48	-0.20	0.98	+63.33	0.93	+55.00	0.56	-6.66

TABLE II
QUANTITATIVE ESTIMATION OF DIFFERENT METABOLITES IN THE ROOTS OF SPINACH

Sr. No.	**Concentrations**	**Organic**			
		Total carbohydrate content (mg/ml)	% I/D	Total free amino acid (mg/ml)	% I/D
	Normal-control	0.40	------	0.38	---
	***Citrus aurantifolia* treatment**				
1.	S	0.55	+37.5	0.51	+34.21
2.	S/2	0.62	+55.0	3.30	+768.4
3.	S/4	0.77	+92.5	4.87	+1181.5
Infested Control		0.95	+137.5	3.70	+873.0

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Ensuring Reliability in Cloud Computing and Comparison on IPv6 Encouraged with Protocols

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***Abstract*- In today's high-capacity networking environment, a need to an on-the-line computing has awakened i.e. a need to have an on-demand networking architecture. Architecture similar to this functionality is formally the famous Cloud Computing that provides a reliable basis to have access for the shared environment. This is accomplished through a connection-oriented network followed with some infrastructure with lesser maintenance and high performance. To accomplish this infrastructure OPNET IT GURU EDUCATIONAL VERSION 14.5 Modeler is being used. The reliability is encouraged by maintaining parameters for routing protocols such that throughput is increased as utilization is increased.**

Key Words: Cloud Computing, Delay, Utilization, TCP Connection, Throughput, PPP, Digital Signal, IP Routing Protocol, IPv6, RIPng, OSPF, IS-IS.

I. INTRODUCTION

Cloud Computing [1] is a mechanism that facilitates multiple connected devices in an Internet to get access to shared devices. These devices may be repeaters, hubs, switches, routers, etc. that help in exchanging the data packets in a network and along with this a certain factor to security is also needed, for that firewalls are required.

Cloud computing formally known as 'on-demand computing', enables an on-demand access to the shared resources and information that is usually managed by a third party situated at different geographical location. For cloud computing network, it is claimed that this technology enables to improve the access for applications in a faster way then to the before, enabling an improvement in manageability and maintainability factors, also, enables IT to adjust factors to shared resources so that they can easily met with fluctuating and unpredictable demands of business.

The main aspect that cloud computing provides is 'virtualization', which enables number of users to get their work done using virtual software, virtual hardware as and when needed. Since it is a Service-oriented Architecture (SOA) [1] that provides resources as aspects of services that facilitates for their use in consideration to well-established standards for global access in a standardized way.

Cloud computing is evolved by addressing the famous Quality-of-Service (QoS) [2] and reliability problems. Cloud computing facilitates following characteristics that will be analyzed in further analysis section. The characteristics can be a follows:

- **Cost**: The public-cloud architecture facilitates to claim high capital expenditures to operational expenditure.
- **Device and location independence**: This provides a facility to number of users to access resources or to operate through a web browser regardless of their geographic location.
- **Maintenance**: This is easy to use technology such that it doesn't need to be implemented onto every computer and can be operated from different places.
- **Performance**: It is made consistent by monitoring using loosely coupled architectures using web services as an interface with system.
- **Productivity**: Productivity is gradually increased as users are not intended to install applications onto their system every time they access.
- **Reliability**: Provides reliable methods for data recovery and backups, improves usage of redundant for multiple users.
- **Security**: The complexity of security is gradually increased when data is distributed onto a wider area or even over numbers of devices.

When is associated with security to a network or security concerned with autonomous systems operating in an unreliable or prone network, firewalls acts good to provide higher levels of security to an autonomous network. Firewall acts as a security factor for network where it is intended to sense, monitor and control every incoming and outgoing message or information or network traffic. Firewall relies to act as a barrier to allow only trusted network traffic to pass inside network and non-trusted outside network.

Rest of the paper is organized as follows. Section 2 deals with characteristics of TCP connection [2] (consisting of congestion-control and monitoring),

Point-to-Point (PPP) [3] protocol along with its characteristics and signaling scheme i.e. Digital Signal 1 (DS1) and Digital Signal 3 (DS3); protocols encouraged in Internet Protocol version 6(IPv6) [4] environment i.e. RIP next generation (RIPng) [5], Open Shortest Path First (OSPF), Intermediate System to Intermediate System (IS-IS). Section 3 contains two scenarios on cloud based network. Section 3a environment with simple IPv6 scheme working underDS3link facilitating RIPng, section 3b represents environment with IPv6 scheme under RIPng, OSPF, IS-IS underDS3 link. Section 4 defines the simulation results that are made to the scenarios. Section 5 includes the conclusion and future work related to the further considerations to better up the working environment.

II. RELATED WORK

In a cloud environment usually it is recommended to use a connection-oriented mechanism i.e. TCP connection. In TCP, the two communicating parties need to establish a connection at first by sending a series of messages to establish a network that is reliable and responsible to operate in-order delivery of a stream of bytes. The confirmation of messages to be delivered is controlled through ACK messages at routines.

Along with its mechanism, TCP provides a highly-tuned congestion control mechanism. The idea that works in congestion-control includes a monitoring process that defines the capacity available to the network, hence justifying that how much packets can be safely transmitted into the network.

TCP is an end-to-end transmission protocol that encourages higher levels of reliability in a network. Apart from this a protocol is also engaged along with the TCP mechanism so that authentication, transmission encryption and compression are also encouraged for maintaining the reliability of conversation taking place in between the integrated parties. PPP protocol is accomplished to provide these three facilities inside a network to make it secure and reliable from outside unreliable network.

PPP is a data link layer protocol which is used to establish a direct end-to-end connection in between two communicating entities. PPP is generally used in a physical manner in any network such as through serial cable, trunk line, phone line, cellular or may be as fibre optic cable like SONET. Generally PPP is used by Internet Service Providers (ISPs) to provide a dial-up connection to users. The circuit provided in PPP protocol environment is both synchronous and asynchronous in nature which is duplex in nature. Duplex circuit means the communicating entities will be maintaining a two-way communication mechanism.

There are certain configurations while working with PPP protocol, out these few can be as following:

- **Authentication**: This is accomplished by exchanging authentication messages while communication. Handshaking mechanism is encouraged to provide authentication.
- **Compression**: Compression techniques are mainly implemented to reduce the amount of data frames travelling along a network. This facilitates an effective throughput on PPP connections. Packets are then decompressed when received by receiver.
- **Error detection**: This is responsible to identify fault conditions, providing a loop-free data link and increased quality factor.
- **Multilink**: This characteristic provides with load balancing mechanism which uses multiple interfaces using PPP.

In telecommunication, information is shared in forms of digital signals that depend usually onto voltage of physical channel. In context to digital transmission, two types of digital signals are pursued that can be namely underlined in a T-carrier signalling scheme. T-carrier signalling scheme [3], [10] facilitates a carrier used to technological support in a cloud environment. The two very famous signalling mechanisms can be as stated below:

a) **Digital Signal 1**: The Digital Signal 1 scheme is formally known as DS1 signalling. This was well known as T-carrier signalling scheme which was used as E-carrier in place of T-carrier for countries mainly United States, South Korea and Japan. DS1 or T1 is basically a bit pattern that is used over a physical T1 line.

b) **Digital Signal 3**: The Digital Signal 3 is formally known as DS3 signalling. This is a 3 level T-carrier mechanism. It is also referred as T3 signalling mechanism. This level is an advanced version to the existing DS1 scheme as it is regarded that DS3 or T3 can transport 28 DS1 level signals within payload. This is more reliable scheme to be opted for a network to increase the productivity and reduces the querying delay.

Besides this, to communicate we need to configure protocols that are reliable and faster to perform. To communicate through the Internet facility, Internet protocols (IP) [6] are used. The two most familiar internet protocols are namely: Internet Protocol version 4 (IPv4) and Internet Protocol version 6 (IPv6). These protocols are intended to relay the

datagrams onto the boundaries of network. The since every version of protocol provides certain pattern to the address provided to each and every data packets which are intended to move across the stations so connected to communicate as:

- **IPv4**: This is a fourth version of IP. This version is a core protocol that is based on standard- based methods of networking. IPv4 is probably a connectionless protocol supporting packet-switched networking i.e. IPv4 provides some aspects of integrity for delivery of data packets by making use of best effort delivery model, but does not guarantee for accurate delivery or to prevent any duplicate delivery.

Besides all these factors, a new version (IPv6) was released to overcome allocation and address requirements by both private and public networks.

- **IPv6**: This is a recent version of IP providing with larger addressing space i.e. uses 128–bit address, much larger than used in IPv4. IPv6 provides technical benefits by providing much larger address space in a hierarchical way. Main features under IPv6 can be as:
  - For address assignment it uses stateless address auto-configuration
  - Provides a simplification in accordance to routers to deliver each packet at their prescribed destinations using fragmentation processes.
  - Creates a parallel and independent network facilitating an automatic mechanism to form host identifier from MAC address.

While communicating in an unreliable network, some aspects of security should also be maintained out of which there are some routing protocols even. RIP [5]is one the protocol that is employing a routing hop count facility. RIP provides a facility to count and limit number of hops between source and destination devices. In an IPv6 environment routing is made at simpler levels for accordance of routers in a network. When RIP is implemented along with the IPv6 protocol address type, network probably performs in a better way as RIP provides route poisoning, split horizon and hold down facilities which prevents inaccurate routing information unnecessarily propagated in a network.

RIP is based on User datagram protocol (UDP) mechanism at the transport layer. RIPng is an extension to RIP version 2 that supports for IPv6 address configuration.

- **OSPF:** OSPF [7] is one the routing protocol for networks that follows IP. It works for an autonomous network such that it uses a link state algorithm that falls for interior group of routing protocols. The OSPF is responsible to collect information from all the routers available in an autonomous network and constructs a topology map of network. A topology is made in a form of routing table that defines all the link paths involved in a network then datagrams are sent solely to their defined destination IP address. OSPF doesn't use TCP/UDP transport protocol, but rather encapsulates into IP datagrams. It is indeed best in implementing its own error detection and correction functionality.
- **ISIS-IS:** IS-IS [7] is another designed routing protocol that rapidly and efficiently moves information in between the devices grouped or connected in a network via physical link. This follows packet-switch networking scheme. IS-IS and OSPF both the protocols act in one and the same manner by finding the lowest cost path from routing topology so maintained, rather IS-IS supports larger area than OSPF.

III. SIMULATION

The simulation [8]is performed to establish a reliable network that consists of TCP type connection for which, a point-to-point transmission protocol (PPP) is simulated for its working in an IPv6 environment using DS3 communication link. The fact on simulating these two scenarios is to get the maximum throughput in a cloud-based environment working under different routing protocols. Also, to reduce the delay caused while placing queries to get access or to operate onto a particular network.

In simulation, a cloud network is set up with basic linking methodologies *i.e.*, DS3 operated under point-to-point transmission protocol PPP.

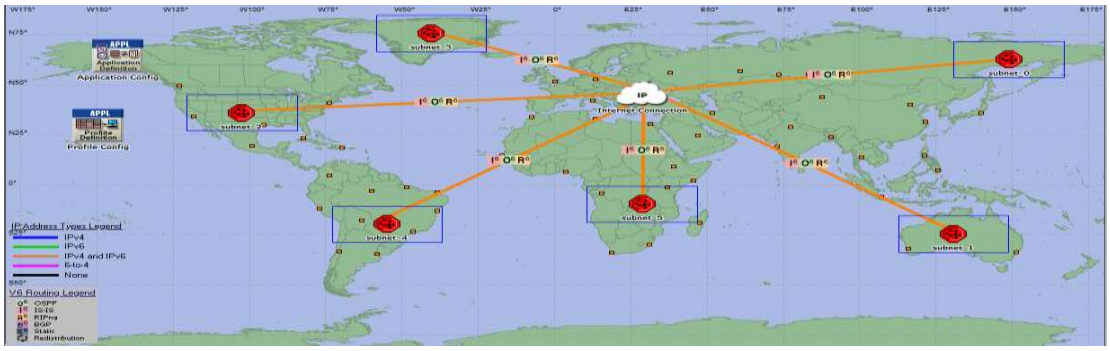

Figure 1. Internet Connection following cloud-based network

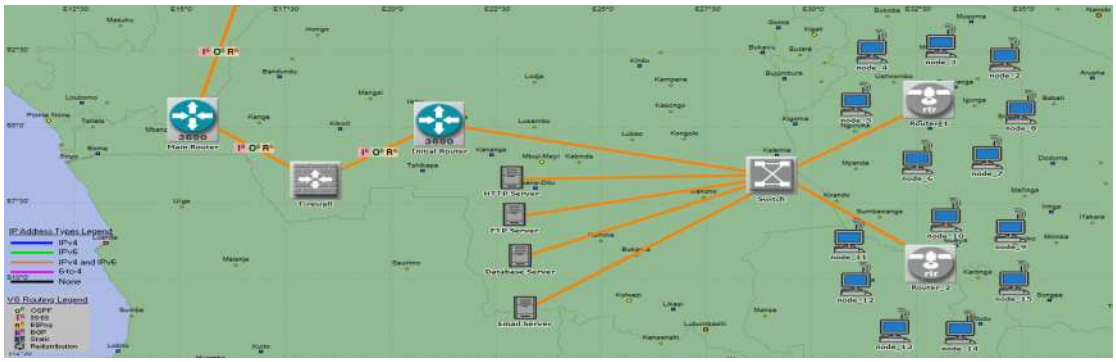

Figure 2. Simple Autonomous Network

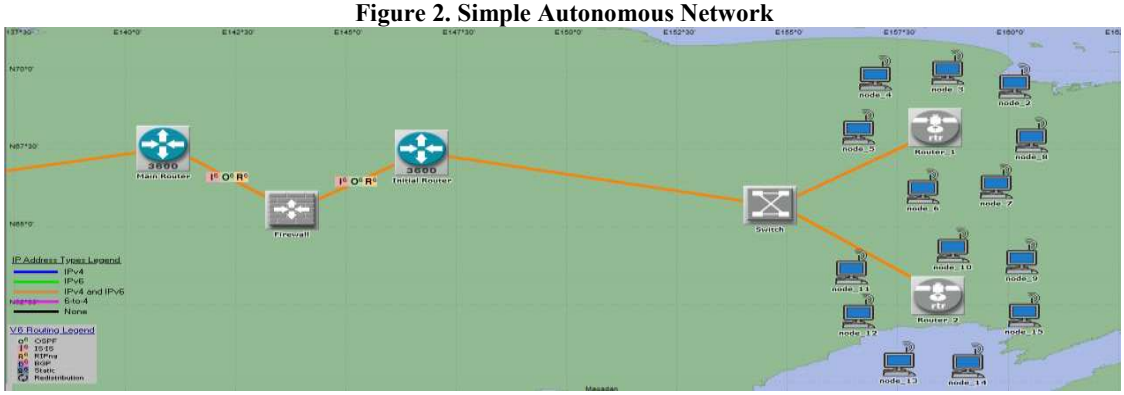

Figure 3. Autonomous Network defining Applications

A) Basic IPv6 environment with RIPng protocol This scenario is made to operate under IPv6 environment that uses only RIPng protocol to gather routing information. The autonomous networks are intended to connect via DS3 or T3 communication links with the ip_cloud.

B) Reliability to Basic IPv6 environment with RIPng This scenario is implemented in an IPv6 environment that supports its routing mechanism under RIPng protocol and also along with OSPF and IS-IS routing protocol in which stations are also connected via DS3 communication link.

The working environment consists of an ip_cloud, six subnets, out of which five subnets are made similar consisting of a wireless LAN (WLAN) using 100BaseT links connected with two routers (namely WLAN_Router1 and WLAN_Router2) and one Ethernet Switch, two CISCO 3640 Routers (one initial & one main router further interlinking to ip_cloud) and one firewall [11]; other one subnet is made as centralised autonomous network in which application servers are made to locate and are made to available for every access made), PPP protocol, connection links (to connect subnets to ip_cloud so that every autonomous network is allowed to

operate), Application Definition (consisting of description or definitions of applications so used) and Profile Definition (defining profiles of each application related to every client).

Fig. 1 depicts the overall schema of cloud- based network, along with this; Fig. 2 represents the architecture that defines to a particular autonomous network and saving their status at the corresponding servers. The corresponding servers are depicted in Fig. 3 respectively.

IV. ANALYSING THE SIMULATION

This section deals with analysis of simulations onto different scenarios and working environments. The results shown for the measuring factors such as delay, throughput, etc. are made to be taken with care. The simulating results will be as following:

A. **Queuing Delay:** Queuing Delay [9] can be defined as amount of time a data packet spends while waiting in a queue at a particular for its successful transmission or to achieve a positive delivery before timeout has occurred.

Fig. 4 and 5 represents the queuing delay factor in both scenarios.

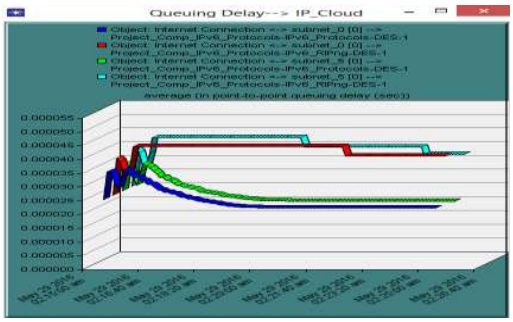

Figure 4.Internet Connection (Subnet 0 and Subnet 5): Queuing Delay

Fig. 4 depicts a queuing delay, in both scenarios, caused while entering a query into an ip_cloud. This represents delay that has caused when multiple users from different networks are trying to get information by sending queries. Out of these four graphs it has been analysed that IPv6 with OSPF and IS-IS works better than simple RIPng.

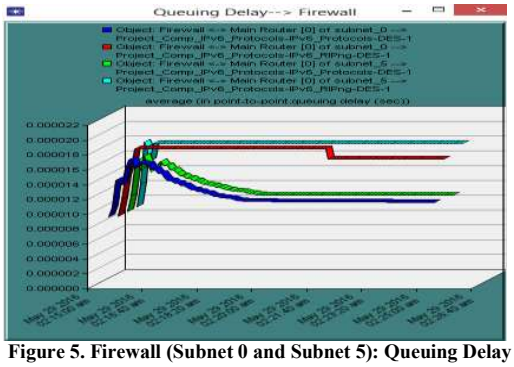

Figure 5. Firewall (Subnet 0 and Subnet 5): Queuing Delay

Fig. 5 depicts queuing delay on firewall of the subnet (Subnet 0 and Subnet 5) in both scenarios onto point-to-point connection link between Main Router and firewall while queries are fired onto it by different network domains. Delay has reduced when dealt with OSPF and IS-IS in IPv6 environment.

B. **Throughput:** Throughput [2] can be defined as a measurement of rate of production while communication. It depicts rate of successful delivery of data packets. Fig. 6 and 7 represents the load factor in both scenarios.

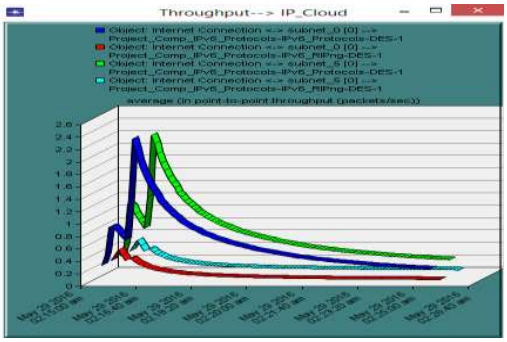

Figure 6. Internet Connection (Subnet 0 and Subnet 5): Throughput

Fig. 6 depicts throughput while receiving requested information through Internet Connection that is made to an ip_cloud. It can be seen very clearly that IPv6 performs better with OSPF and IS-IS i.e. there is a gradual in throughput and reliability is achieved.

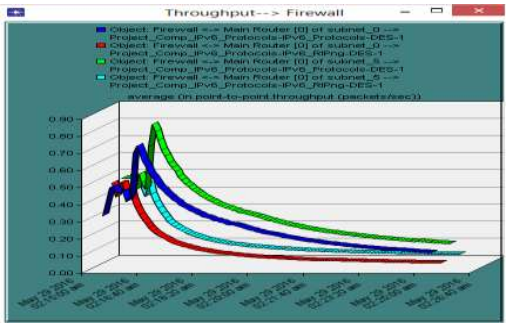

Figure 7. Firewall (Subnet 0 and Subnet 5): Throughput

Fig. 7 depicts throughput in a network while multiple users are making access to the channel. Throughput is increased with respect to numbers of packet in OSPF and IS-IS scheme.

C. **Utilization**: Utilization [12] is a measurement tool which is responsible to measure the performance success of any communication. The utilization proves for the best throughput factor achieved in any aspect. Fig. 8 and 9 depicts the utilization in a network consisting of both scenarios.

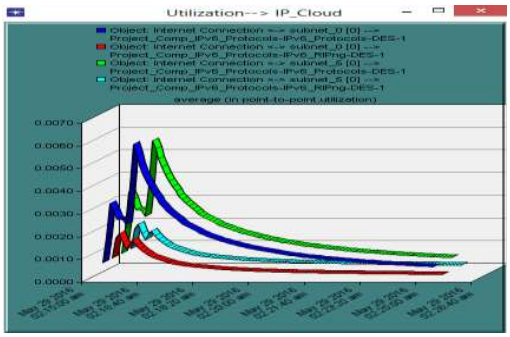

Figure 8.Internet Connection (Subnet 0 and Subnet 5): Utilization

The graph in Fig. 8 depicts utilization in both the scenarios. It can be seen very clearly that here also IPv6 with OSPF and IS-IS works in much better manner than simple RIPng.

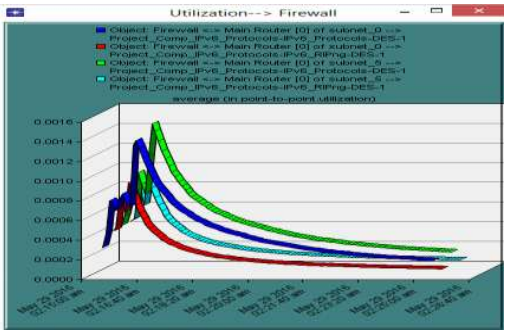

Figure 9.Firewall (Subnet 0 and Subnet 5): Utilization

Fig. 9 is recognized for its results where graph seems to produce better results while performing in IPv6 environment under OSPF and IS-IS protocols.

V. CONCLUSION

The simulation in the proposed paper is based on working of stations in an IPv6 environment in which the stations in each of the autonomous network system is intended to share information via DS3 communication links. The analysis can be clearly seen by all the graphs so generated. The gradual increase in throughput under OSPF and IS-IS protocol schemes can be said as on reliable basis. This is because when simple RIPng protocol is used, it just maintains the routing information and doesn't encourage such efforts so as to increase throughput and utilization. Rather, when it is talked about OSPF and IS-Is protocols, they maintain a dynamic routing table and makes a topology then after. This topology makes possible to automate a lowest path i.e. least cost and least maintenance path whenever there is change in topology. Hence, in this way a factor of reliability is attained while dealing with OSPF and IS-IS routing protocols.

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A Fuzzy ISM Approach for Analyzing the Implementation Obstacles of Electronic Government in Iran

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***Abstract*- "E-Government (EG)" refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. In order to have a successful implementation of electronic government strategy and benefiting from its complete potential and benefits and generally for establishment and applying of electronic government, it is necessary to have different infrastructures as the basics of electronic government with lack of which it is impossible to benefit from mentioned services. For this purpose, in this paper we have managed to recognize relevant obstacles for establishment of electronic government in Iran. All required data for recognition of obstacles were collected from statistical society of involved specialists of Ministry of Communications & Information Technology of Iran and Information Technology Organization of Tehran Municipality through questionnaire. According to the results, mentioned obstacles for applying of electronic government in Iran are as follows: Technical & technological problems, Legal, judicial & safety problems, Economic problems, Organizational Problems and Humanistic Problems. After identifying the key obstacles to successful implementation of EG in Iran through literature review and interviews with experts, 5 main obstacles detected. Then the relationship and sequence of barriers were determined with Fuzzy Interpretive Structural Modeling and MICMAC analysis.**

Keywords: Electronic Government, Information Technology, Obstacles, Fuzzy Interpretive Structural Modeling, Iran.

I. INTRODUCTION

IT (Information Technology) development and communications in all fields of human being life may lead to change of communicative ways of people with society, methods and procedures in which all persons are related to each other for performing their works. Due to these changes, we can name present time as the time of "Information & Communications Technology" by which human societies changed into scientific societies and citizens into users of information networks [1].

One of the most important chances provided by modern technologies for governmental authorities and managers is the possibility of "Re-engineering of government architecture" and increasing the access and output and reliability. Any benefit from re-engineering of architecture [2], government and other above-mentioned facilities in governing process may cause the creation of a reality in the name of Electronic government may lead to electronic governance both as the pre-requisite of governing on information societies governments. This means that it is impossible to govern on information societies only with traditional and expired structures and processes. Electronic government means different methods by which all governmental managers could provide relation with their citizens through digital tools such as internet positions, electronic post, video conference, audio post and internet. Electronic government may provide the following items: (1) More access to governmental information, (2) Betterment of civil partnership through enrichment of all people for contraction with governmental authorities through network relations, (3) Reliability of government through better and clearer activities and reducing of corruption possibilities, (4) Creation of developing chances in rural & deprived areas [3, 4].

By the way, any benefit from electronic government facilities may cause better submission of governmental services to citizens and more access of all citizens along with effective relations with involved parties and enriching of citizens and totally

create a more effective governmental management. Some of the expected results of this process are reduction of administrative corruption and more clearance of affairs, increasing the responsibility rate, permanent betterment of processes, more comforts, increasing of resources and reduction of services costs. By creation of information & communication technologies there is a close relation between servicing centers and customers in which all persons may receive their own services through personal computers. In addition, electronic government may cause an economy in time and costs of government, citizens and labors. Globalization may also make governments to establish electronic government for better selling of their own goods and services and export of culture and introducing of themselves to other cultures and civilizations. [5, 6, 7]. In this study, 5 key obstacles are identified according to literature and experts opinions. Then the relationships between obstacles were determined by using of fuzzy interpretive structural modeling. Finally these obstacles clustered by MICMAC analysis to four clusters.

II. THE THEORICAL BASED OF THE RESEARCH

A. Description of government

In its wide meaning, Government means different organizations with legal powers for applying in specific and determined scope of people. The government may provide its exclusive power for providing discipline in mentioned scope of powers through governmental organizations [8].

B. Major duties of government

Government must/must not do some things. Anderson has written a suitable and applicable set of general roles of government under seven titles as follows: [9]

1. Supply of economic infrastructure
2. Supply of public goods and services
3. Settlement of group challenges
4. Keeping of competition
5. Maintenance of public resources
6. Supply of minimum goods and services for people
7. Economy fixed condition

C. Definitions of electronic government

There are a lot of definitions for electronic government as follows: [10, 11, 12, 13]

- Electronic government means easy benefiting from information technology for direct/day & night distribution of governmental services.
- Electronic government means any benefit of government and other governmental organizations from information technology and creates a change in relation with citizens, trading centers and other cases in challenge with government.
- Electronic government is a method for governments to use information technology and new technologies that provide necessary facilities for suitable access to governmental information and services, betterment of their quality and providing of wide chances for cooperation in public processes and symbols.
- Electronic government may receive/deliver the information and services easily and quickly by depending upon internet and other modern technologies with an applicable and low cost method.
- Electronic government means on time, exact and applicable information and servicing through 24 hours in 7 days of a week and all days of the year through different communicative tools such as telephone and internet.

In other definitions we have other aspects like reliability, responsibility, clearing and so on. As a result electronic government is a set of electronic relation among government, companies and citizens.

D. The importance of creating an Electronic Government

The expectation of people about services and products and quality /manner of presentation is under changing with daily increase basis. Government should reply all these needs and expectations. They require increasing working hours of governmental institutes in order to perform their works without any long queues and receive high quality and cheaper services, therefore the most reliable form of a government for all these needs is electronic government. All governments are competing with each other for attraction of capitals, labors and occupation of professional workers and tourists then for this purpose they need new facilities which may be provided by electronic government.

As a result, electronic government may not only integrate with society but also make the government to focus on more required resources. Electronic government may develop Self Service culture in a way that all citizens could help themselves and reduce any wasting of costs and times [14].

E. The records of electronic government in pioneer countries [15, 16]

Singapore (%47): A country with a population more than 3.5 million persons and internet interference

coefficient of %47 follows civil services in a way that if it possible to provide any linear services it should necessarily provide on line basis. Singapore has developed a wide range of transaction services in different governmental organizations. One of the aspects may show Singapore government as a lead of electronic government is that Singapore was the first country that has used electronic transactions law with allocation of required credits and official situations for companies to benefit from digital documents.

U.S.A: (%66): From 2001, USA has applied various functions for developing of electronic government. For instance, appointing a manager for information technology and electronic government, a similar position with master technology manager and a modern attitude of electronic government for focusing on citizens (Citizen focused). The real goal of government by electronic government was obtaining different ideals such as qualitative services, reducing of prices, clearer situation and easier access to electronic services especially for disable citizens. Today government considers a central entrance of www.firstgove.gove which has been constructed according to the needs of citizens. In addition, the government is active in parallel with development of electronic signature and creating an economic entrance of www.fdbizapps.gov with the goal of facilitating of value channel management.

England (%40): England has established different agreements in the field of electronic government as follows: 1). Establishment of a unique structure for development of electronic government, 2). Executive designing in private sections, 3). Effective relation with citizens, 4). Controlling & following up the supervision on progresses of electronic government.
England has prepared a program in the name of electronic officer for modernization of governmental services. The key aspect of this program is to establish an administration for electronic officer to accept responsibility of program tools including preliminaries of electronic trade & electronic government. This administration includes two groups. A policy making group responsible for strategic designing of infrastructures and operations and delivery group for performing different projects of electronic officer (like unkon.ine.gov.uk). This electronic officer would be led by electronic ministry. The other key aspect of electronic government in England is designing of executive programs through an executive online plan which provided %94 of partial proposals in 25 groups.

F. Iranian Electronic Government in comparison with developed nations

Electronic government has been applied in different countries with different forms and mainly in accordance with their political/social needs. Most of developed countries are encouraged by international organizations like UN to develop electronic government. By the way most of non-developed countries are not sure about it. According to the UN report, any development and applying of electronic government may not necessarily increase the life quality in a country. But the reality is that electronic government is considered as a strategic key for benefiting from competing profit and as a central tool for governmental modifications by all countries of the world. The major property of developed countries against electronic government is social/political news. For example, Zang explains that such a description of electronic government is not a sampling of U.S.A for encouraging and enriching of democratic cooperation [17].

Better democratic cooperation and overcoming on political alienation are two major factors with more challenges than other factors for under-progress countries with an attitude for developing of electronic government. Needless to stat that mentioned challenge is lower than developed countries with considerable democratic progress which may lead to more efforts for upgrading of operation quality of systems and users.

Iranian attitude about electronic government is in fact similar to other under-progress countries. The operation of government and its betterment are more considerable. In fact the major problem of Iranian Electronic Government is not political/ social aspects. These programs have considerable effect on society and are under pressure of social conditions of government. Iranian Electronic government found 44^{th} grade in 2001 among 169 countries which were under consideration and study of World Market Researches Center. Also it found %33 grades and position 107 among 173 countries in another study by UN in 2003. This tangible reduction was a result of program limitations out of political/social reactions against any changes in electronic government. Religious organizations and incorrect rules create a situation for controlling information technologies and internet and any distribution of it [18].

In fact there is a type of hegemony for distribution of information and ideologies in some countries. Religious government is current in Saudi Arabia and Iran and as a method for maintenance of society against non-behavioral effects of internet. But it is rate these strengths could prevent from any

movement towards development of electronic government but may reduce its speed and make some delays. At present it is obvious in Iran. The message of world society is completely understandable by under-developing countries for benefiting from new information & communicative technologies and reducing any gaps between developed & non-developed countries. While Kalatil & Boas explain: It has been proved that electronic government may bear a lot of benefits even for powerful regimes [19].

G. The Role of e-Governance in Bridging the Digital Divide

The concept of the digital divide has been evolving over the years, being generally defined as a social issue linked to the different amount of information between those individuals who have access to the information society and information and communication technologies (ICTs) and those who do not. It also refers to countries, regions, cities, and businesses that are at a differentiated socio-economic and cultural level with regard to ICT accessibility.

The involvement of Governments and suitable e-government tools could become leading actors in bridging the gap. Governmental ICT applications could play a crucial part in diminishing the digital divide between the young and elderly, women and men, the illiterate and the educated, or even between less developed regions and countries.

The key elements in developing e-governance as a defining factor in bridging the digital divide are [20]:

- International, national and regional cooperation.
- Harmonization of the legal framework and regulation.
- Ensuring a minimal package of interconnected and interoperable e-services.
- Promoting ICT skills and digital literacy in a non-discriminative manner.
- Educating and preparing the population of less-developed regions for the Information Society and encouraging e-readiness.
- Running pilot e-services in less-developed regions together with the proper technical assistance.
- Developing e-learning and suitable ICT content.
- Developing e-participation and the inclusion of various social categories in policymaking and decision making, even by using new media technologies, such as social networks.
- Usage of mobile communication as infrastructure for the dissemination of e-services.
- Increasing the transparency in decision making and budget spending by implementing e-services.
- Involving the citizens in all aspects of local and national public administration processes.
- Increasing the quality of life in all its aspects through better e-services and access to knowledge.

H. Problems, obstacles and challenges for establishment of an electronic government

In spite of a simple meaning, electronic government has a lot of problems for governments. The major problem is not in designing method but the first item for governments is presenting of services with suitable method. As a powerful group, Governments should be able to receive digital information along with providing required technical fields for communications of different units with each other and cooperation of private & governmental sections. The other problem is mentality and culture of people. It is so much costly to change mentality and traditional culture of people. The other problems are providing a suitable space, preventing from non-suitable usages and lack of necessary specialty for quick changes in information technology.

The second basic problem of governments is providing suitable legal methods for electronic trade. Since the world is going towards digital world economy, any legal discrepancies are highlighted in international trades. In this way, governments are facing with relevant problems of tax on electronic trade and manner of controlling it, electronic signing of trade contracts and controlling of powerful coding programs.

Third problem of governments which is a potential problem is daily-increasing necessity to democracy and lack of democratic usage of digital systems. By any increase of digital economy, we will have neutralization and/or incorrect usage of technology from democratic point of view. As a result there will be no more variety and this may encourage people to benefit from new worldwide methods. Also it is necessary to consider that a lot of obstacles are on the way of creation of electronic government as follows:

1) Lack of necessity to electronic government
2) Lack of supports by master management of organizations
3) Disability in specifying any limits between confidential information and public information for any access of citizens and economic agencies
4) Expensiveness of any establishment, maintenance and development of information networks and data bases
5) Lack of information technology specialty in some countries. [21, 22]

III. CONCEPTUAL MODEL

According to the literature of research and study of different books and papers and also interview and leading of familiar people with electronic government, it was revealed that various factors are effective in establishment of electronic government in Iran. Although there are a lot of different factors, but it is possible to divide them into five groups as follows:

1) Relevant problems & obstacles of economic factors
2) Relevant problems & obstacles of human factors
3) Relevant problems & obstacles of organizational factors
4) Relevant problems of technical / technological factors
5) Relevant problems of legal, judicial and safety factors

Following Conceptual model of mentioned obstacles have been presented in figure 1:

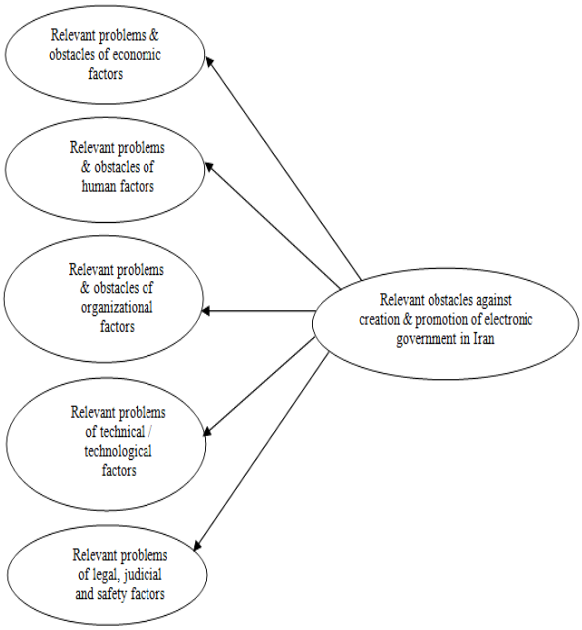

Figure 1. Conceptual model of relevant obstacles against creation & promotion of electronic government in Iran

IV. INTERPRETIVE STRUCTURAL MODELING

ISM is based on group judgment on the extent and nature of relationship among the elements. The interpretations of the group have been used to draw the overall structure from the complex set of elements. The final structure has been portrayed in a digraph [23]. ISM is an interactive learning process [24]. In this, a set of different directly and indirectly related elements are structured into a comprehensive systemic model [25, 23]. The model so formed portrays the structure of a complex issue, a system of a field of study, in a carefully designed pattern employing graphics as well as words [26]. ISM methodology helps to understand the order and direction on the complexity of relationships among elements of the case problem [23] structural flexibility in the SCs, thereby affecting their productivity. The direct and indirect relationships among various elements depict the situation more accurately than the case when an individual factor is considered in a stand-alone mode. ISM develops insights into the collective understanding of these relationships. ISM is interpretive as the judgment of the group of experts decides whether and how the variables are related. It is structural, as on the basis of the relationship an overall structure is extracted from a complex set of variables. It is a modeling technique as the overall structure and specific relationships are portrayed in a graphical model. It is primarily intended as a group learning process but can also be used individually.

Steps of this approach are summarized as below [27, 28, 29]:

Step 1: Pair comparison of variables (Obstacles) using of variables as Table I:

TABLE I
DEFINITION OF VARIABLES IN FISM

Triangular number	Verbal variable	Symbol
(0.75,1,1)	Very strong	AR
(0.5,0.75,1)	Strong	SR
(0.25,0.5,0.75)	Relatively	FR
(0.0,0.25,0.5)	Weak	LR
(0,0,0.25)	Very weak	UN

Step 2: Gathering of expert's opinions using geometric mean method [29].

Step 3: Defuzzication of fuzzy numbers using of centroid method as below:

$$\pi_{ij} = \frac{l_i + m_i + u_i}{3}$$

Step 4: Formatting of initial reachability matrix using of relation as below:

$$\text{if } \pi_{ij} \geq t \rightarrow \pi_{ij} = 1$$

$$\text{if } \pi_{ij} < t \rightarrow \pi_{ij} = 0$$

Step 5: Formatting of final reachability matrix using of relation as below:

$M=D+I$

$M^{*}=M^{k}=M^{K+1}$ $\quad k>1$

Step 6: Drawing of ISM diagram

Step 7: MICMAC analysis

V. FUZZY ISM

Fuzzy ISM gives a pictorial representation of the interrelationships between the elements in the cluster. Instead of representing the relationships by 0 and 1, clear quantified relationships always give a better value addition. A picture is thousand times worthy than an enumeration. In this regard, a three dimensional view of Fuzzy ISM is plotted using the software MATLAB. The Fuzzy ISM thus is plotted and is shown in Fig. 2. X and Y axes indicate the elements. Their interrelationships in terms of intensity on a Likert scale of 0–10 are shown on the Z axis. The interrelationships are expressed by the term intensity in the figure 2. The elements having no interrelationship have the intensity values of 0 (zero) [30].

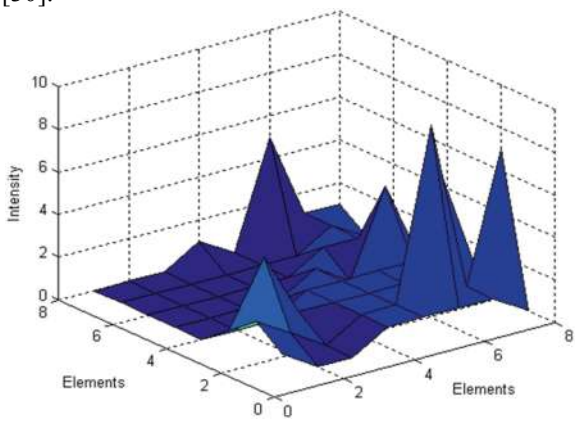

Figure 2. Fuzzy ISM [30]

VI. FINDINGS OF RESEARCH

Interpretive structural modeling is an interactional learning process which a set of different and related elements are organized in a systematic model in it. ISM not only provides a vision on the relationship among the different elements of a system, but also suggests a structure according to the importance and influence of the elements on each other and it also offers a visual representation [31, 32].

TABLE II
THE INITIAL REACHABILITY MATRIX

Factors	Row	C1	C2	C3	C4	C5	Driving power
Economic factors	C1	1	0	1	1	1	4
Human Force factors	C2	1	0	1	1	0	3
Organizational factors	C3	0	0	1	1	0	2
Technical/ Technological factors	C4	0	1	1	0	0	2
Legal, Juridical and Security factors	C5	1	0	0	0	1	2
Dependence power		3	1	4	3	2	1*

In this research, in order to level partition and determine the relationship among the obstacles of employing e-government, after reviewing the related literature and the experts' opinions, five main obstacles were identified. According to the obtained matrix and mentioned rules, the initial reachability matrix was calculated and the final reachability matrix was obtained after multiplying the initial reachability matrix by power of four shown in Tables II and III. It should be mentioned that the numbers with asterisk in the final matrix depict relations obtained after fitting the initial matrix and extending relations.

TABLE III
THE FINAL REACHABILITY MATRIX

Row	C1	C2	C3	C4	C5
C1	1	0	1	1	1
C2	1	0	1	1	1*
C3	1*	0	1	1	0
C4	0	1	1	1*	0
C5	1	0	1*	1*	1

Level Partition of factors is done using final reachability matrix shown in the Table IV:

TABLE IV
LEVEL PARTITION OF FACTORS

Factor	Intersection set	Antecedent set	Reachability	Level
1	1	1	1	2
2	1-2-3-5	1-2-3-4-5	1-2-3-5	1
3	2-3-5	1-2-3-4-5	2-3-5	1
4	1	4	4	2
5	1-2-3-5	1-2-3-5	1-2-3-5	1

Figure 3 shows the research ISM obtained after determining the grade of all obstacles. According to the figure 3, and also removing extending relation and final diagram, the technical or technologic, human force and legal, juridical and security obstacles are placed in a level and the economic and organizational obstacles are located in the second level.

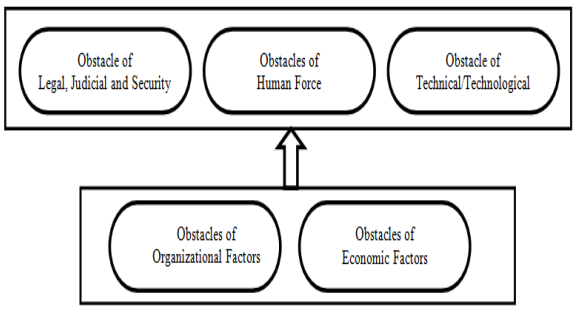

Figure 3. FISM Model

As it is seen in the model, the first level obstacles are influenced and dominated by others. Economic and organizational obstacles have the highest effect and they are located in the second level of the proposed model. These obstacles are clustered by MICMAC.

MICMAC Analysis

After determining the motivating power and dependency of the e-government executive bottlenecks, all obstacles can be placed in one of the four clusters of functional cross-reference matrix multiplication method (Fig. 4).

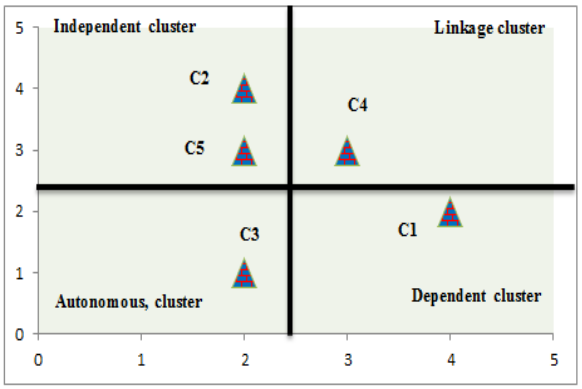

Figure 4. MICMAC Clustering

As it is seen, human force and legal, juridical and security obstacles are in an independent cluster. These obstacles have had the highest influence on other obstacles and being influenced less. Indeed, they cause to bottlenecks in other level which requires the serious attention of the managers. Specially, human force is one of the main obstacles of the e-government. Technical or technologic obstacles are in the relational cluster. Organizational obstacles are in an independent cluster. The measures of independent cluster should be analyzed individually, hence they have less effect on other measures and also they are less influenced. Economic obstacles are in dependent cluster. Indeed, they are being influenced than influence others.

VII. CONCLUSION AND RECOMMENDATIONS

Electronic Government is one of the special concepts which have been performed successfully within recent decades. Electronic government is a digital, wall-free government with a virtual organization for presenting of online governmental services and further cooperation in different political/social activities. Electronic government is resulted from technical changes especially information technology in one side and organizational compliance with information & digital changes on the other hand. In case of accepting the strategic management thought in governmental scope, the philosophy of electronic government will be easily acceptable for agencies. In this research, after reviewing related literature on the obstacles of employing e-government in Iran and interview with the experts of the Ministry of Information Technology and Communications, five main obstacles were identified which constitute the dimensions of this research proposed model including "economic factors", "human force factors", "organizational factors", "technical or technological factors" and "legal, juridical and security factors". In the following, using FISM and also the opinions of the experts, the association and succession of the obstacles were determined and the obstacles were placed in the first level (human force, technical or technological, legal, juridical and security factors) and second level (economic and organizational factors). However, the obtained structural model has helped the Iranian governmental organizations to choose the obstacles or levels in case of implementing e-government system for improving customer service providing.

Also, it is recommended to path analysis (the second order factor analysis) and structural equation modeling by software SPLS in the future research for confirming and fitness of the relations among obstacles in the proposed fuzzy interpretative structural model.

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IT Competencies in Learning Organization and Individual Job Performance

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***Abstract* - Information technology (IT) competencies is defined as knowledge and skills to effectively make use of information collection and utilization required for performing and supporting the business processes. In today's knowledge economy, IT competencies are a critical factor in driving innovation in organizations. This paper explores how IT competencies play a major role in cultivating learning organization and increasing individual job performance. This paper also discussed the conceptual framework of IT Competencies in Learning Organization and Individual Job Performance. Based on the framework, the identified independent variables are reducing time wastage, optimizing information management, reduce external dependencies, lowering cost of ownership and simplify process. The dependent variable is individual job performance which is adopted from the previous literature. The study is significant to researchers and managers to identify the key IT competencies in learning organization and improving individual job performance.**

I. INTRODUCTION

Information Technology (IT) competencies has long been described as the enabler for learning organization to occur and increase individual job performance. Innovation is the key for continuous learning development. To produce innovation consistently, competencies in IT is part of the core skills among individual in an organization to increase job performance. More attention has been given in recent years towards IT competencies contribution in enhancing competitive advantage of an organization. While some claim that investment in IT enhance organization profitability, others disagree. Findings from few studies suggest that the relationship between IT and organization performance are inconsistent with the claim [18]. Senge, author of the fifth discipline defines a learning organization as a place where people strive to widen their capability to create the desired outcome, nurturing new way of thinking, promoting mutual aspiration, and continuous learning are practiced together [17].

However, it must be noted that employees with the ability to learn are more valuable rather than those who possess the skills because these are the employees that will embrace learning organization culture. This is in line with Senge definitions that "organizations learn only through individuals who learn [17]. Individual learning does not guarantee organizational learning, but without it no organizational learning occurs." Individual who possess IT competencies creates a unique value of to the organization in terms of problem solving and promoting learning organization. The purpose of this paper is to explore the role of IT competencies in learning organization and its relations with individual job performance by reviewing the literature that leads to proposing a framework on the relations between them.

II. LITERATURE REVIEW

A. IT Competencies in Learning Organization

Employees who posses IT competencies are considered as knowledge workers and are in demand in any organization. Davenport sees knowledge workers as people with high level of knowledge [2]. It is highly crucial for any organization to acquire knowledge workers especially those with IT competencies to enhance innovation in learning organization. Drucker describes learning organization as every organization is in competition for its intellectual capital [3]. He even mentions that those who possess knowledge are different from others: on the other side they become the backbone of the company's intellectual capital and contribute to the company's sustainability. Organization that pays attention in developing IT competency, and utilizing it to the advantage of the company, are in a better position to improve their competitiveness.

IT competency is a major component in knowledge discovery. The ability to abstract information is a necessary competency in the concept of knowledge society, characterized by the mass diffusion of information, managing and accessing it effectively. However, abstracting requires a degree of learning process [15]. It is highly important to manage information effectively within the organization as it

provides the foundation for improving competitive advantage [18].

Organization competencies and organizational learning have a positive relationship. An organization's competitive advantage can be increased as a result of competencies that are established from a learning culture [11]. The basis to improve organization's competencies is by improving the people's competencies in the organization. Megginson and Pedler identified condition such as IT, where organizational learning is widely practiced, but also extends to suppliers, customers, or competitors, and create a conducive environment which supports learning and self-development for all members of the organization [9]. Innovation in organization is largely influenced by making process simpler and, organizes it for quick and easy retrieval. IT competencies are critical to support innovation through problem solving and creative thinking approach.

However, organization should be aware of the IT myth trap by hoping IT can fix all problems in the organization. IT is only an enabler not the solution, the implementation is still lies with the people in the organization. Companies that continue to spend significant amounts of money on their structure capital are routinely astonished when asked regarding the return on their IT investments [1]. For this research, focus is given on the IT competencies as the core competencies to create growth or new business to generate competitive advantage to the company or development of new technologies. There are a total of five IT competencies that affect individual job performance which are reducing time wastage, optimizing information management, reducing external dependencies, lowering the cost of ownership and simplifying process.

B. Reducing Time Wastage

Collective approach learning can be achieved through conducive environments and robust network and spark knowledge creation and transfer resulting to encouraging innovation and network robustness. Virtual organization is an innovative solution for Small and Medium Enterprises (SMEs) to increase their competitiveness [14]. By embarking on virtual organization concept, organization is able to reduce time wastage through collective approach. To deliver within the required time is a critical aspect in any organization. A learning organization is able to learn and deliver quickly yet with quality within the required time.

Virtual team is defined as distributed work teams whose members are geographically located and work load is distributed using electronic information and communication technologies [7]. As such, the team has no issue to work away from the office and remains connected to each other by technological means without boundary. Decision making can be made faster and the organization keep transforming itself to manage the knowledge in a learning organization environment.

C. Optimizing Information Management

Data is now an essential trading goods in the 21st century. Processed data such as information is valuable to any organization to increase their competitive intelligence. Optimizing information management in an organization is the key IT competency towards leveraging and utilizing knowledge. Better optimization of information management can increase productivity, closer to customers, products to be more innovative, competitive business, and attract and retain top talent. The underlying processes that enable employees to access more comprehensive, accurate and timely information are what a learning organization is all about. However, the first step to be taken is to identify the information flow in the organization which how it contributes to the business objectives. Continuous assessment must be practiced to ensure that the solutions remain relevant in the organization and remove steps that re no longer required and identify information gaps. An external auditor to examine the information flow in the organization is a good idea to look at things from macro perspective and bring a different approach to solve the arising issues. Organization may invest in cloud solutions or develop e-solutions to optimize information management in the organization.

D. Reducing External Dependencies

External dependency is defined as reliance on outside entities who, directly and proportionately, limit a firm's freedom of choice in operations and strategy. The firm's limited control over the required resources is the reason for external dependency, such as parts, products or services, land, labor, capital, and information [8]. IT sector is a fast evolving industry. Today's technologies might be outdated in a few years which is the reason of rising trend of IT outsourcing.

However, outsourcing IT activities in an organization should only be limited to supporting activities such as hardware and software maintenance. Core activities such as internal software development and IT security should not be outsourced and developed internally. Important specific knowledge must be retained in the firm and strive to avoid becoming

dependent to the external IT provider thus limiting the organization capability to continuously learn to transform its knowledge base and improving its intellectual capital for competitive advantage [13].

E. Lowering Cost of Ownership

In the current service industry scenario, lowering cost of ownership is essential for any business to achieve resource optimization, reducing cost of operation and improving profit margin as well as improving sustainability. One approach is to lower cost of ownership by embarking on IT optimization. However, it must be noted initial investment is required and it will gradually reduce as time goes by and will achieve Return on Investment (ROI) after reaching matured phase. Additional investment can be funded from the ROI.

Focusing on service delivery will increase service efficiency, eliminate bureaucracy and enhancing learning process in the organization. As a result, the organization is better managed in terms of risk management and reduces total cost of ownership. This can be achieved through optimizing process flows in the organization and having check and balance system through quality assurance process. An integrated Knowledge Management framework compromising of processes, culture, strategy, management, technology and corporate politics should be developed to allow circulation of knowledge in the organization.

F. Simplify Process

One of the most common problem in an organization is processes redundancies. To solve the issue, most organization will adopt streamlining approach by identifying repeated process and eliminate it to reduce operational cost. Another approach to simplify process in an organization is by making processed information available on real time basis for quicker decision making.

To achieve real time information sharing, cutting edge technology should be adopted such as Internet of Things (iOT) which is about entities acting as providers to consumers of data related to the physical world. Data and information are given more priority rather than point-to-point communication [10].

It is easier to keep track of daily operation, current status, inventory management and assets location through iOT. Competitive advantage is achieved through process optimization which includes increasing accuracy and information timeliness of the business provides. Deeper understanding at the micro operational level will leads towards process optimization [5]. Real time information will be useful for data mining purpose to improve competitive intelligence. Simplifying process in handling customers' request is always a priority in any organization, hence by adopting iOT, the system will be able to provide real time feedback to the customers.

G. Individual Job Performance

Individual learning is related to personal mastery development which will benefit either the individual or the organization. Personal mastery is the ability to improve individual skill. It focuses on the individual learning aspect in the learning organization. It enables us to master our personal vision to what we want to achieve, concentrating our efforts on improving our individual skills [4]. In today's era, individual skill, encouraging organizational learning and nurturing innovation are the catalyst for the organization to improve organizational performance [12].

Redding describes continuous transformation of the organization is achieved through individual learning, widen the organization core competencies, and preparing members for the future [16]. An investment in individual learning is an investment for building tacit knowledge in the organization. Job satisfaction and performance can be improved through organization climate and working environment [6]. Thus, investment in cultivating a conductive working environment is beneficial to any organization. Visweswavaran, and Ones defines job performance as work behaviors which are relevant to organizational goals; within the individual's control; and measurable, servable and scorable [19]. For this study, the author would like to improve the definition of job performance as produced work that is quantifiable, achievable and focus more on the outcome rather than quantity. Individual job performance is directly related with organization that provides continuous learning environment to improve the individual skill, competencies and experience.

III. CONCEPTUAL FRAMEWORK

The proposed conceptual framework in Figure 1 indicates the dependent and independent variables in the study. A dependent variable is what is measured in the study and what is affected during the study. Dependent variable depends on the independent variable. In the study, dependent variable is identified as individual job performance. Meanwhile, independent variable is a variable that changed in the study. A result of change in the independent variable may change the dependent variable. In the study, independent variable is identified as reducing time

wastage, optimizing information management, reducing external dependencies, lowering cost of ownership and simplify process.

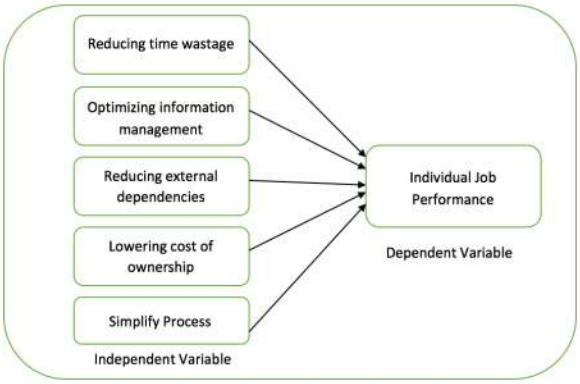

Figure 1. Conceptual Framework of IT Competencies in Learning Organization and Individual Job Performance

IV. CONCLUSION

The proposed IT competencies in learning organizations have a positive relationship with individual job performance. Although the competencies may seem complicated, the organization will benefit from deploying effective management method, nurturing learning organization, optimizing processes, continuously transforming itself and finally improving individual job performance and satisfaction. Individual job performance is an important indicator of task accomplishment and translated towards organizational achievement. Individual job performance will continue to improve as long as the employee keeps learning in the organization. Failure to keep on learning will result towards the employee looking for opportunities to learn elsewhere. Two keys factors to improve individual job performance are clear communication and consistent feedback. The proposed IT competencies aim to address those factors. However, when implementing the concept, the current state and readiness of the organization must be taken into account. This is in accordance with Ortenblad (2004) who states that many authors agree that learning organization cannot be specifically described, it is unique for every organization, and every organization should develop their own unique approach of learning organization [20].

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A Technical Note: The Single-Period Stochastic-Demand Inventory Model under Human Learning

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***Abstract*- We consider the inventory model under the environment of the worker learning, single period, and stochastic demand with the research objective of proposing the cost-minimization order policy. Our work differs from the classical Newsvendor Model in that we incorporate the human factor (specifically worker learning) and its influence over the costs of processing units into the model. We found a number of important characteristics related to the expected cost function and its derivatives; we then used them in formulating the optimal ordering policy. Our research results could be helpful for the analysis of the supply chain coordination and the extension of a periodic review inventory system for similar problems.**

***Keywords* -** supply chain management, stochastic inventory model, optimal order policy, worker learning

I. INTRODUCTION

We consider the worker-learning stochastic inventory model, assuming lost-sales for the unmet demand. The lot sizes are assumed to arrive at the beginning of the selling-period. In general, the single-period stochastic inventory model (also known as the Newsvendor Model) is used to find the optimal order quantity for the perishable items such as fashionable products or those with seasonal demand or short-life cycles. Technically, it is used when the demand for product is stochastic and available for the single selling-season, and when there is an only one-time opportunity for the vendor to purchase, with high possibility of experiencing the long delivery lead time. Our work differs from the classical Newsvendor Model in that we incorporate the human learning and its influence over the costs of processing units into the model.

We describe human learning by using the well-known widely-used Wright's Learning Curve [7]. Our problem is challenging in the way that the best order quantity in the classical model, which is balancing the over-stocking and under-stocking costs, is no longer optimal. Specifically, when adding the cost-saving from worker learning on to the expected total cost, the convexity of the cost curve possibly would not exist. This calls for a new way in determining the optimal order policy.

In response to such challenges, we found a number of important characteristics related to the expected cost function and its derivatives, which we then used in formulating the optimal ordering policy. Examples of the optimal characteristics are:

a) The specific levels of the order quantity q exist that satisfy the first order condition;
b) The optimal order quantity exists and is unique if the demand follows a Uniform Distribution;
c) The unique optimal order quantity exists if demand follows the Beta Distribution with some specific properties of its parameters.

The paper is structured as follows:

a) Section II provides literature review for the work related to single-period inventory models with quantity discount programs, price-dependent demand, and/or learning by experience.
b) Section III presents the formulation of the single-period stochastic-demand inventory model, with the incorporation of human learning. The formulation specifies the research objective of the cost minimization, and expresses the expected cost $G(q)$ function in a mathematical formula.
c) Section IV illustrates the properties of the cost function together with their derivatives, and the proofs of the results. The optimal policies are discussed in Section IV.
d) We then provide a concluding remark and the possible future research in Section V.

II. LITERATURE REVIEW

Khouja [4] extended the single-period stochastic inventory model to the case in which demand is price-dependent and multiple discounts with prices are allowed. The discounts are used to sell excess inventory. He developed the algorithm to identify the optimal order quantity, analyze the joint determination of the order quantity and initial price, and provide some insights using numerical examples. Weng [6] generalized Newsvendor Model by analyzing the coordinated quantity decisions between

the manufacturer and the buyer. Their analysis developed the insights into the use of quantity discount as a coordination mechanism between the manufacturer and the buyer. Hua, Wang, and Cheng [3] considered the Newsvendor Model in which, given the supplier offers free shipping, the retailer faces stochastic demand; their algorithm was used to determine the retailer's optimal order quantity and the optimal selling price simultaneously. They incorporated the supplier's quantity discount and transportation costs into the models.

Arshavskiy, Okulov and Smirnova [1] conducted three different experiments on the basis of Newsvendor Model. In the first experiment, the optimal decision depends on the uncertain number of buyers; in the second experiment, the optimal decision is depending on the uncertain demand and the competitors' decisions; in the third experiment, the optimal decision is subject to the factors similar to those in the second experiment and on decisions of a participant and his/her competitors.

Bolton and Katok [2] conducted a laboratory study and investigated whether enhancements to experience and feedback can facilitate better newsvendor learning-by-doing. Parts of their hypotheses concern adaptive learning and forward-looking learning. They reported that how experience and feedback are organized for the decision maker may have an important influence on whether inventory is stocked optimally. Their findings are mainly obtained from the laboratory / experimental study. To our best knowledge, none of the existing publications have illustrated the theoretical results in the area of single-period stochastic-demand inventory model in a manufacturing environment in which workers learn and are able to produce more efficiently as they process additional units. We probably are the first to include the worker learning and its influence over the costs of processing units into the Newsvendor Model.

III. MODEL FORMULATION

Various assumptions in the classical single-period stochastic inventory model are held in our model, including one-period stochastic-demand (x) with the pdf $f(x)$ and cdf $F(x)$, only one opportunity of order placement, the lost-sales taken place for the unmet demand, the constant per-unit cost of leftover (ℓ) and shortage (s), as well as the continuous time. Although the objective of this study is to maximize the expected profit of $\Pi(q)$, it is equivalent to minimizing the expected cost of $G(q)$, by selecting the optimal inventory level q^* at the beginning of the period.

Our work incorporates the human-learning, as described by Wright's learning curve [7], with the following specifications:

$$T(y) = T(1)y^{-m},$$

where y is the cumulative production volume, $T(y)$ is the production time for the y^{th} unit, and m is the slope of the learning curve, and $m = -\log(p)/\log(2)$ with $100(1-p)$ be the percentage decline in the unit production time with a doubling of the number of units. Note that we assume the production time is continuous and therefore we use the continuous learning curve; that is, y is allowed to take non-integer values and $T(1)$ is the initial instantaneous per-unit production time at the state with no learning. More details of the continuous learning curve is available in the work of Teyarachakul, Chand and Ward [5].

The total production cost for a batch of q units that starts with no prior leaning is defined by $PC(q)$ function:

$$PC(q) = C_0 \int_1^{1+q} x^{-m} dx = \frac{C_0}{1-m}\left[(1+q)^{1-m} - 1\right] \qquad (1),$$

where, C_o is the initial instantaneous per-unit production cost at the state, prior to any learning. With minor modifications, $PC(q)$ can be used to compute the batch production cost of q units, starting with some prior learning of workers.

Profit, Cost and Objective Functions

The model for expected profit $\Pi(q)$ and cost $G(q)$ are illustrated as follows:

$$\Pi(q) = rE(\text{Sales}|q) - \{\frac{C_0}{1-m}\left[(1+q)^{1-m} - 1\right] + \ell\, E(\text{Leftover}|q) + sE(\text{Shortage}|q)\}$$

$$= rE(x) - \{\frac{C_0}{1-m}\left[(1+q)^{1-m} - 1\right]) + \ell\, E(\text{Leftover}|q) + (r+s)E(\text{Shortage}|q)\}$$

where r is the revenue made from each unit sold;

ℓ is the out-of-pocket leftover cost per unit ($\ell \geq 0$) charged at end of period such as the inventory-holding cost, disposal cost, salvage (resale) value, etc.;

s is the shortage cost per unit ($s \geq 0$) charged at end of period such as the opportunity cost of making more profit, loss of goodwill, penalty cost, etc.

If $F(a) = \int_0^a f(x)dx$ and the expected demand $E(x) = \int_0^\infty xf(x)dx$, then $E(\text{Sales}|q) = E(x) - E(\text{Shortage}|q)$.

The objective is to select the optimal amount of the inventory (or order quantity q) that minimizes the expected cost $G(q)$; that is

$$\text{Min } G(q) = \min_{q \geq 0} \{ \frac{C_0}{1-m}\left[(1+q)^{1-m} - 1\right] + \ell\, E(\text{Leftover}|q) + (r+s)E(\text{Shortage}|q)\}$$

$$= \min_{q \geq 0} \left\{ \frac{C_0}{1-m}\left[(1+q)^{1-m} - 1\right] + \ell\int_0^q (q-x)f(x)dx + p\int_q^\infty (x-q)dx \right\},$$

where $p = r + s$.

$$G(q) = \frac{C_0}{1-m}\left[(1+q)^{1-m} - 1\right] + \ell\int_0^q (q-x)f(x)dx + p\int_q^\infty (x-q)dx \qquad (2)$$

The derivative of $G(q)$ are specified by

$$G'(q) = C_o(1+q)^{-m} - p + (\ell + p)\text{F}(q) ;$$
$$G''(q) = -mC_o(1+q)^{-m-1} + (\ell + p)\text{f}(q).$$

Note that $G''(q)$ may not be positive, and, therefore, $G(q)$ may not exhibit the convexity of the expected cost in the order quantity q.

Let q^* be the optimal inventory-level q at the beginning of the period; so, $G(q^*)$ is the minimal cost of $G(q)$. We denote $\hat{q}$ is the value of q that satisfies $G'(\hat{q}) = 0$. Although there is no guarantee in the convexity of cost $G(q)$ in general, we are able to show that there exists a unique optimal solution q^* when demand follows the distributions of Uniform or Beta with some specific characteristics to be discussed next.

IV. CHARACTERISTICS OF THE EXPECTED COST AND THE OPTIMAL ORDER POLICY

***Characteristic* 1:**

There exists q that satisfies the first order condition.

Proof

Recall $G'(q) = C_o(1+q)^{-m} - p + (\ell + p)\text{F}(q)$. Since $\lim_{q\to 0} G'(q) = C_0 - p < 0$ and $\lim_{q\to\infty} G'(q) = \ell > 0$, there must be some values $\hat{q}$, where $0 < \hat{q} < \infty$, such that $G'(\hat{q}) = 0$.

Note that we cannot rule out the possibility that $\hat{q}$ may not be unique. By the first order condition, $\frac{1}{\ell + p}(p - C_0(1+q)^{-m}) = F(q)$. Both LHS and RHS of the equation are increasing as q increases. There are possibilities that they are equal to each other more than once.

***Characteristic* 2:**

q^* is unique if demand x is uniformly distributed.

Proof

We will first show that if demand x follows the Uniform Distribution, $G''(q)$ is either positive (and $G(q)$ is convex) or has one root. Then we will draw the conclusion that the optimal q^* is unique.

Recall the Uniform pdf $f(x) = \frac{1}{b-a}$ and cdf $F(q) = \frac{q-a}{b-a}$. Let b be very large x and $b < \infty$.

Then,

$$G''(q) = -mC_o(1+q)^{-m-1} + (\ell + p)\frac{1}{b-1}$$

If $mC_o(1+q)^{-m-1} \leq (\ell + p)\frac{1}{b-1}$, $G''(q) \geq 0$ and so $G(q)$ is convex and q^* is unique.

If $mC_o(1+q)^{-m-1} > (\ell + \text{p})\frac{1}{b-1}$, $G''(q)$ has one root. Although $G(q)$ may not be convex, q^* is unique. See Figure 1 in Appendix *A* for illustration. Following from Characteristic 2, there are at most two values of $\hat{q}$; this justifies the Optimal Policy 1U.

Optimal Policy 1U: For the uniform distributed demand, the optimal order quantity q^* is such that

$$q^* = \arg\min_{\forall(1,\hat{q})} G(q),$$

where $\hat{q}$ satisfies $C_o(1+\hat{q})^{-m} - p + (\ell + \text{p})\frac{\hat{q}-a}{b-a} = 0$

Next we consider the case when demand x follows the Beta Distribution.

***Characteristic* 3:**

q^* is unique if demand x follows the Beta Distribution with $\alpha = \beta$ and $\beta \in \{2, 4, 6, \ldots\}$.

Proof

Beta pdf $f(x) = \frac{1}{B(\alpha,\beta)} x^{\alpha-1}(1-x)^{\beta-1}$, where $B(\alpha,\beta) = \frac{(\alpha-1)!(\beta-1)!}{(\alpha+\beta-1)!}$ is a constant; $\alpha > 0$; $\beta > 0$; and $x \in [0, 1]$.

In our model, the possible demand $x \in (0, \infty)$, we need to truncate the demand range to fit with the requirement of the Beta Distribution of $x \in [0, 1]$, by letting new x = old x / $Maxq$, where $Maxq$ is an arbitrarily very large demand such that any production beyond Maxq gives a much too high overstocking cost, far higher than understocking cost. At the root of $G''(q)$, $mC_o(1+q)^{-m-1} = (\ell + p)f(q)$

$$mC_o(1+q)^{-m-1} = (\ell + p)c\left(\frac{q}{Maxq}\right)^{\alpha-1}\left(1-\frac{q}{Maxq}\right)^{\beta-1}.$$

A constant c is used to adjust value of $(\ell + p)$ due to newly defined demand x; c also takes into account the effect of $\frac{1}{B(\alpha,\beta)}$. As a result,

$$mC_o(1+q)^{-m-1} = (\ell + p)c\, Maxq^{2-\alpha-\beta} q^{\alpha-1}(Maxq - q)^{\beta-1}.$$

If $\alpha = \beta$ and $\beta \in \{2, 4, 6, \ldots\}$, then $q^{\alpha-1}(Maxq - q)^{\beta-1}$ or RHS is increasing convex and LHS is decreasing convex. Therefore $G''(q)$ has one root and q^* is unique. Figure of $G''(q)$, $G'(q)$, and $G(q)$ for the Beta distributed demand is similar to that for the uniform distributed demand. See Appendix *A*.

Optimal Policy 1B: For the Beta distributed demand with $\alpha = \beta$ and $\beta \in \{2, 4, 6, \ldots\}$, the procedure to obtain the optimal q^* is the following:

1. Find q' from

$$mC_o(1+q')^{-m-1} = (\ell + p)c\, Maxq^{2-\alpha-\beta} q'^{\alpha-1}(Maxq - q')^{\beta-1}.$$

2. Find the value of

$$G'(q') = C_o(1+q')^{-m} - p + (\ell + p)F(q'/Maxq)$$

3. If the value of $G'(q') = 0$, then $q^* = 1$. Otherwise, use the bisection method as suggested to find the optimal q^* where $q^* \in (q', Maxq)$

$$q^* = \arg\min_{\forall q \in (q', Maxq)} G(q)$$

We will close our presentation by providing the concluding remarks.

V. CONCLUDING REMARK

We extend the single-period inventory model by incorporating worker learning in processing units into the classical model. Most of the assumptions of the classical stochastic inventory model are still maintained in our work, such as the constant per-unit cost of leftover and shortage, the zero initial inventory, as well as the continuous time. Wright's Learning Curve [7] is used to explain learning in processing units. We found a number of important characteristics related to the expected cost function and its derivatives and suggested the optimal ordering policy when the demand for product follows a Uniform Distribution or the Beta Distribution.

Our research results could be helpful for analysis of the quantity discount policy for the human-learning stochastic inventory model, supply chain coordination under worker learning and forgetting, and the analysis for the periodic review system for similar problem settings.

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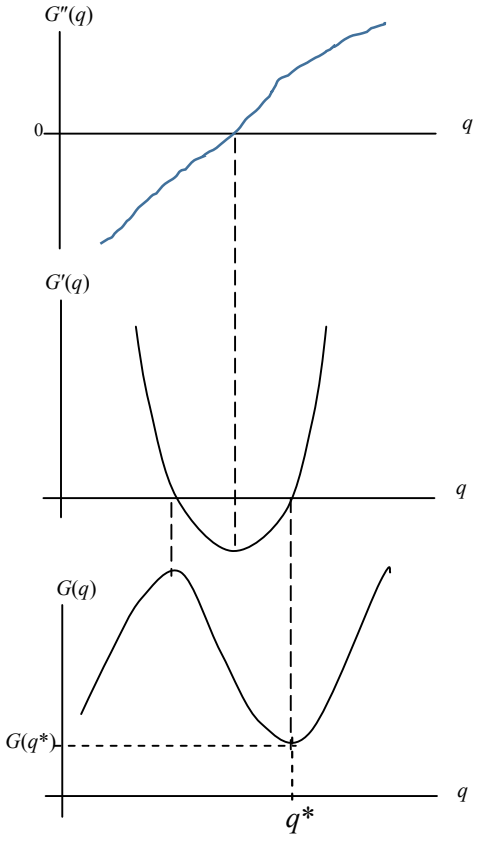
APPENDIX A

Figure 1. Shapes and Characteristics of Functions $G''(q)$, $G'(q)$, and $G(q)$.



Part B:
Management and Operation Research

Identification and Ranking the Key Dimensions of Lean Manufacturing using NEW Approach in Gas Industry

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***Abstract*- Identifying and ranking the key dimensions of Lean manufacturing/services (LM can be considered the first step in implementing these systems in industry, because as long as the managers and staff have not action is to overcome these obstacles, failure of this project seems inevitable. In this study, after identifying the key dimensions to successful implementation of LM in the gas industry through literature review and interviews with experts, 7 main dimensions detected. Then, using SWARA (Stepwise weight assessment ratio analysis) technique, the final weight of dimensions was calculated and ranked in order of importance. The final result of research in assessing and implementing LM systems in the gas industry showed that Services improvement as the most important and Equipment and services process was detected in the lowest rank. Therefore gas industry by addressing and fostering these dimensions as an effective step in the successful implementation of the LM system and will be improving the quality of customer service.**

Keywords: Lean manufacturing/services, Key dimensions, SWARA, Gas industry.

I. INTRODUCTION

One of the most claimed issues is that the era of mass production has reached the end of its life cycle and replaced by new methods including flexible allocation [1]. Lean manufacturing is a new step in production that combines the advantages of mass production and manual production. Lean refers to lean production or lean manufacturing, so that it uses less materials and manpower compared with mass production. This system only uses half of manpower efforts in the factory, half production space, half equipment investment and also half engineering hours for production of new products in half period [1, 2].

Generally, the lean manufacturing paradigm is removing any non-value added activities. Lean manufacturing principles include: eliminating wastes, zero defects, multi-dimensional teams, and reduction of organizational layers, team leadership, and vertical information systems, continuous improvement and pull systems. This method is based on systems including workers with several skills, automatic and flexible machines. In this method, the organization management tries to remove production space, equipment investment, engineering work hours and stagnant inventory and pays attention to zero defect and zero inventory. In lean manufacturing, the producers try to achieve advantages and avoid disadvantages in manual and mass production. They have measures that reduce products cost and produce the products that the customers need them using skilled staff in all organizational levels and multi-dimensional machineries with capability of producing various products [3].

Lean production aims to have better functions for customers, staff, stockholders and society [4]. However, in England, less than ten percent of the firms succeeded in using lean manufacturing methods [5]. Although, the advantages of lean manufacturing are not always obvious but now, the methods and tools of lean manufacturing have been considered by producers compared with traditional methods [6]. Indeed, lean manufacturing is an exponential jump from Ford mass production to new paradigm of production. Although, leanness is the same in all companies, but the process of converting to lean firm provides specific and different outputs in organizations [7].

In this research, with literature review and identification of lean manufacturing dimensions and key criteria's, presenting a model in this field and finally ranking of this dimensions using SWARA, can help the gas industry in implementation of lean systems and achieving to the competitive advantages and satisfying of her customer needs.

II. THE THEORICAL BASED OF THE RESEARCH

A. Lean manufacturing dimensions

Association of Standards and Technology in the American Ministry of Commerce has defined lean manufacturing/ service as follows: "A systematic approach to recognize and eliminate waste through continuous improvement and launch production just when the customer needs it". Generally, from this perspective, the production system of production

factors, materials, human force, parts, machineries, time and etc. that is used more than minimum amount and does not create value added in the product is called waste. However, the idea of eliminating waste was introduced by Taylor and in academic management for the first time and it was completed in on time production [8]. Lean manufacturing (LM) eliminates waste via inventory control and reduction of process lag time. LM was developed by Toyota initially via focusing on eliminating all forms of waste, including defects needed to duplication, removing unnecessary process steps; unnecessary materials or individuals, waiting time, inventory and overproduction [1, 9].

The lean manufacturing philosophy helps the managers to reduce operations costs through elimination of waste. Waste is everything that does not provide the product or service value added [9, 10]. Through eliminating waste, ultimately, the value of production systems is increased for producing products with good quality in order to increase customer satisfaction [11]. Lean manufacturing is related to zero inventory and on time production approach [10, 11]. Several researchers have focused on the key principles of lean production, such as paying attention to individuals [12], quality management, pull production [13] and mistake proofing [14]. At the operational level, these principles lead to techniques such 5S. In addition, measures such as on time production, total production maintenance (TPM), and management are used. Total quality is used to remove different types of waste. In literature, different definitions of lean philosophy can be found which have a common principle of eliminating waste and reducing costs. Basically, the term "lean" refers to a set of activities or strategies to eliminate waste, reduce non-value added (NVA) operations costs and improve value-added process.

Toyota suggested statistical quality control procedures in 1949 according to statistical quality control program to overcome crises. At the same time, Eij Toyoda with the engineer of the company, Taiichi Ohno traveled to America for research on cars manufactured in the world's largest and most efficient production plant (Ford's Rough in Detroit) to use their style. At that time, Ford manufactured 7000 cars per day that seemed a fairy tale compared with its results of 1950 Toyota cars in 13 years. Hence, Toyoda decided to investigate on the production of this plant for three months. During his stay in Ford, Eiji wrote a letter to his boss in Japan and mentioned that he can make some improvements in production systems. Then he and Ohno (after few visits to Detroit) returned to Japan and finally concluded that Ford's production volumes cannot be used in Japan, so they concluded that the lean manufacturing principles cannot be implemented in Japan because it produces significant amount of waste [1, p. 49]. Therefore, they made a new style that was called "lean" later. Now, Toyota is the "leader" among competitors [15].

They found that a lot of wasting is occurred in manpower, efforts, materials, time and space, inventory, and processing defects, excessive waiting time, transportation, and accommodations. They were able to see that the professionals who were away from assembly workers do not have value-added activities. They are only responsible for product and process design and they give orders to workers. The only activity of a foreman is to ensure that the workers follow orders and the assembly line workers have one or two simple duties [1]. From these observations, they understood that this type of losses (human resources and material resources) is less in Japan and Toyota Company and they could not copy and implement what they have seen in America. When Ohno returned to Japan, in the first step, he constituted a team by workers and encouraged them to work together and implement the best method of operation and in the next step, he expanded their duties including repairing of tools, checking the quality, and other activities such as 5S. Then he expanded their duties further.

What is important in the move towards lean manufacturing is building and deployment of key subsystems and beginning from what subsystem depending on the administrator of the organization. To achieve all the goals of lean manufacturing, after the implementation of a subsystem, other subsystems required for lean should be implemented in the organization [16]. Companies need to know the importance of lean manufacturing and what is not working well [17, 18]. Ranko (2012) simulated the lean tools in an efficient production system. This research suggests following items for companies that want to employ lean manufacturing [18]:

1. How much leanness is critical for them?
2. What factors are critical for success of lean?
3. What is not working well?
4. What should be done to promote leanness efforts?

New tools were identified for lean manufacturing in addition to tools had been identified before including modeling, analysis of bottlenecks, cellular manufacturing, lean supermarket, visual control, and zero quality control [18]. In order to be truly effective, lean manufacturing should not just focus on manufacturing, but also it should consider the entire

supply chain. Six characteristics of lean supply chain include demand management; reduce costs and waste, process standardization, industrial standardization, organizational and cooperation cultural change [19].

B. The proposed conceptual model of research

The terms such as "lean production", "lean product", "lean assessment", "lean measurement ", and "lean indices" have been used in the literature on various databases such as Scopus, Google, Scholar, ISI Web of Knowledge and etc. The most common indices can be extracted in the manufacturing industry with reference to the literature. In another study, Amelia et al (2013) designed a conceptual model by the aim of extracting the most commonly used lean indices and dimensions by survey on 25 articles which focuses primarily on the key areas for measuring the leanness in production [20]. Table I summarizes the key dimensions mentioned since 1996 to 2013, along with the importance of factors and dimensions in 25 important studies:

TABLE I
The importance of factors and dimensions [20]

Dimension	Factor	Frequently
Work force	Developing of work force Contribution of work force	14 (H) 4 (VL)
Manufa-cturing process & equipment	SPC TQM Process focus Pull system JiT Eliminate of waste (TPM) Decrease of set up time Process control Work standardization Continues improvement Manufacturing smoothing 5s New process/Equipment technologies Safely improvement Decreasing of time cycle Value identification	12(L) 14(H) 13(L) 13(L) 11(L) 12(L) 11(L) 8(VL) 6(VL) 5(VL) 6(VL) 5(VL) 4(VL) 4(VL) 4(VL) 4(VL)
Supplier	Supplier development JiT delivery with supplier	8 (L) 7 (VL)
Planning & manufacturing scheduling	Management/Shop organization	7 (VL)
Costumer	Costumer Relationship Costumer contribution	6 (VL) 5 (VL)
Visual information system	Visual management system Visual information system	5(VL) 4 (VL)
Technology & service development	DFMA/DFM	4 (VL)

According to Table I and analyses of the literature and following questions, seven dimensions were identified as the main dimensions of a lean assessment:

1. What are the indicators of lean measurement in the production system?
2. What similarities exist in factors discussed among researchers?
3. What are the differences in findings?

The Table II shows the description of each dimension:

TABLE II
The description of lean dimensions

Dimensions of lean manufacturing	Description
Equipment and services process	Ensure that quality standards are observed. Many efforts have been done to reduce the time set for continuous flow production, and services process redesign according to cellular manufacturing and preventive maintenance [21].
Planning and services scheduling	Synchronous services and market demand. This goal can be achieved through leveled product. Use small batches, pull control and ... [21].
Visual information systems	A simple information system depended on the direct information flow that allows related decision makers to have a quick feedback and corrective action including performance information appeared in the press boards [22].
Services improvement	Substantial choice of services structures and technical solutions. Innovative operation agreements in the services operations / advanced methodologies in the design of services such as QFD, design review, FMEA or VRP and etc [22].
Workforce management	Employee participation in plans of continuous quality improvement, development of authority and responsibility taking, including recruitment and selection, training, evaluation and reward for promoting employees' participation, empowerment, and accountability [21].
Contact with supplier	Increase the level of "operational integration" between buyer and supplier considering viewpoints on the transfer of materials from supplier to supplier (logistical relation) that impact on some viewpoints in R&D and logistics [21].
Customer relationship	Develop a logistics relation. Making efforts to ensure advanced and reliable deliveries, development of marketing and business techniques to create a predictable and stable demand, as well as improving the competitiveness and professional of the personnel to deal directly with customer [20].

According to literature review and interview with experts and managers of gas industry, the conceptual model of dimension is proposed as figure 1:

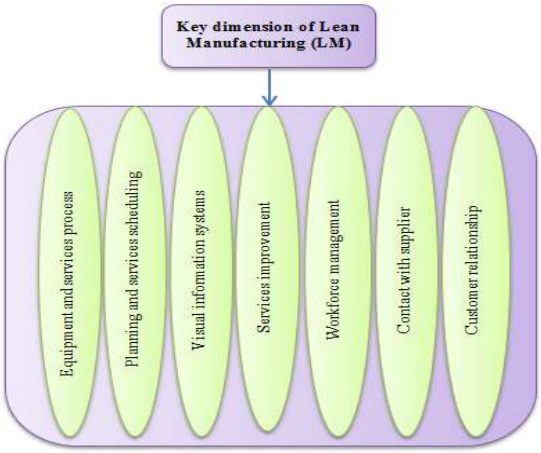

Figure 1. Research proposed conceptual model of Lean dimensions

III. RESEARCH METHOD

The present study is applied firstly because investigates the efficacy of the theories on "lean manufacturing" and expands applied knowledge in this area, and secondly because the suggested tool (model) is used for implementation in an organization and it is descriptive in terms of collecting and analysis of data obtained via questionnaire.

IV. PRIORITIZING THE LEAN KEY DIMENSIONS VIA SWARA

In order to prioritize the identified key dimensions, SWARA technique is used. SWARA is one of the new methods of MCDM which was used in 2010 to develop analysis of the differences between the criteria. In SWARA, each expert ranks the criteria at first. The most important criterion is scored one and the least important one receives low score. Finally, the criteria are prioritized according to average values of the relative importance. In this method, the expert assesses the calculated weights. In addition, each expert specifies the importance of each criterion according to tacit knowledge, information and experience. Then according to the average value of the group's ranks obtained by experts, the weight of each criterion is determined [23]. Therefore, in this study, the views of 15 gas industry experts were used. The weight of each criterion indicates its importance. Measuring of weight is an important topic in many issues of decision-making. SWARA is one of the weighting methods in which professionals play an important role in the calculation of their weight and final assessment. Figure 2 shows the technique executive steps [24, 25].

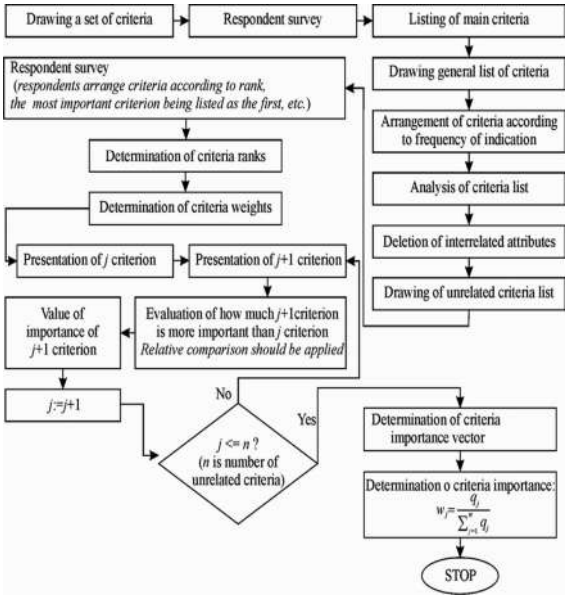

Figure 2. The technique executive steps

After the literature review of research and interview with experts, 7 dimensions of lean manufacturing in gas industry were identified as Table III:

TABLE III
Key dimensions of lean manufacturing

Key dimensions	Symptom
Workforce management	D1
Customer relationship	D2
Visual information systems	D3
Services improvement	D4
Equipment and services process	D5
Contact with supplier	D6
Planning and services scheduling	D7

Then, these dimensions were studied using SWARA technique. SWARA technique is based on expert's opinions, and it is a judgment method. In this research, we have used from 15 experts as Table V:

TABLE IV
Information of experts

Group	Classification	Number
Record of service	Manager	1
	Exploitation engineering	8
	Programming and control	6
Education level	Licentiate	4
	Master	9
	Doctoral	2
Sexuality	Male	13
	Female	2

For doing so, the opinions of 15 experts on key dimensions were identified and the dimensions initial weight was extracted. In fact, the experts were asked to prioritize each dimension individually, and finally to calculate the relative importance of these dimensions, count the number of priorities of each dimension according to experts' viewpoints. For example, the fourth dimension was placed six times in rank one, four times in rank two, three times in rank three, and two times in ranks 4 and 5. After prioritizing key dimensions by the experts, to calculate the weight of each dimension, the number of priorities for each dimension was multiplied by the difference score of the highest score and relevant score.

Table V summarizes final calculation of the weight and importance of each of the dimensions using SWARA that dimensions can be ranked according to the last column weights.

TABLE V
The weight and importance of each of the dimensions

Dimension	Sj	Kj = Sj+1	Wj	Qj	Rank
Services improvement (D4)	-	1	1	0.207	1
Contact with supplier (D6)	0.15	1.15	0.869	0.180	2
Customer relationship (D2)	0.16	1.16	0.749	0.155	3
Workforce management (D1)	0.13	1.13	0.662	0.137	4
Visual information system (D3)	0.14	1.14	0.580	0.121	5
Planning and services scheduling (D7)	0.13	1.13	0.513	0.106	6
Equipment and services process (D5)	0.15	1.15	0.446	0.092	7

V. CONCLUSION AND RECOMMENDATION

Identification and ranking (Determination of importance) the key dimension of lean manufacturing/service system is one of managers basic tasks and engineers of industry. In this research, seven key dimensions (Workforce management, Customer relationship, Visual information system, Services improvement, Equipment and services process, Contact with supplier, Planning and services scheduling) were identified after the literature review of key dimensions of LM and interview with experts of gas industry, that these dimensions construct the conceptual model. Then the identified dimensions were ranked using SWARA new technique and expert's opinions of gas industry. The results of this technique explant that Services improvement is as the most important of dimension, and Equipment and services process is the lowest important in implementation of LM system in gas industry. So, the gas industry can success in implantation of this system, reduce wasting costs and to find an opportunity to superior performance.

We can use FAHP, FANP … for ranking of dimensions, and also is recommended to path analysis for confirmation the relationship between dimensions in research conceptual model using SPLS software.

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Investigating the Impact of Organizational Learning Capability on Organizational Intelligence in Knowledge Based Organizations

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***Abstract*- The aim of this research is to explain the scientific foundations and offer practical solutions for University of Tabriz intelligence based on organizational learning capability. The research is applied in terms of purpose and descriptive in terms of data collection and analysis. The data was collected by using a standard questionnaire. The statistical population consists of scientific members of University of Tabriz in four knowledge groups; where 235 individuals were selected as statistical sample by using Cochran formula in confidence level of 95% and finally 210 questionnaires were selected for final analysis by simple random and cluster sampling method. The results of structural equations modeling showed that organizational learning capability by recognition coefficient of 32% is the predictor of organizational intelligence. Also, the results of Pearson correlation showed that while there is a positive and significant relationship among learning capability variable dimensions with organizational intelligence, the construct of "open space and experimentalism" with correlation coefficient of 0.49 has the highest effect on improvement of organizational intelligence.**

Keywords: Organizational learning capability, organizational intelligence, knowledge based organization.

I. INTRODUCTION

In this era of knowledge; organizations have begun to join the knowledge trend and the words including arm force work, worker, industrial economic and traditional organizations are being replaced with new concepts including "knowledge work", "knowledge", "knowledge economy" and "knowledge organizations". Drucker stated on the new organization by application of these words where the power of mind governs on affairs instead of arm force. According to this theory, in the future those organizations will be expected to develop that have more share of knowledge not more share of natural resources [9]. In knowledge economy, the intellectual property particularly human capital is considered as the most important organizational asset and the organizations potential success is rooted in their intellectual capabilities Knowledge always depends on humans as knowledge producer, so for establishing knowledge based organizations and use of knowledge, it is necessary to pay more attention to production and usage of resources, humans and their mental capabilities. Drucker believes that a man equipped with knowledge is considered as a determinant key of organizational efficiency [2].

In knowledge based organizations, knowledge is an important capital of the organization and their success depends on ability to create, react, employ and transfer knowledge [18]. Hence, knowledge based organizations shall manage their knowledge resources and intellectual capabilities in an efficient way in order to use opportunities in the current dynamic environment. Studies have shown that most researchers have investigated the effect of organizational intelligence on other organizational variables and they have less considered the effective factors on shaping an intelligent organization particularly knowledge based intelligent organizations [1,7]. The shortcomings of the former resources and importance of this subject in the knowledge based organization necessitated to bridge the gap in theoretical foundations.

Universities as knowledge based organizations play an important role in expansion of knowledge with rapid and intricate shifts in technology and science and encounter with government policies and ever increasing competitive environment. Therefore, the aim of this research is explain the theoretical foundation and offer applied solution for establishing University of Tabriz as an intelligent organization

based on organizational learning capability. The following questions have been proposed:

- Do organizational learning capabilities play a role in explaining organizational intelligence changes?
- How is the state of organizational learning capabilities structured in explaining of organizational intelligence?

II. RESEARCH BACKGROUND

A. Knowledge based organization

Knowledge based organizations are organizations that have knowledge capital as their main asset. Universities, software firms and space industries are examples of the knowledge based organizations. A real knowledge based organization is learning organization; since significant part of created value by these organizations is result of optimal learning of the individuals' recognition of problems and then collaboration with customers in order to improve the conditions [4,5].

B. Organizational

Organizational intelligence means knowledge and skills of synergistic combination of tangible and intangible assets available for decision making within the organization in order to achieve organizational goals [10]. Organizational intelligence is not sum of individual's intelligence, but it is the outcome of the individual's intelligence in the organization [3,8,6]. According to Albrecht an intelligent organization is composed of seven dimensions as [1]:

- **Strategic Vision**: The ability of an organization to create, develop and articulate the goals and vision of the organization. The default is that the leaders while expressing of concept of success, represent it. -**Shared fate**: with a sense of common goal, individuals understand success and they are able to act in synergy to achieve the vision of the organization.
- **Appetite for change**: change is sign of challenges and new experiences and exciting for the individuals and acts the chance to start a new business. The appetite for change must be coordinated with a strategic perspective.
- **Heart**: a sense of pride in the organization and follow up job with passion, optimism and belief as characteristics that affect organizational intelligence. Much love to work in the said organizations, the employees are eager to work more than expectations [11,15].
- **Alignment and congruence**: In the intelligent organizations, the structure and codes and regulations are aligned with development of team learning and participation of the staff and finally, creation of value and substantiating of organizations mission.
- **Knowledge deployment**: it represents the culture and atmosphere of the organization to use resources and information. If an organization fails to use the correct knowledge in proper place it will not achieve competitive advantage.
- **Performance pressure:** in an intelligent organization, each individual is accountable for their performance. When people from the organizations are expected for doing their part to meet the mission and thus owning up to the mission of the organization forms responsibility taking [1].

According to Albrecht, these indices are considered as benchmarks that if an organization achieves them it can be identified as an intelligent organization. Albrecht intelligent model according to concentration of the knowledge based organizations and the role and place of knowledge and standards of intelligent measures and the expert viewpoints were considered as model for measuring of organizational intelligent in University of Tabriz [1, 13,23].

D. Organizational learning capability

Organizational learning has been defined as management and organizational factors and features that facilitate organizational learning and learning possibility [8, 24].In following, four abilities of organizational learning of Gomez et al., have been explained [20]: (a) the management must provide a solid foundation to facilitate organizational learning. (b) It is necessary to have a collective intelligence for systematizing of the organization and shared vision among employees in the organization. (c) Organization needs to develop organizational knowledge for transfer and integration of knowledge acquired by the individuals (d) simple compatibility with changes in the environment in order to offer competitive advantage is not sufficient but it is necessary to go beyond confirmatory learning and achieve creative learning that requires open mindedness and experientialism behavior [9]. Four organizational learning capabilities based on Gomez et al. have been briefly explained below:

1. **Management commitment**: creating organizational learning capacity is primarily based on management's strong commitment to learning. Management commitment

facilitates the development and supports management commitment to the process of innovation, leadership and motivation of employees.

2. **System perspective:** system perspective requires a common identity for all members of the organization. In other words, learning capability that is based on collective intelligence aids the organization to be considered as a system and each member should collaborate for fulfillment of these goals.
3. **Openness and experimentation**: Productive learning requires openness and experimentation for new ideas and outside the organization, open space and experimentation make personal knowledge helps it to be constantly updated, expanded and improved. Such, search for new and flexible solutions for current and future issues based on the use of different methods and procedures are supported.
4. **Knowledge transfer and integration:** Process of transferring and local integrating knowledge through oral communication and nonverbal (formal and informal communication and information systems) related communications occur simultaneously and aids to reproduce capability and make available that as useful information [6].

Previous studies have attempted to explore the effective factors of organizational intelligence. In foreign studies' field, Lee et al., in this study the impact of the perceived organizational learning ability on user acceptance of information technology among operating room nurse staff in Taiwan, showed that the perceived organizational learning ability indirectly affects user behavioral intention through the mediation of performance expectancy, effort expectancy, and social influence [13]. This research recognized the relationship between organizational learning ability and utilizing the ERP system, Nowankpa and Romani found that the organizational learning ability had positive impact on the users' satisfaction as the commitment of the management influenced this positive impact on users' satisfaction and application of ERP. And also, the users' satisfaction further influenced the implementation of the ERP system.

Through, the internal studying field, Tabarsa and Nazarpouri, in exploring the impact of intellectual capitals on organizational sagacity, showed structural capitals with 0.46 impact factor included greater impact on structural sagacity and humanistic capital with 0.51 coefficient determination including the most important effective index [22, 24].

E. Development of conceptual framework

Matsuda divides organizational intelligence as a process into five components: organizational memory, organizational knowledge, organizational learning, organizational communication and organizational inference [10,17]. Allameh and Moghadami also argue that in organizational learning, learning processes are manipulated in order to improve knowledge and understanding of individual and organizational learning requirements and set of characteristics in the learning processes and provide implementation of the learning processes [2].In the internal study conducted in Iran, the role of learning ability, as the intelligent event especially in the knowledge-based organizations, has not been attended by the researchers. In this study by focusing on a systematic approach, based on Matsuda organizational intelligence process, organizational learning capability is considered as an intelligent process as a research gap and the following hypotheses are proposed:

The main hypothesis

H1: Organizational learning capability has a positive impact on organizational intelligence.

Secondary hypotheses

H2: Management commitment has a positive impact on organizational intelligence.

H3: Systems perspective has a positive impact on organizational intelligence.

H4: Openness and experimentation have a positive impact on organizational intelligence.

H5: Knowledge transfer and integration have a positive impact on organizational intelligence [12,18].

F. Research conceptual framework

Figure 1. Research conceptual model

III. RESEARCH METHODOLOGY

This research is applied in terms of purpose and it is descriptive and correlative in terms of data collection. The research method is a survey with the major advantages of the ability to generalize the results. The

population consisted of faculty members of the University of Tabriz in four knowledge areas: humanities science, engineering, agriculture and veterinary science that using Cochran formula, at 95% confidence level, a sample size with 235 individuals was determined by stratified random sampling method and finally 210 questionnaires were analyzed relative to each class. Detailed information on the population and the sample is presented in Table I. Data was collected for this study by using Albrecht organizational intelligence questionnaire consists of 49 items and Gomez et al. organizational learning capability questionnaire consists of 16 questions with Likert five grades scale [1]. To determine the validity of the data collection tools, in addition verification from the experts, indices factor analysis, validity of the questionnaire was confirmed. The results of Cronbach's alpha coefficient for the organizational intelligence questionnaire 0.80 and for organizational learning questionnaire 0.93 were obtained respectively. For analysis of the data, confirmatory factor analysis and structural equation modeling were performed by using AMOS software [14,21].

TABLE I
DETAILED STATISTICAL POPULATION AND SIZE INFORMATION

Knowledge scopes	Faculty member number	Sample size	Male	Female
Humanities	175	69	51	12
Technical and Engineering	137	52	42	6
Agriculture	139	53	41	4
Basic sciences	153	61	40	14
Total	604	235	174	36
			210	

IV. FINDINGS

A. Confirmatory factor analysis models

After collection of data to determine acceptability of the parameters measured (observed variables) to measure the implicit variables, at first, all explicit variables related to implicit variables are separately tested. Distinction exists between the two groups of explicit and implicit variables in structural equation modeling. Hidden variable is the variable that comes from the obvious variables. Due to the conceptual model, this study has obvious 11 variables that measure organizational learning and organizational intelligence [16,25]. Variables of strategic vision, shared fate, appetite for change, heart, alignment and congruence knowledge deployment, performance pressure, management commitment, system perspective, openness and experimentation and knowledge transfer and integration were considered as explicit variables (measurement patterns). Outputs of factor X and Y are shown in Tables III and IV. Outputs of Table III are shown in the form of two sets of equations including measurement equations of factor model X and measurement equations of the factor model Y that show the correlation between the observed variables (indicators) and its related factors; implicit components. As shown in Table II the variable of heart has factor value less than 0.29 was removed from the equation due to having value less than 0.3.

TABLE II
RESULTS OF FACTOR ANALYSIS

Implicit variable	Explicit variable	Alpha coefficient	Standard values	Coefficient of determination
Organizational intelligence	Strategic vision	0.8	0.76	57%
	Shared fate		0.32	10%
	Appetite for change		0.35	12%
	Heart		0.29	8%
	Alignment and congruence		0.53	28%
	Knowledge deployment		0.58	33%
	Performance pressure		0.49	24%
Organizational learning capability	Management commitment	0/93	0.8	64%
	Systems perspective		0.83	68%
	Openness and experimentation		0.91	82%
	Knowledge transfer		0.83	68%

B. Evaluation of confirmatory factor models fitting

For confirmatory factor models fitting the fitting criteria of structural equation modeling were used. Fitting measures indicate whether the model represented by data confirms the research measuring model or not? The overall fitting indices to measure models are shown in Table III. It should be noted that the value of chi-square (CMIN) is smaller, the model is compiled by the researcher is satisfactory; if the P-value is larger than 0.05 depicts that the CMIN is acceptable for the model. Since the P-value measured for all models (observed variables) is larger than 0.05, so it can be concluded that the value of chi-square (CMIN) is appropriate for measuring models.

TABLE III
RESULTS OF CONFIRMATORY FACTOR MODELS FITTING

Fitting indices	Acronyms	Accepted value	Calculated value		Result
			Factor model X	Factor model Y	
X2	X2/df	1< X2/df< 3	1.6	1.1	Confirmed
P value	P-value	P > 0.05	0.2	0.32	Confirmed
Goodness fitting index	GFI	٪90 < GFI	0.99	0.98	Confirmed
Confirmatory fitting index	CFI	٪90 < CFI	0.99	0.99	Confirmed

RMSEA	RMSEA	%8 > RMSEA	0.05	0.02	Confirmed

Another valid indices used for the fitting of the model is GFI. GFI is closer to 1 depicts better fitness of the data model. RMSEA is another index of fitness model that is 0.08 or less in the acceptable models, fitness of the models with values higher than 0.1 is considered weak. As shown in Table III the value of this index is less than 0.08 for measuring model that shows a good fit of the data models. It can be concluded that measuring models have good fitting and they could measure implicit variables well.

C. Hypotheses test

Structural equation modeling was used to test the research hypotheses. The results of path analysis between the constructs in the structural model are modified by removing the variable of heart is shown in Figure 2.

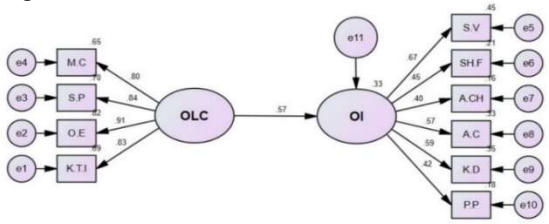

Figure 2.Output conceptual model

D. Assessment of the model overall fitting

Based on theoretical and empirical background each model encounters with the question of to what extent the complied model is in compliance with reality? Indeed, the question is to what extent data supports the theoretical model that has been developed? This key question is subject of fitness. Table IV shows the characteristics of the conceptual model.

TABLE IV
MODEL FITTING

RMSEA	IFI	CFI	GFI	CMIN/DF	P	CIMN	DF
0.07	0.94	0.94	0.93	2.22	0.000	75.65	34

One of the reliable indices used for model fitness is X2/DF that is calculated by simple division of the K square on the model degree of freedom and mostly values between1 to 3 are acceptable. CFI is also based on the correlation between the variables in the model so that the correlation coefficients between them lead to high levels of the comparative fitting index. Values close to 1 for this index are acceptable. According to above information it is concluded that the results indicate a good fitness of the conceptual model with the data. For significance test of the hypotheses, two critical values of CR and P were used. Based on the significance level of the critical values that must be greater than 1.96, the values are less than this value therefore it is not considered important, as well as smaller values of 0.05 for P values indicate significant differences in the calculated value of the regression weights zero in level of 0.95. Considering the results of the model analysis, the hypotheses have been analyzed and the results are presented in Table V.

TABLE V
HYPOTHESES AND REGRESSION COEFFICIENT AND DETAIL INDICES VALUES

Hypothesis	Regression coefficient	Coefficient of determination	Critical value	P	Result
H1: organizational learning capability Organizational intelligence	0.57	0.32	6.15	0.000	Confirmed

This first hypothesis (H1) depicting the impact of organizational learning capabilities on organizational intelligence with standard coefficient of 0.57 and a significant level of 0.000 and critical value of 6.15 (higher than 1.96) is confirmed. Also, P value of this hypothesis is zero and less than 0.01 indicates confirmation of this hypothesis, so by confidence of 99%; so it can be said that organizational learning capabilities have effect on organizational intelligence [19]. To test secondary hypotheses, Pearson's correlation coefficient was used. The results of the Pearson correlation coefficient between independent variables Management Commitment (MC), system perspective (SP), Openness and experimentation (OE), knowledge transfer and integration of (KTI) and the dependent variable of organizational intelligence (OI) are shown in the Table VI.

TABLE VI
RESEARCH VARIABLES CORRELATION COEFFICIENTS AND SECONDARY HYPOTHESES RESULTS

Secondary hypotheses	Coefficient	Sig	Results
H2: M.C ➔ OI	0.45	0.000	Confirmed
H3: S.P ➔ OI	0.48	0.000	Confirmed
H4: OE ➔ OI	0.49	0.000	Confirmed
H5: K.T.I ➔ OI	0.42	0.000	Confirmed

All variables related to organizational learning capability have a 99% significant correlation with organizational intelligence. Increase the level of organizational learning capability, the organization will be more intelligent [22].

V. CONCLUSION AND DISCUSSION

The results of the X factor analysis model shows that the effective index on the variable of organizational learning capability is openness and experimentation with the determination rate of 82%. This implies the acceptance of new ideas from employees within the organization and need to revise and update the

knowledge and institutional environment for effective management of knowledge in the organizations. According to the Y factor model it is determined that all organizational intelligence variables except variable heart had role in measuring of organizational intelligence. Low value of variable heart depicts insignificant role of heart in explaining the variance of organizational intelligence variable. The results can be sought in reduction of the members' life quality, lack of intimate atmosphere and progress opportunities and managers vision toward work and commitment behavior of the manger in University of Tabriz.

The results further show that the most important variable affecting the organizational intelligence variable is index of "Strategic vision" with coefficient of determination of 57%. This testifies the importance of familiarity of the human resources with strategic programs and their participation in decisions related to their functional areas.The analysis of the structural model results indicates that organizational learning capability by a standards coefficient of 0.57 and significant coefficient of 6.15 has a significant positive impact on organizational intelligence. Figure 2 depicts the structural model modified by deleting the variable heart due to low value. In answer to the first research question, the results are based on 32% of the variation explained by organizational intelligence, organizational learning capability, that confirms the hypothesis, it means that the ability of organizational learning can improve organizational intelligence.

The results of this study are based on the potential impact of organizational learning on organizational intelligence at the University of Tabriz and they are consistent with the results of previous studies. Relying on the results obtained it can be argued that planning to improve organizational learning capabilities strengthens organizational intelligence.

To answer the second research question regarding the status of organizational learning capability variable in explaining organizational intelligence, all secondary research hypotheses were confirmed, the commitment of the management variable with a correlation coefficient 0.45, system perspective with a correlation coefficient 0.48, openness and experimentation with a correlation coefficient 0.49, knowledge transfer and integration with a correlation coefficient 0.42 have a significant correlation with organizational intelligence variable.

The research findings show that the Tabriz University can improve its intelligence, that (a) motivate the managers commitment to organizational learning with awareness and recognition of the role and importance of learning in organizational intelligence, (b) members of the organization have a shared fate and a shared vision together and joint actions and relationships based on the exchange of information and improve shared mental models, (c) by making room for new ideas and perspectives help to improve the knowledge of members, (d) improve distribution and dissemination of knowledge through formal and informal communication and interaction between the members and the renewal and production of new knowledge.

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Factors Affecting Consumers' Buying Behavior for Honda City CNG

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Abstract **- The research on factors affecting consumers' buying behavior for Honda City CNG aims to study consumer behavior for car purchase and to evaluate factors that have influences on buying decision for Honda City CNG. Questionnaires were used to collect data from total 400 samples and statistics used for data analysis were percentage and mean. The study can be concluded and recommended in the following part. The study revealed that most of the questionnaire respondents were female aged 31-40, single, graduated Bachelor's degree, working in private companies, having 2 members in the family, and earning monthly income of 40,001-50,000 Baht. For the consumers' buying behavior for car, most of them have one car in the family, the type of car required is passenger car, the get information about the car from friends, they are interested to buy cars in the price range of 500,001-600,000 Baht, Japanese cars are mostly chosen, engine power is between 1800-2000cc., obligation resulting from buy cars have some effect on the decision, income is in the form of salary, person having influences on the decision is spouse. Factors affecting buying behavior for car are after sales service, appropriate cost of purchase/ commission charges, availability of service branches covering all area, and good promotion. The research recommends that the company should seek for advantage in order to compete and survive in the market. Using new technology to serve customers is advisable to respond to customers' needs in a prompt manner and can serve more number of customers. Commissions should be appropriately set to motivate salesperson to do their job and promotion strategy should match customers' needs.**

Keywords: Marketing promotion, CNG, NGV

I. INTRODUCTION

Since oil price had increased significantly and Thai government could not control the price ceiling anymore, domestic petrol and gasoline have to be sold at floating price according to the market. People were suffered from such brutal effects since transportation is the basic necessity for everyone. For this reason, Honda (Thailand) Company Limited tried to keep up with the market situation and manufactured cars with CNG/NGV [1] as an alternative for consumers to save their transportation cost. Compressed Natural Gas (CNG) is an alternative that has been used continuously since then. It has advantage in complete combustion and lower level of pollution released into the environment and Toyota had developed technology to support CNG use since 1984. The quality of CNG contains high octane, therefore it is suitable to apply to engine with internal combustion having high compression ratio enabling maximum power while producing very low carbon dioxide. However, the limitation of CNG is it needs big size of cylinder to be sufficient for long journey causing loading space to become narrower. Natural Gas for Vehicle (NGV) is a natural gas used for vehicles only. Its advantage is complete combustion and produce less pollution especially dust and black smoke. With regards to global warming, pollution problem, and the highest oil price in the history, the world has tried to reduce such problems by encouraging and supporting the use of vehicles with NGV-supported engine.

The use of natural gas as fuel for vehicles had been reported more than 80 years in Italy where currently there are over 300,000 vehicles using NGV. Later the popularity of NGV spread to the United States, Asia, and Africa. Currently there are approximately 4.7 million vehicles worldwide using NGV. Thailand has seriously promoted the use of NGV [3] and now it is in the 23rd rank of countries that use NGV as fuel for vehicles. Since the oil price increased, consumers are interested to modify their vehicles to support the use of alternative fuel but there are also big worries of safety. For this reason, Honda (Thailand) Company Limited could see an opportunity and manufactured Honda City CNG to satisfy the market needs. Therefore, it is an appropriate time for the researcher to conduct a study on consumer behavior and factors [2] that have influences on buying decision for Honda City CNG and the result would be used as guideline for car manufacturers to proceed on further development.

A. Objectives

1. To study factors [5] affecting consumers' buying behavior for Honda City CNG.
2. To study consumers' buying behavior for Honda City CNG.
3. To study the problems those have impacts on consumers' choices for Honda City CNG.

B. Conceptual Framework

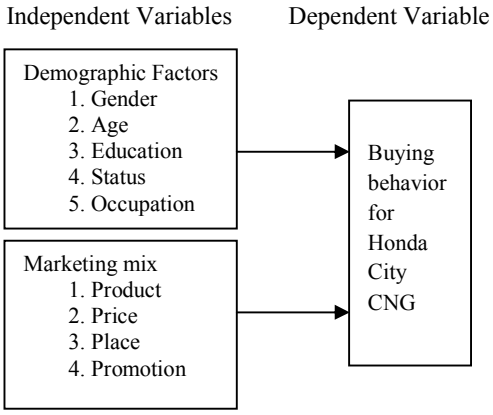

Figure 1: Conceptual Framework

II. LITERATURE REVIEW

The study on factors affecting consumers' buying behavior for Honda City CNG applied marketing mix theory (4Ps) consisting of the following. Phillip Kotler has classified marketing concept and theory into Traditional Marketing which involves building product awareness as usually practiced in the past. This level marketing focuses on marketing mix. Product means things offered by business to satisfy customers' needs. Price means financial value that customer has to pay to acquire the goods needed. Place or distribution means channels consisting of organization and activities that products have to go through to the market. Promotion is a tool to communicate brand of product, service, or idea to people to persuade the needs by reminding them of the product.

III. RESEARCH METHODOLOGY

Data was collected by distribution of questionnaires to 400 samples of people living in Bangkok. The questionnaire was divided into 3 parts as follows.

- Part1 contains demographic data of the respondents
- Part2 contains data about buying behavior for Honda City CNG
- Part3 contains data on marketing mix factors that influence buying behavior for Honda City CNG

Statistics used for data analysis are frequency, percentage, and standard deviation.

A. Research Findings

From the 400 questionnaires respondents, it was found that most are female aged 31-40, 195 of them are single, graduated Bachelor's degree, working for private company. Regarding their buying behavior for cars, most have Japanese passenger [4] cars, got information about cars from internet, the car chosen has down payment between 50,001-60,000 Baht, 218 of them chose period of paying installment more than 5 years, source of income is monthly salary, person having influence on buying decision is spouse, and they are interested to buy Honda City CNG.

Marketing mix factors that affect buying decision for Honda City CNG of the respondents are found that product and service i.e. test drive, parts, installation of CNG, CNG car periodical check, after sales service, installation of CNG equipment from the car manufacturing company is up to standard, and engine check have influences on consumers' buying decision for Honda City CNG

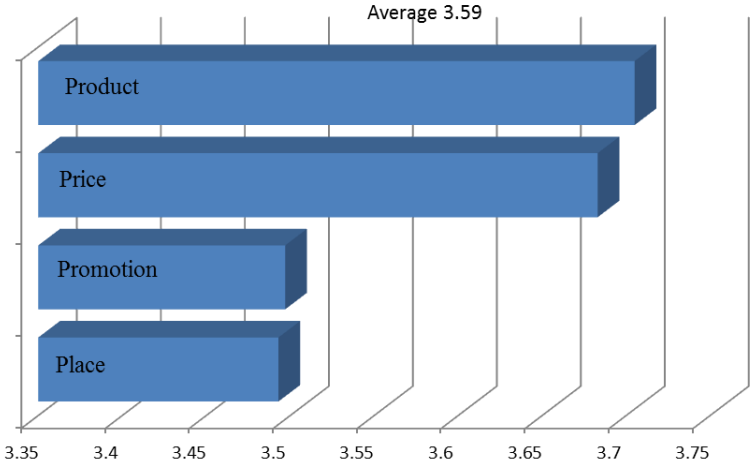

Figure 2 : Overview of factors affecting buying decision for Honda City CNG

The figure indicates that opinions on marketing mix factors affecting buying behavior for Honda City CNG are in a high level of measurement.

TABLE 1
COMPARISON OF CONSUMERS' DIFFERENCE AND THEIR BUYING BEHAVIOR FOR HONDA CITY CNG

Buying behavior for Honda City CNG	χ^2	*p*
1. What brand of car are you using	16.000	.042*
2. What type of car are you using	39.826	.000**
3. What is your source of information	1201.116	.000**
4. What is your expected down payment	40.599	.000**
5. What is your period of installment	28.252	.000**
6. What is your source of income	112.754	.000**
7. Who has influence on your buying decision for car	38.208	.000**
8. You are interested to buy a car	12.443	.014*

* Statistically significance level of 0.05, ** Statistically significance level of 0.01

Results of the analysis and comparison (See Table I) in the study of factors affecting buying decision for Honda City CNG regarding brand of the car currently using, type of the car, information source, desired down payment amount, source of income, and person having influence on the buying decision has probability (*p*) equals to 0.00 which is less than 0.05 meaning that different occupation has influence on buying decision for Honda City CNG in the aspect of brand, source of information, amount of down payment, income source, and person influencing the buying decision at a statistical significance level of 0.05 (See Table II).

TABLE 2
INDICATING RESULT OF THE TEST FOR FACTORS THAT HAVE INFLUENCE ON BUYING DECISION FOR HONDA CITY CNG

Buying behavior for car	Promotion Factor		
	Pearson Correlation	Sig. (2-tailed)	Relations
What brand of car are you using	0.165	0.001	Yes
What type of car are you using	0.089	0.074	No
What is your source of information	0.069	0.171	No
What is your desired down payment amount	0.085	0.088	No
What is your period of paying installment	0.220	0.000	Yes
What is your source of income	0.008	0.869	No
Who has influence on your purchase of car	0.105	0.036	Yes
You are interested to buy car	0.077	0.24	No

* Statistically significance level of 0.05, ** Statistically significance level of 0.01

IV. CONCLUSION AND RECOMMENDATION

Results of the study suggested that Honda (Thailand) Company Limited should pay attention to promotion. It should come up with variety of promotions by learning from competitors' strategies. For distribution channel, it should expand branches to cover strategic areas in order to serve customers as widely as possible and apply new technology to improve working system to respond to customers' needs more promptly and extendedly.

ACKNOWLEDGEMENT

The study of factors influencing consumers' buying behavior for Honda City CNG has been accomplished with the courtesy of all the respondents who are the main source of information. The researcher feels grateful to Dr. Tossaporn Mahamad, the advisor, who gave advices and support in everything to complete this research. Many thanks to MBA classmates who gave suggestion and assistance and also MBA Program officers who provided all necessary facilities. Finally, the researcher is immensely grateful to all the lecturers who provided relevant knowledge and also writers of textbooks and articles which are used as source of data and reference for this independent study.

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Motivation Factors that Influence Work Effectiveness of Operational Level Officers, Case Study: Laksi Mail Center

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Abstract - **The research on motivation factors that influence work effectiveness of operational level officers of Laksi Mail Center attempts to evaluate impacts of motivation factors on work effectiveness of the operational level officers. This quantitative research was conducted having 240 samples who are operational officers in Laksi Mail Center. Tool for data collection is questionnaire and statistics used to analyze data is descriptive statistics including frequency, percentage, mean, standard deviation, t-test, and One-Way ANOVA. The research revealed that most of the respondents are male aged 36 years and above, married, graduated Bachelor's degree, officer position, tenure over 16 years, and monthly income less than 10,000-15,000 Baht. Motivation factors that affect work effectiveness of operational officers in Laksi Mail Center include security, achievement, and responsibility. Work effectiveness of operational officers is found to be in high level of satisfaction. The study recommends maintaining image and reliability to operational officers, allocating appropriate amount of works, setting a clear scope of work and clock off time, work assignment should be fair and should be considered on the basis of capability so that they can participate in the work that they are responsible. In addition, the operational officers should be given opportunities to work on new type of work and take part in decision making since it will make them feel that they are part of an organization. Administrative officers should make the officers feel the trust given by superior.**

Keywords: Motivation factors, Work effectiveness, Laksi Mail Center.

I. INTRODUCTION

Today is an era of communication technology competition while economic also expanded rapidly and at the same time changes in business environment have caused business operation within an organization to change accordingly. This has resulted in business organization both in government sector and private sector, seek strategies to maintain competitiveness. Thailand Post , formerly part of the Communications Authority of Thailand until its privatization in 2003, is a state enterprise that reports to Ministry of Information and Communication Technology and provides postal service, financial service, and some types of telecommunication services to serve state and people of Thailand. Thailand Post has been continuously developing by applying technologically advanced equipments to serve people. Reformation has been done on working procedures changing from manual system to automatic postal counter system. All the scattered services are gathered and available as one-stop service with speed, accuracy, and friendliness of officers to achieve customer satisfactions and to maintain competitiveness in freely open telecommunication industry. The organization needs to keep improving its capacity for flexible management by developing technology and human resource to run the business effectively in competitive market [3].

Thailand Post provides mailing services and it needs facilities to receive, sort, and delivery. Currently it has 18 such facilities nationwide and one of them is Laksi Mail Center which is a very strategically important one. Success of operation is a result of human resource which needs effective management that leads to the best work efficiency. Maximum utilization of human resource to enhance the performance [2] in quality and quantity will help an organization to generate optimum income. Therefore, CEO has to ensure effective human resource management so that the organization becomes success and reach its goals.

The researcher is interested to study motivation factors [7] that influence work effectiveness of operational level officers of Laksi Mail Center and will apply the findings to enhance work effectiveness of operational officers as well as to plan and improve its human resource in the future.

A. Objectives

To study motivation factors influencing work effectiveness of operational level officers of Laksi Mail Center.

B. Conceptual Framework

The Two-factor Theory of Frederick Herzberg concerning motivational factor and hygiene factor is applied to this research as conceptual framework in the following context.

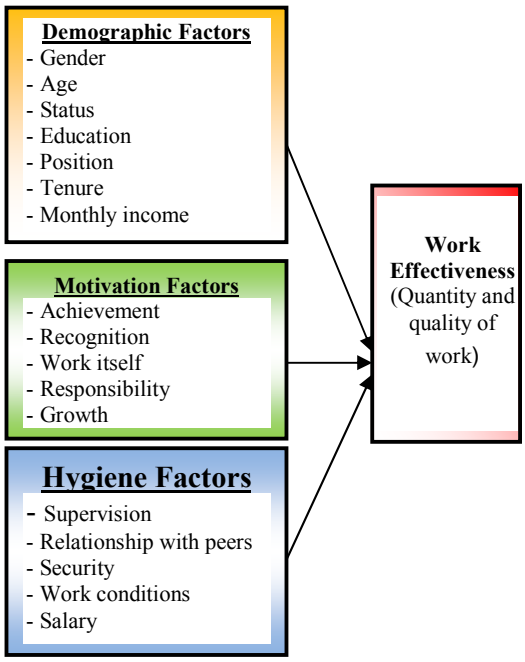

Figure 1. Conceptual Framework

II. LITERATURE REVIEW

In the study of motivation factors influencing work effectiveness of operational level officers of Laksi Mail Center, the researcher has conduct data search and applied concepts, theories, and related studies to form conceptual framework as follows.

Frederick Herzberg's Two-factor Theory involves 2 types of factors. One is job satisfaction in relation to work motivation factors such as responsibility, challenging work. The other is job satisfaction in relation to hygiene factors such as salary and work condition.

III. RESEARCH METHODOLOGY

Instrument for this research was questionnaire which is divided into 4 parts as follows.

- Part 1 consists of demographic factors of respondents in 7 questions.
- Part 2 consists of 5-level rating scale questions on motivation factors that have influences on work efficiency [4].
- Part 3 consists of 5-level rating scale questions on satisfaction in work efficiency.
- Part 4 consists of open-ended questions for respondents to express their opinions and useful ideas.

A. Data Collection and gathering Technique

1. Data obtained from the search in different sources including textbooks, articles, and related researches.
2. Data obtained from target group via questionnaires were reviewed for completeness to ensure that questionnaires are suitable as data source and ready for data analysis.

B. Data Analysis

Data obtained through questionnaires were then assessed by computer program to find percentage and mean. Microsoft Excel was used to create Pie chart and Bar chart as well as explaining and presenting data charts to analyze characteristics of each variable.

C. Findings

The research revealed that from all 240 samples who answered the questionnaires, most are male aged 36 years and above holding married status and Bachelor's degree. Most of them are in officer position working for 16 years and above with average monthly income of less than 10,000-15,000 Baht.

Motivation factors that have influences on work efficiency [1] of operational officers in Laksi Mail Center consist of achievement, recognition, work itself, responsibility, and growth. Hygiene factors that have the influences on the work efficiency are supervision, relationship with boss, relationship with peers, security, work condition, and salary/fringe benefits. The figure 2 indicates that opinion toward motivation factors that have effects on work efficiency [6] is generally and also individually in a high level.

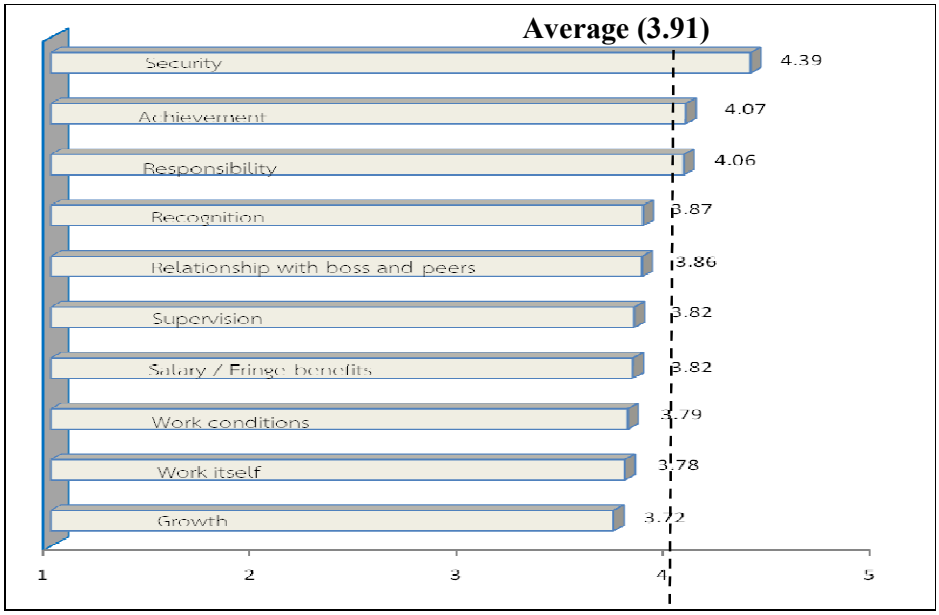

Figure 2. Overall motivation factors that affect the work efficiency

TABLE I
COMPARES DIFFERENCES OF MOTIVATION FACTORS WITH WORK EFFICIENCY

Motivation factors affecting work efficiency		**SS**	**Df**	**MS**	**F**	**Sig**	**Result**
Achievement	Between Group Within Group Total	16.531 82.119 98.650	6 233 239	2.755 0.352	7.817	.000**	Positive
Recognition	Between Group Within Group Total	15.188 83.462 98.650	9 230 239	1.688 0.363	4.651	.000**	Positive
Work itself	Between Group Within Group Total	13.557 85.093 98.650	13 226 239	1.043 0.377	2.770	.001**	Positive
Responsibility	Between Group Within Group Total	14.285 84.365 98.650	9 230 239	1.587 0.367	4.327	.000**	Positive
Growth	Between Group Within Group Total	21.848 76.802 98.650	14 225 239	1.561 0.341	4.572	.000**	Positive
Supervision	Between Group Within Group Total	26.666 71.984 98.650	15 224 239	1.778 0.321	5.532	.000**	Positive
Relationship with boss and peers	Between Group Within Group Total	28.226 70.424 98.650	20 219 239	1.411 0.322	4.389	.000**	Positive
Security	Between Group Within Group Total	21.797 76.853 98.650	9 230 239	2.422 0.334	7.248	.000**	Positive
Work conditions	Between Group Within Group Total	20.743 77.907 98.650	12 227 239	1.729 .343	5.037	.000**	Positive
Salary/ benefits	Between Group Within Group Total	32.373 66.277 98.650	14 225 239	2.312 .295	7.850	.000**	Positive
Overall Average	Between Group Within Group Total	98.150 .500 98.650	208 31 239	472 .016	29.256	.000**	Positive

From table I it can be seen that motivation factors have influences on work efficiency [3] of operational officers of Laksi Mail Center in every aspect.

IV. CONCLUSION AND RECOMMENDATION

Motivation factors have high level of influences on work efficiency [5] of operational officers of Laksi Mail Center in every aspect. CEOs should maintain image and reliability to operational officers, allocate appropriate amount of works, set a clear scope of work and clock off time, assign the work fairly by considering the officers' capability so that they can participate in the work that they are responsible. In addition, the operational officers should be given opportunities to work on new type of work and take part in decision making since it will make them feel that they are part of an organization.

ACKNOWLEDGEMENT

This independent study has been completed with courtesy and assistance from highly respected thesis committee who reviewed, proved, and suggested the way to conduct this research with quality. The researcher would like to thank management and operational officers of Laksi Mail Center for their mercy and their data as well as opinion given in the questionnaires. The researcher is grateful to the parents who always give full affiliation, caring, morale support, and encouragement. If there is any use or goodness of this research to anyone, the researcher would like to dedicate all to the above mentioned persons. The researcher would like to apologize if there is any mistakes incurred hereby.

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Motivation Factors Influencing Work Efficiency of Employees in Building and Physical Plant Sub-division of Ramkhamhaeng University

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Abstract - **The study of motivating factors influencing work efficiency of employees in Building and Physical Plant sub-division of Ramkhamhaeng University aimed to evaluate motivating factors influencing work efficiency of employees in Building and Physical Plant sub-division of Ramkhamhaeng University. This quantitative research was conducted on 155 samples who work in Building and Physical Plant sub-division of Ramkhamhaeng University. Questionnaire was used as an instrument and statistics used to analyze data are descriptive statistics including frequency, percentage, mean, standard deviation, t-test, One-Way ANOVA, and regression analysis. The research revealed that most of the respondents are male aged 36-45 with lower than Bachelor's degree education and working as temporary workers with an experience of more than 20 years. Motivating factors influencing work efficiency of the employees in Building and Physical Plant sub-division of Ramkhamhaeng University are in high level overall consisting of security, recognition, achievement, salary/benefits, relationship with peers, advancement, work itself, and safety work environment. The study recommends that CEOs should focus on work environment such as office equipment used in the work should be modern and always ready to use, and this will increase work efficiency. Illumination and temperature has to be properly controlled, and air purifier should be installed in order to improve work environment and hence motivate employees to work.**

Keywords: Motivation factor, work efficiency, Building and Physical Plant sub-division of Ramkhamhaeng University

I. INTRODUCTION

Ramkhamhaeng University is classified in the 4th group for undergraduate level education which focuses on producing Bachelor's degree graduates with the vision to be learning organization with high performance. It also emphasizes on producing graduates with knowledge along with ethics in order for sustainable development of Thai society. Academic missions are to maintain quality of the graduates, improve course to keep up with standard and flexible in actions, cooperate with international academic forums to develop knowledge of people into international level by variety of education models according to academic standard.

Building and Physical Plant sub-division of Ramkhamhaeng University [1] reports to Office of President of Ramkhamhaeng University. Its duty is to perform according to policies of the university i.e. to support teaching and study by provision of buildings, materials, equipments, maintain cleanliness of the buildings, gardens, and all places in the university as well as maintenance of buildings, equipments, and vehicles. It also provides facilities for the university's personnel and students such as canteen management by assuring sufficient food and cleanliness of the places as well as safety & securities, transportation and traffic within the university's territory. In addition, infrastructures such as water, electricity, telephone, and support of university's activities are taken care by Building and Physical Plant sub-division of Ramkhamhaeng University. It is an important organization reporting directly to Office of the President of Ramkhamhaeng University. Its personnel are performing supporting work for effective teaching and learning in the university. Nature of this work needs team work and it takes part and plays important supporting roles in university management (Building and Physical Plant sub-division, 2010, p.32-33).

Building and Physical Plant sub-division of Ramkhamhaeng University has been continuously developing its competitiveness and it is flexible to change for better efficiency and effectiveness. To achieve targets specified in the university's policies, improvement of personnel capacities have to be continuously assured. For the above reasons, the researcher could see necessity in studying motivating factors influencing work efficiency [2] of employees in Building and Physical Plant sub-division of Ramkhamhaeng University and shall apply results of the research as guidelines to further motivate personnel in Building and Physical Plant sub-division of Ramkhamhaeng University.

A. Research Objectives

The objective of this work is to study motivating factors influencing work efficiency [6] of

employees in Building and Physical Plant sub-division of Ramkhamhaeng University.

B. Conceptual Framework

In the study of motivating factors influencing work efficiency [5] of employees in Building and Physical Plant sub-division of Ramkhamhaeng University, the researcher has applied the Two-factor theory of Frederick Herzberg and Work Efficiency theory of Gilbert along with related studies to form conceptual framework below.

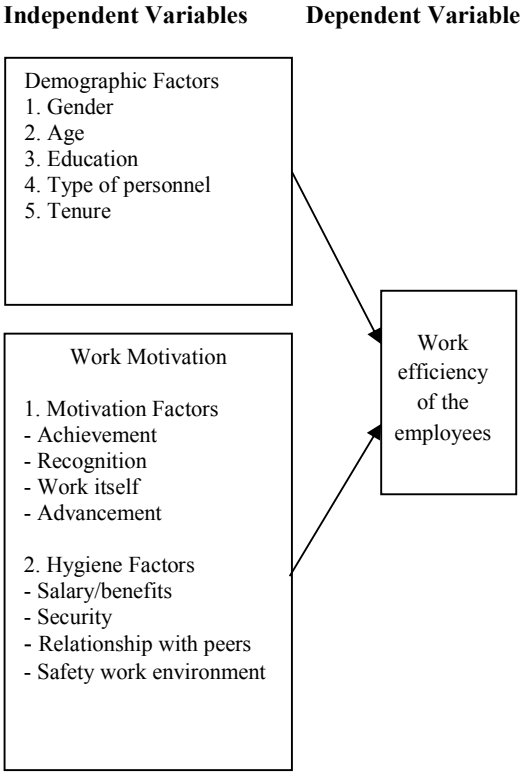

Figure 1. Conceptual Framework

II. LITERATURE REVIEW

In the study of motivating factors influencing work efficiency [2] of employees in Building and Physical Plant sub-division of Ramkhamhaeng University, the researcher has done the search on articles, concepts, theories, and related theories to apply to the study as follows:

Herzberg's Two-factor Theory deals with 2 types of factors. One is relation of job satisfaction with motivation factors such as responsibility & challenges which involves nature of work [3]. The other is relation of job satisfaction with hygiene factors such as compensation and work condition which involves work environment. Motivation factors play a role in motivating employees to work. They consist of 5 dimensions: achievement, recognition, job characteristics, job responsibilities, and job advancement. Hygiene factors help to prevent employees from job dissatisfaction. They do not help in motivation but without these factors being fulfilled, employees may have job dissatisfaction. Hygiene factors have 4 aspects consisting of: compensation/salary, job security, relationship with peers, and safety work environment. Gilbert's theory of work efficiency [6] mentioned that people bring three things along with them to work: knowledge, capacity, and motives:

1. Knowledge is the ideas and skills about work derived from education, training, and work experience.
2. Capacity is physical and intellectual capability of working people.
3. Motives include value, beliefs, admiration, like, dislike, etc.

III. RESEARCH METHODOLOGY

Instrument used in the research is questionnaire distributed to 155 samples of employees in Building and Physical Plant sub-division of Ramkhamhaeng University. The questionnaire was divided into 4 parts.

- Part 1 consists of 5 questions about demographic data of the respondents
- Part 2 includes 5-level rating scale questions about opinion on motivation factors that have effect on work efficiency [5].
- Part 3 contains 5-level rating scale questions about opinion on work efficiency.
- Part 4 are open-ended questions about guidelines for improvement of work efficiency [4] allowing respondents to express their opinions and suggestions.

A. Data Collection

1. Collecting data by gathering from different sources such as textbooks, articles, and related studies.
2. Collecting data by using questionnaires with target group of samples, then review to make sure of data completeness and ready to be analyzed.

B. Data Analysis

Data was assessed using computer program to find percentage, mean, and use Microsoft Excel to create pie chart and bar chart, and then discussed the results of the study by presentation and analysis of each variable.

C. Findings

The research revealed that most of the respondents are male aged 36-45 with lower than Bachelor's degree education and working as temporary workers with an experience of more than 20 years. Motivation factors influencing work efficiency of the employees in Building and Physical Plant sub-division of Ramkhamhaeng University are found to be in high level overall consisting of 8 aspects i.e. security, recognition, achievement, salary/benefits, relationship with peers, advancement, work itself, and safety work environment.

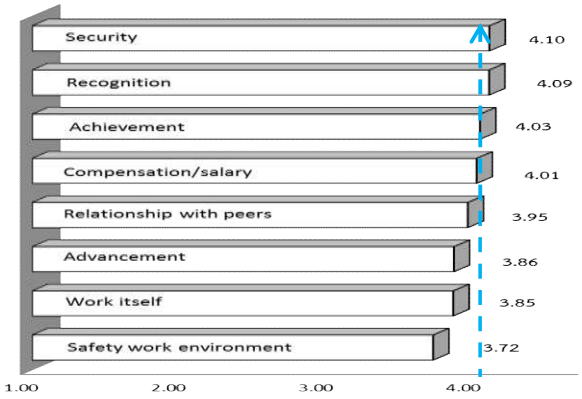

Figure 2 showing overview of 8 motivation factors that influence work efficiency

Figure 2, indicates that motivation factors influencing work efficiency of the employees in Building and Physical Plant sub-division of Ramkhamhaeng University are found to be in high level of all 8 aspects

IV. CONCLUSION AND RECOMMENDATION

Motivation factors influencing work efficiency of the employees in Building and Physical Plant sub-division of Ramkhamhaeng University are found to be in high level overall. CEOs should focus on work environment such as office equipment used in the work should be modern and always ready to use, and this will increase work efficiency. Illumination and temperature has to be properly controlled, and air purifier should be installed in order to improve work environment and hence motivate employees to work.

ACKNOWLEDGEMENT

This research has been accomplished because of courtesy of thesis committee who assisted in reviewing and guiding the study. The researcher would like to thank CEOs and employees of Building and Physical Plant sub-division of Ramkhamhaeng University who are very cooperative and very helpful in data collection for this research. The researcher feels deeply grateful to parents for their always love, care, support, and encouragement. Any usefulness and goodness from this study, the researcher would like to dedicate to those mentioned above. If there is any mistake found in this independent study, the researcher would like to apologize and take all the responsibility. Finally, the researcher feels obligated to all lecturers who have given knowledge and ideas, as well as writers of textbooks and articles that have been referred to in this study.

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The Relationship between Work Performance Motivation and Organizational Commitment of Suvarnabhumi Post Office Branch Employees

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Abstract - **The purpose of this study is to determine the relationship between Work Performance Motivation and Organizational Commitment of Suvarnabhumi Post Office Branch employees. The samples of this study were 100 post office employees at Suvarnabhumi Post office branch by using questionnaires as a tool. The statistical analysis data were percentage and mean, standard deviation, and comparison of relationships between variables by T-test, F-test, One Way Anova and Regression Analysis. Findings indicated that most of respondents were males, age between 20-30 years, single marriage status, high school or vocational education, monthly income between 10,001-20,000 baht, and at least 10 years of work experience. The opinions on work performance motivation were found with high degree level, as for factors of Organization commitment were at high degree level consist of a willingness to devote its efforts to strengthen the productivity of the organization, willing to stay with organization for the longest, and accepting and believing company policy. Results from hypothesis study found that work experience, job responsibility, relationship with co-workers and supervisor were organizational commitment of Suvarnabhumi Post Office Branch Employees. The recommendations from this study were Administrative officers should consider internal factors important in hiring elder workers, compensation, insist in finding nearby housing, job motivation, appreciation of employees, communication with other, suitable working environment, respectively.**

Keywords: Employees Motivation, Commitment Organizational, Suvarnabhumi Post Office, Employees

I. INTRODUCTION

Motivation is a condition in which a person is persuaded to conduct any activity or to behave in some way to achieve his/her goal. Motivation may be a result of internal or external stimulus and also varies according to the person's experience; therefore, it is complicated to specify the motives for particular behavior. Since some action results from many persuasions simultaneously at a time, it could be concluded that human behavior is a result of motivations [7]. For employees in an organization to work effectively, in addition to knowledge and skills, work motivation is also a very significant element. Human resource is highly valuable to an organization, hence if administrative officers could motivate knowledgeable employees to willingly and responsibly work for an organization, it shall lead to creativity and efficiency in work. This will in turn bring improvement to an organization enabling it to reach the specified targets. To achieve this, administrative officers have to understand employees' needs and then find ways to effectively motivate them to work. Proper motivation can lead to maximum utilization of human resource capacities, and it can be achieved by determining what employees need and what type of job satisfaction is effective for them.

Suvarnabhumi post office branch is one of Thailand Post branches reporting to Ministry of Information and Communication Technology and established on September28th, 2003 located on 999 Village No.7, Suvarnabhumi 2 Road, Racha Thewa Sub-district, Bang Phli District, Samut Prakan Province 10001. Establishment of Suvarnabhumi post office branch was a consequence of significant change in international transportation by the government moving the main airport of Thailand from Don Mueang airport to Suvarnabhumi airport. The Suvarnabhumi post office was set up to serve international customers with convenience and speed. Currently it is facing problem of employees' resignation and early retirement. The procedures to become permanent officers of Thailand Post take a lot of time and could discourage employees in temporary status. They are not motivated to work and their performance is not reaching the maximum capacity, thus not reaching the organization's targets.

For the above reasons, the researcher is interested to conduct the research on work performance motivation of employees in Suvarnabhumi post office branch. Results of the study would be applied as guidelines to determine strategies and policies that will respond to the needs of employees in order to motivate them to improve

their work performance and commitment to an organization as well as work efficiency. This will enable an organization to be more competitive in the market and will help to maintain quality personnel to continue working for an organization.

A. Research Objectives

1. To determine significance level of work motivation of employees in Suvarnabhumi post office branch.
2. To evaluate organizational commitment of employees in Suvarnabhumi post office branch.

B. Research Methodology

This quantitative research randomly selected the 100 samples from employees in Suvarnabhumi post office branch. Statistics applied in this research for data analysis are:

1. Descriptive statistics include percentage, mean, and standard deviation to explain demographic factors of the questionnaire respondents and variables.
2. Inferential statistics for testing hypothesis include t-test, One-way ANOVA, and Regression Analysis.

Questionnaire created based on concepts, theories, and related studies was used as a tool for data collection and consists of 4 parts as follows:

- Part 1 contains close-ended multiple choice questions on demographic factors of questionnaire respondents.
- Part 2 contains close-ended 5-level rating scale and checklist questions about factors affecting work motivation
- Part 3 contains 5-level rating scale and checklist questions on opinion on organizational commitment of employees in Suvarnabhumi post office.
- Part 4 contains open-ended questions on opinion and suggestions of the respondent.

II. FINDINGS

Findings indicated that most of respondents were males, age between 20-30 years, single marriage status, high school or vocational education, monthly income between 10,001-20,000 baht, and at least 10 years of work experience.

A. Overall picture indicating work motivation

It was found that motivation factors affecting Suvarnabhumi post office's employees work performance are generally at high level including security, work condition, achievement, relationship with peers, company policy, relationship with subordinate, responsibilities, relation with boss, supervision, work itself, growth, advancement, and recognition. Factors that are in medium level are salary/benefits, work condition, and total life space.

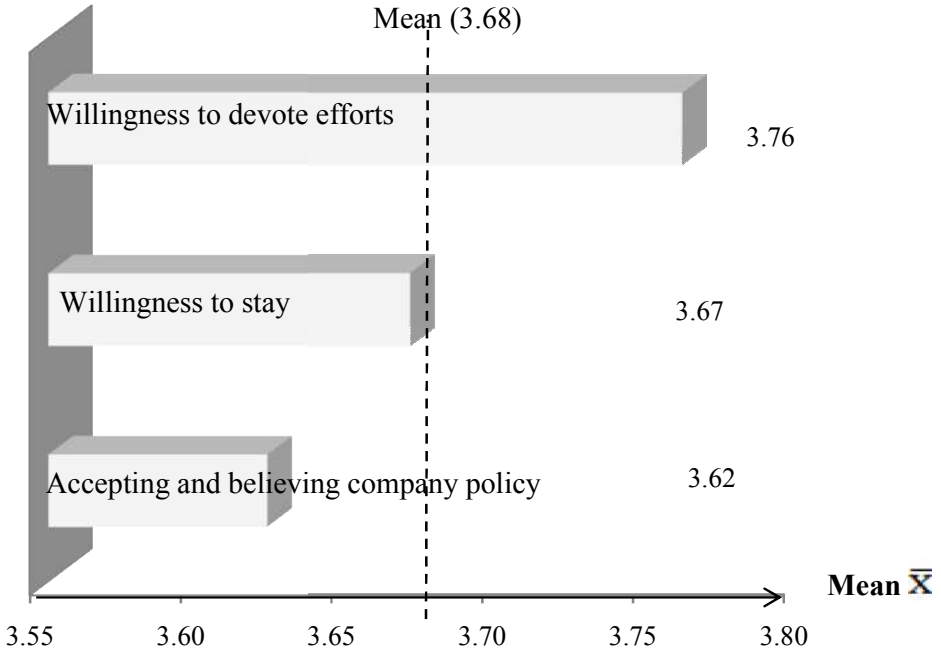

Figure 1. Overall picture of organizational commitment factors

B. Overall Picture of Organizational Commitment Factors

The opinions on factors of Organization commitment were at high degree level consisting of willingness to devote its efforts to strengthen the productivity of the organization, willingness to stay with organization for the longest, and accepting and believing company policy.

III. HYPOTHESIS TEST RESULTS

Hypothesis-1: Demographic factors have influence on organizational commitment of employees in Suvarnabhumi post office. The test results indicated that gender, age, education, and monthly income do not have effect on commitment of employees in Suvarnabhumi post office while marital status and work experience do have the effect.

Hypothesis 2: Work motivation has positive relationship with organizational commitment of employees in Suvarnabhumi post office. The test result showed that work itself, responsibilities, relationship with subordinates, relationship with boss, and work position have positive relationship with organizational commitment of employees in Suvarnabhumi post office while achievement has negative relationship with the commitment.

IV. CONCLUSION AND DISCUSSION

Overall work motivation of employees in Suvarnabhumi post office was found to be in a high level. The finding [9] resembled that the motivation factor and hygiene factor of personnel in Office of The Attorney General to be in high level and also in accordance with the research of [2] which found motivation factors of operational level employees in high level. Further, it was also similar to the finding of [8] that found motivation of employees in one off-shore Construction Company has to be in high level. Organizational commitment of employees in Suvarnabhumi post office was in high level similar to the study of [3] which found that commitment level of personnel working in Chon Buri Provincial Administrative Organization. This finding also resembles that of [5] which revealed that employees in Chiang Mai Provincial Electricity Authority have high organizational commitment.

Hypothesis 1 demographic factors have effect on organizational commitment of employees in Suvarnabhumi post office. The test found that demographic factors *i.e.*, gender, age, monthly income do not have influence on organizational commitment of employees in Suvarnabhumi post office. This finding resembles the study of [6] that found gender, age, monthly income, and education to have no effect on organizational commitment. For marital status and work experience, they have effect on organizational commitment of employees in Suvarnabhumi post office. This finding is in accordance with [1] who suggested that marital status and work experience have influences on organizational commitment of employees.

Hypothesis 2 work motivation has positive relationship with organizational commitment of employees in Suvarnabhumi post office. The hypothesis test indicated that motivation factors in general have positive relationship with organizational commitment of employees in Suvarnabhumi post office. This is similar to the finding of [4] which showed that overall motivation factors have positive relationship with an organizational commitment.

V. RECOMMENDATIONS

From the study, the researcher has useful recommendations as follows:

1. Administrative officers should consider appropriate benefits provided to employees to encourage them to work and support their morale.
2. Administrative officers should give priority to temporary employees with long tenure to become permanent employees so that they would be encouraged and feel secured to continue working for an organization.
3. Administrative officers should pay attention to improve employees' benefits *i.e.*, provision of residence nearby the work place to enhance work efficiency.
4. Administrative officers should focus on work environment such as working equipment, illumination, temperature, and air circulation because it has impact on the work performance.

ACKNOWLEDGEMENT

This independent study is part of MBA course in KasemBundit University. The researcher feels grateful to Dr. Chinnaso Visitnitikitja for his suggestions and corrections on the study until it

was finally completed. The researcher feels obligated to personnel of Suvarnabhumi post office for their cooperation in providing data as well as their assistance in questionnaires distribution. The researcher believes that this research paper would be useful to administrative officers and personnel of Thailand Post. Results of the study would be used as guidelines for improvement of Thailand Post in the future.

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Service Quality of Shipping Container at Merlex Transport Co. Ltd.

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Abstract - **The research on service quality of shipping container at Merlex Transport Co., Ltd. attempts to evaluate factors that have influence on service quality of shipping container at Merlex Transport Co., Ltd. Questionnaires were used as a tool to collect data from 100 customers. Statistics used here for data analysis are frequency, percentage, mean, standard deviation, t-test, and One-Way ANOVA. The study revealed that most of the respondents are female aged 31-40, working as employees, type of service used is mostly cold container truck, and period of using the service is more than 6-8 years. Factors affecting service quality of shipping container are in the medium level overall. Tangibility is in the medium level, reliability is in high level, responsiveness is at the medium level, assurance is in high level, and empathy is in medium level. Regarding satisfaction in shipping container service of Merlex Transport Co., Ltd., it is found to be in medium level in general. Hypothesis test result showed that service quality in dependability and confidence aspects have effect on customer satisfaction on customer satisfaction at a statistical significance level of 0.05. Recommendation from the study suggested that CEO should pay attention to improvement of quality of delivery trucks in service to have modern technology, checking of trucks condition, applying new technology to enhance service quality, provide an effective 24-hour call center, and expand the transportation route nationwide.**

Keywords: Service quality of shipping container, Merlex Transport Co., Ltd.

I. INTRODUCTION

Transportation of goods is a very necessary activity since manufacturing sites and consumers are located in different geographical areas. Manufacturers have to send their products to the place where there are needs. Customers tend to need more of quality products with larger volume of consumption and their needs of product are more likely in prompt manner. For this reason, manufacturers try to cope with this trend by improving product quality and availability. It is commonly known that apart from the product itself, service is the next most important element that comes along the product. Good service will improve customer satisfaction [2] with the product. Transportation also needs to have quality to satisfy customers. Delivery of the goods has to be done with minimal transportation cost [1]. "Logistics" is the first service sector of Thailand that will move on to Asean Economic Community (AEC) by allowing foreign companies to come in to compete with local service providers and increase investment proportion. However, as we are coming close to AEC, we could see ineffectiveness in logistics [3] of Thailand. Logistic is the service that needs effective communication with customers and hence they seek quality of the service. If customers are not satisfied with the service, they may change to use other service providers. Therefore, transportation companies have to prepare in all respects to serve logistics needs that are increasing and they should improve effectiveness of logistics system along with improvement of service quality [4].

Transportation is the heart of all business whether domestic, import, or export. For this reason, this small company had started in the name Merlex Transport Co., Ltd. with expertise in maintenance and repair of dry container and reefer unit. The company has highly experienced and skilled personnel that continuously and intensely trained in accordance with international standard and now it is having UKAS ISO 9001: 2008. The company has the following significant policies: goods & container damage insurance of 10 million Baht; 24-hour call center; sophisticated computer program to manage goods delivery; 24-hour personnel for container handling; more than 80 trailers each is equipped with electricity generator; large area of container yard for stocking of containers; and numbers of electricity supply outlets to support cold container. Apart from all these, the most important thing in service is to create satisfaction to the customers. From the above reason, the researcher is interested to study service quality of shipping container at Merlex Transport Co., Ltd. in order for future improvement and development of service quality of shipping container at Merlex Transport Co., Ltd.

II. LITERATURE REVIEW

In 1988 Parasuraman et al. gathered the concepts they suggested in 1985 to become more precise by referring to further study conducted later causing their elements of service quality to reduce to 5 elements consisting of the followings. Tangibility

is physical facilities, equipments, and appearance of personnel. Reliability is ability to give the service as promised, trust, and accuracy. Responsiveness is enthusiasm and promptness to serve/ assist customers. Assuranceis understanding of customers' needs, friendliness, and ability to make customers confident. Empathy is giving special care and attention to customers.

III. RESEARCH OBJECTIVES

1. To study factors affecting service quality of shipping container at Merlex Transport Co., Ltd.
2. To study customer satisfaction on service quality of shipping container at Merlex Transport Co., Ltd.

IV. RESEARCH METHODOLOGY

Instrument used in the study is questionnaire which could be divided into 4 parts:

Part1 contains 5 multiple choice questions about personal data of the respondents regarding gender, age, work position, type of service used, and number of years using the service of the company.

Part2 contains close-ended 5-level rating scale questions about factors affecting service quality of shipping container trucks in 5 aspects including assurance, reliability, responsiveness, tangibility, and emphathy.

Part 3 contains close-ended 5-level rating scale questions on satisfaction on service quality of shipping container trucks.

Part 4 contains open-ended questions for the respondents to express their ideas and suggestions. Inferential statistics used for this research to test the hypothesis are Independent t-test, and One-Way ANOVA.

Conceptual Framework

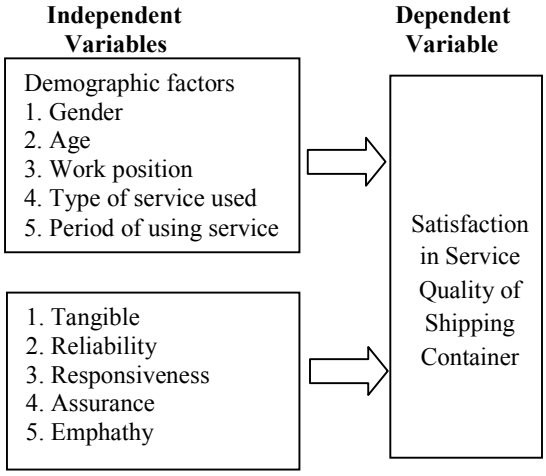

Figure 1. Conceptual Framework

Findings

From the study on 100 samples, it was revealed that most are female aged 31-40, working as employees, type of service used is mostly cold container truck, and period of using the service is more than 6-8 years.

TABLE I
COMPARISON OF CUSTOMERS HAVING DIFFERENT SERVICE QUALITY FACTORS AND THEIR DIFFERENT LEVEL OF SATISFACTION ON SERVICE OF SHIPPING CONTAINER TRUCKS

Satisfaction on transportation service		SS	df	MS	F	Sig.	Result
-Reliability	Between group	2.182	8	.273	2.218	.033*	different
	Within group	11.191	91	.123			
	Total	13.374	99				
-Assurance	Between group	3.402	8	.425	3.248	.003*	different
	Within group	11.915	91	.131			
	Total	15.316	99				

Table I indicates that customers with different factor of reliability have effects on satisfaction in the service quality of Merlex Transport Co., Ltd. at 0.033 meaning reliability perceived by customers have effect on their satisfaction on the service. For assurance, it shows the value of .003 meaning that if customers are assured in the quality of the service of Merlex Transport Co., Ltd., they would be satisfied and vice versa.

Factors affecting service quality of shipping container trucks

From the study, it is found that opinion on factors affecting service of shipping container trucks for all five factors are in medium level as shown in figure 1.

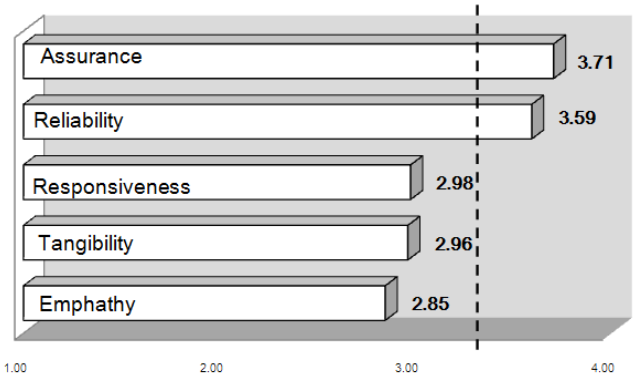

Figure 2. Factors affecting transportation service

Satisfaction on service quality of shipping container trucks

The study found satisfaction on service quality of shipping container trucks of Merlex Transport Co., Ltd. generally in medium level as shown in Figure 3.

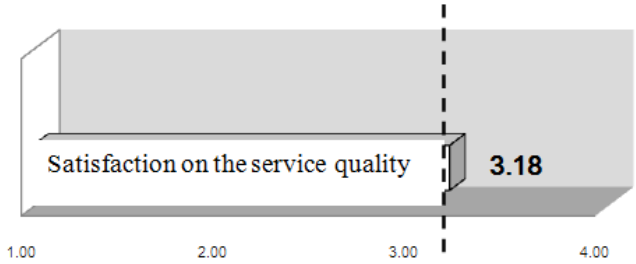

Figure 3. Satisfaction Analysis

VI. RECOMMENDATIONS

From the study of service quality factors of shipping container trucks of Merlex Transport Co., Ltd., the researcher has the following suggestions. CEOs should pay attention to improvement of service quality *i.e.*, standard of the trucks should be in proper condition and equipped with high technology devices; regularly check condition of the trucks; install GPS system for tracking, train all level of employees to focus on service quality and become caring assistance/advisor to the customers to ensure tangibility. CEOs should also: arrange personnel in 24-hour call center; expand the transportation route nationwide; increase number of trucks to serve increasing customers' needs promptly; apply document control system to prevent human mistakes; reduce number of inefficient employees and maintain the good one; and try to apply more computer programs to work in replacement of human. CEOs should prepare personnel with good communication skill to respond to problems or suggestions from customers and also delegate works to related organization systematically and effectively.

ACKNOWLEDGEMENT

This independent study is part of MBA course of KasemBundit University. It is completed with assistance of Dr. Chinnaso Visitnitikijawho sacrifice his time advising, guiding, and correcting the mistakes in detail. The researcher would like to thank Assistant Professor Ing-on Tanphan for her advice about concepts and theories used in this study as well as guidance for appropriate ways to study and correction of mistakes.

The researcher also feels obligated to the customers of Merlex Transport Co., Ltd. who cooperated in answering questionnaires and giving all required information making this study succeed. Results from this study shall be applied as guidelines for improvement of the organization and for further studies.

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Application of Porter's Model and Johnson Cultural Model on Chinese Automobile Sector

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***Abstract* - In this research paper the authors will check the relevance of Porter's five forces model and Johnson cultural web model of Chinese car industry and failed Volkswagen-Suzuki alliance. In this era of globalization, business is crossing the international boundaries and companies are looking for competitive advantage. Culture plays a major role in international ties and successful partnerships. Both the examples discussed in this paper are from automobile industry. China is the leading car manufacturer of the world even in the recession phase. The authors will apply porter's five forces model on Chinese car industry and also analyse cultural differences between Volkswagen and Suzuki by applying Johnson cultural web model.**

I. INTRODUCTION

In this paper the authors will discuss about two important strategic management models which are Porter's five forces model and Johnson cultural web model. Porter's five forces model is based on five forces which are helpful in understanding the competition in a particular industry. Whenever any industry plans to expand itself in overseas market, it is advisable for the managers to do Porter's five forces study of that market. It comes under the category of micro-environment analysis of industry. Johnson cultural web model is very useful in understanding the organizational culture of a specific industry or firm. The cultural web model is based on six cultural elements and it provides a detailed analysis of internal culture, power structure and control system of the company. The author will discuss about Chinese automotive segment based on five forces model. The author will also discuss about the failed alliance of Volkswagen and Suzuki to understand the cultural web model in real situation. The benefits and further scope of improvement in the above mentioned two models will also be discussed. The managers are finding both these models very useful in doing strategic management of the company. In the last section of the report the author will discuss certain recommendations to a car company for improving competitive strategy in foreign market. This report is based on secondary data. The secondary data consist of journal articles, online news, e-books and reports etc. This report will provide the in-depth understanding of two important strategic models used in current business practice.

II. PORTER'S FIVE FORCES MODEL

In this part the authors will analyse the application of Porter's five forces analysis and Cultural web model. Porter's five forces model is useful in analysing the level of competition within an industry and helps the organization in framing its market entry strategy. The five forces analysis was invented by Michael Porter in 1979 and those forces created a revolution is strategic management of companies. Porter's five forces analysis are used to analyse the micro-environment inside the country for a specific industry. The five forces given by Porter are threat of new entrants, threat of substitute products, bargaining power of customers, bargaining power of suppliers and rivalry among the competitors as shown in figure 1.

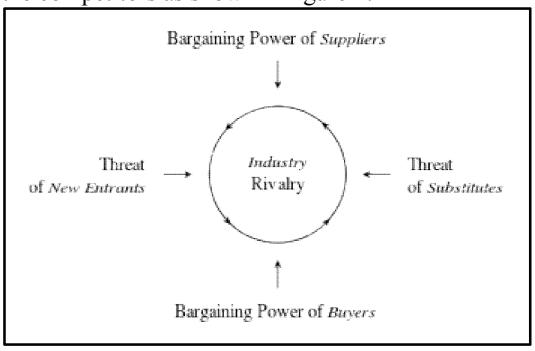

Figure 1. [14]

Threat of new entrants refers to the entry of new companies in the same segment. For example, there are many companies in car industry, that is, Volkswagen, JLR, Suzuki etc. The threat of new entrants has been affected by the entry barriers present in a country. These barriers are government policies, capital requirement, and infrastructure, switching cost to customers, customers demand, and economies of scale etc. threats of substitute products to the presence of similar products within a specific industry. The substitute products perform the similar function as the industry product but by different means [15] For example, coffee can be considered as substitute of tea.

Bargaining power of customers' increase when there are more number of companies are present in a particular business segment. Customers can switch to another company if it provides good quality at lesser cost. Powerful customers can bind the companies to reduce their prices. Bargaining power of suppliers refer to the negotiation power of the raw material supplier with the manufacturer of the products and services. The bargaining power of suppliers increases if they are less in number and vice versa. The industrial rivalry is the competition among different firms present in a specific segment in a country. The innovative capability of the firm helps it in getting competitive advantage.

III. JOHNSON'S CULTURAL WEB MODEL

The culture plays an important role in the success or failure of an organization. The organizational culture refers to the set of values, beliefs, attitudes practiced inside an organization and the way things have been done in that organization. [10] have presented a cultural web which was helpful in understanding the culture within an organization. The figure 2 is showing the cultural web.

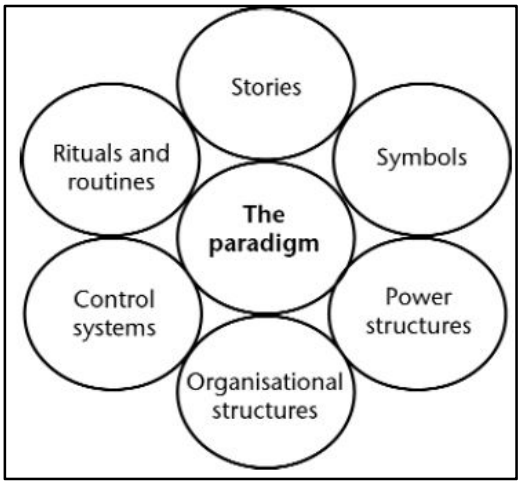

Figure 2. [18]

The six major elements of cultural web are stories, rituals & routines, symbols, control systems, organizational structure and power system. Stories are the past events discussed by the people inside and outside of the company. The past events provide knowledge about the behaviour of company officials in various situations. The daily behaviour and actions of people have been described by the element rituals and routines. Symbols are the visual representation of logos, dress codes and colours of the company. The organizational structure provides knowledge about the type of leadership followed inside the company. The top-down hierarchical structure and organization chart of the company. Two organizations have different organizational structure within the same country. Control systems are the ways organizations have been controlled. The control system includes financial system, quality system and rewards of the organization. Power structure is the way power has been distributed inside the organization [5]. In some organizations power rests on the shoulders of one or two key executives while in their power has been distributed from top to bottom. The culture of a particular country also affects the organizational culture of the company. Culture plays a significant role when two organizations merge with each other or when the organizational changes occur inside a company.

IV. APPLICATION OF PORTER'S FIVE FORCES MODEL IN CHINESE CAR INDUSTRY

The impact of globalization and industrialization can be seen on Chinese automobile industry. China is the world's fastest and leading automotive maker. The global economic slowdown has not impacted the Chinese automotive industry. In terms of volume, China is producing more number of cars in comparison to France, Germany and Korea [19]. The threat of new entrants is medium to low in Chinese automotive industry. It is difficult for domestic manufacturer to enter in Chinese car industry segments. The main barriers for entry in car industry in China are financial costs and government policies [1]. The new market players require high fixed cost for setting up their production facilities in China and there is requirement of good infrastructure as well. The boom of Chinese car industry has attracted heavy foreign direct investment. Many foreign car manufacturers are looking to set up their base in Chine to achieve economies of scale. The government policies and other entry barriers have also reduced for foreign car manufacturers. The threat of substitutes is lower in Chinese automotive industry. People can say that public transport is the main substitute of cars in China but the public transport will not affect the purchasing decision of the customers. Some dealers are also selling cheap second hand cars in China. These cheap second hand cars can also be a substitute of the new branded cars in Chinese automotive market.

The potential of car industry is continuously increasing in China. China is selling 37% more cars in comparison to previous year [21]. The industrial rivalry is on high in Chinese automotive industry. One can argue that rivalry is moderate in luxury car segments. A big number of brands are dominating the Chinese market. These brands are Toyota, General Motors, Ford, Honda, Volkswagen, Nissan etc. Bargaining power of customers is high in Chinese market because there are too many options available to the customers. The purchasing power of the customers is also increasing because income level in increasing. The demand of the luxury cars is also increasing in Chinese market. The loyalty for brands weaken the bargaining power of customers to an extent. The raw materials like steel and other metals required for the manufacturing by foreign manufacturer is provided by few suppliers worldwide which increase the bargaining power of the suppliers in Chinese market. Overall, the bargaining power of the suppliers is moderate in Chinese market. A big number of foreign manufacturers are present in China. Those foreign manufacturers are very concerned about timely production of the cars. The agreements between manufacturers and suppliers are also increasing the bargaining power of the suppliers because the nature of agreements is indispensable. The domestic manufacturer is not aligned to the contracts with local suppliers. The domestic manufacturers choose the suppliers as per their convenience. This will decrease the bargaining power of the suppliers. The reputed car manufacturers are looking for the suppliers which follow sustainable methods of production and this sustainability requirement is also increasing the supplier power.

V. APPLICATION OF CULTURAL WEB IN VOLKSWAGEN- SUZUKI ALLIANCE

The organizational culture plays a dominant role when two car companies from different countries make an alliance. The employees face certain organizational changes which they found difficult to implement in their daily life. Volkswagen and Suzuki entered in an alliance in December 2009 when Volkswagen purchased a 19.9% stake in the Japanese manufacturer [12]. Within 20 months of the partnership between Volkswagen and Suzuki ended. The cross cultural differences and different organizational culture of Volkswagen and Suzuki were the major reasons behind the split of Volkswagen-Suzuki partnership. Volkswagen was a German car manufacturer while Suzuki was a Japanese manufacturer. The organizational culture of Volkswagen and Suzuki was very much different. The policies of two companies were different and the employees faced a cultural mismatch in their working approach [2]. On one hand the Volkswagen employees were very disciplined and fast in decision making on other hand the Suzuki employees were less disciplined and slow in decision making. Suzuki employees were less prone to risk taking in business. They felt problems in going along with Volkswagen employees.

Initially both the companies promised each other about technology sharing for hybrid cars and electric cars but they have not fulfilled their promises. Suzuki expanded its business purchase with Fiat and this decision upset the higher management of Volkswagen [3]. Volkswagen officials said that Suzuki has broken its promise on technology sharing with some third party. The communication differences between the top management of two companies were also a reason of their failed alliance. Suzuki employees were not happy with bossy attitude of Volkswagen employees. Volkswagen employees tried to show Suzuki that they were superior to them. Many business officials and research analyst said that both the companies were failed to understand the cultural values, attitude and organizational structure of each other. Volkswagen were eyeing on the big Indian market with the help of this alliance because Suzuki was a big name in Indian small car segment. Suzuki didn't found Volkswagen technology suitable for Indian market and the company was ready to form partnership with other companies in India. The top leadership of Volkswagen was much more task oriented while the top leadership of Suzuki was employee oriented. Finally, both the companies have ended up their alliance in 2011.

VI. STRENGTHS AND LIMITATIONS OF PORTER'S MODEL

Porter's fiver forces analysis is useful in introducing the industrial economics to the strategic management area. These five forces helped the small and big entrepreneurs in making their strategy while entering in foreign countries. The five forces analysis helped the companies in understanding the competition in overseas market and achieving economies of scale [9].This model enables the managers to think about current situation of their industry in more structured and easy-to-understand manner. It also helps the companies in understanding their future profitability. There are also some major

limitations of Porter five forces model. The first limitation is that this model is applicable for broader level of an entire industry it is not applicable for smaller market level. Porter five forces model present the true picture of present day competitiveness in an industrial segment. It can be said it is static in nature while the companies need planning for future as well. There is also uncertainty in the conclusions made under five force analysis model. Institutional issues and firm specific factors are also important for controlling the industry but the five forces model only talks about external factors [13].

VII. STRENGTHS AND LIMITATIONS OF CULTURAL WEB MODEL

Cultural web model is useful in understanding the internal culture of the companies. The internal culture, values and attitudes defines the behaviour of employees of an organization. The cultural web model is very useful for mangers while establishing joint venture, partnership and alliances with other foreign organization [4, 11]. The porter five force model put emphasis on external factors while cultural web model showcases the internal power and structure of organization. Cultural web model provides information about decision makers and power pillars of the organization. These cultural models reduce confusion in the minds of customers. Cultural web models are very useful in implementing organizational changes. The major limitation of cultural web model is the time required to apply this model in practice. There are six major elements of cultural web model. The international managers have less time in checking all the six elements. This cultural web model doesn't talk about the impact of country's culture on the organizational culture. Hofstede argued about cross cultural differences between different countries but there is no linkage between cultural web model and Hofstede model [8]. An organization needs to change its approach when it expands itself in foreign countries.

VIII. SCOPE OF IMPROVEMENTS

Porter five forces model should also include certain industry specific factors so that this model should also benefit small market study. Few researchers have argued that there is a need to add sixth force in the porter's model. The sixth force will be complementors. Complementors are the companies and firms which sell the products and services compatible to the goods and services sold by the given industry. This sixth force will make this model more reliable. Porter's five forces model presented the micro-environment analysis in broader level. This model should be revised to make it more compatible in understanding minute competitive differences between the industries. There is need to eliminate the level of uncertainty from porter's model conclusions. The author wants to give some recommendations to improve the cultural model as well. Cultural model should be integrated with national cultural model that is Hofstede model so that managers can also understand the influence of foreign country culture on their organization. There are certain organizations, which donot have standard set of values, attitudes and beliefs. The employees from diverse cultural background work in those organizations. The cultural web model should also include an element which talks about diverse organization.

IX. RECOMMENDATIONS FOR VOLKSWAGEN TO IMPROVE ITS POSITION IN CHINA

Volkswagen has lost its top position to Toyota in Chinese market in terms of profit. Toyota sold approximately 7.5 million vehicles in comparison to 7.43 million vehicles of Volkswagen in first nine months of the year 2015 [6]. Volkswagen is looking to improve its competitive strategy in Chinese market. The top management of Volkswagen has admitted that a software has been fitted in the diesel cars of the company to manipulate the carbon dioxide emission. This statement made conditions adverse for Volkswagen in tougher Chinese market. The customers are raising questions over the moral values, ethics and routine decision making of the company. In fact, many customers around the world have lost their faith in Volkswagen.

The author will recommend Volkswagen to work on its cultural web to regain its top position in Chinese market. There are serious questions on the organizational structure and power structure of Volkswagen. It is the responsibility of top management that business ethics should be followed inside the company. This emission scandal can't be taken in good taste. The company officials need to avoid such incidence in future and adopt a transparent approach to win customer's trust in Chinese market. Chinese customers believe in long term relationship and they are loyal to the brands. The bad stories are coming out about Volkswagen in World market. In my opinion Volkswagen should admit its mistake openly in front of Chinese customer and

make a fresh start to capture the market leader position.

Another recommendation for Volkswagen is to reduce its high prices to achieve success in both Chinese and Indian market. One can argue that income level of people is increasing in both the emerging countries so there are no affordability issues, but choices of customers are also increasing. Bargaining power of the customers is increasing because there is tough rivalry between Volkswagen and other car manufacturing companies in China. The company needs to work on its quality and other factors to retain its old customers and add new customers to the list. In my opinion the company should focus on the production of fuel efficient Electric Vehicles to improve its sales. Energy efficient EV will be more in demand by global customers in coming years to reduce carbon emission level [20]. The world is facing the problem of global warming and the companies need to understand their environmental responsibility in manufacturing the products [17].The company needs to develop new business model in which it can provide affordable prices to the young generation of China and India [16]. Young buyers can help the company in making a comeback.

In the last few years Volkswagen achieved more success in Chinese market in comparison to comparison to the combined market of U.S. and Western Europe. Here the author wants to recommend that Volkswagen should not be over ambitious by the economic growth of Chinese market. At this stage, the company can't take risk of overproduction. They should be in touch with the international suppliers so that suppliers can deliver the raw materials on time whenever required. Volkswagen group is not present in low cost SUVs and minivans segment [7]. More number of customers are demanding low cost SUVs in China and India. In fact, Volkswagen entered in a failed alliance with Suzuki to capture middle level and low level income customers. Volkswagen group should focus on manufacturing low cost SUVs and minivans to regain top position in Chinese segment. The low cost SUVs segment will also help the company in Indian market.

X. CONCLUSION

In the conclusion it can be said that this exercise of strategic analysis has been very much useful for the author to improve his in-depth understanding of strategic management models in business. This assignment helped the author to understand the practical application of five forces model and cultural web model in business scenario. The author rate five forces model as most important among all the models because this model is key for environmental analysis of foreign market while making global strategy. Cultural model also has its own importance because cross cultural issues affect the partnership, sales and objectives of the company in host country.

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Marketing Factors Influencing Consumer Behavior for CP Brand Chicken Parts

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***Abstract*- The research on marketing factors influencing consumer behavior for CP brand chicken part attempts to study consumer buying behavior for CP brand chicken parts, marketing mix factors affecting the buying behavior, and relationship between marketing mix factors and the consumer buying behavior for CP brand chicken parts. Instrument used in the research is questionnaires which were distributed to 400 samples who are buyers of CP brand chicken parts. Statistics used in the research are percentage, mean, Chi-square for data in the form of frequency, and Pearson Product Moment Correlation. The study indicated that most of the respondents are female aged 36 years up, Muslim, single, and graduated lower than Bachelor's degree, earning maximum average monthly income of 20,000 Baht, and having 2-3 family members. For consumer behavior in buying CP brand chicken parts, it was found that most of them buy breast part at 2-3 times per week frequency. Perceived advantage of chicken parts is that they can be used variously in cooking. Each purchase was found to have an average value of 101-300 Baht and supermarket is the most preferable choice because of its variety of choices. Family member was shown to have influence on the purchase of chicken parts, and packaging has significant impact on the buying decision. Most of the consumers paid attention to marketing mix factors such as price, product, place, and promotion which were at the high level of significance respectively. Test result of relationship between marketing mix and buying behavior of CP brand chicken parts proved that product and price have relationship with consumer behavior in CP brand chicken parts.The research recommended a focus on promotion buy applying new marketing communication techniques, distribution channel should be made convenient to customers, price setting should be standardized, and values of the products should be added.**

I. INTRODUCTION

Meat chicken is a tremendously important agricultural product of Thailand. Production of meat chicken had expanded every year i.e. from 2011-2012 domestic production of the chicken increased from 994,319,478 birds in 2011 to become 1,055,934,706 in 2012 which was counted as 6.20% increase (Journal of Thai agriculture forecast) [1]. In 2013, meat chicken production was expected to grow more since farmers gain better knowledge of farm management and technology in raising the chicken. In addition, weather condition in farming zones facilitate better growth rate of the chicken. Central region is the best production source for meat chicken followed by the northeast, north, and south respectively. The strategic provinces for raising meat chicken are Chon Buri, Chachoengsao, Nakhonnayok, Prachin Buri, and Ubon Ratchathani respectively. Countrywide number of households raising meat chicken as business was 7,484 households in total [4-5].

Charoen Pokphand Food Public Company Limited and affiliates or CPF is a company that has complete chain of chicken production including animal feed factories, hatcheries, chicken farms with evaporative cooling system, and poultry slaughtering & processing plants which is the most sophisticated plants in Asia. With the requirement to increase value of chicken products and to seek for more profitable markets than domestic poultry market which was facing high competition, CPF who used to be the leading exporter of frozen chicken changed its production and export further processed chicken and reduced the production of frozen chicken where it used to be number one producer in Thailand [2].

CPF builds confidence to consumers with new standard products with the policy to promote the brand for food safety as well as applying marketing mix to gain more confidence in consuming chicken products. For this reason, researcher became interested to study factors influencing Bangkok consumer behavior in further processed chicken CP brand. The results shall be beneficial to the company to form marketing plan and improve product quality to match consumers' needs and shall be a source of useful information for interested people.

A. Research Objectives

1. To study consumer buying behavior in CP brand chicken parts.
2. To study marketing mix that affect consumer buying behavior in CP brand chicken parts.

B. Conceptual Framework

In the study, researcher has applied marketing mix theory to form conceptual framework as a

guideline to study marketing mix factors that affect consumer buying behavior for CP brand chicken parts as shown below.

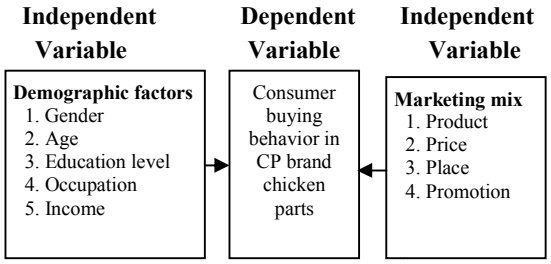

Figure 1. Conceptual Framework

C. Research Methodology

Data collection was accomplished by distribution of questionnaires to 400 samples who bought CP brand chicken products. The questionnaire could be categorized into 4 parts. Part1 contains 7 personal questions about gender, age, education, occupation, average monthly income, marital status, and number of family members. Part2 includes 8 multiple choice questions regarding consumer behavior in buying CP brand chicken parts. Part3 represents marketing mix that has influences on consumer buying behavior for CP brand chicken parts. This part contains 21 ranking questions with the content about product, price, place, and promotion. The last part consists of open-ended questions asking for suggestions and opinions of the respondents [6].

II. FINDINGS

Most of respondents were female with age of 36 years and above, Muslim, married, graduated lower than Bachelor's degree, pursuing own business/venders, having maximum average monthly income of 20,000 Baht, and having 2-3 family members.

Data on marketing mix that has influences on buying decision for CP brand chicken parts

A. Product

The study indicated that product factor has the highest level of effects on buying behavior in 4 dimensions including packaging with FDA/Halal signs (mean = 4.50); packaging shows complete ingredients (mean = 4.47); cleanliness and safety (mean = 4.36); and product choices (mean=4.27). The product factor that has high level of effects on the buying behavior was nutrition with the mean of 4.17. Overall mean of product significance is in the highest level (mean = 3.35)

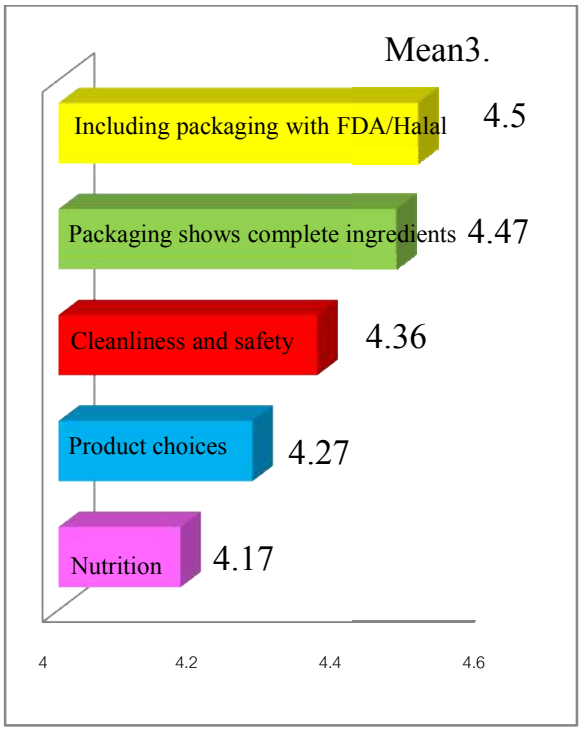

Figure 2. Significance of product factor

B. Price

From the study, price factor that has the highest level of influences on consumer buying behavior for CP brand chicken parts in 4 aspects including reasonable price comparing to quality (mean=4.84); different price levels are available (mean=4.73); promptness in price change (mean=4.60); and information of price change in advance by mode of quotation/price labels (mean=4.45).

Figure 3. Significance of price factor

The price factor that was found to be in high level of significance was standard pricing with the mean of 4.14. Overall mean of price significance is in the highest level (mean=4.55)

C. Place

The study showed that distribution channel factor was found to have high level of significance in 5 dimensions including uniqueness of the shop (mean=4.03); advance purchase is available (mean=3.98); parking area is convenient and safe (mean=3.93); products can be easily found on the shelf (mean=3.88); and the location is easy for traveling (mean=3.86) respectively. Overall mean of place factor is in the highest level with the mean of 3.94.

Figure 4. Significance of Place

D. Promotion

The study showed that promotion factor has high level of significance in 5 dimensions including cash discount (mean=4.05); new style of presentation (mean=3.99); acceptance of payment by credit card (mean=3.93); marketing communication is in place (mean=3.89); delivery service is provided (mean=3.82); and interesting sales promotions are available (mean=3.75) respectively. Overall mean of promotion factor was in the highest level (mean=3.90).

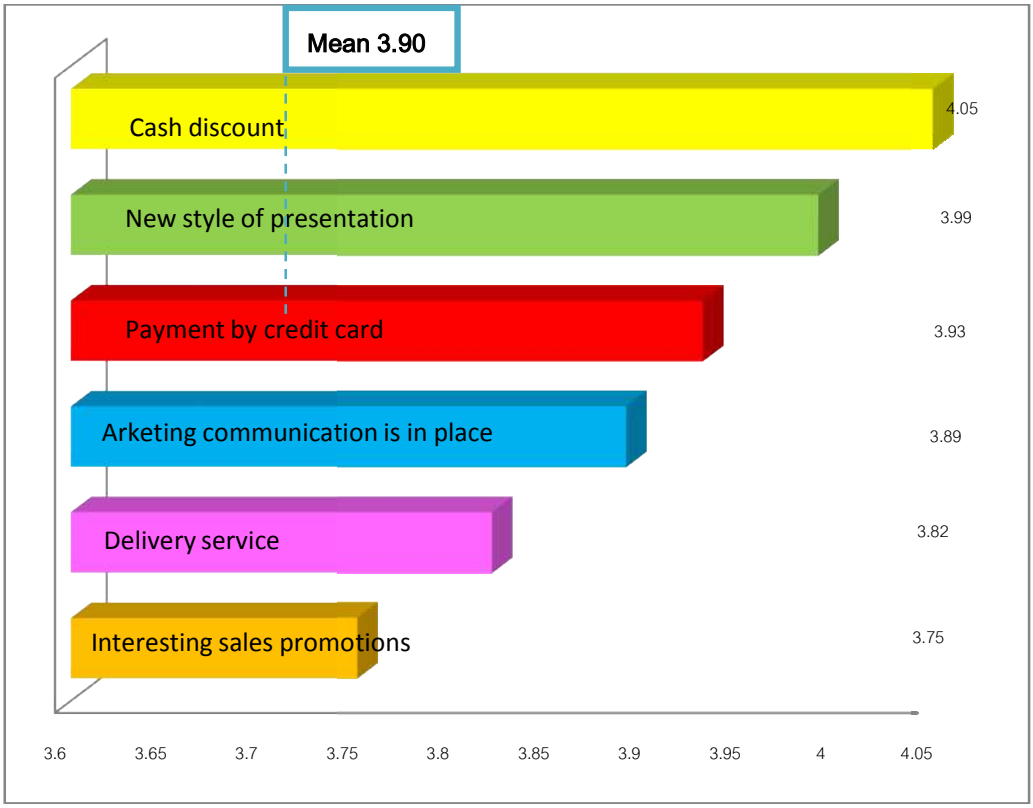

Figure 5. Significance of promotion factor

Price factor has relationship with buying behavior of CP brand chicken parts.

TABLE I
ANALYSIS OF RELATIONSHIP BETWEEN PRODUCT AND THE BUYING BEHAVIOR

Buying behavior in CP brand chicken parts	**Price factor**		**Test result**
	Pearson Correlation	**Sig. (2-tailed)**	
Type of CP chicken parts product	.065	.196	No relation
Buying frequency of CP chicken parts product	-.017**	.728	No relation
Advantage of CP chicken parts product	.075	.135	No relation
Value of purchase for CP chicken parts product	.093	.064	No relation
Location to buy CP chicken parts product	.358	.030*	Negative relationship
Reason for choosing to buy from such location	.079	.114	No relation
Person having influences on buying decision	.080	.109	No relation
Priority in buying CP chicken parts product	.301	.037*	No relation

*statistical significance at level of .05 **statistical significance at level of .01

Analysis of the relationship between the variables that factor into the marketing mix of product behavior in your products irresistible chicken parts that are associated with a statistically significant level. 010.05 fee. Correlation coefficient (*r*) is equal to 030, shows that the two are in a relationship, and relatively low in relation to the opposite direction.

TABLE II
ANALYSIS OF RELATIONSHIP BETWEEN PRICE AND THE BUYING BEHAVIOR

Buying behavior in CP brand chicken parts	Price factor		Test result
	Pearson Correlation	Sig. (2-tailed)	
Type of CP chicken parts product	.079	.113	No relation
Buying frequency of CP chicken parts product	-.091	.070	No relation
Advantage of CP chicken parts product	.054	.281	No relation
Value of purchase for CP chicken parts product	-.017	.729	No relation
Location to buy CP chicken parts product	.172	.001**	Negative relationship
Reason for choosing to buy from such location	.031	.543	No relation
Person having influences on buying decision	-.015	.766	No relation
Priority in buying CP chicken parts product	.074	.142	No relation

*statistical significance at level of .05 **statistical significance at level of .01

Analysis of relationship between price and buying behavior in CP brand chicken parts indicated that the location to buy CP chicken parts product has relationship with consumer buying behavior at a statistical significance level of 0.01 with correlation coefficient of 0.172 meaning that the 2 variables have negative relationship.

TABLE III
ANALYSIS OF RELATIONSHIP BETWEEN PLACE AND THE BUYING BEHAVIOR

Buying behavior in CP brand chicken parts	Place Factor		Test Result
	Pearson Correlation	Sig. (2-tailed)	
Type of CP chicken parts product	-.027	.588	No relation
Buying frequency of CP chicken parts product	-.119	.017*	Negative relationship
Advantage of CP chicken parts product	-.088	.079	No relation
Value of purchase for CP chicken parts product	-.018	.717	No relation
Location to buy CP chicken parts product	.127	.011*	Negative relationship
Reason for choosing to buy from such location	-.097	.054	No relation
Person having influences on buying decision	-.084	.094	No relation
Priority in buying CP chicken parts product	.051	.313	No relation

*statistical significance at level of .05 **statistical significance at level of .01

Analysis of relationship between place and consumer buying behavior in CP brand chicken parts in the aspects of Buying frequency of CP chicken parts product and Location to buy CP chicken parts producthave relationship at statistical significance level of 0.05 with correlation coefficient of -0.119, 0.127 meaning that both variables have low level of negative relationship.

TABLE IV
ANALYSIS OF RELATIONSHIP BETWEEN PROMOTION AND THE BUYING BEHAVIOR

Buying behavior in CP brand chicken parts	Promotion Factor		Test Result
	Pearson Correlation	Sig. (2-tailed)	
Type of CP chicken parts product	0.023	0.640	No relation
Buying frequency of CP chicken parts product	-0.025	0.620	No relation
Advantage of CP chicken parts product	-0.172*	0.368	No relation
Value of purchase for CP chicken parts product	-0.005	0.915	No relation
Location to buy CP chicken parts product	0.149*	0.963	No relation
Reason for choosing to buy from such location	-0.039	0.434	No relation
Person having influences on buying decision	0.018	0.718	No relation
Priority in buying CP chicken parts product	0.063	0.207	No relation

*statistical significance at level of 0.05 **statistical significance at level of 0.01

Analysis of relationship between promotion and consumer buying behavior in CP brand chicken parts in the aspects of Type of CP chicken parts product; Buying frequency of CP chicken parts product; Advantage of CP chicken parts product; Value of purchase for CP chicken parts product; Location to buy CP chicken parts product; Reason for choosing to buy from such location; Person having influences on buying decision; and Priority in buying CP chicken parts product were found to have the following Sig. (2-tailed) value respectively 0.640, 0.620, 0.368, 0.915, 0.963,

0.434, 0.718, and 0.207 which were higher than 0.05 meaning H_0 was accepted while H_1 was rejected. This indicates that promotion does not have relationship with buying behavior for CP brand chicken parts.

III. CONCLUSION AND DISCUSSION

Demographic data of questionnaire respondents indicated that most of the respondents were female aged 36 years up, Muslim, single, and graduated lower than Bachelor's degree, earning maximum average monthly income of 20,000 Baht, and having 2-3 family members. This data resembles the research of Issaree Kitwattanaboon (2006) who studied consumer behavior and satisfaction in marketing mix of Saha Farm Company Limited, Talad Thai Branch. She found that most of the buyers were 31-40 years of age, had primary level of education, pursuit independent occupation or merchant with monthly income of 10,001-20,000 Baht.

Factors that have influence on buying behavior in CP brand chicken parts were found to be in high level of significance. When considering in details, 2 dimensions were found to be in the highest level of significance i.e. distribution channel and promotion. This result resembles that of Issaree Kitwattanaboon (2006) who studied consumer behavior and satisfaction in marketing mix of Saha Farm Company Limited, Talad Thai Branch and found that most of the samples were highly satisfied with distribution channel and promotion.

The research also found that product and price were the factors that have the highest importance [3]. This finding is in accordance with the study of Chayada Kanabkaew (2005) which investigated Hat Yai consumers' buying behavior in chicken products. The study revealed that the samples gave highest significance to cleanliness, freshness, and honesty of seller when weighing the chicken at the point of sale. For chicken product, it was found that price, promotion, buying convenience, flavor, nutrition, sophistication, and packaging were in a high level of significance. This is in accordance with the research of Suporn Buasri (2004) which studied Hat Yai people's behavior in pork consumption. Her study found that most samples emphasized on cleanliness, freshness, safety from chemical substances and epidemics at the highest level of significance [7].

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The Relationship between other Comprehensive Income Items and Rate of Return of Listed Firms in the Stock Exchange of Thailand

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Abstract **- The research attempts to study relationship between Other Comprehensive Income Items in accordance with Thai Financial Reporting Standard and Rate of Return of Listed Firms in the Stock Exchange of Thailand for the year ending 2012, 2013, and 2014. The researcher applied Multiple Regression Analysis developed from the model of Dhaliwal et al. (1999); searched secondary data from textbooks, accounting standard, and website of Stock Exchange of Thailand; and use computer program for statistics to analyze the relationship. Other Comprehensive Income Items were set as independent variables and the Rate of Return was dependent variable. Results of the study could be explained that net profit and other comprehensive income items were not found to have relationship with rate of return of listed firms. Detailed analysis of each element of other comprehensive income items consists of capital surplus from asset valuation, profit or loss resulting from estimation according to actuarial science principle, profit or loss from translation of foreign currency financial statement, profit or loss from valuation of investments available for sale, and profit or loss from cash flow hedge. The annual analysis showed no relationship between the other comprehensive income items mentioned and rate of return of listed firms. However, when looking at overall three year period, profit or loss resulting from estimation according to actuarial science principle was proved to have relationship with rate of return of listed firms.**

I. INTRODUCTION

Users of financial statement usually focus on profit of companies as shown in income statement since companies that make high profit will pay dividends preferable to their shareholders. This had made researcher come up with the question that if net profit is an indication of the company's business operating performance to which investors paid their attention, other comprehensive income items should also be a good indicator to support the same purpose. According to concept of profit measurement and capital maintenance, other comprehensive income items are included in shareholder's equity. If users of financial statement focus only on income statement, they may make suboptimal decisions. Other comprehensive income items originated from the attempts of accountants to keep all elements of rate of return in one place to enable investors to have a complete view [5].

A. Research Objectives

Objectives of this research are to determine relationship between other comprehensive income items according to Thai Financial Reporting Standard and rate of return of listed firms in the Stock Exchange of Thailand [1-2].

B. Related Theory

Thai Accounting Standard TAS1 concerns presentation of financial statement. Other comprehensive income items according to TAS1 consist of revenue and expenses (including adjustment and re-categorization) which are not allowed to be realized in income statement. Other financial reporting standard and elements of other comprehensive income items included: capital surplus from asset valuation (accounting standard TAS16 amended 2009) with regards to land, buildings, and equipments; Thai Accounting Standard TAS38 (amended 2009) about intangible assets; profit or loss resulting from estimation according to actuarial science principle in relation to Thai Accounting Standard TAS19 with regards to employees' benefits; profit or loss from translation of foreign currency financial statement according to Thai Accounting Standard TAS21 (amended 2009) about influences of exchange rate; profit or loss from valuation of investments available for sale according to Thai Accounting Standard TAS39 about realization and measurement of financial instrument; and profit or loss from cash flow hedge in reference to Thai Accounting Standard TAS39 relating to realization and measurement of financial instrument [4,6,9].

C. Benefits from the research

1. Benefits to investors. Investors can use data on other comprehensive income items to help in making investment decisions in the Stock Exchange of Thailand.

2. Benefits to securities analysts. Apart from looking at profit or loss in the period, securities analysts can have a look at other comprehensive income items as other source of relevant data to analyze securities of companies that show these items in their financial statement.
3. Benefits to students and interested people. This research can be utilized as data source or reference for future researches.

II. RESEARCH METHODOLOGY

Population of the research is listed firms in Stock Exchange of Thailand by looking at their financial statement ending December 31st of 2012, 2013, and 2014. Exceptions are on companies in the group of banking, fund and securities, insurances, as well as companies in rehabilitation. From data acquired, it was found that 406 companies can be determined as population of this research.

Multiple Regression Analysis was applied in the study and statistical computer programs were used to analyze the data. Other comprehensive income items were set to be independent variable while rate of return was set as dependent variable [9-10].

Adjusted R^2 represents coefficient in decision making. It measures to what extent independent variables can be used to explain changes in dependent variable.

P-Value is the value used to make conclusion of hypothesis test. If P-value is shown to be lower than the defined statistical significance, hypothesis would be accepted and vice versa.

Data analysis was first done separately for each year of 2012, 2013, and 2014. Then all three years would be analyzed all together for four times. Each time comprised 2 models which would give results of data analysis in 8 sets of report [3].

A. Models Applied in the Research

Models used to analyze data in this research were as follows.

Model 1

$$R_i = \alpha_0 + (\beta_1 * NI_i) + (\beta_2 * OCI_i) + \varepsilon_i$$

This model attempts to analyze relationship between rate of return and net profit or loss for the period together with other comprehensive income items shown in shareholder's equity in financial statement of listed firms [7].

Model 2

$$R_i = \alpha_0 + (\beta_1 * NI_i) + (\beta_2 * REV_i) + (\beta_3 * RETIRE_i) + (\beta_4 * FCT_i) + (\beta_5 * MKT_i) + (\beta_6 * CASH_i) + \varepsilon_i$$

This model is for determining relationship between rate of return and net profit or loss together with capital surplus from asset valuation, profit or loss resulting from estimation according to actuarial science principle, profit or loss from translation of foreign currency financial statement, profit or loss from valuation of investments available for sale, and profit or loss from cash flow hedge.

R_i represents rate of return of listed companies which is used to measure all kinds of return on investment in securities such as capital gain/loss and dividends with an additional assumption that dividends shall be reinvested.

α_0 is static coefficient.

β_1 is independent variable coefficient

ε_i is variation

MKT is profit or loss from valuation of investments available for sale.
REV is capital surplus from asset valuation.
FCT profit or loss from translation of foreign currency financial statement.
RETIRE profit or loss resulting from estimation according to actuarial science principle.
CASH profit or loss from cash flow hedge [11].

Data was analyzed using multiple regression analysis (Figure 1) an application of computer program for statistics. Other comprehensive income items were set to be independent variable while rate of return was set as dependent variable [8].

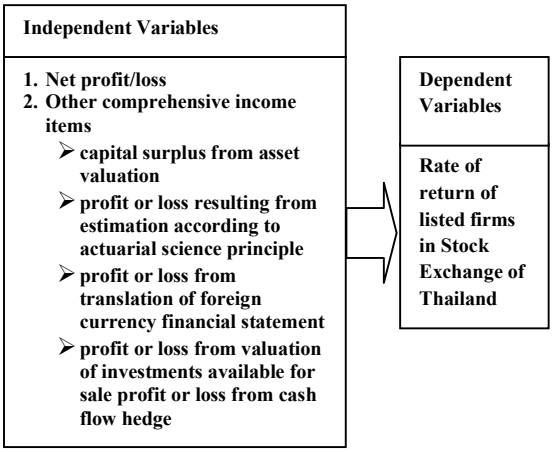

Figure 1. Data Analysis

III. FINDINGS

Findings could be concluded annually for each model as follows.

A. Analysis result of year 2012

Data for year 2012 using model 1 showed that the p-value of net profit and other comprehensive income items equal to 0.408 and

0.887 respectively which are higher than 0.05. Therefore, it could be concluded that net profit and other comprehensive income items do not have relationship with rate of return of the listed firms.

Data for year 2012 using model 2 showed that the p-value of net profit and other comprehensive income items equal to 0.760, 0.824, 0.740, 0.928, 0.103, and 0.896 respectively which are higher than 0.05. Therefore, it could be concluded that net profit and other comprehensive income items do not have relationship with rate of return of the listed firms.

B. Analysis result of year 2013

Data for year 2013 using model 1 showed that the p-value of net profit and other comprehensive income items equal to 0.551 and 0.726 respectively which are higher than 0.05. Therefore, it could be concluded that net profit and other comprehensive income items do not have relationship with rate of return of the listed firms.

Data for year 2013 using model 2 showed that the p-value of net profit and other comprehensive income items equal to 0.876, 0.833, 0.813, 0.921, 0.201, and 0.483 respectively which are higher than 0.05. Therefore, it could be concluded that net profit and other comprehensive income items do not have relationship with rate of return of the listed firms.

C. Analysis result of year 2014

Data for year 2014 using model 1 showed that the p-value of net profit and other comprehensive income items equal to 0.263 and 0.588 respectively which are higher than 0.05. Therefore, it could be concluded that net profit and other comprehensive income items do not have relationship with rate of return of the listed firms.

Data for year 2014 using model 2 showed that the p-value of net profit and other comprehensive income items equal to 0.210, 0.469, 0.590, 0.899, 0.305, and 0.448 respectively which are higher than 0.05. Therefore, it could be concluded that net profit and other comprehensive income items do not have relationship with rate of return of the listed firms.

D. Analysis result of all 3 years of 2012-2014

Overall data for year 2012-2014 using model 1 showed that the p-value of net profit and other comprehensive income items equal to 0.129 and 0.547 respectively which are higher than 0.05. Therefore, it could be concluded that net profit and other comprehensive income items do not have relationship with rate of return of the listed firms.

Overall data for year 2012-2014 using model 2 showed that the p-value of net profit and other comprehensive income items equal to 0.424, 0.665, 0.048, 0.793, 0.824, and 0.748 respectively which are mostly higher than 0.05 except for profit or loss resulting from estimation according to actuarial science principle with its p-value of 0.048 which is lower than 0.05. Therefore, it could be concluded that net profit and other comprehensive income items do not have relationship with rate of return of the listed firms except profit or loss resulting from estimation according to actuarial science principle which has relationship with rate of return of the listed firms.

From the analysis above, both net profit/loss and other comprehensive income items showed no relationship with rate of return of listed firms except in the case of considering 3 years together where profit/loss from estimation according to actuarial science principle was found to have relationship with rate of return of the listed firms.

IV. CONCLUSION AND DISCUSSION

From the analysis by both method i.e. the first method focused on net profit/loss and other comprehensive income items as a whole, and the second method focused on net profit/loss and each element of other comprehensive income items, the analysis results showed that they all do not have relationship with the rate of return which means the hypothesis is rejected. However, exception is in the case of considering 3 years together where profit/loss from estimation according to actuarial science principle was found to have relationship with rate of return.

V. LIMITATIONS

This research does not consider each part of other comprehensive income items individually which has effect on rate of return of listed firms, and also does not separately analyze according to each group of industry. Further, other comprehensive income items were shown to contain a big gap among each other such as profit/loss from valuation of investments available for sale had 340 items in three years income statement while there were only 25 items in profit/loss from cash flow hedge. Values of the realized amount are also very much different. For each component of other comprehensive income items to yield profit practically, it may require different period of time. As a result, a research with separate analysis for each

component or each industry is supposed to give more precise results than to analyze all together as a whole.

Current economic condition and in the year 2012 until 2014 and 2015 is in downturn. Political instability as well as international and domestic terrorisms has caused increase of decrease in rate of return of the listed firms to be influenced by other factors than normal business operating performance. For example, even thought listed firms pay dividends to shareholders at a high rate, once terrorism problem occurs value of the shares would go down.

VI. RECOMMENDATION FOR FUTURE RESEARCH

1. In this research, the analysis was not done individually on each group of industry. Therefore, future research should be conducted with separate analysis for each group of industry or each component of other comprehensive income items.
2. This research studied other comprehensive income items that appear on profit & loss statement and the values were concluded at the end of period. However, analysis was not conducted on other comprehensive income items that are "other components of shareholders' equity" which is a cumulative value shown in statement of financial position for each accounting period.
3. Results of hypothesis test in this research rejected the hypothesis; however the causes for such outcome have not been identified.

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System Thinking Approach to Deal with Sustainability Challenges

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Abstract - **In this research paper the authors will test the relevance of system thinking approach in dealing with the complex problems. System thinking is different in comparison to traditional thinking because it focuses on the inter relationship between the different components used in the system. The authors will test the relevance of system thinking approach in dealing with the problem of obesity. Now-a-days India, UK, Australia and several other countries are facing obesity problems in children. Obesity is a root cause for many other diseases in the system. This is an alarming situation and traditional approaches are failed to find solution of this problem. In this paper the authors will check whether system thinking approach will be beneficial in sustainability challenges or not. United Kingdom is effectively using system thinking approach and its example will be discussed in this research paper.**

I. INTRODUCTION

A system is set of separate parts interrelated with each other to work towards a common goal. In this essay the author will critically discuss the argument whether system thinking is useful in developing solution of sustainability challenges. The author will support the argument favours the argument that system thinking is useful in dealing with wicked problem. System thinking focuses on the individual parts and the interrelationship between those parts to produce solution for the problems. The author will also discuss the applicability of system thinking in dealing with the problem of obesity. Both developing and developed countries are facing the problem of obesity. The obesity problem is increasing at rapid pace in children of America and other European countries. Obesity is considered as a wicked problem because there is no definite solution of this problem. Some researchers have also concluded that system thinking is a very time consuming process and it is not easy to understand. The authors will also discuss the counter arguments against system thinking approach in the last part of research paper.

II. SYSTEM THINKING APPROACH IN DEALING WITH SUSTAINABILITY CHANGES

System thinking approach is very useful in dealing with the problems of sustainability because this approach looks the things from a macroscopic rather than seeing a shorter picture. Now-a-days system thinking has been used by various academicians and practitioners [15]. System thinking has been founded by Professor Jay Forrester in 1956. There is a significant difference in the traditional thinking approach and system thinking approach. Traditional analysis approach focuses on what is being studied while system thinking approach looks for an interrelationship between the different constituents of the system. It can be denied that world is pacing towards industrialization and globalization. In this globalized era, the world needs to face several complexities in coming year. System thinking will help in dealing with those complex problems. System test is an essential application of system thinking approach.

The three important parts of system test are purpose, elements and functions [1]. First part is system test; it describes the purpose for which system thinking has been adopted. The second part works on different elements of system thinking. Finally, there is need to see the interrelationship between different elements. One can say computer and informational technology have made a transformational change to the sustainable society. Computers and technology have provided computational solutions to the most complex problems of the world. Sustainability challenges need to be solved in different manner. A system approach is helpful in finding an interrelationship between technology, human behaviour and environmental impacts. In modern society there is a shift from computational thinking to system thinking [7]. Computational thinking involves the use of programming and algorithms to find the solution each complex problem. There is one restriction or limitation with computer thinking that the computer professionals try to solve all the problems with the help of algorithms. There are certain problems which can't be understood through algorithms. For those problems complex system thinking has been evolved.

System thinking focus on how one constituent of system will interact with another constituent of the system. The nature of system thinking makes it enable to solve complex problem faced by the society. For e.g. System thinking is very useful in dealing with the problem which involve interrelationship between different actors to solve the complex problems, recurring problems which

have not been solved even after the past efforts [2]. Sustainability challenges are also called the adaptive challenges because already established protocols and procedures can't be applied to such situation [10]. There is no unified procedure or approach to deal with most wicked sustainability challenges. System thinking can be useful in changing our previous mental models to deal with the problems of sustainability because it contains process, technologies and set of skills. [18] has argued that the mental models using system thinking involves certain steps:

1. Framing the issue using dynamic thinking and system as cause thinking
2. Building understanding using operational thinking, scientific thinking and generic thinking
3. Communication using emphatic thinking

III. OBESITY PROBLEM

Obesity is considered as the wicked problem because obesity has all the features of a wicked problem. Wicked problems are not stable, no clear solution and socially complex in nature [3].Obesity rated as a complex problem because there are numerous interconnected variables and elements attached to it. The increasing obesity rates are equally affecting both developed and developing countries. Now obesity is affecting the health of young children and adults. Obesity problem causes severe effects on the human body. For e.g. high blood cholesterol, pregnancy complications, mental stress, low self-confidence, hirsutism and psychological disorders. The total economic cost associated with obesity is $117 billion [5]. America is most severely affected by obesity problem in last few years. World Health Organization has announced obesity as one of the greatest public health challenges of 21st century.

A joint study by International Association for the study of Obesity and World Health Organization has estimated that approximately 1.7 billion people are overweight or obese. The WHO study also concluded more than 2.5 million deaths per year including 3 lakh deaths in USA [6]. Obesity problem occurs when energy intake of the individual is more than the energy expenditure. The high energy intake and lower energy expenditure creates energy imbalance. The people are categorized overweight when their body mass index is more than equal to 25 kg/mm and obese when their body mass index is more than equal to 30 kg/mm. The two major concerns related with obesity are; it is increasing at rapid pace and there is no well-defined solution to this problem.

In spite of the seriousness of obesity problem the doctors and physicians are considering as simple problem and trying to change individual behaviour to counter the problem of obesity. There are several therapies to deal with the problem of obesity which include behavioural, cognitive, surgical and pharmaceuticals therapies. The most common adopted by doctors and health care professionals to deal with the problem of obesity is to advise the people on regular diet and health education. In recent time Bariatric surgery and Pharmacotherapy have produced some excellent results to deal with the problem of obesity. The previous researches have also shown that physicians are not properly trained in obesity management strategies. Physicians and health care professionals recommend obese people to eat less but there are no absolute strategies to support their recommendations. The physicians are also facing structural problems while dealing with the problem of obesity. It is difficult to arrange appropriate size of equipment to deal with the problem of obesity in different people.

IV. APPLICATION OF SYSTEM THINKING TO DEAL WITH PROBLEM OF OBESITY

System thinking can provide ways to deal with complexity of obesity problem and it will be new beginning for the health care professionals [10].The system approach has been very useful in dealing with various healthcare problems such as cardiovascular disease, mental health and tobacco control. This approach has a brilliant history of past 50 years. A system approach sees the problems from broader perspective to find out interconnection between different levels.

A system approach also considers the importance of circumstances and condition under which a specific decision and the impact of those circumstances during the implementation phase. While dealing with wicked problems under system approach even a small change in one element can make a big impact on the other elements. In dealing with obesity problem the first task of the physicians is to match capacity with complexity. Many physicians avoid discussion with patents over obesity problem because they have large patent load, less knowledge about the practices used for obesity problem and minimum resources. The physicians need to change their approach while dealing with obesity problem. Obesity is a complex problem and physicians need to have the information about best practices to deal with obesity problem. They need to counsel the obese people in effective and improved manner. Physicians can reduce the complexity of the obesity problem by focusing on the process rather than outcome.

Physicians need to improve their communication with the patients because many patents remain uninformed about the prevention techniques.

Physicians can access the risk, study the current behaviour of patents, convince them for a change in behaviour, set goals and help them in combating against the barriers. The main objective of system thinking approach is to create an atmosphere which encourages communication, feedback and improvement. A health literacy team consist of experts can take the responsibility to increase the awareness about obesity in the minds of people.

The Foresight group in UK has adopted system thinking approach to deal with the problem of obesity [9]. Firstly the group has searched for various factors responsible for obesity based on scientific evidence. In the second step group members have identified the relationship between different factors and the effect of changing the value of one factor over another. In the third step the group has analysed the future levels of obesity and the most effective responses. The Foresight group has designed a map which has showed the interrelationship between different contributors to energy balance. System thinking argues that there is need of integrated interventions between different levels of society which include family, individual, local, national and international level.

Physicians and health care professionals should focus on long-term behavioural change in obese people. Only the implementation of policies is not important but the evaluation of those policies is also important. A system thinking approach also helped various stakeholders and decision makers to think about the future of various approaches base and potential costs associated with them based on what if scenarios [16]. System dynamics modelling also helped United States in dealing with the problem of obesity. System thinking argues that we can't put the entire responsibility of weight loss on the shoulders of patients. The food production companies also need to understand the problem of obesity. Similarly families, school, communities all need to come together to work together to get rid of the obesity problem.

We need to make an informative environment which will see obesity as a wicked problem rather than considering it as simple problem [12].System of system methodologies presented two dimensions to understand obesity problem. The first dimension talked about nature of system which is changing from simple to complex and second dimension talked about relationship between the participants [8]. On the basis of overall analysis it can be system thinking approach has provide multiple methodologies to generate knowledge, finding interrelationships between different elements and reducing the impact of obesity problem.

There are some arguments which oppose the relevance of system thinking approach. On one hand experts are suggesting the use of system thinking to solve wicked problems on other hand some researchers argued that system thinking shared the ideology of planners, technical efficient persons and planners [13]. It is difficult for a health care professional of physicians to fit him in the dimensions of system thinking. Another criticism of system thinking approach is that it is a time consuming process [14]. System thinking is trying to make an interconnection between all the microscopic elements. Many physicians remain due to heavy patient loads and their other responsibilities. It will be challenging for all the physicians and health care professional to give enough time to implement system thinking approach.

System thinking has been applied to those problems which have no definite solutions. It is easy to work on the problems if the boundaries of problem have been decided. The third criticism of the system thinking that there is no certain boundaries of the system thinking. Physicians need to think about too many things in limited time. Firstly the problem is complex secondly there is no defined solutions of the problem. Fourth criticism about the system thinking is that it is considered equivalent to the cybernetics. As argued by [4] system thinking perceives the world as a computer and cybernetics was considered as another extension of mechanistic and reductionist model [17]. It is true the system thinking talks about interactions between different elements but the system philosophy doesn't specify nature of interactions and interdependencies [20]. In this essay the author has argued that system thinking is used for complex and wicked problems. But it is very complex for people to understand the mathematical models and tools used in the system thinking.

V. RECOMMENDATION

There is need to involve system thinking approach in the course curriculum of the higher education programmes. The inclusion of system thinking approach will enable students to see the complex sustainability challenges from complex and pluralistic views of the world [11]. The researcher needs to show the students practical application of system thinking by applying system thinking in design of course curriculum. In this paper authors have discussed about obesity challenges but sustainability problems are not limited up-to obesity problem. The world is facing global warming and environment change problems. The teaching of concepts of system thinking will help students in dealing with environmental problems.

VI. CONCLUSION

On the basis of above discussion it can be said that system thinking is very much useful in dealing with sustainability challenges. The traditional method used for dealing with the problem of obesity are not providing effective result, this problem is growing continuously at rapid pace. Physicians and health care professionals need to give their time and effort to develop various objectives for applying system thinking approach in dealing with the problem of obesity. Foresight group UK has successfully adopted the system thinking approach to deal with the problem of obesity. Foresight group has selected various factors and relationship between different elements to deal with the problem of obesity. Though people are using system thinking from last 50 still the critics said it is time consuming process with no limitations.

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Improvement of Warehousing Service Quality of ABC Company Limited

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Abstract **- The research about improvement of warehousing service of ABC Company Limited aimed to evaluate service quality that affects the customers' satisfaction. Population of the study was 135 employees in 5 divisions *i.e.*, Sales, Logistics, Human Resource, Marketing, and Finance & Accounting. Questionnaires were used to collect the data and Percentage, Mean, t-test, One-way ANOVA, and Regression were applied to analyze the data gathered. The study indicated that most of the samples were female aged 21-30 with married status, graduated high school/vocational degree, having 3-6 years of work experience, and earning monthly income of 20,001-30,000 Baht. It was found that samples had medium level of satisfaction on the service. They paid attention on reliability in a high level including equipment i.e. accurate scanner, straightforwardness of warehousing officers, trustable appearance of warehousing officers, and general quality of warehousing service. Hypothesis test result showed that demographic factors including gender, age, status, education level, division, work experience, and monthly income did not have influence on the customers' satisfaction. Service quality factors were tested and found that responsiveness to customers' needs had relationship with customers' satisfaction while tangibility, reliability, competence, accessibility, courtesy, communication, and security did not have relationship with the customers' satisfaction.**

Keyword: Improvement marketing quality

I. INTRODUCTION

Thailand is improving its economic system and production is being expanded all over the country. As a result, there is significant number of movements of the products to keep in warehouse or distribution center in order to satisfy customers' needs both domestically and internationally. With an implementation of Asean Economic Community (AEC), competition among ASEAN countries will become fierce and Thailand will be at disadvantage because of its instable political condition, overall economic slowdown, and its reluctant attention to logistics management comparing to the other nine ASEAN countries [2, 3, 20].

Severe competition has forced Thailand to try to improve its economic operation in every possible ways to reduce costs and increase the value in the whole supply chain [1, 17]. Entrepreneurs are seeking ways to cut cost while maintaining competitiveness among other businesses in the same industry. In this condition, customers have choices for low price product and service with good quality in a timely manner which will help the business to gain repeat buyers and therefore benefit to the business [6, 7, 13]. In order to prepare for business opportunity, it has to improve for effective warehousing management as well as for higher quality of warehousing service. Warehousing services include picking the products from manufacturer, preparing the products according to customers' purchase order, receiving returned products, and inventory count which are important activities in the balancing within supply chain by preventing uncertainty in each procedures that may cause damage and loss in business opportunity.

For this reason, the researcher as a senior level staff becomes interested to study warehousing service as a part of logistics management of ABC Company Limited. The results obtained from the study shall be utilized as guideline to improve quality of warehousing service, to increase competitiveness, to reduce unnecessary costs, and achieve maximum efficiency as well as to satisfy clients with the warehousing service of the company.

II. RESEARCH OBJECTIVE

The research aims to study factors of warehousing service quality which have influence on the client of ABC Company Limited.

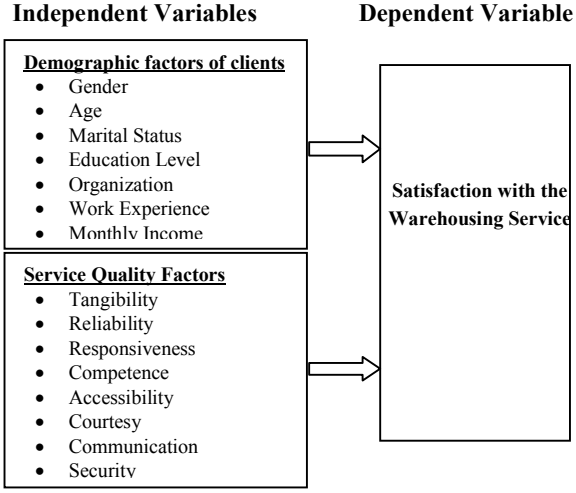

Figure 1. Conceptual Framework

III. LITERATURE REVIEW

Service quality theory consists of tangibility, reliability, responsiveness, competence, access, courtesy, communication, credibility, security, and understanding/knowing the customer [14].

IV. RESEARCH METHODOLOGY

The research used questionnaire as a tool for data collection which can be considered in 3 parts.

Part1 contains in total 7 nominal scale questions about demographic data of the sample such as gender, age, education, organization, work experience, and monthly income [8-10, 14, 18-19]. Answers of questions are checklist and respondents have to choose only one choice that best suit the answer. A simple statistics tool i.e. percentage is used to analyze data collected in this part [3, 5].

Part2 consists of Likert's 5-level rating scale questions about warehousing service quality in 8 aspects and each aspect has 5 questions so totally there are 40 questions in this part. Statistical tools used to analyze data obtained in this part are percentage, mean, t-test, One-way ANOVA, and Regression. Each level is identified in ranges of means as follows. Mean 4.51-5.00 indicates the highest level of satisfaction. Mean 3.51-4.50 indicates high level of satisfaction. Mean 2.51-3.50 indicates medium level of satisfaction. Mean 1.51-2.50 indicates low level of satisfaction. And mean 1.00-1.50 indicates the least level of satisfaction.

Part3 includes open-ended questions about opinion and useful recommendation from respondents.

V. FINDINGS

A. Demographic data obtained

From 135 samples, most of them were female aged 21-30 with married status, graduated high school/vocational degree, having 3-6 years of work experience, and earning monthly income of 20,001-30,000 Baht.

B. Warehousing service quality factors that affect client's satisfaction.

It was found that overall service quality was in medium level according to the following order: reliability, competence, responsiveness, security, communication, courtesy, and tangibility.

Tangibility is found to be in high level of quality. The warehouse is provided with adequate illumination, air circulation, staffs are enthusiastic and ready to serve clients.

Reliability is found to be in high level of quality. Equipment i.e. scanners are accurate, warehousing officers are straightforward and cooperative, warehousing officers have trustable appearance, and general quality of warehousing service is good.

Responsiveness is shown to be in high level of quality. Receiving and releasing of the product by warehouse officers, and working hours 8.30-18.00 are suitable.

Competence is identified in a high level of quality. Officers know their duty, they have knowledge and skills necessary to serve clients, and they have ability to solve problems at hand [11,15,16].

Accessibility is found to be in high level of quality. Clients have choices to access the service such as telephone, facsimile, e-mail, and social media. Clients can also go in and out to the location of warehouse conveniently.

Courtesy is in medium level of quality including cleanliness and neat dressing of warehouse officers, politeness and manner of warehouse officers, hospitality and assistance rendered by warehouse officers as well as humbleness of the warehouse officers.

Communication is found to be in high level of quality i.e. warehouse officers communicate through e-mails.

Security is in high level of quality as inventory control officers maintain good condition of the products making it ready to be distributed.

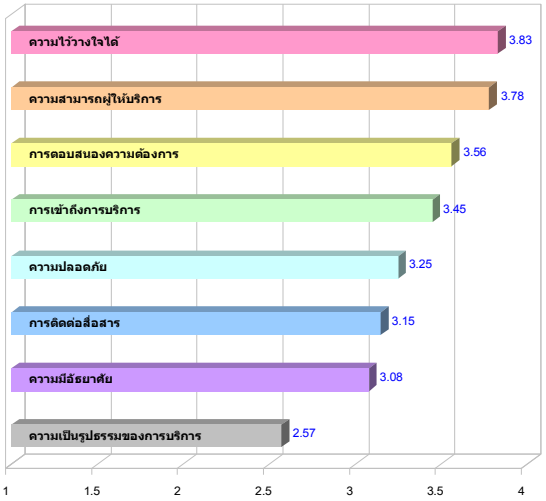

Figure 2. Level of opinion toward warehousing service quality factors that affect clients' satisfaction in the service

Reliability 3.83 Competence 3.78 Responsiveness 3.56 Accessibility 3.45 Security3.25 Communication3.15 Courtesy 3.08 Tangibility 2.57

C. Hypothesis Test Results

The researcher set hypothesis of the study as follows:

1. Demographic factors have influence on client's satisfaction in the service. The result showed that factors such as gender,

age, marital status, education, organization, work experience, and monthly income do not have effect on client's satisfaction.

2. Warehouse service quality factors have relationship with client's satisfaction. The result proved that reliability, competence, accessibility, security, communication, courtesy, and tangibility do not have relationship with client's satisfaction while responsiveness does.

TABLE 1
SHOWS MULTIPLE REGRESSION ANALYSIS OF RESPONSIVENESS

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
(Constant)	4.095	2.945		1.390	.167
Officers are ready to provide warehousing information promptly.	-.345	.160	-.313	-2.154	.033
Officers inform results of operation in every step.	.459	.267	.276	1.715	.089

VI. DISCUSSION

The researcher has interesting points that worth discussion as follows:

Warehousing service quality factor in responsiveness aspect has effect on client's satisfaction. This is similar finding to the research of Dr. Somchit Arjin et al. which found designing of web-based system makes it easier for users since it can be used anywhere as long as there is internet signal, and it also helps to reduce transportation cost [17].

VII. RECOMMENDATION

The researcher would like to suggest the following recommendations:

1. Organization within the company should be improved to achieve better quality of service by training.
2. Tangibility and reliability should be focused. Warehouse officers should be aware of significance of providing better quality service.

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Work Efficiency of Delivery Staffs of ABC Company Limited

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Abstract - **The study attempts to determine factors that have influences on work efficiency of delivery staffs of ABC Company Limited. Population is all the delivery staffs out of which 135 were drawn as samples. Questionnaires were used to collect the data and percentage, mean, standard deviation, t-test, F-test, One-way ANOVA, and Fisher's least significant difference (LSD) were used to analyze the data. The study revealed that from 135 samples most were male aged 21-30 with single status, graduated diploma, working with the company for 1-5 years, and earning income of 10,001-15,000 Baht per month. Respondents had high level in average for opinion toward work efficiency of delivery staffs of the company. Factor that had the highest level of influence was knowledge, while factors that had high level of influence were capability, information, persuasion, motivation, and equipment respectively. Hypothesis test result showed that gender and period of work with the company had influence on work efficiency of delivery staffs of the company at a statistical significance of 0.05. Demographic factors including age, status, education, and income were found to have no effect on the work efficiency. Knowledge had relationship with satisfaction in the work efficiency while capability, motivation, information, persuasion, motivation, and equipment did not have relationship with the work efficiency. The study suggested that administrative officers should focus on encouraging the staffs to gain knowledge, capability, and skills in routes of product delivery since they affect their work efficiency.**

Keywords: Work efficiency, Logistics, Costs

I. INTRODUCTION

Nowadays, logistics management is an important task that helps entrepreneurs to gain competitiveness domestically and internationally [4-6]. Globalization and free trade concept have led to intense business competition and forced entrepreneurs to improve their business capacity in every possible way. Examples are minimizing the costs, adding more values to the product & service, managing delivery process from manufacturer to buyers all along the supply chain [3,8,12,13,14]. In business operation, entrepreneurs are aware of production cost as the main cost and try to reduce production cost in order to be able to compete in the market. Since it is hardly possible to maintain the same level of sales revenue while increasing the price of goods, entrepreneurs pay attention to costs. Apart from material and labor costs, logistics cost is also a significant element of total cost. Logistics cost incurred as a result of logistic activities which mainly are customer service, transportation, storage, ordering process, order quantity, and inventory control. Total cost concept is crucial in effective logistics management. Every organization aims at reduction of overall logistic costs instead of considering each activity separately [11, 15]. Costs are reflected in main logistics activities as well as supporting activities in order to show relationship of all logistics activities. Delivery is one of the most important activities in logistics since almost all business more or less have to involve delivery from raw materials, parts, to finished products to channels of distribution or end customers. If problem occurs such as late delivery or improper method of delivery causing damages to the products, the business would be affected by such problems and the company may lose business opportunities [2].

ABC Company Limited produces and distributes cosmetics and health products. It has been facing problems with product delivery to distribution channels and agents. Most of the problems found concern capability of delivery staffs including their knowledge, skills, as well as equipments, unorganized delivery, unpunctual delivery, and irresponsibility in the products being delivered. These problems result in waste of time, expenses, as well as loss in business opportunities for the company and the company has to always bear higher costs to solve these problems. From the facts mentioned above, the researcher became interested to study factors that have effects on work efficiency of delivery staffs to find the solution and improve work efficiency of delivery staffs of ABC Company Limited to achieve the target for cost reduction from mistakes in delivery process [1,10].

A. Research Objectives

The research aims to determine factors that have influences on work efficiency of delivery staffs of ABC Company Limited.

B. Benefits of the Research

Results from the determination of relevant factor affecting work effectiveness of delivery staffs of

ABC Company Limited could be applied to improve the work efficiency of the delivery staffs.

C. Conceptual Framework

Researcher applied efficiency concept of Thomas F. Gilbert to form the conceptual framework used to study relevant factor affecting work effectiveness of delivery staffs of ABC Company Limited as shown in the below figure.

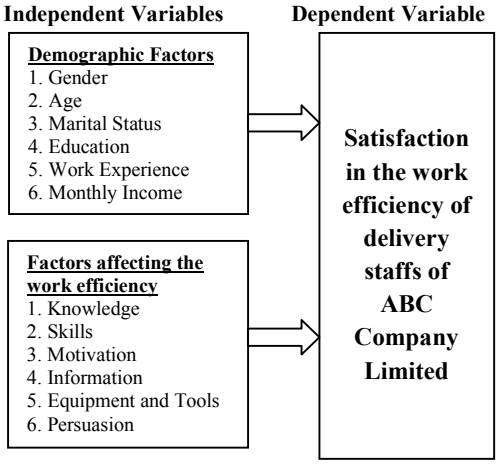

Figure 1. Conceptual Framework

II. RESEARCH METHODOLOGY

An instrument used to collect data for this research was questionnaire that could be described in 3 parts. Part1 contains demographic data of questionnaire respondents including gender, age, marital status, education, work experience, and monthly income. Part2 includes questions about opinion on factors affecting work efficiency of the delivery staffs. Finally, part3 consists of open-ended questions about opinion and suggestions of the respondents. Questionnaires were distributed to 135 delivery staffs in the company.

III. FINDINGS

A. Demographic factors

From 135 samples most were male aged 21-30 with single status, graduated diploma, working with the company for 1-5 years, and earning income of 10,001-15,000 Baht per month [7].

B. Factors affecting work efficiency of delivery staffs of ABC Company Limited.

The finding indicated that respondents had averagely high level of opinion toward work efficiency of delivery staffs of the company. Factor that had the highest level of influence was knowledge, while factors that had high level of influence were capability, information, persuasion, motivation, and equipment respectively with the following details.

For knowledge, the opinion was in the highest level overall. When considered in details, the following aspects were found to be in the highest level: knowledge about product delivery; knowledge about directions and the routes; and being trained to improve delivery skills.

For capability, the opinion was in high level overall. When considered in details, the following aspects were shown to be in high level: activeness in conveying the products; speedy and punctual delivery; and ability to solve problems at hand.

For motivation, the opinion was in high level overall. When considered in details, the following aspects were found to be in high level: suitable compensation with capability; appropriate annual bonus; and adequate fringe benefits provided by the company.

For information, the opinion was in high level overall. When considered in details, the following aspects were found to be in high level: accurate information regarding the product preparation; accurate information regarding the delivery; and understanding in delivery document.

For equipment and tools, the opinion was in high level overall. When considered in details, the following aspects were found to be in high level: good skills in using equipment and tools; adequate number of delivery trucks; and sophisticated & adequate number of scanners used to check the products.

For persuasion, the opinion was in high level overall. When considered in details, the following aspects were found to be in high level: adequate sophisticated equipments are available in the work place; safety in the work place; and appropriate work environment is maintained i.e. illumination, noise, and air circulation.

Figure 2 shows overall opinion on factors affecting work efficiency of delivery staffs of ABC Company Limited.

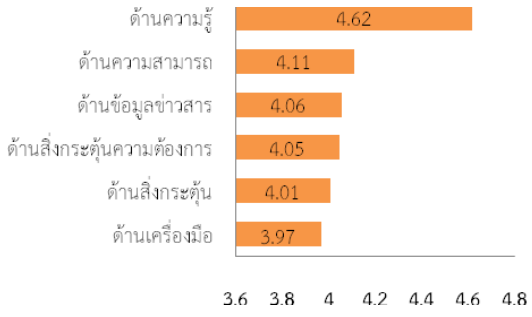

Figure 2. Overall opinion on factors affecting work efficiency of delivery staffs

Knowledge = 4.62
Capability = 4.11
Information = 4.06
Persuasion = 4.05
Motivation = 4.01
Equipment = 3.97

TABLE I
HYPOTHESIS TEST RESULT SHOWS RELATIONSHIP OF WORK EFFICIENCY AND SATISFACTION IN THE WORK OF DELIVERY STAFFS OF ABC COMPANY LIMITED.

Relationship	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
Constant	0.445	0.504		0.882	0.380
Knowledge (Knowledge in directions and routes)	0.534	0.189	0.519	2.830	0.005*
Knowledge (Training to improve delivery skills)	0.427	0.127	0.466	3.358	0.001*
Capability (Activeness in conveying the products)	0.287	0.119	0.255	2.409	0.018*
Motivation (Appropriate annual bonus)	0.103	0.130	0.097	0.793	0.430
Information (Accurate delivery information is provided)	0.173	0.129	0.169	1.343	0.182
Relationship	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
Constant	0.445	0.504		0.882	0.380
Equipment and Tools (Adequate delivery trucks are provided)	0.151	0.107	0.145	1.410	0.161
Persuasion (Safety in the work place)	0.314	0.134	0.278	2.350	0.020*

It can be noticed from the table under the knowledge factor that knowledge in directions and routes has Sig. value of 0.005 and training to improve delivery skills has Sig. value of 0.001. For capability factor, activeness in conveying the products has Sig. value of 0.018. For persuasion, safety in the work place has Sig. value of 0.020 meaning that these mentioned factors have relationship with work efficiency of delivery staffs of ABC Company Limited at a statistical significance level of 0.05

IV. CONCLUSION AND DISCUSSION

From the study about factors that have influences on work efficiency of delivery staffs of ABC Company Limited, the researcher will explain important points that is in accordance with the research of Dr. Somchit Arjin as follows [9]:

For knowledge, knowledge in product delivery, knowledge in directions and routes, and training to improve delivery work were found to require development of system. Staffs needs training for:

1) basic knowledge of customer service

2) data recording by focusing on organizing product code
3) assigning product code without duplication and
4) barcode printing as well as printing for customers.

For capability that involves with work efficiency, it consists of:

1) ability to search for contaminated product
2) effective revoking of problem products and
3) prevention of duplication by mechanical tools to reduce cost of product distribution system, cost of revoking, and ability to increase the price of product.

For motivation, it can help to reduce exposure to crisis such as speed, accuracy, and credibility in track & trace or checking origins of the product which could build confidence to customers, thus reducing distribution cost and can increase the price of product.

For information, useful data could be utilized for further research and academic study by broadcasting the research paper on websites enabling interested people to use the service and ask for suggestion with real time response.

For equipment and tools, system design on website makes it easier for the user and also helps to reduce delivery cost. It can be used for checking from anywhere as it is web-based application. Users just have to connect to internet signal. Staffs have to be trained to know and operate the system effectively according to the standard.

For persuasion, it could be applied to other products to facilitate production process and production management to reach the standard. Distribution and service could make difference in effective response to customers' needs.

V. RECOMMENDATION

Network creation is one of the significant processes which can help to make the system effective. However, parties involved in the supply chain have to follow the process honestly to ensure every process has quality and safety and could be inspected. Therefore, network creation in the form of membership where every member jointly owns the products as:

1. Looking for channel of distribution such as exhibition, distributing through agents, as well as applying e-commerce.
2. International standard for export should be maintained since Thailand is one of exporting countries for many important products. Therefore, if service provider can set a standard to check origin of products, Thailand will have opportunity to suggest exporters to apply the research paper to help in exporting the products in compliance with an international standard.

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Factors Influencing Consumers' Choice for Car Leasing Service of ABC Bank Limited

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Abstract - **The research attempted to study factors that have influence on consumers' choice for car leasing service of ABC Bank Limited. Population of the study were consumers, who availed the ABC Bank's car leasing service. 200 samples were randomly selected to answer the questionnaires. Statistical tools used to analyze the data were percentage, mean, standard deviation, t-test, F-test, One-way ANOVA, and Fisher's least significant difference (LSD). The study discovered that out of 200 samples most of them were male age 31-40, graduated Bachelor's degree, working in private companies with monthly income above 20,000 Baht. Overall opinion was in high level, and the factor with the highest influence was product, followed by people, physical evidence & presentation, process, price, place, and promotion respectively. Hypothesis test proved that demographic factor i.e. occupation had influence on consumer behavior in choosing car leasing service of ABC Bank Limited at a statistical significance level of 0.05. However, gender, age, education, and income did not have influence on the consumers' behavior. Marketing mix factors including product, place, promotion, and process had influence on the consumer's behavior at a statistical significance level of 0.05, while price, people, and physical evidence & presentation did not have influence on the consumers' behavior. The research suggested that administrative officers should focus on every aspects of the lease system. They may improve all the systems to be always sophisticated and responsive to customers' needs as well as pay attention to service staffs and all facilities involved.**

I. INTRODUCTION

Automobile industry is very crucial to Thailand's economy and the slowdown in automobile industry this year has caused Thailand's GDP of industry sector to decrease accordingly. However, Thailand still has confidence and continues its expansion in automobile industry with the outstanding products such as pickup truck and eco car. Pickup truck and eco car are the two leading types of vehicle that the government has been trying to promote and push it to world class production base. Launching of the second generation of eco car and restructuring of excise tax in 2016 would bring about significant changes in automobile industry of Thailand.

Now look closer to ourselves, it is obvious that cars are necessary for the living of Thai people because of its convenience and suitability with the facilities provided in the country. Competition in domestic automobile market is very high. Most of the manufacturers keep launching new model of cars to compete for market share and results in temptation to consumers to purchase cars for replacement of an old one and also for new buyers in the market. Car leasing loan is one type of consumer loans which according to the Civil and Commercial Code Section 572 is mentioned that "Leasing is a type of contract that lessor rents out a property and promises to sell such property or transfer ownership to the lessee with the condition of installment payment" [10]. Lease contract is a kind of rent contract with the promise to sell such property, which is car in this case, after the lessee pays part of the payment and followed by periodical payment to the owner. And when payment has reached an agreed amount in agreed time period, lessor will transfer ownership of such property to the lessee.

Today there are many financial institutes established to specifically serve car leasing. Limitation of consumers' income and saving that is lower than price of the cars has made it necessary for consumers to use leasing service Leasing in finance and securities companies generally has condition to approve loan 50%-70% of the car value and consumers are required to pay down payment (partial deposit) from their personal money. After that equal amount of installment payment is made by the buyer every month with the total period varies from 24-48 months in a fixed rate of interest without deducting from the principal. Therefore, actual interests being paid are much higher than the rate shown in the contract. Ownership of the cars will remain with seller until buyer finish all payment for the car and in some case the guarantor is required. Drawback of the leasing is actually high interest rate since this type of loan contains high risk. Car is easy to be moved anywhere and as a result make it difficult to follow in the case of repossession. Advantage of leasing is its simple procedure of approval since it is particularly meant for car purchase. Therefore, terms and conditions are usually fixed and the lessee can understand and make a decision right away. However, commercial banks are normally not interested in leasing because of its high risk comparing to other types of loan. Therefore,

leasing companies present all the terms and conditions to lessee including special offers in order to facilitate the decision making [8].

The growth of automobile market and car leasing business has caused the competition for leasing to continue. Finance and securities companies have high demand to promote their loan and lend out the money. In car leasing, collateral is a car itself which has high financial liquidity. Recently demand of car buyers for leasing service has increased because of lower rate of interest. In order to cope with high competition and to maintain market share, ABC Bank Limited with its 600 branches nationwide including its service at the point of sale has survived in the market in a good performance every year. Today, there are lots of competitors of ABC Bank Limited. Each of them comes up with marketing plan and strategy as well as marketing mix to differentiate themselves from the others and to strengthen their position in the market [2,7,15]. The researcher is therefore interested to study factors that have influences on consumers' choices for car leasing service of ABC Bank Limited. Results of the study shall be used as guidelines for improvement in car leasing service to match with consumers' needs.

A. Research Objectives

1. To study consumer behavior in choosing car leasing service of ABC Bank Limited.
2. To study factors that have influences on consumers' choices for car leasing service of ABC Bank Limited.

B. Conceptual Framework

For this study, the researcher applied concept of factors influencing customers' choices for car leasing service of ABC Bank Limited. Customers expresses their opinions toward car leasing service of ABC Bank Limited in the aspects including product, price, place, promotion, people, process, and physical evidence & presentation [4].

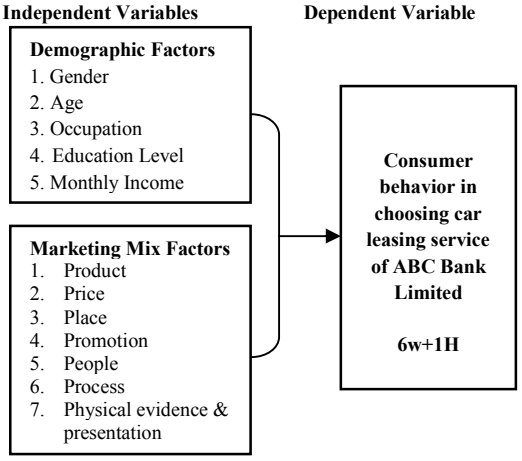

Figure 1. Conceptual Framework

II. LITERATURE REVIEW

Theory of marketing mix for service business consists of product, price, place, promotion, people, process, and physical evidence & presentation.

III. RESEARCH METHODOLOGY

The research was conducted by surveying from 200 samples of ABC Bank Limited's leasing customers. Questionnaire was used as a tool for data collection. It consists of 4 parts as follows:

- Part 1 and part 2 contain close-ended nominal scale questions in which respondents can choose only one choice that best represents their answer. Part1 is about general information of the samples i.e. gender, age, education, occupation, and monthly income. Part2 concerns data about consumer behavior in choosing car leasing service of ABC Bank Limited including 10 questions on frequency of the service, condition of the car purchased, type of car loan, price of the car, credit amount approved, period of the lease, installment amount, past record on pending debts, and influencing person in their decision making [3,12,13,14].
- Part3 asks respondents about their opinion on factors that may have influences on consumers' choice for car leasing service of ABC Bank Limited in 7 aspects including product, price, place, promotion, people, process, physical evidence & presentation. Questions are Likert's 5-level rating scale questions.
- Statistics used to analyzed data were percentage, mean, t-test, One-Way ANOVA, and Regression. Each level is identified in ranges of means as follows. Mean 4.51-5.00 indicates highest level of satisfaction. Mean 3.51-4.50 indicates high level of satisfaction. Mean 2.51-3.50 indicates medium level of satisfaction. Mean 1.51-2.50 indicates low level of satisfaction. And mean 1.00-1.50 indicates the least level of satisfaction.
- Part4 includes open-ended questions about opinion and useful recommendation from respondents.

IV. FINDINGS

A. Demographic data of the respondents

The study discovered that out of 200 samples most of them were male age 31-40, graduated Bachelor's degree, working in private companies with monthly income above 20,000 Baht.

B. Data about consumer behavior in choosing car leasing service.

The study found that most of them need brand new passenger cars, used service of the bank once, price

of the cars purchased is between 300,001-600,000 Baht, credit amount latest approved is 400,001-700,000 Baht, the amount of credit approved equals to the amount required in the loan application, latest period of the lease is 60 months, installment amount is between 5,001-10,000 Baht, no record of bad debt, and decision making is done by themselves.

C. Data about factors that have influence on customers' choices for car leasing service.

The study discovered that all 7 factors including product, price, place, promotion, people, process, and physical evidence & presentation can be explained as follows.

- Product. Most of the respondents gave high level of measurement on reputation of the company, loan offered match with personal needs, service reliability, worthiness of the service, and variety of loan types respectively.
- Price. Most of the respondents gave high level of measurement on low interest rate, price of the lease is affordable, price of the lease is comparably cheaper than other places, appropriate charges applied, and small amount of down payment respectively.
- Place. Most of the respondents gave high level of measurement on location that is near to the house or work place, convenience in contacting the bank, off-site service, many branches are available, easy to travel, adequate parking space, location in community, and ability to contact through internet respectively.
- Promotion. Most of the respondents gave high level of measurement on advertisement on media such as radio, television, billboard, discount for early installment payment, privilege for current customers, and staffs are able to give advice off-site on some particular occasion respectively.
- People. Most of the respondents gave high level of measurement on manner and courtesy of staffs, understanding of customers' needs, honesty and reliability, skills and knowledge, effective in work, equal treatment to customers, and proper dressing & good character respectively.
- Process. Most of the respondents gave high level of measurement on convenience and speed in credit approval, appropriate working hours, installment payment is convenient and fast, accurate working, good communication and easy to understand, simple terms and conditions in lease contract, good system to follow up installment payment, simple procedures in general, continuous improvement, and adequate number of servicing staffs respectively.
- Physical evidence & presentation. Most of the respondents gave high level of measurement on air circulation, sufficient illumination, cleanliness of the service place, uniqueness of the place, sign boards are clear and attractive, wide area and no congestion, sophisticate office equipment, and modern & nice decoration of the place respectively.

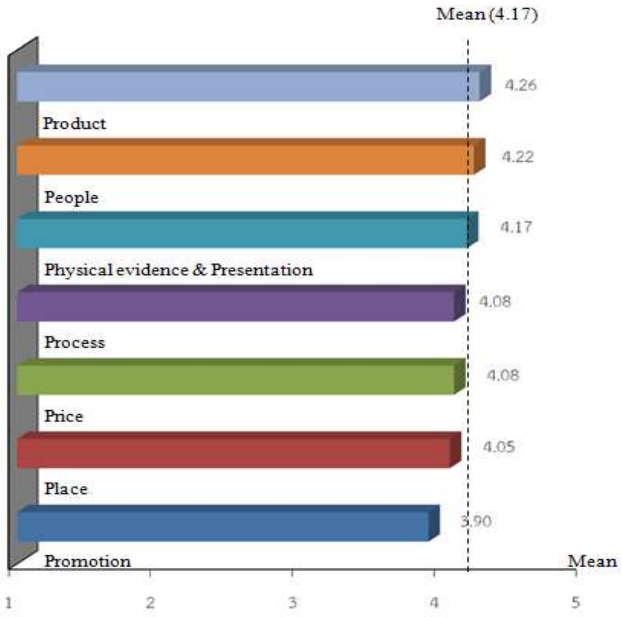

Figure 2. Decision making on factors that influence consumers' choices for car leasing service of ABC Bank Limited

Hypothesis test results

The researcher has set the following hypothesis.

1. Demographic factors have influence on consumer behavior for choices of car leasing service of ABC Bank Limited. The result showed that gender, age, education, and monthly income did not have any influence while occupation did.
2. Marketing mix factors have influence on consumer behavior for choices of car leasing service of ABC Bank Limited. The result showed that price, people, and physical evidence & presentation did not have the influence while product, place, promotion, and process did.

TABLE I
COMPARES INFLUENCES OF OCCUPATION ON CONSUMER CHOICE FOR CAR LEASING WITH ABC BANK LIMITED

Significance	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Group	2.693	4	0.673	2.703	0.032
Within Group	48.576	195	0.249		
Total	51.269	199			

TABLE II
MULTIPLE REGRESSION ANALYSIS OF MARKETING MIX FACTORS INCLUDING PRODUCT, PLACE, PROMOTION, AND PROCESS

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.
	B	Std. Error	Beta		
(Constant)	.086	.359		.241	.810
1 Product					
Reliability of the service	-.203	.092	-.160	-2.204	.029
2 Place					
Location in community	.154	.069	.139	2.219	0.28
3 Promotion					
Staffs give advice off-site	-.180	.067	-.182	-2.682	.008
Discount for A-grade customers	.160	.079	.180	2.033	.044
4 Process					
Standard system of work	.360	.089	.358	4.042	.000
Proper payment follow up system	.186	.078	.167	2.377	.019
Sufficient staffs available	.181	.090	.161	2.006	.047

V. DISCUSSION

The researcher has interesting points that worth discussion as follows:

Demographic factors have influence on consumer behavior for choices of car leasing service of ABC Bank Limited [9]. Occupation has influence on consumer behavior for choices of car leasing service of ABC Bank Limited. This may be caused by the knowledge of person especially those whose work is related to loan. This finding is in accordance with the research of Somphorn Klinphaetkit that found different occupation to have different influences on the choices of loan [11].

Marketing mix factors have influence on consumer behavior for choices of car leasing service of ABC Bank Limited.

1. For product, overall mean was in high level. This can be the result of reputation of the company, loan offered match with personal needs, service reliability, worthiness of the service, and variety of loan types. This is similar to the research of Juthamas Netrassamee about factors affecting consumer decision making for car leasing service of TISCO Bank Public Company Limited, Chiang Mai Branch which found that the Bank's customers paid attention to all 7 dimensions in high level with the first priority given to product, followed by price, process, place, people,

promotion, and physical evidence & presentation respectively [5].

2. For place, overall mean was in high level. This is because of readiness of the place and sufficient space to wait for the service. This result resembles that of Anirut Therdthamphaisarn which revealed that customers cares very much about a place to wait for the service [1].
3. For promotion, overall mean was in high level. Advertisement on media such as radio, television, billboard, discount for early installment payment, privilege for current customers, and staffs are able to give advice off-site on some particular occasion are all important in accordance with the research of Khanaphot Chairat which found that most of the customers make the decision because of low interest rate and receiving news and information from advertisement of the bank [6].
4. For process, overall mean was in high level because of fast service such as loan approval. This finding resembles that of Juthamas Netrassamee which found customers to focus on processes especially fast approval of the loan [5].

VI. RECOMMENDATIONS

The researcher would like to suggest the following recommendations:

From the research on factors that have influence on consumers' choice for car leasing service of ABC Bank Limited, the researcher has recommendation for improvement of the car leasing service by applying consumer behavior learned from this research as follows:

1. Customers mostly have opinion toward product in high level for reputation of the company. Therefore, administrative officer should pay attention to maintaining image of the bank while promoting more by using advertisement to make customers recognize more about the bank.
2. As customers have high opinion toward place in aspect of location that is near to house or work place, administrative officers should focus on expanding more channels to reach more customers such as direct marketing or telemarketing.
3. Customers have opinion toward promotion in high level for advertisement on media such as radio, television, and billboard, administrative officers should encourage more of such advertisement to cover wider area and more number of people.
4. As customers have opinion toward process in high level for fast approval of loan, administrative officers should be aware of importance of the process and try to response to customers' needs in a prompt manner in every procedure.

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Part C:
Humanities

Lecture's Effective Methods in Teaching Difficult Subject

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***Abstract* — Teaching and learning are process occurs between student and teacher as an interaction activity. In teaching process, teacher must provide materials to enrich student's knowledge by using effective methods, since teaching method is influential towards student's understanding. If teacher could provide materials using understandable method, student must rapidly enrich their knowledge and would achieve maximum results in process of obtaining learning in education field. Nowadays, significant number of students do not master subject materials given by teacher, as their reasons majority of teachers do not deliver subject materials by using effective methods while subjects taught are sufficient complex or difficult . Based on research at Sunan Gunung Djati State Islamic University there are 10 subjects considered difficult such as Essay Writing 35%, Interpreting 24%, Vocabulary Building 29%, Advance Structure 26%, Systemic Functional Grammar 54%, Philosophy 40%, Syntax 17%, Translation 18%, Phonology 22%, Morphology 34%. While the reason of why those subjects considered difficult such as using formal language (educated language) 70%, the examples given are not understandable 67%, not explaining materials based on basic concept 61%, using English fully in explaining materials 44%, explaining the materials quickly 34%, explaining the material much seriously 24%. Then there are five lecture's effective methods in teaching difficult subject chosen by students, those are explaining materials based on basic concept 90%, using daily language in explaining the materials 80%, inserting local language in giving examples 70%, not explaining the material much seriously 12%, providing exercises after explaining materials 15%. To ensure those methods are effective, students provided exercises related lecture's methods they choose to measure whether those methods are effective or not, and the results are explaining materials based on basic concept 55,8%, using daily language in explaining the materials 67,6%, inserting local language in giving examples 54,5%, not explaining the material much seriously 40%, providing exercises after explaining materials 40,7%.**

Keyword: difficult subject, lecture's effective methods, student

I. INTRODUCTION

Teaching and learning process is an activity occurs between teacher and students, its activity means students receive the information from the teacher such as about social science, natural science, and so forth. This activity can be called as a knowledge enrichment activity of students since they are provided much information by teacher then their knowledge will increase. Nowadays, not only teacher who provides the information to student, but also students must be aware toward the knowledge enrichment itself. In teaching and learning process student must be active to find the materials by themselves, while teacher just leads the students in getting their knowledge [1]. In this case, teacher must lead students by giving explanation toward the material which is not understandable by students. There are two learning principles which are able to make students become active in finding materials by themselves, such as:

1. **Learning stimulus**
   Learning stimulus can be given to students by way of giving several motivations and changing student's mindset that the materials learned are difficult, so that student will be more enthusiastic in learning subjects.
2. **Giving positive respond**
   When students ask teacher and give several arguments, teacher had better give positive respond toward students' arguments, it will be able make students more confident.

Teaching and learning process is carried out based on educative principle, in which there must be interaction between student and teacher contained information that can be knowledge for the students. Although students must be active to find the information of materials, but teacher's role also must be heeded, interaction can be run well if both students and teacher are responsive each other. A teacher does not only teach the students by providing the information, but a teacher also must ensure that the students understand with teacher's explanation and also the information itself.

These days, teachers do not explain the material well whereas the material explained is difficult, it makes students do not catch the materials wholly in their mind. It is one of teaching and learning problems, the teacher has no effective methods in

teaching difficult subjects. If it is continuously occurs, students will not totally understand those difficult subjects, so that a teacher must find an effective methods for making student more understand to the subject taught. At State Islamic University of Sunan Gunung Djati Bandung, majority of students consider that the lectures do not explain the difficult subjects very well, so students do not understand at all toward the subject learned. Lecturer really needs effective methods in teaching difficult subjects.

A. Purpose

This writing aimed at knowing teacher's method in teaching difficult subject, analyzing how students' understanding toward the difficult subjects taught by teacher, and giving effective methods to teachers in delivering difficult subjects.

II. REVIEW OF RELATED LITERATURE

A. Definition of Learning and Teaching

Learning is the most basic activity in human learning process especially in achieving institutional goals of an educational institution. It shows that success or failure of educational goal achievement depends on how learning process experienced by individuals. According to Nasution, earning is considered a change in behavior as a result of experience and practicing [4]. And Gulo also defines learning as occurred activity in human's life which changes their behavior and mind [9].

Teaching is guidance towards students' learning activities. Teaching is to organize the environment around students so as to encourage student to have learning activities [6]. Meanwhile Nasution argues that there are several things related to teaching activity, such as:

1. Teaching means guiding students' activity
2. Teaching means guiding students' experience
3. Teaching means assisting students' progress and adapting to their environment [4].

And according to, teaching is an activity carried out by teachers to assist student in learning activity [10]. Thus, could be concluded that teaching is an activity occurred in student's learning process to obtain more knowledge.

B. Definition of Student's Understanding in Studying

Based on Indonesian Dictionary, understanding is the ability to obtain something in mind comprehensively. Understanding could not be achieved if there is no learning process, thus learning process influences one's understanding. Students' understanding level is different; it depends on how the teacher teaches the materials. Students' understanding means that student has had their own manner to answer the questions given rightly.

C. Definition of Teaching Method

Teaching method is defined as teacher's steps to help students learn the desired subject contents and be able to develop achievable goals in the future [3, 7]. Teaching method used by teacher should be different and able to build maximal students' understanding, since considerable teaching method is needed in teaching and learning process.

Teaching method also defines as teacher's techniques in teaching subjects to build up students' understanding [5]. Similar with Wena, she also argues that teaching method is teacher's techniques as an art in teaching and learning process to enrich student's knowledge [8]. Hamdani concludes that learning process is a process of educational interaction between teacher (Who creates an atmosphere of learning) and students (who responds the teachers' efforts) [2].

III. RESEARCH METHOD

A. Methodology

This research is carried out at Sunan Gunung Djati State Islamic University on July, 5th 2015. The research target is English literature students of fifth semester (145 from 278 students). The carried out methods are qualitative and quantitative. Both methods used in 2 different steps.

First Step – Qualitative Method

It is carried out by directly interviewing to resource person about 3 important discussions as to "Teacher's Effective Methods in Teaching Difficult Subject", those are:

1. What subjects which are considered difficult?
   The question for knowing what subjects are considered difficult
2. Why the subjects are considered difficult?
   The question for knowing the reason of the subjects are considered difficult
3. How about the solution or effective teaching method to deliver the materials?
   The question for finding desired methods to overcome the difficulty toward related materials.

Second Step – Quantitative Method

The result of interview on first step used as guidance for the second step question, that would be formed become Questionnaire. The question used on this step is still same with the first step. The difference is on the questionnaire resource person asked to choose only 3 choices for each question.

IV. RESULT AND DISCUSSION

A. The first step result

The first step result brings out several answers from the participants about the difficult subjects, the reason of its difficulty, and the solution to solve those difficulties. Those answers are written based on direct interview to the participants (English Literature Students of Sunan Gunung Djati State Islamic University).

TABLE I
INTERVIEW RESULT

1	**What subjects which are considered difficult?**	
	1	Vocabulary building
	2	Advance Structure
	3	Systemic Functional Grammar
	4	Philosophy
	5	Syntax
	6	Translation
	7	Phonology
	8	Morphology
	9	Essay Writing
	10	Interpreting
2	Why the subjects are considered difficult?	
	1	The examples given are not understandable
	2	Not explaining the materials based on basic concept
	3	Explaining the materials quickly
	4	Using English fully in explaining materials
	5	Explaining the material much seriously
	6	Using formal language (educated language)
3	How about the solution or effective teaching method to deliver the materials?	
	1	Don't explain the materials much seriously, there must be inserted a little joke
	2	Inserting local language in giving examples
	3	Explaining materials based on basic concept
	4	Providing exercise after explaining materials
	5	Using daily language in explaining materials

The result on Table I shows there are 10 subjects considered difficult from 60 subjects have been and being studied (from 1-5 semester). In percentage is 16,67%. It would potentially become main problem towards students' study, as it could influence curriculum structure or subject learning plan for 8 semesters (normal) if this difficulty affects to failure of related subjects.

There are 6 reasons which cause 10 subjects considered difficult to understand. Generally, the main problem comes from teacher's teaching methods, which is not rightly implemented in teaching and learning process, thus student is difficult to understand.

Students require teacher's enjoyable and interested method in delivering materials. At least there are 5 methods required by students which have been written on Table I.

B. The second step result

The second step brings out the result from shared questionnaires to the participant. The interview results are made as the guidance of questionnaires' question consist of "what, why, and how". The questions are answered by half of English Literature Students of Sunan Gunung Djati State Islamic University. There are three main questions given to the participants (could be seen on the Table II).

TABLE II
QUESTIONNAIRE RESULT

Questionnaire Question			Number of Student	
1	**What subjects which are considered difficult?**			
	1	Vocabulary building	42	Students
	2	Advance Structure	38	Students
	3	Systemic Functional Grammar	79	Students
	4	Philosophy	58	Students
	5	Syntax	25	Students
	6	Translation	26	Students
	7	Phonology	32	Students
	8	Morphology	49	Students
	9	Essay Writing	51	Students
	10	Interpreting	35	Students
		TOTAL	435	*per 435 (145x3)*
2	Why the subjects are considered difficult?			
	1	The examples given are not understandable	97	Students
	2	Not explaining the materials based on basic concept	88	Students
	3	Explaining the materials quickly	49	Students
	4	Using English fully in explaining materials	64	Students
	5	Explaining the material is much seriously	35	Students
	6	Using formal language (educated language)	102	Students
		TOTAL	435	*per 435 (145x3)*
3	How about the solution or effective teaching method to deliver the materials?			
	1	Don't explain the materials much seriously, there must be inserted a little joke	65	Students
	2	Inserting local language in giving examples	87	Students
	3	Explaining materials based on basic concept	99	Students
	4	Providing exercise after explaining materials	81	Students
	5	Using daily language in explaining materials	103	Students
		TOTAL	435	*per 435(145x3)*

Data on Table II indicates that from 10 subjects which have materials considered difficult to understand could be sequenced as follow (from the hardest)

1. Systemic Functional Grammar
2. Philosophy
3. Essay Writing
4. Interpreting
5. Morphology
6. Vocabulary building
7. Advance Structure
8. Phonology
9. Translation
10. Syntax

There are 3 subjects chosen more than 73 resource people ($\frac{1}{2}$n + 1) those are Systemic Functional Grammar (79 from 145 = 54%), Philosophy (58 from 145 = 40%), and Essay Writing (51 from 145 = 35%). It indicates those subjects have materials which are considered difficult.

Then, the reasons of why the subjects considered difficult to understand in a row, the most influences reasons are:

1. Using formal language (educated language)
2. The examples given are not understandable
3. Not explaining materials based on basic concept
4. Using English fully in explaining materials
5. Explaining the materials quickly
6. Explaining the material much seriously

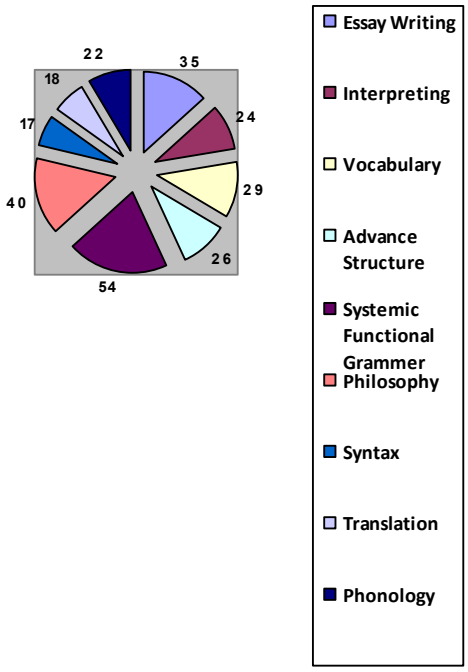

Figure 1. Subject Difficulty Analysis

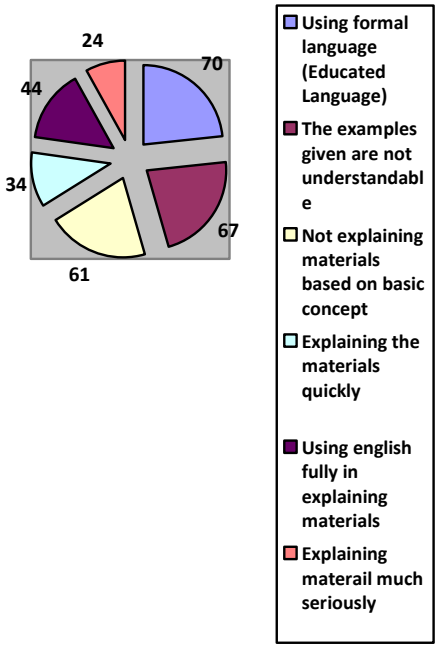

Figure 2. Subject Difficulty Influences

To deal with those problems, needed the teacher's effective methods in delivering material, those methods are as follow (Sequenced from the most effective methods based on questionnaire result):

1. Explaining materials based on basic concept
2. Using daily language in explaining the materials
3. Inserting local language in giving examples
4. Not explaining the material much seriously
5. Providing exercise after explaining materials

To ensure the method is effective, then in questionnaire contained additional questions, subject materials have ever learned using those 5 methods above made into questions. If the questions are answered correctly, it means the method is effective.

From Table III, could be concluded that the most effective methods in teaching difficult subject are:

1. Explaining materials based on basic concept
2. Using daily language in explaining the materials
3. Inserting local language in giving examples

Since these three methods preferred by the students which can be proved by the results of the questionnaire (selected more than 73 students) and it is proven effective since more than 73 students can also answer the delivered materials using these three methods correctly.

TABLE III
UNDERSTANDING STUDENTS TOWARD MATERIAL USING MENTIONED 5 METHODS ABOVE

NO	Used Methods				
1	Explaining the material much seriously				
	129	The number of students who answered	58	Total of students who answered correctly	40%
2	Explaining materials based on basic concept				
	133	The number of students who answered	81	Total of students who answered correctly	55,8%
3	Inserting local language in giving examples				
	138	The number of students who answered	79	Total of students who answered correctly	54,5%
4	Providing exercise after explaining materials				
	126	The number of students who answered	59	Total of students who answered correctly	40,7%
5	Using daily language in explaining the materials				
	141	The number of students who answered	98	Total of students who answered correctly	67,6%

V. CONCLUSION

Based on the results of the research, there are ten subjects considered difficult by English literature students of Sunan Gunung Djati State Islamic University, and the three hardest are Systemic Functional Grammar (79 from 145 = 54%), Philosophy (58 from 145 = 40%), and Essay Writing (51 from 145 = 35%). While there are six reasons of why those subjects considered difficult, chosen three highest reasons as main cause of difficulty in understanding related subject materials, such as using formal language (educated language) (70%), the examples given are not understandable (67%), and not explaining materials based on basic concept (61%). Then there are five lecture's effective methods in teaching difficult subject chosen by students, and the three highest are explaining materials based on basic concept (90%), using daily language in explaining the materials (80%), and inserting local language in giving examples (70%).

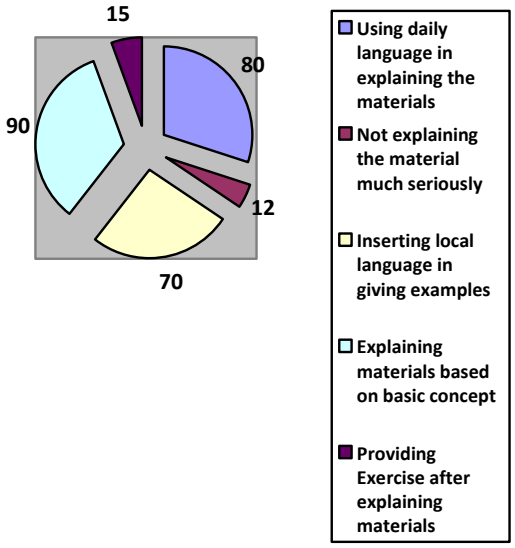

Figure 3. Lecture Effectiveness Analysis

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Literature in Language Teaching: What, Why and How?

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Abstract- **This paper addresses some of the major issues related to the teaching of literature as a specialist subject and as a language teaching resource. The discussion includes an overview of the term literature, the possible reasons for using literature in language teaching and what it means to go beyond the traditional term of literature in the context of language education. Finally, some of the approaches to the teaching of literature have been discussed**.

Key words: Literature, Language Teaching, Literature with a small 'l', Process-based and Product-based approaches.

I. INTRODUCTION

Literature was an integral part of second and foreign language teaching in the 'Classical Humanist' view of education, where an understanding of the high culture expressed in the sophisticated language of literature was considered more important than communicative competence. Maley in 1989 [8] claimed that literature became insignificant when:

- The structuralist approach tended to exclude literature except in the form of simplified readers, and the utilitarian bias of the communicative approach deflected attention away from anything, which did not seem to have a practical purpose.
- The structuralists focused on linguistic form rather than creative use of language through the reading of literary/imaginative texts. Although, the so called innovative approaches with a functional focus continue to question the role of literature in language courses, literature continues to have a role in language teaching in many former British colonies. However, literature has to be redefined or extended in order to make it accessible in terms of texts and teaching methods for language learners.

II. MODERN DEFINITIONS OF LITERATURE

Scholars such as [1, 4, 5, 6, 7, 10, 11] consider the traditional definition of literature (as a canon of texts in a chronological order) as being rigid, elitist and unrepresentative however, more recent definitions include the writer, reader and the text. Louise Rosenblatt in 1938 [13] highlighted the exploratory nature of literature in the following comment:

- The reader may explore his own nature, become aware of potentialities, acquire clear perspective; develop aims and a sense of direction.

In its broadest sense, literature is not restricted to print materials alone, but includes cartoons, films, songs, characters and stories (to appeal to learners' imagination. Maley and Duff in 1989 [6] made the following observation:

- There is nothing sacred about a literary text. All such texts were at some time written down, rearranged, scratched out, torn up, revised, misprinted, and so on. Anyone doubting this should simply look at any well-known writer's notebook or manuscript.

According to McRae [11], the definition of literature should include texts like newspaper headlines, advertisements, jingles, songs and cartoons. Cook [3] and Mao Sihui [9] make a case for imaginative texts or representational materials in language teaching.

It is evident that a narrow definition of literature is likely to restrict the ways in which literary texts are selected, organized and studied in institutions. The traditional approach to the study of literature with a focus on plot, character and theme is being complemented with other approaches in the present day context. Based on the ideas discussed here, the major reasons for using literature in language education are given in the following section.

III. REASONS FOR USING LITERATURE

Teaching literature in ESL since the 1980s has changed in terms of texts, approaches and even the language level of learners. The argument that only advanced students can cope with literature has become untenable with the emergence of new materials.

Maley in 1989 [8] listed the merits of using literature as a resource in the language classroom:

- *Universality*: The themes of literature are common to all cultures, though they may be presented differently. Even genres, devices and conventions of literary works are common across cultures.
- *Personal response*: Literature deals with ideas, things, sensations and events which are likely to be a part of the reader's experience or encourage the reader to experience the world of the literary work and relate it to their own lives.
- *Variety*: The themes of literature include all kinds of subject matter in all conceivable varieties of the language.
- *Interest:* The themes of literature are intrinsically interesting, because they are drawn from human experience and presented in an engaging manner.
- *Economy and suggestive power:* One of the great strengths of literature is its suggestive power. Even simple literary texts turn readers' attention to the underlying implications of what is said.
- *Ambiguity*: Because it is highly suggestive and associative, literature speaks subtly to different meanings to different people. It is rare for two readers to react identically to a given text. In teaching this has two advantages. It means that, within limits, each learner's interpretation has validity; also, because each person's perception is different, an almost infinite fund of interactive discussion is guaranteed.

Parkinson and Thomas in 2000 [12] stated that the final reason for using literature is a question of choice or "convenience". The success of the literature syllabus is related to the learners' needs, objectives of the syllabus, and the teaching methods.

IV. APPROACHES TO LITERATURE IN LANGUAGE TEACHING

Although several approaches to the study of literature has been identified and practiced, the discussion is restricted to process-based and product-based approaches proposed by Carter [2].

A process-based approach according to Carter in 1996 [2] is one that:

- Involves the teacher coming down from the pedestal or lectern and involves a classroom treatment of literature which does not view literature as a sacrosanct object for reverential, product-centred study. A process-centred pedagogy for literature means that literary texts do not have a special status in the classroom.

The converse of this (where the teacher is on a lectern or a pedestal and where literature is viewed as a sacrosanct object) will be labeled product-based approach. According to Carter [2], a vast majority of literature teachers consider the text as a "body of knowledge" [2], which has to be explained with adequate background information for the learners to pass examinations. The objective of this approach seems to concentrate on "knowledge 'about' literature rather than knowledge 'of' literature" [2].

A process-based approach to literature in ESL/EFL is based on the premise that students generally lack the language ability to study literary texts. Instead, literary texts are seen as a resource for language teaching offering scope for learners' personal interpretation from a cross-cultural perspective.

According to Carter in 1996 [2], a process-based approach to literature has the following methodological implications for the ESL/EFL classroom:

- Activities include cloze, prediction, re-writing, expansion, reduction and role-playing. Literary texts are treated like other texts in the language classroom.
- A process-based approach to literature is a shift from teacher-centeredness to student-centredness which encourages learners' personal reaction to literary texts through a series of language-based activities.
- Classroom communication ceases to be one-way with group and pair work. Therefore, teacher-student, student-student- and student-teacher interaction is possible in this approach.

V. CONCLUSION

The discussion is concluded by stating that the practical aspects of using literature in the language classroom should be the primary concern rather than terminological considerations such as, literature as a study, 'literature with a small 'l' or the advantages and disadvantages of product-based and process-based approaches.

The success of one or more of the approaches depends on several factors such as the selection of literary texts, learners' sociocultural background, literary competence, selection of appropriate teaching methods and class size to list a few.

Finally, teachers need not be specialists in literature, but a genuine interest and conviction in teaching the language of literature will help. On the contrary, untrained language teachers who have a strong background in literature may not have the skills and strategies required for the language-through-literature classroom.

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The Village in Transition: Development and Cultural, Economic, and Social Changes in Mae Kampong Village, Chiang Mai, Thailand

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***Abstract* - Behind the scene of the national economic success of Thailand over the last several decades, rural villages were forced to face predicament because of the urban-centered industrial economy based on neo-liberal economic beliefs. It is often said that the national economic boom was coupled with the political views of disregarding the countryside as peripheral, stagnant, and threatened area, preferring investment into cities as the predominant driving force of the national economy. In light of the historical context of the relationship between Thai community and the high-powered state authority, examining one specific community which is struggling to find a way of development in the globalized world today will be of great help to understand the contemporary notion of rural development in Thailand. In this paper, research is focused on Mae Kampong village, which has been under great influence of the Government in terms of development and has been experiencing a number of, for better or worse, changes, in terms of Mae kampong has been traditionally recognized as a site for its cultivation of tea and production of a fermented tea product, called Mieng, however, it has been in a great transition of modes of economy, namely primary industry of Mieng production to service industry of eco-tourism as one of the most well-known tourist destinations in rural Northern Thailand, ever since it began to get involved in tourism industry in the late 1990s. This paper examines cultural, economic, and social changes that occurred in the village over the course of the contemporary development and ultimately the outlook of community self-sufficiency and self-reliance in Mae Kampong village.**

Keywords: Social Development, Culture, Economic, and Social Change

I. INTRODUCTION

Starting from the 1950s, Thailand had experienced unprecedented economic boom in the nation's history until the 1980s. The average annual growth in the 1960s was 8%, 7%in the 1970s, and 4-6% in the beginning of the 1980s [1]. Thai people, especially those who are in the nation's capital, Bangkok, enjoyed the economic boom and started to have "modernized" lifestyle. However, behind the scene of the national economic success, rural villages were forced to face predicament because of the urban-centered industrial economy based on neo-liberal economic beliefs.

In light of the historical context of the relationship between Thai community and the high-powered state authority, examining one specific community which is struggling to find a way of development in the globalized world today will be of great help to understand the contemporary notion of rural development in Thailand. In this paper, focus is centered on a village called *Mae Kampong*, which has been under great influence of the Royal project and the Government in terms of development, and yet has a great deal of potential for achieving a self-reliant way of community governance because of its traits as a traditional agrarian rural community. This paper aims to examine the socio-cultural changes that occurred in the village over the course of the contemporary development and ultimately the outlook of community self-sufficiency and self-reliance, deploying a realistic and empirical approach to look at the Thailand's contemporary phenomena happening in the rural communities.

Mae Kampong is the third village of seven villages in Huai Kaew sub-district, Mae On district, Chiang Mai province, Northern Thailand, known as a major producer of Northern Thai traditional tea product called *Mieng*. It is located east of Chiang Mai province, about 50 kilometers from the city, average 1,300 meters above the sea level. It has been about 100 years since the first generation of this village that had been searching for suitable places for tea cultivation came from nearby areas to settle in the location and started to form the community. Now, the village has 134 households and 374 people in total. The village consists of six clusters, Pang Nok, Pang Klang, Pang Khon, Pang Ton, Pan Nai No.1, and Pang Nai No.2.

Mae kampong has been well known for its making of the fermented tea product, called *Mieng*, in which

most villagers had been traditionally engaged as one of the major sources of income. In fact, about 97% of the villagers are engaged in Mieng production [3]. However, ever since the village started to get involved in tourism industry with its village home stay program in 2000, more and more villagers are shifting their focus on production of Mieng as a predominant economic activity to other forms of economic activities such as coffee production, home stay business, tea leaves pillow making as a souvenir product, and Thai massage service largely because of the declining demand of Mieng from lowland consumers. All in all, despite the fact that Mae Kampong has achieved a great deal of development, it has to be said that the development was chiefly brought by the government under the framework of rural development in Northern Thai context mentioned above, not by the villagers themselves.

Thus, one has to accept that the development of Mae Kampong is a result of the Government-led rural development schemes and the initiation by the villagers has not played a major role in the village's contemporary development. Finally, "change" is the word that most clearly illustrates what has been happening over the last few decades in Mae Kampong. Change in the mode of the village's economy, namely from Mieng production to community-based tourism, brought wealth and the material abundance to the villagers. However, the development, as is the case anywhere in the world, has two sides of which negative one can possibly lead to the destruction of essential elements for the community cohesion. Therefore, in this paper, emphasis will be made on the examination of the recent change of the village's economy in terms of cultural, social, political, and economic perspectives.

II. RESEARCH OBJECTIVES

1. What are the socio-economic and cultural changes through the course of development in Mae Kampong, and how have villagers perceived these changes?
2. In what way have these changes affected on social relations among villagers, and how they adapt based on existing physical, social, and cultural capitals?
3. How have villagers participated in and negotiated with development process and activities which brought changes into the community?

III. RESEARCH FINDINGS

A. Symbolic meaning of Mieng for Mae Kampong

The community symbol of Mae Kampong is Mieng. When some survey questions were asked like what the symbol of Mae Kampong is, almost all the villagers answered: it is Mieng. Therefore, one of the most valuable findings through the field research was that Mieng was something far more than a mere cash crop and it is unconceivable for the villagers to abandon the production of Mieng just because of the current declining consumption. In fact, a home stay house owner, in the life history interview, said that "My grandfather migrated to this village in order to cultivate Mieng. And my parents also grew Mien. That is why Mien is important for me [7]." And also, another interviewee said "We cannot cultivate rice because of the high altitude here, and we had traditionally bartered Mien with rice. So, Mien is the source of life for us just like rice is for the lowlanders. That is why Mien has been the most important for us, and it is true even after we started tourism [7]." For this, it can be said that Mieng is essential for the villagers' sense of identity and bears a great deal of memories and experience as a Mae Kampong's village member.

For the people in Mae Kampong, Mieng production, in which almost all the villagers have been engaged as a special meaning in terms of both economic and cultural perspectives. Since approximately 100 years ago, when the ancestors of the current generation came to settle in a place where it is called Mae Kampong today, almost all the villagers across the generations have been participating in Mieng cultivation and processing of it. Thus, it is natural to think that Mieng was ingrained in the villagers' cultural identity and came to bear an important symbolic meaning for them.

B. Mieng as Social Capital

Except it is located in a high land, which makes it difficult for the villagers to grow rice, Mae Kampong is not different from ordinary Thai communities in that they believe Buddhism and worship the king and the royal family. In Mae Kampong, the people's cooperative attitude and bond came not only from the fact that they are geographically bound but also from the labor intensive characteristic of Mieng. Although one's farm land and tea trees are clearly demarcated from that of others based on the individual ownership of lands and trees, in the past when the level of Mieng production was much higher than now, they used to work together with other villagers as well as waged laborer from the nearby villages since it was too hard for one household to cover all of their Mieng fields. In addition, after the tea leaves are picked, they need to collectively process the tea leaves in groups. This work often involved cross-household work in the village, and it was a common form of Mieng production in the past (but nowadays it can be

rarely seen because of the declining level of Mieng production). Importantly, the groups were not formally formed, but people often informally gathered and initiated the processing of tea leaves. This is the traditional way of Mieng processing in Mae Kampong, and it fostered the sense of cooperation in economic activities and psychological closeness among the villagers. Thus, it can be said that for the villagers of Mae Kampong, Mieng is not only economic capital but also, importantly, an agent to fostered social capital for the people.

C. Community-based tourism (CBT) in Mae Kampong

Mae Kampong's community-based tourism (CBT) was initiated, with help from external agents such as the government and NGOs for planning and consultation, mainly by the former village headman. In 2000, that persuaded three households to open their houses for homestay, and now there are 27 home stay-serving households in the entire village, most of which are concentrated in Pang Nai No.1 and pang Nai No.2. Home stay-serving households get 520 Baht per one visitor for a one night accommodation and two meals a day services. 350 Baht out of 520 Baht goes directly into the household's revenue and the rest 170 Baht goes to the village cooperative.

The village has a system of village cooperative, and the major financial source to the cooperative now comes from remittance by each home stay owner. The cooperative redistributes wealth made by the home stay service to all the village members, securing them to have benefits such as financial support for yougpwoples' education (e.g., grant of 1,000 baht, 2,000 baht, and 3,000 baht for young people who go on to high schools, BA, and MA respectively.) and medical care financial support (e.g., 150 baht per night for those who stay and get treatment in hospitals, 1,000 baht for a newborn baby, and 2,000 baht for households of which family members passes away).

Individual perception of the village tourism varies from person to person. Generally, it looks that young people in the village welcome tourism and are keen to engage in tourism activities. Among the middle-aged and elderly people, there seems to be consensus that they have the sufficient level of tourist visitation and if they have more, it will bring the village a more chaotic situation. Thus now, people think that they have a good balance between their traditional way of life and tourism, and more development in tourism is not needed.

D. Cultural Change: Fusion of Mieng and Tourism

Handler and Linnekin (1984) [8] states that tradition is a product of symbolic construction that occurs in the present, not something handed down from the past; there is no fixed tradition, but it is always in the process of on-going reconstruction [4]. Therefore, traditional local identity or community symbol is always renewed, remade, and modified in each generation. In other words, there is no fixed and objective thing that one can say identify as traditional culture; and what is defined as traditional culture is constantly being reformulated both in the past and the present. Perhaps, if the consumption of Mieng is significantly decreasing and the habit of Mieng savoring is to disappear, there might be a need of integrating Mieng more into the tourism activities so that Mieng can keep its presence even after Me Kampong turns (if it really happens) completely into a tourism community in future. In other words, the villagers of Mae Kampong have to reconstruct a new community symbol and the community boundary, synthesizing Mieng and CBT through invention of new Mieng-related products (such as, for example, Mieng flavored chewing gum and Mieng herbal products) that can sell to the tourist who visit Mae Kampong.

E. Division of Labor and Social Change

While tourism brings economic benefit to host communities, in that it creates new employment opportunities and brings about income generation, it is necessarily coupled with division of labor. Division of labor is a crucial element for economic growth because it enhances effectiveness of production and in the economics perspectives; it has been hailed as a key factor of the contemporary economic development in the post-industrialized world. However, in the sociological perspective, it brought some negative effects on local communities. Especially, in tourism destination communities, many of which used to be traditional agrarian communities, the tendency is more obvious. In fact, one of the liveliest discussions about negative impacts of tourism is its introduction of division of labor to the communities.

In fact, one of survey respondents said that "Since the beginning of the tourism project, human relationship in this village seems to have changed. In the past, we helped each other without any return, like rendering other villagers Mieng processing tools for free, but now we have to pay to borrow them" [7]. Similarly, another interviewee said: It is nice to have a lot of tourists because they certainly bring money to the village. But, nowadays, people living in the tourist area seem to care only about their businesses [7].

Since it has been only about 15 years since Mae Kampong started to get involved in tourism, the long-term impact of tourism made on the village is open to question. In order to fully examine qualitative aspects of tourism consequences such as changing human relations among the villagers, a further research in the longer period must be required. Nevertheless, even now, there are some testimonies from the villagers that the village is changing in a negative way. Therefore, it must be concluded that the village needs more tourism development because of the current situation of the declining demand of Mieng, but the tourism development has to be under the village's control so that it does not ruin the traditional way of the villagers' life.

F. Problems of Mae Kampong's Administrative Management

The modern development was first brought to Mae Kampong in 1970s by the state-led rural development schemes. The construction of the paved road was initiated by the US-aligned government's political intention to expel the communism activists who were thought to be hiding in mountains near Mae Kampong; and although it is the villagers (especially the former village headman) who decided to get themselves involved in tourism in 2000, later on, the eco-tourism became a part of the government-led OTOP (One Tambon One Product) program. Thus, it can be said that the development programs in Mae Kampong were always initiated by or taken into a part of the government-led development programs. Thus, it is highly dubious if the true voice of the village members were reflected in the village's development trajectory.

In discussing Thai rural community administration, it is essential to touch upon the government's regional administrative system. For Thailand's regional administration, village (*muban*) and subdistricts (*Tambon*) play a significant role. In each village, village headman (*phuyai ban*) is elected by the villagers while sub-district chiefs (*kamnan*) are appointed by the government. At the tambon and village levels, tambon councils and village development committees are now integrated into the rural development framework and play a part in administration of rural development programs; and these bodies are dominated by the sub-district chiefs and village heads as agents of the state [2].

The concept of participatory development has been internationally hailed as a possible counter movement to the paternal and top-down development discourse, however, Thailand's situation with regard to participation in administration of rural development programs is far from achieving community participation. In Thailand's case, the decentralized system of tambon administration is nothing more than a top-down program by the government within each bound of sub-district and village. Since all the village heads (*phuyai ban*) are summoned by the government for attending tambon meeting that aim to disseminate the government policies throughout the villagers via the village heads. After the tambon meeting, the village heads set up village meetings (usually compulsory) in their own villages to tell the same story talked by the sub-district chiefs in the previous meeting to the common villagers, and in the village meetings, the opportunity for the villagers to express their opinions and to give feedback about the government projects to the village heads is often limited. Importantly, this is also the case in Mae Kampong.

Therefore, although Mae Kampong is known as a very successful case of a CBT [5] village where the decision-making is based on community participation and the wealth made from the village tourism is redistributed to all the villagers through the village cooperative system, whether one can say that Mae Kampong has a democratic administrative structure is open to question, considering the fact that the common villagers attitude towards participation in the village's development planning and decision-making is quite passive, there are obviously problems in terms of the village's administrative management.

G. Mieng as Cultural Capital

It is not reckless to think that Mieng has an aspect of cultural capital, which has an important negotiation power in the community development discourse, as Bourdieu describes in his work. Although the high-powered government programs and strong leadership in the village structure have a significant role in the development trajectory, bottom-up from ordinary village members can be possible by the tradition of Mieng production. In fact, Bourdieu maintains that in modern societies, the confrontation between the distribution of economic capital (wealth, income, and property), which is so called the dominant form of hierarchy, and the distribution of cultural capital (knowledge, culture, and educational credentials), second principle of hierarchy, delineates the field of power [6]. Thus, cultural capital, which is the most significantly embodied by the tradition of mutual cooperation among the villagers fostered by Mieng production, can be a significant factor as the bargaining power for the ordinary villagers to negotiate with the development discourse.

IV. CONCLUSION

Mae Kampong has been through its development trajectory over the last several decades. The traditional agrarian community, which hasput its predominant emphasis on production of Mieng, a traditional fermented tea product in Northern Thailand, is now in transition to turning into a tourism site for both Thai domestic and international tourists. Community-based tourism (CBT), without doubt, brought a great deal of economic benefit to the village, creating various income resources for the villagers and generating employment opportunities for them. Nevertheless, the transition of the village's mode of economy brought various negative impacts on the village such as a declining presence of Mieng, which has been bonding the villagers together, and changing human relations among the villagers. For these negative impacts brought by the introduction of the village tourism, enhancing the villager's awareness of cultural and social significance of traditional Mieng production would be essential. Therefore, there is a need for Mieng, in the villagers' heads, to be reconsidered and redefined so that it can keep its traditional value within the community even in the current time of the village tourism.

In addition, Mieng has a potential in enhancing the villagers' sense of participation in the village's decision-making and tourism planning and ultimately bargaining power to negotiate with higher authority that often pushes down their development ideology to local communities because it is what they are proud of as a villager of Mae Kampong, who should be capable of creating their own future. This can be made possible by integrating Mieng into the current CBT programs by inventing Mieng-related products that can be sold as a part of the village tourism or by actively showing the tradition of Mieng production to their visitors.

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