

**ISSN 2356-847X**

**Volume 16, October 2018**

**Canadian International Journal of Social Science and  
Education**

**CIJSSE**

**With Support from Canadian Research**

**Centre for Humanities and Science**

**[www.cijse.org](http://www.cijse.org)**

**[socialscience@crchs.info](mailto:socialscience@crchs.info)**

**350 Joicey Boluvar**

**M5M 2W1**

**Toronto, Canada**

### **About The Journal**

**The Canadian Research Centre for Humanities and Science encourages Undergraduate students and Post-Graduates Students of Colleges and Universities to submit their papers for publication in the Canadian International Journal of Social Science and Education. In addition, The CRCHS will give letter of acceptance for all papers accepted for publication and a Certificate of publication.**

### **Frequency of Publication**

**The Canadian International Journal of Social Science and Education is published twice per year, in January and June.**

### **Chief-In-Editor**

**Dr.Samah Khalil**

**Associate Professor at Ontario College for Research & Development**

**Prof. Dr Tijana Mandić**

**Religious and Psychological Studies, FDU, Serbia**

**Dr. Marlyn Morris**

**Program Manager, CRCHS**

**Gloria Esteban de la Rosa,**

**Professor at the University of Jaen, Spain**

**Ahmed Ali (PhD)**

**Associate Professor of Translation**

**Dept. of Arabic and Translation Studies**

**American University of Sharjah**

**International Editorial Committee**

**Dr Nathalie Gosselin, Ph.D.,**

**Adjunct Professor, Department of psychology, University of Montreal**

**Dr. Syed Asad Abbas Rizvi**

**Saudi Arabia**

**Dr. Matthias Heinz**

**Germany**

**Dr. Wasantha Subasinghe**

**India**

**Dr. Mahmoodreza Hosseini**

**Dr. Isabel Cuadrado-Gordillo**

**Spain**

**Inmaculada Fernández-Antelo**

**Spain**

**Dr. Adarsh Kohli**

**India**

**Dr Lung-Sheng Lee**

**Taiwan**

**Dr. Ahmed Alkhalifah**

**Saudi Arabia**

**Dr. Mohamed Alamro**

**Saudi Arabia**

**Dr.Sang-Heui Lee**

**China**

**Dr. Nadir Ali Kolachi**

**Dr.Chah Jane Mbolle**

**Dr.Li, Yiping**

**Dr.Kaushikkumar Chimanlal  
Raval**

**Dr.Filiberto Toledano**

**Dr.Jung Hyun RYU**

**Dr.Flavio Marques Azevedo**

**Dr.Esra Ceran**

**Dr. Omar S. Al-  
Mushayt**

**Dr. Sergi Kapanadze**

**Dr. Vicky (Vayia) Karaiskou**

**Dr. Dejan Marolov**

**Dr. Mohamed S. Osman**

**Dr. Francesca Spigarelli**

**Dr. Dragica Vujadinovic**

**Dr. Badar Alam Iqba**

**Dr. Syed Asad Abbas Rizvi**

**Dr.Adarsh Kohli**

**Dr. Hong Thi Nguyen**

**Dr. Andrea Smith-Hunter**

**Dr. Hetti Appuhamillage Kumudu**

**DR. Sumedha Sanjeevani**

**Dr. Balraj Singh Brar**

**Dr. Mahmoodreza Hosseini**

**DR. ISABEL CUADRADO-GORDILLO**

## Table of Content

<b>“A SUSTAINABLE PENSION SYSTEM IN A FAST CHANGING WORLD: CASE OF ALBANIA”</b>	<b>7</b>
<b>ALBANIAN CHALLENGES TOWARDS AN EFFICIENT ”PENSION SYSTEM</b>	<b>26</b>
<b>The value of community-based environmental education to Chinese students in Macau</b>	<b>42</b>
<b>Living with Risks: A Case Study of Palm Oil Peasants in Indonesia</b>	<b>51</b>
<b>DISRUPTING THE AUTOMOTIVE INDUSTRY: TESLA STRIVES FOR SUCCESS</b>	<b>70</b>
<b>?Are consumers ready for sustainable electrical vehicles</b>	<b>83</b>
<b>Challenges of Arabic Language on Students with Dyslexia</b>	<b>90</b>
<b>Effect of Etymology Instruction on EFL Students’ Vocabulary Learning and Reading Comprehension</b>	<b>96</b>
<b>Small Projects for Jordanian Women's Empowerment</b>	<b>111</b>
<b>Does Voluntary Integrated Reporting Reduce Information ?Asymmetry</b>	<b>116</b>
<b>GeoTourism GIS: Case Study Failaka Island, Kuwait</b>	<b>137</b>
<b>Algebraic Content and Pedagogical Knowledge of Sixth Grade Mathematics Teachers: Through Document Analysis</b>	<b>157</b>
<b>Investigating the Acquisition Order of English Restrictive Relative Clauses: Evidence from Egyptian EFL Learners</b>	<b>171</b>
<b>STUDY OF ORGANIZATIONAL STRESS IN EMERGENCY MEDICAL SERVICES</b>	<b>194</b>

## **“A SUSTAINABLE PENSION SYSTEM IN A FAST CHANGING WORLD: CASE OF ALBANIA”**

**PhD. Candidate. OLGERTA IDRIZI**

**Faculty of Economy, Mediterranean University, Tirana, Albania**

**Prof. Dr. BESA SHAHINI**

**Department of Statistics and applied Informatics**

**Faculty of Economy University of Tirana, Albania**

### **Abstract:**

The discussion on the pension system is always a matter of a sensitive debate, when it comes to a country's radical development reforms. The current pension system in Albania is organized under the PAYG principle. This system is not sufficient to achieve financial stability in the pension system and should be expanded towards supplementary private pensions. Throughout this article, we will talk about some important issues of the pension scheme in general, the current situation of the system in Albania as well as about the challenges and perspectives for the future.

Our aim is to compare the current scheme with the two options offered by the new Albanian pension reform, in order to recommend the best option, which ensures the financial coverage of the scheme and the distribution of the pension amount to improve the social situation of this stratum of the population.

The main objective of this study is to assist in predicting the future of the pension scheme through actuarial projections related to demographic structure, unemployment, number of contributors and beneficiaries, in Albanian case. The methodology used is based on projection models of financial effects, according to projection scenarios of demographic and macroeconomic factors. At the end of the paper, the baseline scenario is recommended, including some conclusions and recommendations following the idea that the pension system should be fully reformed.

### **1. Pension system in Albania**

Albania, as one of the Central and east European countries, which came up from a hard communist regime, was introduced by World Bank, the idea of a five pillar pension system.

- The zero pillar: has to do with the benefits associated with poverty reduction. Retirement payments are made for persons who have reached retirement age but have not contributed during their lifetime because they did not work or because they did not want to contribute to pension schemes.

- First pillar: A mandated, unfunded and publicly managed Defined Benefit system. This pillar, mainly guarantees the protection of the elderly from poverty, which is part of the redistributive function of the state. This scheme is called generation relationship, as current contributors pay to get benefits those citizens who are currently retired. This is the so called model of Pay as You Go, the one that Albania is applying.

- Second pillar: A mandated, funded and privately managed Defined Contribution system. This pillar is a combination between a private scheme and the public pension system and is based on capitalization or redistribution, but it should to be clearly separated from the first pillar. Under this scheme, part of the mandatory contribution will be administered by the public scheme Pay as you go (current scheme: solidarity between generations), which will guarantee a basic pension while the rest will be administered by private companies. These companies will pay the pension when the retirement age will arrive, based on the paid compulsory contribution along with the gain realized over the years.

- Third pillar: A voluntary funded and privately managed retirement system. This means that all the people who aspire for higher pensions than normal can become part of these schemes. The private pension scheme, is still an area to be explored and needs further reforms in Albania to be real effective. Under this scheme, the citizens are free to contribute to this scheme, which is completely independent, and not under the state control.

- Fourth pillar: This is also a non-funded system. Here, we find more social aspects of the scheme, such as family support, health care, and so on. Thus, any person who has reached retirement age has the right to receive a pension in one of these schemes.

The experience of recent decades has shown that many countries are transforming pension systems from mono-pillar version to the multiple one. Multiple-pillar pension systems are more appropriate to meet the goals and objectives that a pension scheme should have. The most important objective of the pension system is to reduce old-age poverty and ensure a level of living close to what an individual had while working. The multi-pillar system better absorbs the gap among population groups.

In many Western European countries the term “second pillar” is often associated with the supplementary pension schemes set up under collective labor agreements. Looking at the trends in pension reform in Central European countries in transition, like Poland and Hungary, there was a shift from PAYG to funding pension schemes. Under the assistance of the World



Bank, this trend was followed by Western Balkan countries: Croatia, FYROM and Kosovo. On the other side, the International Labor Organization (ILO) is supporting the existing public PAYG systems, which would be reformed to face the complex challenges. The Czech Republic was continuing reforming the PAYG pension system, as well as the other Western Balkans, including Albania.

Reforms of the PAYG system started in 1993 resulted not so effective and efficient, so the pension reform is under the main priorities of the Government. , The main intervention in this sector was undertaken in 2002 and the last one in 2014. The strategic objective of the Government is to develop the second and the third pillars of pension system, as the first pillar is not any more attractive, due to many changes in Albanian context through years. Based on the solidarity among generations characteristic, the PAYG system provides immediate benefits for retired people, but creates little or no contributions to those who are of working age. For this reason, the unfinanced pension system PAYG is vulnerable to risk. PAYG scheme works well when the rate of increase in labor force participation is the same as the rate of natural growth of the population.

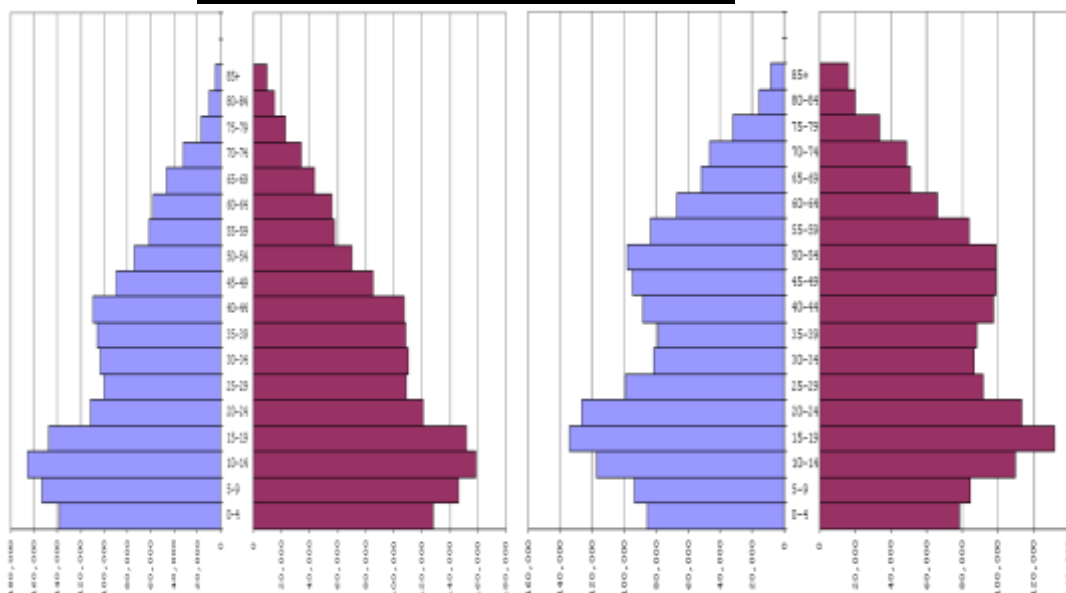
The challenges of this pension system depends on the country's demographic and economic developments:

- 1) Projections in many parts of the world, including in Albania, show that in the near future the percentage of working age population will decrease, compared to the percentage of pensioners. These demographic changes are the result of the retirement of the generation of people born in the post-World War II years (considered as the baby boom years) as well as the increase in life expectancy due to the development of medicine and changes in lifestyle and diet foodstuffs (Blake 1992). This phenomenon is called "population aging". The aging of the population is accompanied by an increase in the fiscal burden that the government has to afford to pay for pensions.

The question is whether Albania is in the situation of population aging? According to the Institute of Statistics, the old age index (i.e the population ratio 65 years and over with the total number of people) has increased from 8 percent in 2001 to 12 percent in the 2011 census (*INSTAT census 2011*). Also, there has been a drop in the rate of replacement that is the ratio of the population under the age of 15 to the total population. So the replacement rate from 29 % in 2001 was down to 21 %. As far as fertility indicators are concerned, we can say that the fertility rate of 2.3 children per woman in 2001 has decreased to 1.7 in 2011. This is due to the continuing decrease in the number of births, a phenomenon that is already present in Albania and we should be prepared to face the problems that accompanies it. Another important reason for accelerating the aging of the population has been

immigration. Immigration as a phenomenon began after the 1990s and according to an assessment by the International Organization for Migration (IOM) Albania has had a migratory population rate for the last two decades by the highest number of people in the world. According to them almost a quarter of the population has left the country and most of them were young men (IOM - Migration in Albania country profile 2016). As can be seen from the population pyramids (Graph 1) in the 2001 and 2011 census, the aging population is a present risk.

**Graph 1: Population Pyramid 2001- 2011**



*Source: INSTAT census 2001-2011*

The Albanian transition from a centralized economy to a free market led to the creation of private enterprises, which at the beginning were more focused on services and were small enterprises. The process of creating new jobs was at very low rates. According to the Labor Force Survey organized by INSTAT in 2012, the unemployment rate was 13.9 % . According to the same survey, the participation rate in the labor force for the population of 30-64 years old is 75.6 % , while the employment rate is 68 % . The labor market in Albania was also associated with a high degree of informality.

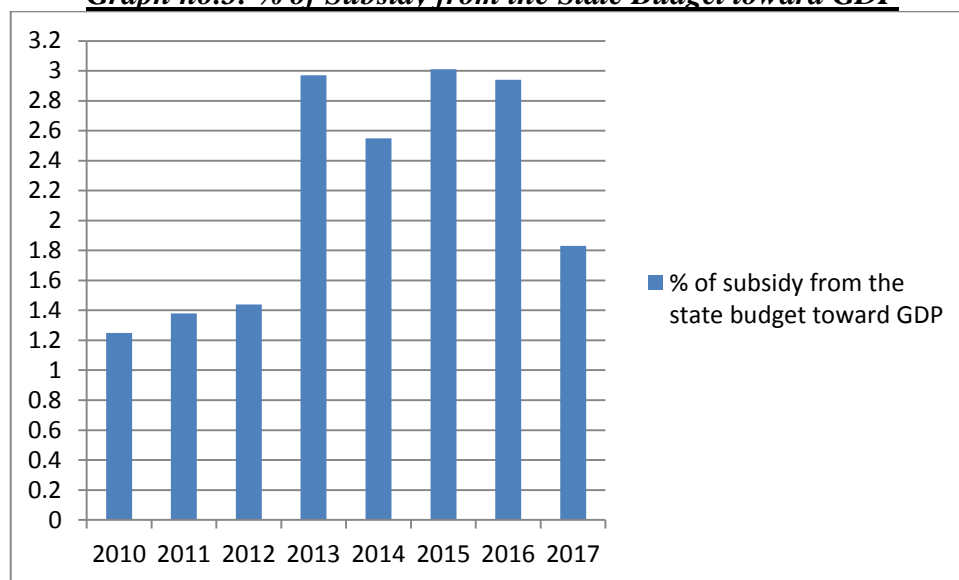
**Graph 2: Nr. of Employees and Contributors 2010-2016**



*Source: Instat and Institute of social Insurance statistical report*

Most of the working people do not declare themselves employed, thus avoiding social security payments. While in the case of employers declaring their employees, they tried to lower their salary by reducing the insurance premium. This is because by 2006 the amount of social security contributions was very high 29.9 % of the salary from which 71.2 % was paid by the employer. The Albanian government in 2006 lowered its contribution to 23.9 %. However, the Albanian labor market is characterized by a high degree of informality, which is reflected in the Graph 2. In conclusion we can say that as a consequence of demographic changes, high migration rate, relatively high unemployment rate, low participation rate in labor force and high degree of informality in the labor market, number of contributors to the scheme of social insurance has dropped and consequently the income of the social security scheme. On the other hand, until now, almost every person who has reached retirement age during these years, since he worked in the period before the 1990s, has the right to receive a full or part pension, depending on the fact that how many years he/she has contributed.

So, the situation of the pension scheme today is characterized by a high number of beneficiaries and a low number of contributors. Since our pension scheme is a PAYG scheme, which means that the contributions of those currently working go to pay pensions to the beneficiaries of the scheme, the economic situation of the system is in risk. According to the SII, in the "Social Insurance Statistics" publication for 2017 the subsidy from the state budget is 1.83 % of GDP, while it used to be high during three previous years as shown in Graph no.3

**Graph no.3: % of Subsidy from the State Budget toward GDP**

*Source: Institute of social Insurance statistical report*

The Albanian Social Insurance Scheme is managed by the Social Insurance Institute which is an independent public institution whose organization and operation is regulated by law. It is governed by the administrative council and the general director.

The Social Insurance Institute's mission is focused in the administration of the social security plan in general and to pension policies in particular, covering the population with social security elements in each country and time when it is proper, increasing so the number of contributors and collecting income from farmers' and volunteer contributions, improving efficiency in the management of social security funds, temporary free funds and reserve funds.

**Funding:** According to the Financial Regulation of ISI, it is allowed to borrow financial resources from one branch to another, against a defined interest rate. Interest-free borrowing is only allowed when it is approved by the Parliament in the ISSH's annual budget.

Incomes = regular Income + Irregular incomes

**Regular incomes involve:**

Contributions (by employers, by employees, by self-employed, from the state budget) + Interest and Commissions

**Irregular incomes:**

Transfers from the state budget (for indexing pensions, for special programs, to finance the Institute deficit) + Other Income (fines, etc.)

Expenses= Benefits + Administrative cost + Reserve fund of Social insurances

**Benefits** = Insurance for sickness + Lifecycle insurance+ Pension insurance+ Insurance for accidents at work+ Transfer to the unemployment insurance budget

**Administrative cost** =Current or Operational + Investments

**Reserve fund of Social insurances**

Some main statistical data through last three years are shown in table, 1, 2 and three

**Table 1: Financial situation- Total incomes and its components through last three years ( In ALL)**

	2014	2015	2016
<b>Income from contributions in total</b>	<b>61,720</b>	<b>60,148</b>	<b>66,383</b>
compulsory scheme	61,081	59,058	65,173
collected from GTD <sup>1)</sup>	52,464	56,473	62,692
collected from SII <sup>2)</sup>	8,617	2,585	2,481
supplementary scheme	638	1,090	1,210
<b>Contributions paid from State Budget (SB)<sup>3)</sup></b>	<b>6,751</b>	<b>5,794</b>	<b>5,022</b>
for special categories <sup>4)</sup>	3,291	3,533	3,712
for self-employed in agriculture	3,460	2,261	1,310
<b>as percentage of GDP</b>	<b>0.71</b>	<b>0.48</b>	<b>0.40</b>
<b>Financing of special programs from SB</b>	<b>13,509</b>	<b>15,661</b>	<b>14,473</b>
special programs of government	9,519	11,561	10,082
suppl scheme & special treatments	3,990	4,100	4,391
<b>as percentage of GDP</b>	<b>0.97</b>	<b>1.09</b>	<b>0.96</b>
<b>TOTAL OF INCOME</b>	<b>81,980</b>	<b>81,604</b>	<b>85,878</b>
<b>as percentage of GDP</b>	<b>5.88</b>	<b>5.69</b>	<b>5.72</b>
<b>Expenditure in total</b>	<b>101,498</b>	<b>107,309</b>	<b>114,276</b>
benefit costs	85,296	88,904	93,457
special government programs	9,633	11,497	13,687
suppl scheme & special treatments	4,707	4,892	4,973
administrative costs	1,862	2,016	2,159
<b>TOTAL OF OUTCOME</b>	<b>101,498</b>	<b>107,309</b>	<b>114,276</b>
<b>as percentage of GDP</b>	<b>7.28</b>	<b>7.48</b>	<b>7.61</b>
<b>Subsidy to cover the difference (Income - Outcome)</b>	<b>-19,518</b>	<b>-25,705</b>	<b>-28,398</b>
<b>as percentage of GDP</b>	<b>-1.40</b>	<b>-1.79</b>	<b>-1.89</b>

Source: Institute of social Insurance statistical report

**Table 2: Average Pension in Albania through last three years ( In ALL)**

	2014	2015	2016
<b>Urban pension amount</b>			
old-age pensions	14,518	14,585	14,873
invalidity pensions	12,593	12,648	12,803
survivors pensions	6,765	6,696	6,613
<b>Rural pension amount</b>			
old-age pensions	7,825	8,330	8,556
invalidity pensions	6,113	6,501	6,595
survivors pensions	3,252	3,240	2,830

*Source: Institute of social insurance statistical report*

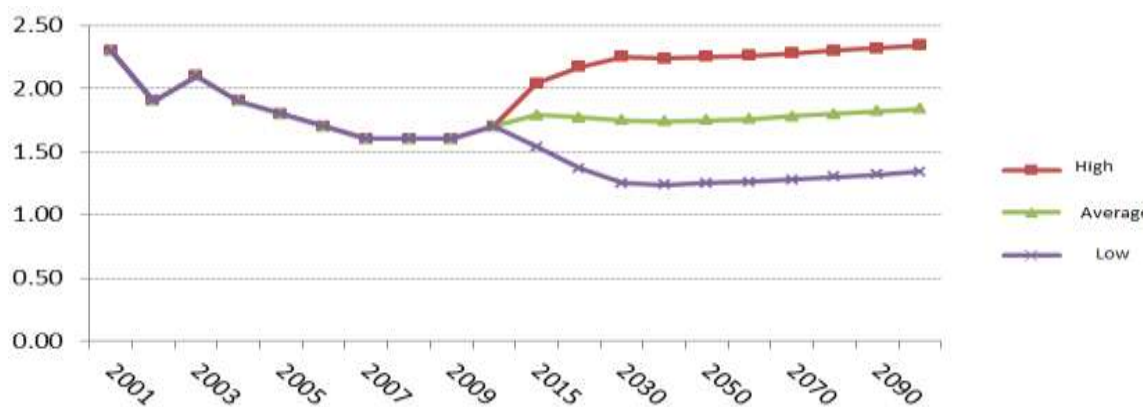
## **2. Population and macroeconomic indicators projections**

### **2.1 Population Projections**

The projections serves to predict the size and demographic structure of the population based on fertility, mortality and migration, (Guxho, A. 2014). Population projections are based on Population Census 2011 and Household Data Survey. These projections will cover the period 2011-2050 and are built on the basis of gender and age. There are several ways to build projections, but in this study, we will be based on the scenarios built by Guxho 2014 in order to predict the financial effects of the pension scheme.

**Fertility:** Total Fertility Rate (TFR) is one of the most important components of population projections. The synthetic index of TFR has been decreased over years. The construction of TFR projection is based on population data starting from 2001 according to age groups of five years and the methodology used is probabilistic projections of TFR. There are several methods to build TFR projections, but the one used is the Bayesian Projection Model. Fertility projections are based on three hypotheses: 1) Average hypothesis: it is assumed that in 2050 TFR will be 1.75 2) Minimum hypothesis: TFR will reach 1.25 level 3) Maximum hypothesis: TFR will reach 2.25

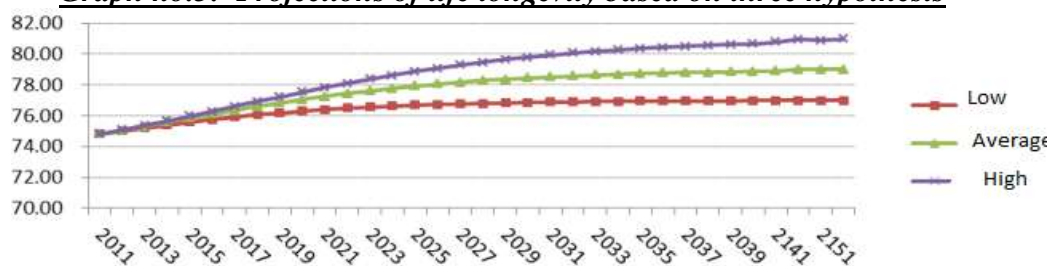
### **Graph no.4: Projections of TRF for three hypothesis**



Source: Guxho, A. 2014

**Lifetime:** Based on the trend of lifetime in the last 10 years and with the average fertility hypothesis, the average Hypothesis assumes that life expectancy will increase and will be 79 years old, for males and 83 for females in 2051. Referring to the High Hypothesis it will be 81 for males and 85 for females in 2051. Referring to the Low Hypothesis, life expectancy will be 77 for males and 81 for females in 2051.

**Graph no.5: Projections of life longevity based on three hypothesis**

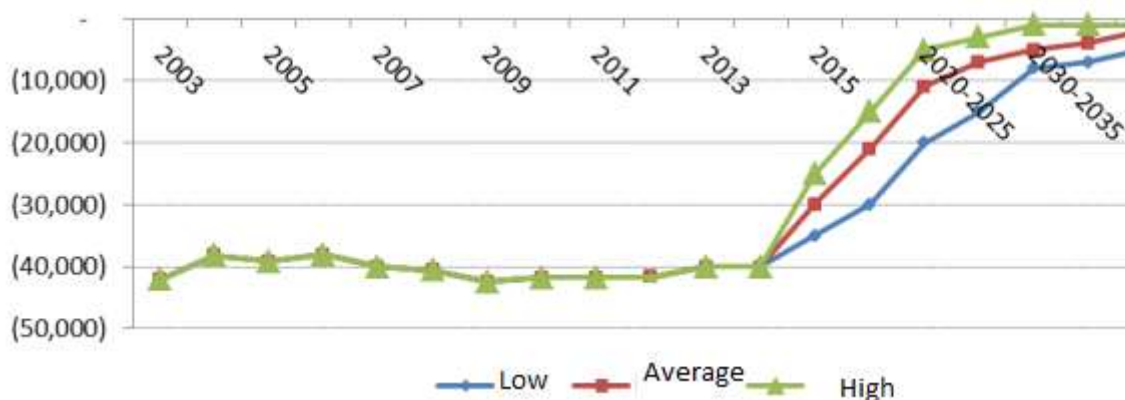


Source: Guxho, A. 2014

**Mortality:** To calculate the mortality indicators, the RUP (Rural Urban Projection) program was used, and gender tables were created. Starting from two life tables, which were taken from the 2001 and 2011 population census, interpolating the probability logs to death according to age groups, a new gender table was calculated in order to achieve the desired lifetime.

**Migration:** This phenomenon has always been present, but the rate of Albanian migration has changed. Migration projections are the most difficult predictions to be made, because detailed data is missing over the years. Recent Census data showed a decline in the number of resident population from 3.1 million in 2001 to 2.8 million in 2011, despite the positive natural growth (fertility-mortality) that we have had in these years. This decline has come as a result of immigration.



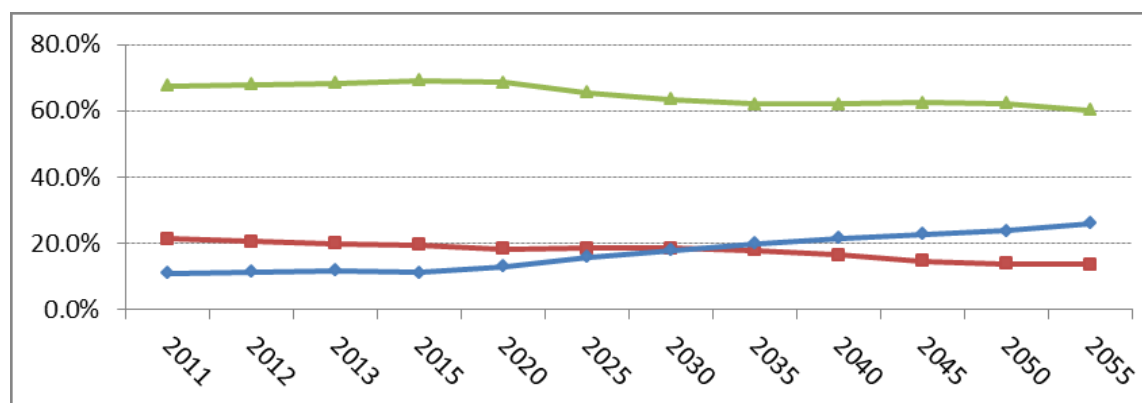
**Graph no.6: Projections of net migration through three schenarous**

Source: Guxho, A. 2014

For **the population projections**, it is considered the combination of hypotheses on fertility, mortality and migration. The low, Average and High variation consists in making the projections by referring to respectively the Low, Average and High Hypotheses for each component. Thus, according to the low variation, Albania's population will continue to decline by 2030, where the population is expected to be around 2.47 million. According to the medium variant, the population decline will continue until 2025. According to the high variant, which is also the most optimistic variant, the collapse of our nation's population ends in 2020 and then we would have an increase in the number of population as the consequence of a TFR around the replacement rate and a relatively low migration rate. According to these projections, the population of Albania will continue to decline by 2025 and will then begin growth rates, albeit modest. According to population projections, another phenomenon that is noticed is the increase in the old age index which in 2055 is projected to be 26.1 percent. This means that in the future Albania will face the problem of aging of the population. Population aging has a negative impact on PAYG pension schemes.

**Graph no.7: Projections of group-ages through years**





Source: Guxho, A. 2014

## 2.2 Projections of macroeconomic indicators

**Labor market.** Based on: 1) labor market data (Instat 2017 (table 3)) for the years 2013-2017;

***Table 3: Participation scale in labor force***

	2013	2014	2015	2016	2017
<b>Total</b>					
15-29	38.7	41.9	44.5	45.7	45.6
30-64	71.1	72.3	74.5	76.1	77.0
15-64	59.6	61.5	64.2	66.2	66.8
15+	52.4	53.7	55.7	57.5	58.3
<b>Males</b>					
15-29	47.9	51.2	52.8	51.7	52.8
30-64	82.9	84.5	85.2	85.8	87.8
15-64	70.2	72.2	73.4	74.1	75.8
15+	61.7	63.5	64.3	65.0	66.8
<b>Females</b>					
15-29	30.1	32.0	35.4	38.8	37.2
30-64	60.7	61.2	64.6	66.8	66.7
15-64	50.1	51.3	55.1	58.3	57.7
15+	44.0	44.4	47.2	49.9	49.8

Source: INSTAT

2) Projections for the average participation rate in the labor force is made through the formula:

$$PR(\bar{a}, \underline{a}, t) = \sum_{a=\underline{a}}^{\bar{a}} \sum_{g=m,f} PR_{a,g}^t * p_{a,g}^t$$

(eq.1)

$$p_{a,g}^t = \frac{pop_{a,g}^t}{\sum_{a=\underline{a}}^{\bar{a}} \sum_{g=m,f} pop_{a,g}^t}$$

(eq.2)

Where  $\bar{a}$  is the upper limit of group- age,  $\underline{a}$  is the bottom limit of the group age, g is sex, t is time,  $PR_{a,g}^t$  is the rate of participation in the labor force for this age group in year t, pop is population, p is population structure.

3) To calculate the number of contributors, there are used three hypotheses: a) Low hypothesis, i.e. the unemployment rate decreases at slow rates, becoming 13% in 2025 and then kept constant. b) The average hypothesis, i.e. unemployment rate decreases at average rates and reaches 11.2% in 2025 and is then kept constant. c) The high hypothesis, i.e. unemployment rate decreases rapidly at 9.3 percent in 2025 and is then kept constant.

**Table 4: Projections for nr. Of employers according three hypothesis**

	2020	2025	2030	2040	2050
<b>Low</b>	880.1	920.7	958.3	1100.7	1438.1
<b>Average</b>	920.2	950.8	987.5	1110.9	1549.7
<b>High</b>	932.3	961.4	1103.1	1637.71	1561.9

*Source: Authors calculations*

The labor market in Albania is characterized by a high degree of informality, expressed in two forms: the non-declaration of employed persons (more in rural areas than urban ones) and lower wage declaration, as a consequence, a reduction in social security contributions (mostly in urban areas). Currently, according to INSTAT (www.instat.gov.al the labor market) there are about 1157 thousand people employed for 2016 and according to ISSH

(www.iss.gov.al statistics of 2016) there are 718.3 thousand contributors. So, around 63% of employed persons pay social security contributions. This ratio is maintained at 70% (considering the improvement of the informality situation) constant until the end of the forecast period.

The legal retirement age is thought to be 65 for men and 63 for women and remains unchanged throughout the period.

**Macroeconomic situation: The growth rate of GDP** is considered to be 3.8% for 2017, it is foreseen according Ministry of Finances to be 4% in 2020, and it is foreseen to be constant from 2020 and on.

**Table 5. Macroeconomic situation and forecasting**

	2013	2014	2015	2016	2017	2020	2030	2050
<b>GDP growth rate %</b>	1	1.8	2.2	3.4	3.8	4	4	4
<b>Inflation %</b>	2.1	1.6	1.8	1.3	1.3	2	2	2
<b>Real wage growth %</b>	2	0.1	0	-0.4	-0.2	3	3	3

*Source: Ministry of Finances, Bank of Albania, Instat*

As far as the **indexation of pensions** is concerned, the assumption is that this will be done with the inflation rate. Referring to the assumption of indexing the wages, they are indexed with nominal GDP growth.

### **3. Projections of pension and financial effects results**

As the most optimal scenario, it is considered the average one and is called a baseline scenario. All the calculations are based upon the average hypothesis of each above mentioned projections.

The table below shows the performance in years of income and expenditure for pensions under the pure public pension scheme (The one that is still in implementation)

**Table 6. Revenues and expenditures according to public pension scheme**

	2020	2025	2030	2040	2050
<b>Total public pensions (rural +urban) /GDP</b>	9.8	10	9.7	11.2	11.4

(%)					
<b>Total revenues from contributions (rural+urban) /GDP (%)</b>	7.2	7.3	7.8	12.7	13.1
<b>Deficit (balance) of current pension scheme (%)</b>	2.6	2.7	1.9	-1.5	-1.7

*Source: Authors calculations*

Although increasing gradually, the growth rate of expenditures is much higher than the rate of revenue growth, making the scheme more financially unstable. Consequently, the current deficit of the pension scheme will continue to deepen reaching the peak of 2025 with 2.7% of GDP. Then the deficit starts gradually decreasing, moving negatively at somehow between 2030 and 2040.

Considering the fact that the pure public pension scheme has some problems and it cannot finance itself, before going in an inevitable crisis a new private scheme should be considered.

In 2014, the Government has approved a new reform on pension, which considers two options:

- 1) The formula for calculation of the pension would be:

$$P = PS + Sh \quad (\text{eq.3})$$

Where:

- P is the monthly pension measure;
- PS is a social pension, the amount of which is no higher than the partial pension payment provided by the contributory scheme;
- Sh is an addendum whose value is 1% of the base value of the annual basis, which represents the ratio of the average contribution in the current year to the average contributions of previous years

And of course it has some other elements to be considered regarding the age and so on. While the Private pension funds will continue to be based on the free will of the citizens to contribute to them

- 2) According to the second option, the formula for calculation of the pension would be

$$P = \frac{Ka + F}{Jm} \quad (\text{eq.4})$$

P is the pension measure; There is the aggregate amount of capital accumulated throughout the years when contributions are paid;

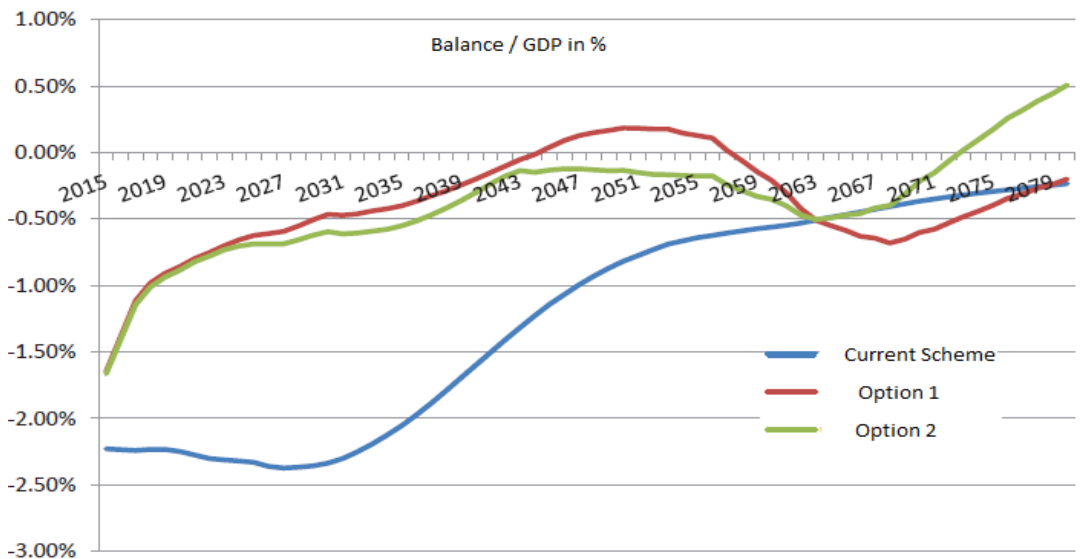
F is the notional gain accumulated over the years as a result of the application of the national interest rate;

Jm is the average life expectancy of the population at retirement age.

Thus, at the moment of retirement, the aggregate amount of accumulated capital and "non-profit" earnings are divided by the average life expectancy and are converted into an annuity, which is then converted into monthly pensions.

This paradigmatic reform moves toward the system with a national account. This system works according to the Pay-As-You-Go principle, just like the current scheme, which means that current contributions are used to cover current benefit costs. However, the national system represents a substantial change compared to the current system. This is because this system is designed to imitate a private defined contribution system where the pension amount is determined by the history of individual contributions and their profit rate, but in this kind of system, the profit rate by contribution is defined by the government in national aspect, rather than the product of their investment in financial markets.

**Graph no.8: Projection of balance in % of GDP for two options of the new pension reform**



*Source: Ministry of Social Works and Youth*

Referring to graph. No.8, the Option 2, like Option 1, guarantees higher benefits than the current scheme after 2035. Thus, under the actual deficit scheme, which represents the difference between the income from the contributions and total spending and does not include the cost of social pension, deepens from 2.2% of GDP to approximately 2.4% of GDP in 2027. It then gradually began to decrease, falling to 1.5% GDP in 2041, to 1% of GDP in 2046 and remain at 0.5% of GDP after 2064. Under option 2, the deficit immediately falls from 1.6% of GDP in 2015 to 1% of GDP in

2018. The gradual decline of the deficit continues for the remaining period, falling below 0.5% of GDP for the period 2037-2074, the year in which the system passes into surplus.

To have a clear view on the driving forces behind the development of public pension, in terms of pension expenditure to GDP ratio, we have used the formulas:

$$\frac{\text{Pension Exp.}}{\text{GDP}} = \frac{\overbrace{\frac{\text{Population 65+}}{\text{Population 20-64}}}^{\text{Dependency Ratio}} \times \frac{\overbrace{\frac{\text{Number of Pensioners}}{\text{Population 65+}}}^{\text{Coverage Ratio}} \times \frac{\overbrace{\frac{\text{Population 20-64}}{\text{Working People 20-74}}}^{\text{Labour Market/Labour Intensity}} \times \frac{\overbrace{\frac{\text{Average Pens}}{\text{GDP}}}^{\text{Benefit Ratio}}}{\text{Hours Worked 20-74}}$$

(eq.5)

To be more precise, the ‘coverage ratio’ is further decomposed to show up the single effects of early-age pensions and old-age pensions,

$$\frac{\overbrace{\frac{\text{Number of Pensioners}}{\text{Population 65+}}}^{\text{Coverage Ratio}} = \frac{\overbrace{\frac{\text{Number of Pensioners 65+}}{\text{Population 65+}}}^{\text{Coverage Ratio Old-Age}} + \left( \frac{\overbrace{\frac{\text{Number of Pensioners } \leq 65}}{\text{Population 50-64}}}^{\text{Coverage Ratio Early-Age}} \times \frac{\overbrace{\frac{\text{Population 50-64}}{\text{Population 65+}}}^{\text{Cohort Effect}} \right)$$

(eq.6)

And the labor market indicator is decomposed as following:

$$\frac{\overbrace{\frac{\text{Population 20-64}}{\text{Working People 20-74}}}^{\text{Labour Market/Labour Intensity}} = \frac{\overbrace{\frac{1/\text{Employment Rate}}{\text{Population 20-64}}}^{1/\text{Employment Rate}} \times \frac{\overbrace{\frac{1/\text{Labour intensity}}{\text{Working People 20-64}}}^{1/\text{Labour intensity}} \times \frac{\overbrace{\frac{1/\text{Career shift}}{\text{Hours Worked 20-64}}}^{1/\text{Career shift}}}{\text{Hours Worked 20-64}}$$

(eq.7)

**Table 7. Factors behind change in public pension expenditures**

	2020-2030	2030-2040	2040-2050
<b><i>Public Pensions to GDP</i></b>	-0.1	3	-0.5
<b><i>Dependency ration effect</i></b>	3.5	2.2	1.1
<b><i>Covering ratio effect</i></b>	-0.6	-0.5	-0.2
<b><i>Benefit ratio effect</i></b>	-0.7	-0.6	-0.3
<b><i>Employment ratio effect</i></b>	0	-0.15	0.1

<b><i>Residual</i></b>	-0.3	-0.15	0
------------------------	------	-------	---

*Source: Authors calculations*

Based on table 7 and as a consequence of *equation 5*, the *benefit ratio* mitigates the increase of pension expenditures compared to GDP. Although, unemployment still generates pension accruals, long periods of unemployment have a negative impact on future pension benefits. A positive impact of the *benefit ratio* (in the sense of reducing the pension expenditures) will remain over the whole projection horizon but it will be less effective starting in the mid-2040s as a result of a much more favorable ratio of pensioners to labor force population. Due to the “new” demographic situation the negative impact of the sustainability factor in *equation 5* will be reduced. The dependency coefficient, which shows the beneficiary / contributor ratio, begins to have a slight decrease, through years. The Covering rate is calculated as the ratio of the current average wage to the current average pension. Given the fact that average wage growth follows growth rates of intensive GDP, while existing pensions account for wages on which contributions have been paid in previous years and indexation of pensions is done with inflation, the covering rate will be reduced to the coming years.

#### **4. Conclusions**

The current pension scheme of Albania suffers from a deep deficit, offers low benefits and covers a low number of working age population. Long-term projections show that if this scheme is not reformed the benefits will be lower than the salary average and a considerable number of citizens will remain without penance of old age.

Consequently, the reformation is indispensable. Reforming a pension scheme should take into account two objectives, namely:

- Financial sustainability of the scheme
  - Benefits for the old age and poverty reduction for this category
- Albania's population will continue to decline for several years as a result of low natural growth and a high degree of emigration. On the other hand, in the coming years an increase of the old age index is predicted, which means that the percentage of the population over 65 will be increased.

The new governmental pension reforms offer two options for reform. Option 1 focuses on improving parameters of current systems. Option 2 proposes a paradigmatic reform by being shifted towards the system with a niche account. Both options focus on tightening the connection between contributions and benefits by encouraging citizens to become part of the

scheme and contribute to their real wage. Consequently, both proposed options bring one deficit reduction as well as higher benefits for citizens. By 2030 both options have almost the same performance in reducing the deficit. After this year Option 1 results more effective than Option 2 in reducing the deficit by giving a deficit of almost 1% Lower GDP at the end of the forecast period.

Pension systems aim at preventing both old age poverty and falling immediate income and cost when people move from retirement. These two objectives exclude one another because the more a retirement system focuses on poverty reduction and redistribution, the less income they will be able to afford guaranteed to individuals with middle and high salaries a pension closer to their long-term income years of work.

Option 1 is characterized by an acceptable measure of redistribution as all contributors will benefit social pension at retirement age plus a certain percentage of their salaries average, while Option 2 is a clean contributory scheme where the annuity of each contributor depends only on the level of paid contributions. However, the choice between having or not this redistribution should not be seen as a choice between these two options. Option 1 can be done less redistribution by abolishing the social pension or reducing its size and strengthening the bond between contributions and pension and Option 2 may become more redistributive by I added some social benefits to total pension.

## **Bibliography**

- Albania Government and IMF . *Economic and fiscal program 2016-2020*
- Anita M. Schwarz (2006) -*Pension System Reforms*
- Blake, D. (1992). *Modeling pension fund investment behavior*. London: Routledge
- Baldwin, B. (2009). *Research Study on the Canadian Retirement Income System*, Canada
- CRPM (Centre for Research and Policy Making) (July 2005) *Pension System Reform in Macedonia*. Occasional Paper No. 7,
- Deacon, Bob and Paul Stubbs (2003) .*The Making of Social Policy in South-Eastern Europe: Theories, Methods, Politics*. Paper presented at GASPP 6 Seminar Thessaloniki, Greece
- Eurostat 2013. *European Social statistics* .ISSN 1977-7930
- Fiche , C (2017). *Pension Projections exercise 2018*. Germany
- Lama, A. (2005) "*Insurance System Development, The necessity of Social Insurances and Private Pensions in Albania*."
- Guxho, A (2014). *Pension scheme in Albania and actuarial forecasting*., Dissertation, University of Tirana



- Holzmann, R., MacKellar L, and Repansek J, (2008) . *Pension Reform in Southeastern Europe Linking to Labor and Financial Market Reforms.*
- *ILO estimates and projections of the economically active population 1990-2020* (sixth Edition)
- Ministry of social wellbeing and youth (2014). *Document of Pension policy.*
- Novy. R. Rauh. M&J.(2010). *Public Pension Promises: How Big Are They and What Are They Worth.*, Journal of Finance.
- Xhumari, M. (2000) .*Welfare programs for unemployment income in Albania*, published by FISS
- [www.worldbank.org/pension](http://www.worldbank.org/pension)
- [www.instat.gov.al](http://www.instat.gov.al)
- [www.issh.gov.al](http://www.issh.gov.al)
- [www.amf.gov.al](http://www.amf.gov.al)

## **“ALBANIAN CHALLENGES TOWARDS AN EFFICIENT PENSION SYSTEM”**

**PhD. Candidate. OLGERTA IDRIZI**  
**Mediterranean University of Albania**

**Prof. Dr. BESA SHAHINI**  
**Department of Statistics and applied Informatics**  
**Faculty of Economy University of Tirana, Albania**

### **Abstract:**

Pensions' reform in most Western, Central and Eastern European countries is one of the most important topics of the agenda of reforms undertaken by many of these countries.

The main objective of this study is to assist in predicting the future of the pension scheme through actuarial projections related to demographic structure, unemployment, number of contributors and beneficiaries, in Albanian case.

Through this study, we intended to predict what would be the financial effect of two options: 1) if Albania continues with the same scheme as well as 2) when a new contributory scheme is being implemented. This study will conclude and recommend some of the steps for reforming the pension scheme in our country based on the experience of other countries and what financial effect would the state budget have with the implementation of the new scheme.

The methodology used for implementing the actuarial model is based on the construction of the population projections using the RUP system (Rural Urban Projection), a system developed by the Census Bureau of the United States of America. While the economic performance forecasts, i.e: GDP, inflation rate, unemployment rate or expected indexation of wages and pensions, will be sourced by the Albanian Ministry of Finance and the International Monetary Fund.

## **5. Introduction**

Traditionally World Bank offers during all its literature review a three pillar system referring to the pension system. But going through a detailed observation of this system throughout the countries all over the world and the efforts undertaken to build a sustainable pension system, it is considered as interesting to add two extra pillars to then old literature and discuss a five pillar pension system. This one is more appropriate for countries like Albania and many other Central and east European countries, which came up from a hard communist regime. .

- The zero pillar: has to do with the benefits associated with poverty reduction. Retirement payments are made for persons who have reached retirement age but have not contributed during their lifetime because they did not work or because they did not want to contribute to pension schemes.
- First pillar: A mandated, unfunded and publicly managed Defined Benefit system. This pillar, mainly guarantees the protection of the elderly from poverty, which is part of the redistributive function of the state. This scheme is called generation relationship, as current contributors pay to get benefits those citizens who are currently retired. This is the so called model of Pay as You Go, the one that Albania is applying.
- Second pillar: A mandated, funded and privately managed Defined Contribution system. This pillar is a combination between a private scheme and the public pension system and is based on capitalization or redistribution, but it should to be clearly separated from the first pillar. Under this scheme, part of the mandatory contribution will be administered by the public scheme Pay as you go (current scheme: solidarity between generations), which will guarantee a basic pension while the rest will be administered by private companies. These companies will pay the pension when the retirement age will arrive, based on the paid compulsory contribution along with the gain realized over the years.
- Third pillar: A voluntary funded and privately managed retirement system. This means that all the people who aspire for higher pensions than normal can become part of these schemes. The private pension scheme, is still an area to be explored and needs further reforms in Albania to be real effective. Under this scheme, the citizens are free to contribute to this scheme, which is completely independent, and not under the state control.

- Fourth pillar: This is also a non-funded system. Here, we find more social aspects of the scheme, such as family support, health care, and so on.

The right to receive a pension in one of these schemes belongs to everybody who has reached retirement age

The experience of recent decades has shown that many countries are transforming pension systems from mono-pillar version to the multiple one. Multiple-pillar pension systems are more appropriate to meet the goals and objectives that a pension scheme should have. The most important objective of the pension system is to reduce old-age poverty and ensure a level of living close to what an individual had while working. The multi-pillar system better absorbs the gap among population groups.

In many Western European countries the term “second pillar” is often associated with the supplementary pension schemes set up under collective labor agreements. Looking at the trends in pension reform in Central European countries in transition, like Poland and Hungary, there was a shift from PAYG to funding pension schemes. Under the assistance of the World Bank, this trend was followed by Western Balkan countries: Croatia, FYROM and Kosovo. On the other side, the International Labor Organization (ILO) is supporting the existing public PAYG systems, which would be reformed to face the complex challenges. The Czech Republic was continuing reforming the PAYG pension system, as well as the other Western Balkans, including Albania.

Reforms of the PAYG system started in 1993 resulted not so effective and efficient, so the pension reform is under the main priorities of the Government. , The main intervention in this sector was undertaken in 2002 and the last one in 2014. The strategic objective of the Government is to develop the second and the third pillars of pension system, as the first pillar is not any more attractive, due to many changes in Albanian context through years. Based on the solidarity among generations characteristic, the PAYG system provides immediate benefits for retired people, but creates little or no contributions to those who are of working age. For this reason, the unfinanced pension system PAYG is vulnerable to risk. PAYG scheme works well when the rate of increase in labor force participation is the same as the rate of natural growth of the population.

The challenges of this pension system depends on the country's demographic and economic developments:

2) Projections in many parts of the world, including in Albania, show that in the near future the percentage of working age population will decrease, compared to the percentage of pensioners. These demographic changes are the result of the retirement of the generation of people born in the post-World War II years (considered as the baby boom years) as well as

the increase in life expectancy due to the development of medicine and changes in lifestyle and diet foodstuffs (Blake 1992). This phenomenon is called "population aging". The aging of the population is accompanied by an increase in the fiscal burden that the government has to afford to pay for pensions.

The question is whether Albania is in the situation of population aging? According to the Institute of Statistics, the old age index (i.e the population ratio 65 years and over with the total number of people) has increased from 8 percent in 2001 to 12 percent in the 2011 census (*INSTAT census 2011* ). 7.9% of the whole population is over 65 years old in 2017, and 9.3% is foreseen in 2031 ( Instat 2017)

Also, there has been a drop in the rate of replacement that is the ratio of the population under the age of 15 to the total population. So the replacement rate from 29 % in 2001 was down to 21 %. As far as fertility indicators are concerned, we can say that the fertility rate of 2.3 children per woman in 2001 has decreased to 1.7 in 2011. This is due to the continuing decrease in the number of births, a phenomenon that is already present in Albania and we should be prepared to face the problems that accompanies it. Another important reason for accelerating the aging of the population has been immigration. Immigration as a phenomenon began after the 1990s and according to an assessment by the International Organization for Migration (IOM) Albania has had a migratory population rate for the last two decades by the highest number of people in the world. According to them almost a quarter of the population has left the country and most of them were young men (IOM - Migration in Albania country profile 2016). The Albanian transition from a centralized economy to a free market led to the creation of private enterprises, which at the beginning were more focused on services and were small enterprises. The process of creating new jobs was at very low rates. According to the Labor Force Survey organized by INSTAT in 2017, the unemployment rate was 11 % . According to the same survey, the participation rate in the labor force for the population of 30-64 years old is 77 %, while the employment rate is 68.7 %. The labor market in Albania was also associated with a high degree of informality

***Table 1: Nr. of Employees and Contributors 2010-2016***

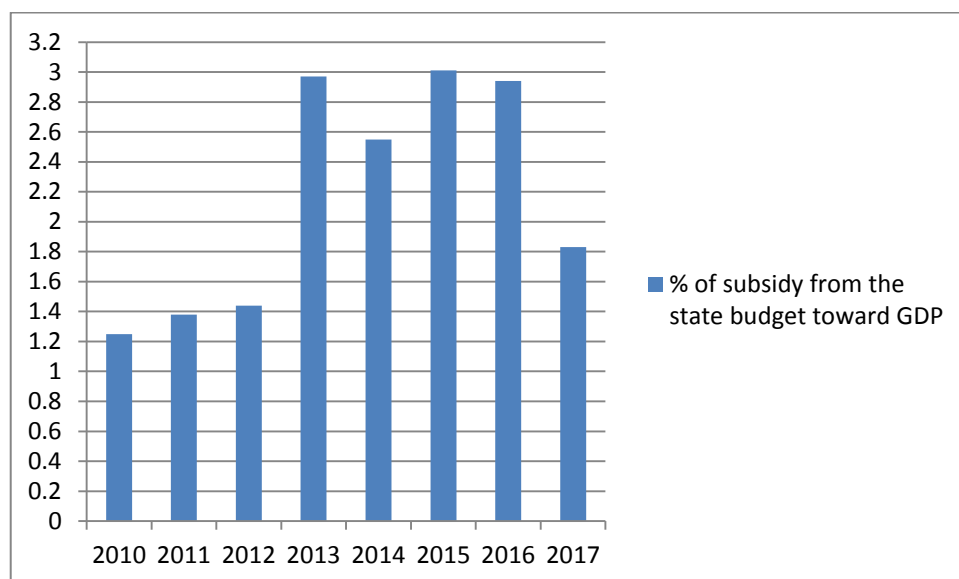
	2010	2011	2012	2013	2014	2015	2016
<b>No. of Employees (000)</b>	904	948	959	917	925	973	1000
<b>No. of Contributors(000)</b>	681.99	719.78	636.8	561.2	654.6	718.1	718.1

*Source: Instat and Institute of social Insurance statistical report*

Most of the working people do not declare themselves employed, thus avoiding social security payments. While in the case of employers declaring their employees, they tried to lower their salary by reducing the insurance premium. This is because by 2006 the amount of social security contributions was very high 29.9 % of the salary from which 71.2 % was paid by the employer. The Albanian government in 2006 lowered its contribution to 23.9 %. However, the Albanian labor market is characterized by a high degree of informality, which is reflected in the Graph 2. In conclusion we can say that as a consequence of demographic changes, high migration rate, relatively high unemployment rate, low participation rate in labor force and high degree of informality in the labor market, number of contributors to the scheme of social insurance has dropped and consequently the income of the social security scheme. On the other hand, until now, almost every person who has reached retirement age during these years, since he worked in the period before the 1990s, has the right to receive a full or part pension, depending on the fact that how many years he/she has contributed.

So, the situation of the pension scheme today is characterized by a high number of beneficiaries and a low number of contributors. Since our pension scheme is a PAYG scheme, which means that the contributions of those currently working go to pay pensions to the beneficiaries of the scheme, the economic situation of the system is in risk. According to the SII, in the "Social Insurance Statistics" publication for 2017 the subsidy from the state budget is 1.83 % of GDP, while it used to be high during three previous years as shown in Graph no.3

**Graph no.1: % of Subsidy from the State Budget toward GDP**



*Source: Institute of social Insurance statistical report*

The Albanian Social Insurance Scheme is managed by the Social Insurance Institute which is an independent public institution whose organization and operation is regulated by law. It is governed by the administrative council and the general director.

The Social Insurance Institute's mission is focused in the administration of the social security palm in general and to pension policies in particular, covering the population with social security elements in each country and time when it is proper, increasing so the number of contributors and collecting income from farmers' and volunteer contributions, improving efficiency in the management of social security funds, temporary free funds and reserve funds.

**Funding:** According to the Financial Regulation of ISI, it is allowed to borrow financial resources from one branch to another, against a defined interest rate. Interest-free borrowing is only allowed when it is approved by the Parliament in the ISSH's annual budget.

Incomes = regular Income + Irregular incomes

**Regular incomes involve:**

Contributions (by employers, by employees, by self-employed, from the state budget) + Interest and Commissions

**Irregular incomes:**

Transfers from the state budget (for indexing pensions, for special programs, to finance the Institute deficit) + Other Income (fines, etc.)

Expenses= Benefits + Administrative cost + Reserve fund of Social insurances

**Benefits** = Insurance for sickness + Lifecycle insurance+ Pension insurance+ Insurance for accidents at work+ Transfer to the unemployment insurance budget

**Administrative cost** =Current or Operational + Investments

**Reserve fund of Social insurances**

Some main statistical data through last three years are shown in table 2.

**Table 2: Financial situation- Total incomes and its components through last three years ( In ALL)**

	2014	2015	2016
<b>Income from contributions in total</b>	<b>61,720</b>	<b>60,148</b>	<b>66,383</b>
compulsory scheme	61,081	59,058	65,173
collected from GTD <sup>1)</sup>	52,464	56,473	62,692
collected from SII <sup>2)</sup>	8,617	2,585	2,481
supplementary scheme	638	1,090	1,210
<b>Contributions paid from State Budget (SB)<sup>3)</sup></b>	<b>6,751</b>	<b>5,794</b>	<b>5,022</b>
for special categories <sup>4)</sup>	3,291	3,533	3,712
for self-employed in agriculture	3,460	2,261	1,310
<b>as percentage of GDP</b>	<b>0.71</b>	<b>0.48</b>	<b>0.40</b>
<b>Financing of special programs from SB</b>	<b>13,509</b>	<b>15,661</b>	<b>14,473</b>
special programs of government	9,519	11,561	10,082
suppl scheme & special treatments	3,990	4,100	4,391
<b>as percentage of GDP</b>	<b>0.97</b>	<b>1.09</b>	<b>0.96</b>
<b>TOTAL OF INCOME</b>	<b>81,980</b>	<b>81,604</b>	<b>85,878</b>
<b>as percentage of GDP</b>	<b>5.88</b>	<b>5.69</b>	<b>5.72</b>
<b>Expenditure in total</b>	<b>101,498</b>	<b>107,309</b>	<b>114,276</b>
benefit costs	85,296	88,904	93,457
special government programs	9,633	11,497	13,687
suppl scheme & special treatments	4,707	4,892	4,973
administrative costs	1,862	2,016	2,159
<b>TOTAL OF OUTCOME</b>	<b>101,498</b>	<b>107,309</b>	<b>114,276</b>
<b>as percentage of GDP</b>	<b>7.28</b>	<b>7.48</b>	<b>7.61</b>
<b>Subsidy to cover the difference (Income - Outcome)</b>	<b>-19,518</b>	<b>-25,705</b>	<b>-28,398</b>
<b>as percentage of GDP</b>	<b>-1.40</b>	<b>-1.79</b>	<b>-1.89</b>

*Source: Institute of social Insurance statistical report*

## **6. Some socio-economic projections to be considered**

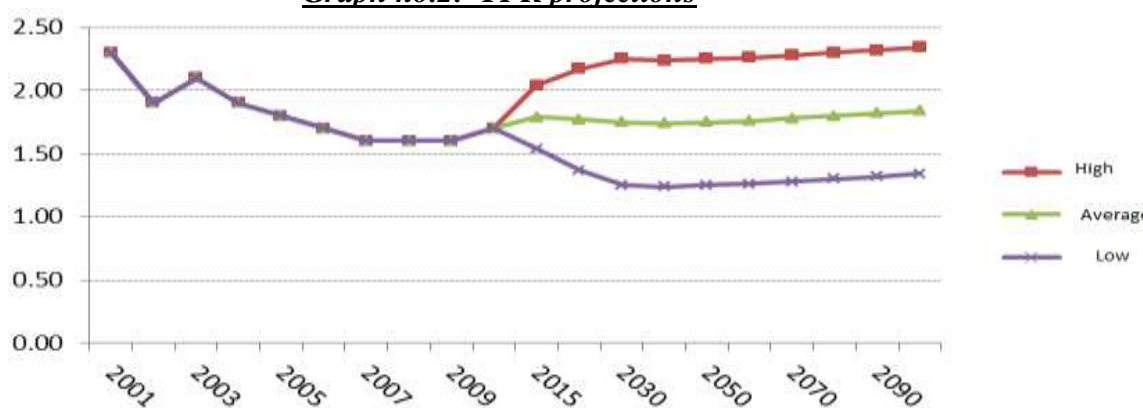
Population projections are based on Population Census 2011 and Household Data Survey and they are used to predict the size and demographic structure of the population based on fertility, mortality and migration, (Guxho, A. 2014).. These projections will cover the period 2011-2050 and are built on the basis of gender and age. There are several ways to build projections, but



in this study, we will be based on the scenarios built by Guxho 2014 in order to predict the financial effects of the pension scheme.

Total Fertility Rate (TFR) is one of the most important components of population projections. The synthetic index of TFR has been decreased over years. The construction of TFR projection is based on population data starting from 2001 according to age groups of five years and the methodology used is probabilistic projections of TFR. There are several methods to build TFR projections, but the one used is the Bayesian Projection Model. Fertility projections are based on three hypotheses: 1) Average hypothesis: it is assumed that in 2050 TFR will be 1.75 2) Minimum hypothesis: TFR will reach 1.25 level 3) Maximum hypothesis: TFR will reach 2.25

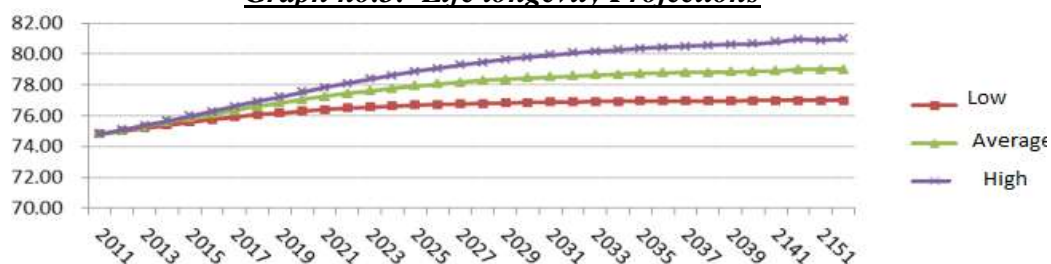
**Graph no.2: TFR projections**



Source: Guxho, A. 2014

The average Hypothesis, which is based on the trend of lifetime in the last 10 years, assumes that life expectancy will increase and will be 79 years old for males and 83 for females in 2051. Referring to the High Hypothesis it will be 81 for males and 85 for females in 2051. Referring to the Low Hypothesis, life expectancy will be 77 for males and 81 for females in 2051.

**Graph no.3: Life longevity Projections**

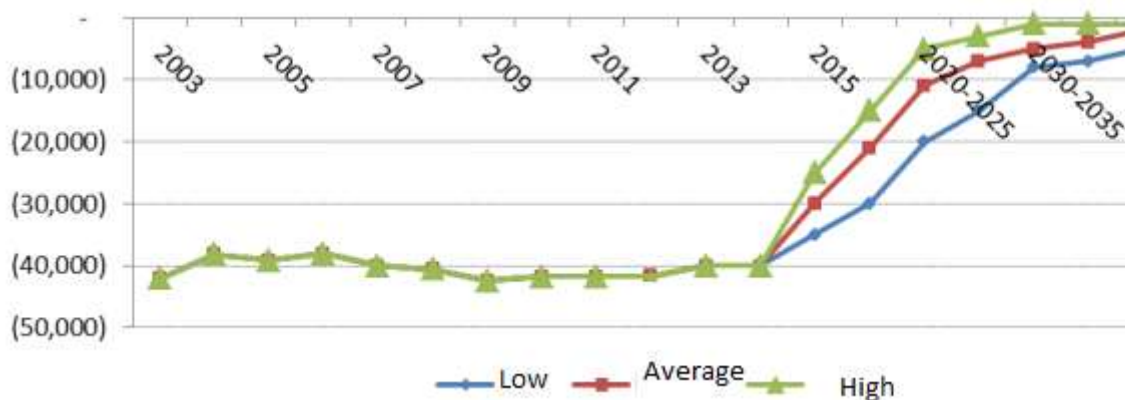


*Source: Guxho, A. 2014*

The RUP (Rural Urban Projection) program was used to calculate Mortality. For this, the life and gender tables were created. Starting from two life tables, which were taken from the 2001 and 2011 population census, interpolating the probability logs to death according to age groups, a new gender table was calculated in order to achieve the desired lifetime.

The migration phenomenon has always been present, but the rate of Albanian migration has changed. Migration projections are the most difficult predictions to be made, because detailed data is missing over the years. Recent Census data showed a decline in the number of resident population from 3.1 million in 2001 to 2.8 million in 2011, despite the positive natural growth (fertility-mortality) that we have had in these years. This decline has come as a result of immigration.

**Graph no.4: Migration Projections**

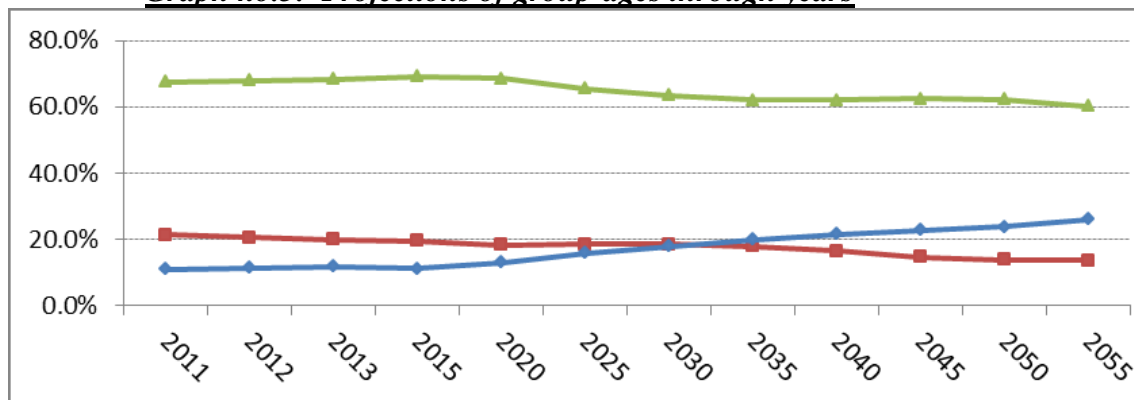


*Source: Guxho, A. 2014*

We have combined the mortality, Life longevity and migration projections for making the population projections. The low, Average and High variation consists in making the projections by referring to respectively the Low, Average and High Hypotheses for each component. Thus, according to the low variation, Albania's population will continue to decline by 2030, where the population is expected to be around 2.47 million. According to the medium variant, the population decline will continue until 2025. According to the high variant, which is also the most optimistic variant, the collapse of our nation's population ends in 2020 and then we would have an increase in the number of population as the consequence of a TFR around the replacement rate and a relatively low migration rate. According to these projections, the population of Albania will continue to decline by 2025 and will then begin growth rates, albeit modest. According to population

projections, another phenomenon that is noticed is the increase in the old age index which in 2055 is projected to be 26.1 percent. This means that in the future Albania will face the problem of aging of the population. Population aging has a negative impact on PAYG pension schemes.

**Graph no.5: Projections of group-ages through years**



Source: Guxho, A. 2014

## 2.2 Some projections for economic indicators

Based on: 1) labor market data (Instat 2017 (table 3)) for the years 2013-2017;

**Table 3: Participation scale in labor force**

	2013	2014	2015	2016	2017
15-29	38.7	41.9	44.5	45.7	45.6
30-64	71.1	72.3	74.5	76.1	77.0
15-64	59.6	61.5	64.2	66.2	66.8
15+	52.4	53.7	55.7	57.5	58.3

Source: INSTAT

2) Projections for the average participation rate in the labor force is made through the formula:

$$PR(\bar{a}, \underline{a}, t) = \sum_{\underline{a}=\bar{a}}^{\bar{a}} \sum_{g=m,f} PR_{a,g}^t * p_{a,g}^t$$

(eq.1)

$$p_{a,g}^t = \frac{pop_{a,g}^t}{\sum_{a=\underline{a}}^{\overline{a}} \sum_{g=m,f} pop_{a,g}^t} \quad (\text{eq.2})$$

Where  $\overline{a}$  is the upper limit of group- age,  $\underline{a}$  is the bottom limit of the group age,  $g$  is sex,  $t$  is time,  $PR_{a,g}^t$  is the rate of participation in the labor force for this age group in year  $t$ ,  $pop$  is population,  $p$  is population structure.

- 4) To calculate the number of contributors, there are used three hypotheses: a) Low hypothesis, i.e. the unemployment rate decreases at slow rates, becoming 13% in 2025 and then kept constant. b) The average hypothesis, i.e. unemployment rate decreases at average rates and reaches 11.2% in 2025 and is then kept constant. c) The high hypothesis, i.e. unemployment rate decreases rapidly at 9.3 percent in 2025 and is then kept constant.

The labor market in Albania is characterized by a high degree of informality, expressed in two forms: the non-declaration of employed persons (more in rural areas than urban ones) and lower wage declaration, as a consequence, a reduction in social security contributions (mostly in urban areas). Currently, according to INSTAT ([www.instat.gov.al](http://www.instat.gov.al) the labor market) there are about 1157 thousand people employed for 2016 and according to ISSH ([www.isssh.gov.al](http://www.isssh.gov.al) statistics of 2016) there are 718.3 thousand contributors. So, around 63% of employed persons pay social security contributions. This ratio is maintained at 70% (considering the improvement of the informality situation) constant until the end of the forecast period.

The legal retirement age is thought to be 65 for men and 63 for women and remains unchanged throughout the period. The growth rate of GDP is considered to be 3.8% for 2017, it is foreseen according Ministry of Finances to be 4% in 2020, and it is foreseen to be constant from 2020 and on.

The inflation rate is 1.3% in 2017 and is foreseen to be constant at 2% from 2020 and on

The real wage growth is -0.2% in 2017 and is foreseen to be constant at 3% from 2020 and on

As far as the indexation of pensions is concerned, the assumption is that this will be done with the inflation rate. Referring to the assumption of indexing the wages, they are indexed with nominal GDP growth.

### 3 Pension and financial projections exercise

The baseline scenario used in this part of the study, refers to the most optimal scenario, which is considered the average one. All the calculations are based upon the average hypothesis of each above mentioned projections. The table below shows the performance in years of income and expenditure for pensions under the pure public pension scheme (The one that is still in implementation)

**Table 4. Revenues and expenditures according to public pension scheme**

	2020	2025	2030	2040	2050
<b>Total public pensions ( rural +urban) /GDP (%)</b>	9.8	10	9.7	11.2	11.4
<b>Total revenues from contributions (rural+urban) /GDP (%)</b>	7.2	7.3	7.8	12.7	13.1
<b>Deficit ( balance) of current pension scheme (%)</b>	2.6	2.7	1.9	-1.5	-1.7

*Source: Authors calculations*

The growth rate of expenditures is much higher than the rate of revenue growth (although increasing gradually), making the scheme more financially unstable. Consequently, the current deficit of the pension scheme will continue to deepen reaching the peak of 2025 with 2.7% of GDP. Then the deficit starts gradually decreasing, moving negatively at somehow between 2030 and 2040. Considering the fact that the pure public pension scheme has some problems and it cannot finance itself, before going in an inevitable crisis a new private scheme should be considered. In 2014, the Government has approved a new reform on pension, which considers two options:

3) The formula for calculation of the pension would be:

$$P = PS + Sh \quad (\text{eq.3})$$

Where:

- P is the monthly pension measure;
- PS is a social pension, the amount of which is no higher than the partial pension payment provided by the contributory scheme;
- Sh is an addendum whose value is 1% of the base value of the annual basis, which represents the ratio of the average contribution in the current year to the average contributions of previous years

And of course it has some other elements to be considered regarding the age and so on. While the Private pension funds will continue to be based on the free will of the citizens to contribute to them

- 4) According to the second option, the formula for calculation of the pension would be

$$P = \frac{Ka + F}{Jm} \quad (\text{eq.4})$$

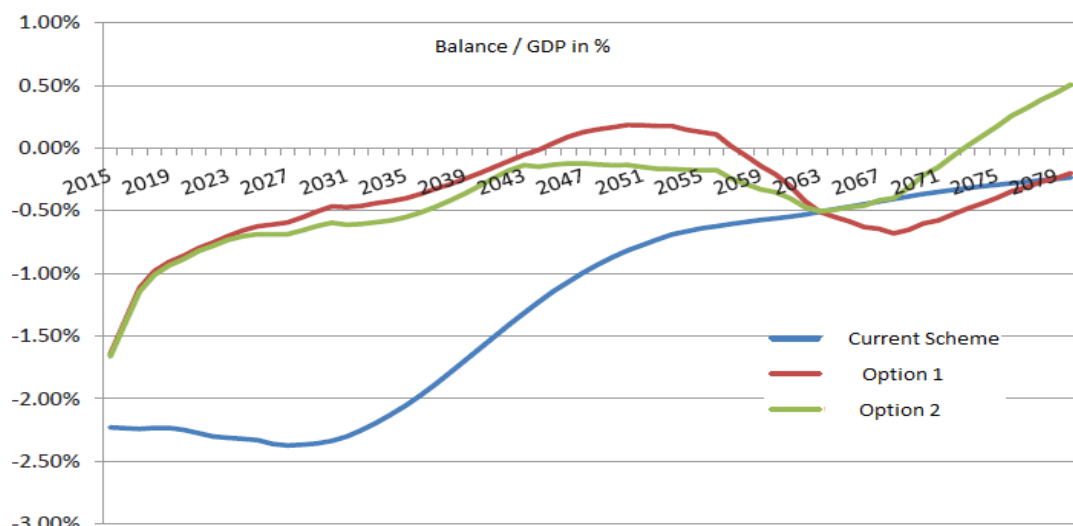
P is the pension measure; There is the aggregate amount of capital accumulated throughout the years when contributions are paid;

F is the notional gain accumulated over the years as a result of the application of the national interest rate;

Jm is the average life expectancy of the population at retirement age.

Thus, at the moment of retirement, the aggregate amount of accumulated capital and "non-profit" earnings are divided by the average life expectancy and are converted into an annuity, which is then converted into monthly pensions. This paradigmatic reform moves toward the system with a national account. This system works according to the Pay-As-You-Go principle, just like the current scheme, which means that current contributions are used to cover current benefit costs. However, the national system represents a substantial change compared to the current system. This is because this system is designed to imitate a private defined contribution system where the pension amount is determined by the history of individual contributions and their profit rate, but in this kind of system, the profit rate by contribution is defined by the government in national aspect, rather than the product of their investment in financial markets.

**Graph no.6: Projection of balance in % of GDP for two options of the new pension reform**



*Source: Ministry of Social Works and Youth*

Referring to graph. No.8, the Option 2, compared with Option 1, guarantees higher benefits than the current scheme after 2035. Thus, under the option 1, the actual deficit scheme, which represents the difference between the income from the contributions and total spending and does not include the cost of social pension, deepens from 2.2% of GDP to approximately 2.4% of GDP in 2027. It then gradually began to decrease, falling to 1.5% GDP in 2041, to 1% of GDP in 2046 and remain at 0.5% of GDP after 2064. Under option 2, the deficit immediately falls from 1.6% of GDP in 2015 to 1% of GDP in 2018. The gradual decline of the deficit continues for the remaining period, falling below 0.5% of GDP for the period 2037-2074, the year in which the system passes into surplus.

#### **4 Conclusions**

The basic motive for reforming the pension system in Albanian case, based on both theoretical and empirical results lies in the progress of the demographic trend in the future and the macroeconomic trends of the country.

Despite the reforms undertaken over the years, according to the study, it is emergent and necessary the transferring of the pension system from that PAYG to the system of multiple columns, where the special weight will also occupy the fully funded system.

Specifically, also based on the structure of the Albanian population, the recommendations regarding the application of the multi- pillars system are as below:

- 1) The application of the first column, which includes all the elderly, regardless of whether they contribute or not, by providing them the vital minimum, regardless of whether they do not have the seniority needed to work for retirement benefits. Albania will go so towards the European countries' trends turning into one a more social and solid state in supporting the generations.
- 2) The introduction of the second column, which is the combination of the public scheme -pay as you go (current scheme based on solidarity between generations), which will guarantee a basic pension, and private scheme, where private companies will be selected and invested these funds in the financial market to enable growth of the amount of the contribution that will be distributed pensioners on the basis of contributions that have been paid over the years.
- 3) Development of the third column, that is, the current private scheme for all persons wishing to benefit from higher pensions than normal in retirement age

The new governmental pension reforms offer two options for reform. Option 1 focuses on improving parameters of current systems. Option 2 proposes a paradigmatic reform by being shifted towards the system with a niche account. Both options focus on tightening the connection between contributions and benefits by encouraging citizens to become part of the scheme and contribute to their real wage. Consequently, both proposed options bring one deficit reduction as well as higher benefits for citizens. By 2030 both options have almost the same performance in reducing the deficit. After this year Option 1 results more effective than Option 2 in reducing the deficit by giving a deficit of almost 1% Lower GDP at the end of the forecast period.

## **Bibliography**

- Albania Government and IMF . *Economic and fiscal program 2016-2020*
- Anita M. Schwarz (2006) -*Pension System Reforms*



- Blake, D. (1992). *Modeling pension fund investment behavior*. London: Routledge
- Baldwin, B. (2009). *Research Study on the Canadian Retirement Income System*, Canada
- CRPM (Centre for Research and Policy Making) (July 2005) *Pension System Reform in Macedonia*. Occasional Paper No. 7,
- Deacon, Bob and Paul Stubbs (2003) *The Making of Social Policy in South-Eastern Europe: Theories, Methods, Politics*. Paper presented at GASPP 6 Seminar Thessaloniki, Greece
- Eurostat 2013. *European Social statistics* .ISSN 1977-7930
- Fiche , C (2017). *Pension Projections exercise 2018*. Germany
- Lama, A. (2005) *"Insurance System Development, The necessity of Social Insurances and Private Pensions in Albania*.
- Guxho, A (2014). *Pension scheme in Albania and actuarial forecasting.*, Dissertation, University of Tirana
- Holzmann, R., MacKellar L, and Repansek J, (2008) . *Pension Reform in Southeastern Europe Linking to Labor and Financial Market Reforms*.
- *ILO estimates and projections of the economically active population 1990-2020* (sixth Edition)
- Ministry of social wellbeing and youth (2014). *Document of Pension policy*.
- Novy. R. Rauh. M&J.(2010). *Public Pension Promises: How Big Are They and What Are They Worth.*, Journal of Finance.
- Xhumari, M. (2000) *.Welfare programs for unemployment income in Albania*, published by FISS
- [www.worldbank.org/pension](http://www.worldbank.org/pension)
- [www.instat.gov.al](http://www.instat.gov.al)
- [www.iss.gov.al](http://www.iss.gov.al)
- [www.amf.gov.al](http://www.amf.gov.al)



## **The value of community-based environmental education to Chinese students in Macau**

**Nga Ian Tam**

**Macau Polytechnic Institute**

### **Abstract**

Environmental education covers a variety of areas, from ecology to the preservation of nature, and is important in sustaining the future. Many higher education institutions in the world are implementing knowledge about the environment to their students. In the design department of School of Arts at Macau Polytechnic Institute, a 2 credit 30 hours elective course title 'Environmental Science' is offered. Yet, learning takes place in the classroom and the traditional learning approach makes it difficult to transform students to care about the environment or to have them behave in an environmental friendly manner. With a lack of an authentic natural environment in Macau, the author had organized a community-based environmental program in Thailand to 12 design students in 2015. Framed by active learning, constructivist learning, experiential learning and service learning, the qualitative study tends to examine the value of students learning in a rainforest. Findings review 7 themes from enhancing students' interpersonal relationship to the appreciation of simple happiness.

**Keywords:** Environmental education, transformation, community

### **Introduction**

The design department of School of Arts has the longest history in offering design training to local students in Macau. Only in recent years, the design curriculum offers courses related to the environment. A 2-credit 30 hours elective course title 'Environmental Science' is one of them. The learning outcome of the course tends to give students an overview of what environmental science is and students are required to submit a written report as well as conducting group analysis based on the power-point lecture conducts by the teacher in class. As most of the courses in the design department take place in the classroom, students reviewed a lack of active engagement. In a 2017 student engagement survey, findings reviewed a rating of 11 percent to 26 percent of 'active and collaborative learning' activities that were considered as 'very often' engaged by students (Yung, 2017). The low active engagement rates indicate more active teaching methods should be encouraged in School of Arts.

Environmental education is important as many students in Macau have a lack of awareness in issues related to the environment. Macau is only 30.5 square km with a population of about 650,000 people and is one of the world's most densely populated regions in the world. According to the environmental statistic 2017 report published by Macau SAR Statistics and Census Service, Macau highest temperature had reached 38 degree Celsius, air quality had been rated 'poor' in most of the days, water consumption had increased by 2.7 percent, domestic waste and waste from the business sector has kept increasing. Although the government organizes activities to the public in regards to environmental protection such as the Macao International Environmental Co-operation Forum & Exhibition, many local students are not aware of what they should do in contributing to a better environment. Moreover, their habits of living in small city results in their reliance on a comfortable, easy, convenient and unsustainable lifestyle, supported by a 2015 survey that over a thousand high school students claimed they 'often and carelessly perform behavior that is not environmental' (Associação Geral de Estudantes Chong Wa de Macau, 2015).

Climate change has affected the lives of many people including those in Macau. In 2017, typhoon Hato kills at least 10 which leads to billions of economic lost and is the deadliest disaster Macau had ever encounter in more than 50 years. Climate change is linked to severe disaster and is supported by researches that “greenhouse warming will cause hurricanes in the coming century to be more intense globally...” (Geophysical Fluid Dynamics Laboratory, 2018). When natural disaster occurs more frequently and deadly, it is important for educators to inform students about the danger of climate change and how they can participate in protecting the environment.

Since the first Earth Summit was held in 1992 by United Nations, conferences on environmental protection, strategic plan on fighting climate change, research in environmental education and so on has evolved over the past decades. With different teaching and learning styles, the ultimate goal in educating students in environmental protection is to meet United Nations 2030 goal in which “all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles...” (UNESCO, 2017).

Environmental education is one area of sustainable development which involves different ways of teaching and learning. Among the numerous teaching styles, Myers & Beringer (2010) found that course that is community-oriented and is constructive and active tends to increase student knowledge in sustainable development (Miller & Gonzalex, 2010). A review of literature in active learning, constructive learning, experiential learning, service learning and transformative learning is essential in order to understand why Chinese students’ participation in this case study is important.

## Literature Review

The concept of environmental education occurs in late 19<sup>th</sup> Century that focuses on out-of-class learning, nature and conservation. In 1970, United Nations Educational, Scientific and Cultural Organization (UNESCO) define environmental education as individual and collective effort and participation in solving current environmental problems and in preventing new ones. Throughout the years, researches and theories on environmental education lead to the published of environmental literacy frameworks based on UNESCO’s 1978 objectives. Recent study by Chawla (1998) shows the implementation of environmental related experiences to youth such as “formal, non-formal, familial, and social experiences” is influential. Other researchers also review that action research, issue-and-action instruction and service-learning in regards to environmental issue contribute to youth development in the area of environmental decision making and problem solving. There are many ways to educate students about sustainable development but the most effective ways according to Seatter & Ceulemans (2017) study is the use of dialogue teaching style that involves active learning and field experiences and “is the only model that supports a pedagogical emphasis on *sustainability as discourse*”.

Active learning is defined by Bonwell and Eison (1991) as “instructional activities involving students in doing things and thinking about what they are doing”. Learning by doing is valued by Fleischer (2011) in which sustainable behavior can be encouraged through the focuses on the learning process. Kolb’s (2014) experiential learning cycle support Fleischer’s theory in which “learning is best conceived as a process, not in terms of outcomes”. Kolb’s four stages cycle—concrete experience, reflective observation, abstract conceptualization, and active experimentation requires learner to reflect through observation and to ultimately experiment with

new thoughts and ideas. It is similar to constructive learning in which student construct learning on their own through social interaction and participation.

Service learning is one type of active learning that “address human and community needs together with structured opportunities intentionally designed to promote student learning and development” (Jacoby, 1996). There are many benefits of service learning including Astin et al. (2000) research that “shows significant positive effects on all 11 outcome measures”, including critical thinking skills and interpersonal skills. Eyler & Giles (1999) study also review students with an increased level of critical thinking. Service learning can take place in any community but Berry (2007) claim international setting is better as the value students gain is higher, supported by Miller & Gonzalez (2010) study in which participants had reported an enhanced in global awareness, and an understanding in challenges and resources in the community that they are serving.

Serving in an international community and in a natural setting is important. Hook’s (1994) study show transformation takes place in a multicultural community that respects one another and values different voices. Researchers such as Gruenewald (2003) and Orr (1992; 2004) encourage place-based environmental education in which one not merely learn to live with others but also with the natural environment. Ewert, Mitten & Overholt (2014) argues that student should experience the natural environment and care for the natural environment. Moreover, experiencing a natural environment is often transformative and supported by Wilson (1984) and Dirkx (2000) in their study. Barlett (2008) study even shows a positive correlation between participants’ experience of nature and their sustainability-related household habits.

## **Research Context**

The design department of School of Arts does not offer out-of-class learning in environmental education but studies show students are encouraged to think about the environment and their environmental attitudes and behavior when they are learning in the natural environment. Due to the benefit of learning in a natural environment, a case study was conducted in 2015. The case study required collaboration with a non-profit organization located in a tropical rainforest in PakSong, Chumphon Province in Southern Thailand. The non-profit organization was chosen because of their low participation costs, the natural beauty of the service site and a 7 days program that involves in working with natural material.

## **Method**

This research seeks to find out the value of 12 Chinese students living and learning in a sustainable village in Thailand in 2015. The research took place in a sustainable village surrounds by rainforest in which I was living and working along with the students for 7 days. A phenomenological case study was adopted in order to collect descriptive data to determine interpretations. My onsite field notes and students’ reflective journals were collected in 2015 whereas students’ in-depth interviews were collected in 2017, supported by Miles & Huberman (1994) that qualitative data is collected over a period of time as people live the experience. The interviews were conducted in Chinese, audio-recorded and transcribed by the author with consent from the students. The transcriptions were emailed to the students for verification and then analyzed by using a 5 steps approach that involved reading the data, looking for significant statements, interpreting statements for themes to emerge, refining the themes and expressing the data in my own words.

## Findings

During the analysis of students' 2015 journal and 2017 interview, several themes emerge: (a) enhanced interpersonal relationship, (b) enhanced critical thinking (c) academic enhancement (d) self-belief through harsh work, (e) adaptable and applicable learning contents, (f) simple happiness and (g) reflection after the experience.

Many students expressed their joy at working with their classmates, as they often worked in groups of two or more. As they were always together, during work and after work, their relationship was enhanced during their 7 days experience in the sustainable village and after their return to Macau. Students at times were required to work with other foreign helpers from Germany, France and other countries, but many male students were not good in English and they rarely communicated with them. Many of them did confess their weakness in English in their journal and it led to their fear of interacting with the foreign helpers. However, with other female classmates doing the translation, those who couldn't speak English were found connecting with the foreign helpers. In particular, two male students had expressed their excitement and joy and how much they had gained through the interaction. Besides, students' critical thinking as well as their academic performance was also enhanced as many of them mentioned their change in thinking and how the experience strengthened their idea to implement respect for nature into their school work.

Students' 7 days work required labor and strength, such as moving stones, digging, nailing bamboo with a hammer and so on. As there were no electric tools in the rainforest to assist them in their work, most of them mentioned how the harsh work wore them out. However, it was the process of working hard with the others that gave them the required perseverance. Respondents were all young, and though their lives in the rainforest were totally different from their comfortable live in Macau, they mentioned how they got used to living there, especially when it came to the last working day.

The days when they were not working were the days when they can relax and enjoy nature. The service site was not big, with only a river, trees, bushes and clay huts. Life was simple, but some students explained that they gained happiness through the simple things they did. During the interview, students used words such as enjoy, fun and happy to describe their days in the rainforest. It was also the simple happiness that changed some of their perceptions and that this type of living could be applied to Macau. Though students were required to submit their journals two weeks after they returned to Macau, what they wrote in their journals was mostly about what they did. Most of the respondents claimed that more reflection occurred at a later stage, when they returned to Macau. This was also the reason why their in-depth interview was conducted in a later stage so that more information about their changes in thinking and behavior could be collected.

Table 1 reviewed students' responses in the value of this community-based environmental learning.

**Table 1. The value of community-based environmental education**

<b>Enhanced interpersonal relationship:</b>
“These days, work was a bit harsh, but I felt very happy, this feeling will never be forgotten” (Mr. Leong, 2015).
“Diane saw me working on my computer and came to talk to me. I told her I only understood a little and she started to speak slowly, and if I didn’t understand, she would repeat it again. I was very touched and had the courage to talk to her patiently by using my limited English... I was very touched and appreciated what she said. From what she said, I have learnt more about facing my own problems and the challenges in the outside world. At that moment, I realized there were lots of things I have to do, and I am happy to face all challenges!” (Mr. Li, 2015)
“I think our relationship of helping one another is important. In the past, we would think why should we help you? When you were there, you knew interpersonal relationships were very important” (Miss Fok, 2017).
“The environment at night is quite spooky, you realize... We need to live together and cannot be on our own... And you know that living together is very important. In the city, people are on their own. But in primitive places, you can’t. You need help from others. Like, ‘I don’t have shower gel, please pass it to me...’ And I feel very happy in these circumstances” (Miss Chao, 2017).
“I am afraid of English, and of white and black people... There are differences in our skin color, and close contact with them gives me this aura... But I discovered, after communicating with them... this aura will disappear. Now I have become more brave and willing to go out” (Mr. Pun, 2017)
<b>Enhanced critical thinking:</b>
“In DinDang, when we sprayed the insect repellent, Martha asked why we did it, and she said that if they don’t sting you, they are not hurting you and you don’t have to kill them. I think it’s really true. If they didn’t sting you, they are just there living with you, and you don’t need to kill them. I really think we need to have their way of thinking... and that they are totally immersed in nature” (Miss Lei, 2017).
“I will follow the trend. The trend is about the promotion of environmental protection. And after going to Thailand...(laugh)... Mhm, this possibility is stronger, as everyone does this. And at that time, most of the people were Westerners, only we were Chinese. And I found the Western culture is different from ours. What they do is particularly practical and not using too many natural resources, and it makes me think that I can do it too” (Mr. Pun, 2017).
“Like, we made a raft, and we needed to mix the soil for a plantation. They didn’t need me to do much, but I will ask more why they do it. Like how they deal with it, as the plant grows. I wanted to ask more questions and do more... You won’t find the natural resources reduced. They will use them and produce them. And I find it’s miraculous” (Mr. Li, 2017).
<b>Academic enhancement:</b>
Like, I study Design. And even Design doesn’t work. I will first think in the direction of the environment. Like, if it can save electricity, can it protect the environment? Will it create more architectural rubbish? To me, I have this in mind before the concept. I think it changes me a lot in this area” (Miss Fok, 2017).
“If I have to do it personally, it will be in my assignments. For example, if you asked me to design a residential community, or this semester we are working on the shipyard in Macau... I will include items that are environmentally friendly, instead of removing all the old structures and filling all the land with concrete. I will leave some important plants and flowers, to add more green to this place in order to give tourists a natural feel” (Mr. Fan).

**Self-belief through harsh work:**

“This morning, we needed to move the rocks under the heat of the sun. This was pretty tough. But seeing those Western guys working so hard, we started catching up” (Mr. Li, 2015).

“Like, moving stones. I thought I couldn’t but I really can. I realized I always think I can’t do it, but actually when you do it, you can do it” (Miss Fok, 2017).

Before, I would think if I can’t handle it because it’s harsh. But when you were there, it was harsh but you could do it. You learn that when people are not at the end of their rope, they don’t realize what they can do (Miss Chao, 2017).

**Adaptable and applicable learning contents:**

“When it came to the fifth day, the last working day in DinDang, to tell the truth, after five days, I felt I had already got used to things here... so adapted as if I had been living here all the time. Everything becomes a matter of course” (Mr. Cho, 2015).

“Their way of recycling – like the cushion made of plastic bags – can be applied in Macau. Like, if you have old clothes or pieces of cloth, you can use them to make a cushion too” (Mr. Choi, 2017).

“When we were in Bow’s place, we ate and if we didn’t have enough, we ate more. But if we were all full, we told each other to finish the food and not to waste it. When I’m in Macau, I do the same in many ways” (Miss Chao, 2017).

**Simple happiness:**

“I felt very happy and enjoyed the process. I think it was fun. Like, using natural material such as sand, bamboo, soil and so on to make a hut” (Miss Kwok, 2015).

“After lunch, we heard some music from far away, and it was an ice-cream truck. We acted like a child, blocking the truck. We all bought one ice-cream and ate it... I felt after we came here we had returned to purity” (Miss Fok, 2015).

“In the past, I made things complicated. Actually, life can be simple... not complicated... Like, what to eat and what to wear... Actually, a very simple life won’t starve you to death. Also, everyone [here] is carrying their mobile, or playing computer games. But over there you could do different types of work – like handcraft – and you could be very happy. Things we pursue should be simpler” (Mr. Leong, 2017).

**Reflection after the experience:** They started to value not merely shopping and playing computer games, but interacting with people of other cultures, valuing other people’s thoughts and ideas and opening themselves up to new thinking and challenges.

“When I was there, I reflected on the things I did. Now I reflect on how I can behave more environmentally. Various cultures were found to have a huge impact on Chinese students’ critical self-reflection

and on their thinking in the area of environmental protection. Therefore, I highly recommend that “After I came back to Macau, I have had more reflection. Over there I didn’t have much reflection, and usually my reflection was about interpersonal relations... That is what I’ve learnt...” (Mr. Pun, 2017).

“When you were actually in the environment, what you thought was what you did. But after the experience, you lost the environment and you were not in the environment, reflection increased compared to when you were there” (Mr. Fan, 2017).

“My reflection occurs after I came back because we need time to digest, when I was there I was immersed in the environment and with no time to think, after coming back, there is a huge difference

ns are not  
nts in this  
ds, online  
nce in the  
the Asian



similar research be undertaken in a multicultural and sustainable setting, where Chinese students can interact and communicate with people with a mindset of environmental protection.

## References

1. Associação Geral de Estudantes Chong Wa de Macau. (2015). Investigation on Environmental Awareness of Middle School Students in Macao research report. <http://www.myra.org.mo/wp-content/uploads/2015/07/%E6%BE%B3%E9%96%80%E4%B8%AD%E5%AD%B8%E7%94%9F%E7%92%B0%E4%BF%9D%E6%84%8F%E8%AD%98%E8%B0%83%E6%9F%A5%E5%A0%B1%E5%91%8A1.pdf>
2. Astin, A. W., Vogelgesang, L. J., Ikeda, E. K., & Yee, J. A. (2000). *How service learning affects students*. Higher Education Research Institute, University of California: Author.
3. Ballantyne, R. and Packer, J. (2002) "Nature-based Excursions: School Students' Perceptions of Learning in Natural Environments." *International Research in Geographical and Environmental Education*, 11(3): 218-236.
4. Barlett, P. F. (2008). Reason and reenchantment in cultural change. *Current Anthropology*, 49(6), 1077-1098.
5. Berry, H. A. (2007). Breaking New Ground: The Impact of International Service-Learning Programs on the Study Abroad Field. *American Institute for Foreign Study Foundation*.
6. Bonwell, C. C., & Eison, J. A. (1991). *Active Learning: Creating Excitement in the Classroom*. 1991 ASHE-ERIC Higher Education Reports. ERIC Clearinghouse on Higher Education, The George Washington University, One Dupont Circle, Suite 630, Washington, DC 20036-1183.
7. Chawla, L. (1998). Significant life experiences: A review of research on sources of environmental sensitivity. *The Journal of Environmental Education*, 29 (3), 11-21.
8. Dirkx, J. M. (2000). Transformative Learning and the Journey of Individuation. *ERIC Digest* No. 223.
9. Ewert, A. W., Mitten, D. S., & Overholt, J. R. (2014). *Natural environments and human health*. UK: CABI International.
10. Eyler, J., & Giles Jr, D. E. (1999). *Where's the Learning in Service-Learning?* Jossey-Bass Higher and Adult Education Series. Jossey-Bass, Inc., 350 Sansome St., San Francisco, CA 94104.
11. Fleischer, S. (2011). Emerging beliefs frustrate ecological literacy and meaning-making for students. *Cultural Studies of Science Education*, 6(1), 235-241.
12. Geophysical Fluid Dynamics Laboratory, Princeton University Forrestal Campus. (2018). *Global Warming and Hurricanes*. Retrieved September 11, 2018, from <https://www.gfdl.noaa.gov/global-warming-and-hurricanes/>
13. Gruenewald, D. A. (2003). The best of both worlds: A critical pedagogy of place. *Educational researcher*, 32(4), 3-12.
14. Hollweg, K. S., Taylor, J. R., Bybee, R. W., Marcinkowski, T. J., McBeth, W. C., & Zoido, P. (2011). Developing a framework for assessing environmental literacy. *Washington, DC: North American Association for Environmental Education*.
15. Hooks, B. (1994). *Outlaw culture: Resisting representations*. UK: Routledge.
16. Jacoby, B. (1996). *Service-Learning in Higher Education: Concepts and Practices*. The Jossey-Bass Higher and Adult Education Series. Jossey-Bass Publishers, 350 Sansome St., San Francisco, CA 94104.

17. Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. Pearson Education.
18. Macao SAR Statistics and Census Service.. *Environmental Statistic 2017*. Retrieved from <https://www.dsec.gov.mo/Statistic.aspx?lang=en-US&NodeGuid=251baebb-6e5b-4452-8ad1-7768eafc99ed>
19. Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.
20. Miller, K. K., & Gonzalez, A. M. (2010). Domestic and international service learning experiences: A comparative study of pre-service teacher outcomes. *Issues in Educational Research*, 20(1), 29-38.
21. Myers, E. M., & Beringer, A. (2010). Sustainability in higher education: Psychological research for effective pedagogy. *Canadian Journal of Higher Education*, 40(2), 51–77.
22. Orr, D.W. (1992). *Ecological literacy: Education and the transition to a postmodern world*. Albany: State University of New York Press.
23. Orr, D. W. (2004). *Earth in mind: On education, environment and the human prospect*. Washington D.C.: Island Press.
24. Seatter, C. S., & Ceulemans, K. (2017). Teaching Sustainability in Higher Education: Pedagogical Styles That Make a Difference. *Canadian Journal of Higher Education*, 47(2), 47-70.
25. United Nations Educational, Scientific and Cultural Organization (2017). *Indicators and a Monitoring Framework* <http://indicators.report/targets/4-7>
26. Wilson, E. O. (1984). *Biophilia*. Harvard University Press.
27. Yung, E. (2017). *Macau Polytechnic Institute Year 4 Student Engagement Survey 2017*. Retrieved from Macau Polytechnic Institute website: [http://www.ipm.edu.mo/cntfiles/upload/docs/teaching\\_learning/common/student%20engagement\\_2017\\_year4.pdf](http://www.ipm.edu.mo/cntfiles/upload/docs/teaching_learning/common/student%20engagement_2017_year4.pdf)

## **Living with Risks: A Case Study of Palm Oil Peasants in Indonesia**

**Keio University, Japan    Deng Jingxi**

### **Abstract**

Over the past two decades, Indonesian palm oil sector has witnessed an enormous area expansion and also has affected local people's life significantly. In these concentration areas of palm oil plantations, the conflicts between local peasants and palm oil companies continue to happen, and some of them even lead to fierce violence, torture, or even death. However, in Kembang Janggut sub-district, East Kalimantan, the case seems to be quite unusual: one foreign company has broken the promise with local peasants and has took their land for free for several years; yet everyone chose to remain silent. The purpose of this research is to have a clearer picture of the current situation of local people who are involved in palm oil industry in this region; to see how they live with a powerful multinational corporation, then explore and compare their actions after an "important" change (not being paid) occurred. Eventually, to explain why they chose to remain silent instead of fighting against the company and what makes them be able to do so; of particular significance are their choice-making process and perspectives towards various risks in their daily life.

Keywords:

1. Palm oil industry, 2. Peasants, 3. Multinational corporation, 4. Land dispute, 5. Risks

### **Introduction**

Few Indonesian industries have shown such a rocket growth as the palm oil industry did during the past fifteen years. This growth is visible in the country's production and export numbers as well as in the quantity of its palm oil estate area. Driven by increased global demand and higher yields, palm oil cultivation has been expanded significantly by Indonesian farmers and conglomerates. Now, Indonesia's oil palm plantation and processing industry is a key industry to the country's economy: the export of palm oil is an important foreign exchange earner and the industry provides employment opportunities for millions of Indonesians. Almost seventy percent of Indonesia's oil palm plantations are located on Sumatra where the industry was started during the Dutch colonial days. The remainder, around thirty percent, is largely found on the island of Kalimantan.

State-owned plantations play a modest role in the Indonesian palm oil industry, while big private enterprises (such as the Wilmar Group and Sinar Mas) produce approximately half of total Indonesian production. The rapid expansion of oil palm plantations in Indonesia continues to

lead to hundreds of disputes and conflicts over land, involving demonstrations, land occupations, displaced persons, arrests, beatings, torture and deaths.<sup>1</sup> Some organizations which are monitoring plantation expansion, believe that the number of conflicts is on the increase and that further large-scale oil palm expansion will result in more conflicts unless the rights issues around plantation expansion are addressed.

East Kalimantan, one of the concentration areas of palm oil industry, the conflicts between local peasants and palm oil companies are not rare to find. As attracting foreign investment has always been attached to great significance, it is foreseen that the settlements of disputes are usually not the best representations of local people's interest. In addition, the ambiguous regulations and laws in claiming land titles as well as corruptions among officials make it even more difficult to generate a satisfying solution for peasants.

## Data and Method

In a sub-district called Kembang Janggut, people have lived with one British enterprise "REA Holdings PLC (REA Kaltim in Indonesian)" for over seven years. During two rounds of fieldworks taken place in 2016 and 2017, I interviewed 111 local residents randomly from fifty-five families in three villages: Bukit Layang, Kelekat and Kembang Jenggut, which are all located within the area of PT REA Kaltim Plantations concession. Informants are chosen randomly on site; I walked into local people's houses and talk to anyone who was willing to talk. With every one of the local villagers who felt comfortable of talking to me, semi-structured interview has been conducted. Interviews lasted from forty to sixty minutes.

From the first round of interview, I noticed that almost everyone is related to REA to some extent, and the informants can be categorized into three groups:

### 1). Plasma smallholders

Plasma smallholders are also known as scheme-smallholders. A company forms an arrangement with several individual farmers, generally located in close proximity to the company's plantation. The company typically holds the farmer land title, effectively leases the land from the farmers

---

<sup>1</sup> Wakker, E., Greasy palms, (2005). *The social and ecological impacts of large-scale oil palm plantation development in Southeast Asia, Friends of the Earth*, P.30.

and manages the plantation on their behalf, treating the landowner as shareholders and providing a dividend for their stake in the plantation. On the one hand, this model benefits from scale and generally higher productivity, but on the other hand, communities give up direct management control of their lands, which can come at a cost. Additionally, while they do 'opt-in' to the partnerships, in some instances the nature of land licensing may leave farmers with limited choice, the only alternative being to 'opt-out' and obtain no benefits.

## 2) Independent smallholders

Farmers typically manage 2-5 ha parcels of land. They are not locked in to formal company partnerships and are technically free agents to sell their FFB (Fresh Fruit Bunches) to whomever they choose. However, in reality, they commonly sell their FFB to one agent in order to ensure security of buyer, which is critical given the need to sell FFB within 24-48 hours of harvest before significant yield loss, and to receive a viable return on investment.

## 3) Employees of REA

This group refers to the people who work for REA Holdings. Even they are employed by the company, the majority of them are not contract workers, and that's why they constantly worry that they may be out of job when they wake up in the morning the next day. Their jobs usually require intensive physical work, for instance, patrolling on company plantations as safety guards, spreading chemicals to the oil palm trees.

Living in this area seems quite pleasant except for the hot and rainy weather: extremely slow-paced life, quiet and peaceful atmosphere, people smiling and laughing with each other, drinking coffee with their families and friends under the tree, no need to work extra hours in the evening, going to the bazaar on weekend to have some fun ...all is completely disparate from busy city life. Most of them don't go to town or to the cities very often, "it takes too much time, transportation is not convenient at all", and "would rather stay at home with family". And also, when being asked what they think of their current life, almost everyone said, "I guess it's fine" or "it's not bad".

Nevertheless, under this beautiful and harmonious scenery, one strange thing has come to my notice after talking to the local people, especially among those who signed the contract with REA and became plasma smallholders: since the first three or four years of signing the contract,

the company has stopped paying them the agreed amount of money, which means REA is now using their land for free and the residents are not getting any financial benefit from it.

As a matter of fact, this phenomenon has been raised as a potential risk of joining plasma scheme with any palm oil company in various articles and books, as it is always the case that local residents are not strong enough to stand in the position of being able to negotiate with these powerful plantation companies, and it's not rare that peasants have lost all they had. Still, when they were talking about why they decided to believe REA Kaltim, seldom do they mention the knowledge of any similar case.

In addition, what truly surprised me is when they said they didn't really protest or demonstrate against it. It sounds ridiculous: losing such a big income as well as their land title, they chose to accept it and digest the problem by themselves. And it gets even more and more confusing when seeing their "peaceful and calm" facial expression while they talked about this issue.

Puzzled by local people's behavior and choice, second round fieldwork has been carried out in February 2017. As for this second round of interview, informants remained to be the same group of villagers as with last time, while different questions were raised to different groups accordingly. Each interview has been lasted around fifty to sixty minutes.

The main focus this time is to answer the question of missing violent form of fighting against the company on the issue of not being paid. Questions are designed to examine their livelihood, family relationship, their way of communication within the village, bond with community members, as well as to understand their access and information to the outside world and most significantly, to fatherly explore their perception towards their own life and the company REA holdings.

## **Findings: Between Local Residents and REA**

### **1. Possible Motivations to Join the Plasma Scheme**

1). The local residents were attracted by "don't need to work on land anymore, money will come every month" at the beginning.

Almost everyone mentioned that this offer was extremely appealing, as it implied that they could receive money by just sitting at home and doing nothing, let alone the amount itself was even bigger than what they might earn from hard work in the field. Hence, they almost fell for the idea in the first moment.

## 2) Bad weather can influence harvest; which lead to unstable income

According to the informants, in recent years they have experienced rather frequent extreme weathers, for instance, flood and drought, which made it not easy to maintain a certain level of income constantly. And this seems to have been one of the main concerns that they have when talking about farming.

## 3). Working on the land is physically too hard (far away from home, need to do everything by themselves all the time, etc.)

One finding from the fieldwork is the family size of the informants: in former expectation, the family size will be in accordance with typical agricultural-centered society, in which people always tend to prefer larger families in order to have enough labors to work on family land. Quite surprisingly, the situation in this region is that the majority of the families are consisted of three to four people, which usually appear in the form of father, mother and one or two children.

A lot of interviewees did mention that they had some difficulty in persuading their children into working on the land, because somehow, the younger generation found it less attractive to do so. In this area, the boom of going to work in a more prosperous urban area didn't seem to have occurred; instead, their ideal work is to have a job that is not too hard and also not far away from home.

Despite of the fact that younger generation in the village do not need to worry about finding a job, since they can just inherit family land and make a living like their parents do, they still prefer something "simpler and easier". To them, owning a piece of land is not necessarily positive; on the contrary, the image they have attached to it is always heavy, as for the most of time means responsibility and uncertainty because that's what they felt directly from the work, rather than just income which only exist in harvest period.

The similar idea has actually also existed in older generation's mind too. They used a lot of expressions such as "I didn't have any choice", "it's the family land I got from my parents" or "besides this I didn't know what to do" when asked why they started to work on family land and whether they like it or not. The undeniable fact is that they have already been working on the land for tens of years; there was never any available option, or, excuse, which can help them to get out the situation and provide them with some new possibilities. From the moment that local people became aware that their hard work does not necessarily equal to a good income, they may have started to wait for an agent to bring them with a new source of livelihood, which will generate more stable income. And what makes it even more promising, is that this income is even achievable with less efforts.

#### 4) Neighbors and friends have signed the contract

One of the most frequent statements they made is that they had known someone else in the village that joined the plasma scheme. No matter neighbors or relatives, almost everyone knew someone else who has become a plasma smallholder. Even some villager was cautious and patient to wait until next year to see how situation would develop, unfortunately, it seems that they were not careful or patient enough.

## 2. Potential Risks of Becoming a Plasma Smallholder

One of the famous idea that James Scott argues in his book *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*, is that peasants are the agents who always follow the "safety-first principle", as it may be too dangerous if they try to adopt anything new, e.g. new technology, new seeds, since they are already very close to subsistence level. They cannot take the risk, as they are vulnerable when respond to market economy.

Is this really the case? Is this really the process that they have gone through before deciding to become a plasma scheme and letting REA Kaltim use their land? As a matter of fact, we may view this whole issue as a high-risk movement, is that by doing so, they are going to lose what they relied to make a living; the resource to support the whole family. But is this how they see the contract?

When being offered a deal which sounds close to "perfect", some would doubt that there must be some intrigue behind it; that it can never be that smooth and sweet when negotiating with a huge multinational enterprise. And one independent small holder has literally expressed the same



concern: “you cannot trust such a big company, they must take advantage of you in some way.” He explained that’s why he chose to stay independent when “tempted” by the contract. “Of course it’s more difficult because you need to take care of everything. But still, it’s safer to keep an eye on my own land.” And this man is now the wealthiest guy in the region, with the possession of the largest land of 12 hectares. When asked how he perceived those who have joined the plasma scheme, “I know such thing like this would happen. Perhaps it’s not something I should say, but they are just too lazy. I do feel bad for them; my neighbor also signed the contract; but they just shouldn’t in the beginning. Now the company has control over them and they cannot do anything about it.”

What if, every other villager views the contract in the same or similar as he does, will the situation turn out to be different? And what has prevented them from being able to do so?

The villagers’ saying has somehow made this clear. It will be unfair to claim them of not having thinking about anything but just fascinated by the benefits; as many of them did mention that “we thought a lot about the possible consequences. It’s a huge and famous company, it won’t just disappear with our land” and “we just couldn’t think of any reason to say no”. The fact is that they failed to see the potential danger; to realize even though this contract in the beginning creating a “win-win” relationship with REA Kaltim, they are still in a weaker position in terms of power and capability, especially after signing the contract they are going to lose the most valuable leverage in any future negotiation: the land.

Despite of the fact that land disputes between residents and palm oil enterprises happen time to time in other parts of the nation, it seems that they are not aware of that, even the one occurred in a village in the same province. Their way of communicating with outside world has been restrained, to face-to-face conversation, telephone (not smartphone), radio program and only a small number of residents have televisions at home. Besides, seldom do they travel to other places but to the weekly bazaar nearby, which in turn, has narrowed down their possible information stream. The demerit which could be witnessed now, is that lack of information has become a barrier when they attempted to figure out the consequences before making an important decision.

The principle of inclusiveness provides an essential ingredient for small town life. It accommodates the human need to establish position in the local social hierarchy, a necessary step in creating social identity. The biggest reality of plasma-scheme joiners has been built on the basis of everyday experience, which stands far away from bargaining with a multinational company. It’s understandable that the plasma-scheme joiners didn’t behave more cautiously;

especially they are not even familiar with the language concerning “making a deal”, let alone with an influential enterprise. The elements that they have most frequent interaction with are their land, neighbors and family members. Their daily routine is all building on these elements: working in the field for about half time in a day, having a coffee with neighbors and friends, dinner with family; which has shaped their reality as “a villager in Kembang Jenggut”, and this image has seemed to be the dominate or even the only identity they have in mind towards themselves. This identity has been repeatedly confirmed through their everyday activities and interactions, thus has gradually developed into a fixed image that has been recognized by people surrounding them.

Living in a village like Kembang Jenggut for several decades, local residents know each other well enough to trust them over “money issue”, that if one family is in a financial difficulty, villagers are always willing to offer a hand by raising small fund. “We know each other very well so we can trust them”, “we have been living in the same place since we were born and of course we will help when anyone is in trouble, because we know they’ll also do the same thing”; these words have constantly popped up during the interview. This “solid” trust which shared by residents, on the other hand, may shed some light upon why they did not figure the negative sides of being a plasma scheme joiner; that they have never experienced or heard any vicious scheme before. Generally speaking, their surrounding environment has always been friendly and pleasant, and this concrete environment has been the foundation of their daily life for over decades. This consistent reality may be what Scott called “subsistence ethnic” in this community, by this principal that people behave and interact each other. The failure in sensing the possible risks of becoming a plasma smallholder can be seen as their missing awareness towards something unfamiliar; something they cannot touch upon, something never existed in their life before.

### **3. REA and Local Residents’ Everyday Life**

Even the “not being paid” issue among plasma smallholders in Kembang Jenggut sub-district has already been going on for several years in a row, somehow, it still remains to be the area where was no fierce or violent protest or demonstration against the company. From the fieldwork, I tried to picture how REA fit in their daily life as well as their perception towards the company’s presence.

#### **1). REA Kaltim: A Powerful Existence**

In East Kalimantan, the total palm oil areas were about 1.02 million hectares. There are 351 palm oil companies having 297 plantations here, and REA's land covers around 110,000 hectares, taking up over ten percent of the whole area. Perhaps the local residents may not have the accurate figure of how much land dose REA Kaltim own in their mind, nevertheless, they can feel its existence by just walking around their houses. There are advertisements of the company all over the village; in front of shops, on some random walls and on the street signs. Also, the fact that currently they do not have any solid written material in hand may have put them in an even weaker position.

## 2). Attachment to Land Has Changed

There has always been a certain fixed assumption that land and farming is everything to famers; we simply suggest that they would do anything to protect and keep their land. In the past, their source of income was restricted to land and farming, that the livelihood of the whole family was almost entirely tied to their harvest. There were not many diversifications for their livelihood; growing vegetables and rice mainly for sell, which considered to have been the main stream for their cash income. As for family consumption, they planted vegetables, crops and raise some livestock in their own backyards, and this still remains to be the case today. This small backyard, serving as a cushion between falling below the subsistence line when not receiving any payment from REA Kaltim, may have also been one of the critical factors in deciding not rebelling against REA back then.

For the majority of villagers here, their land size has also been a problem when they attempted to rely purely on market economy. Over ninety-five percent of the interviewed families possess the land under two hectares. Therefore, the harvest and types of crops have been restrained, which has directly led to lower income. Besides land size, the remote location, inconvenience of transportation, lack of information and frequent extreme weather, local residents were always in a fragile position when responding to market economy. And that is also the initial reason why they were attracted by REA Kalitm's offer in the beginning.

Those who became plasma smallholders might have gone through a major change in their life, as they were no longer in the production system that they were familiar with; instead, this time, they don't serve as decision makers anymore. According to the local people, one of the most attractive aspects about becoming a plasma oil palm tree grower, is that they can be shifted into the position of listening to and following orders, rather than being fully responsible for everything. If things go wrong, they are not the one to blame. If being plasma smallholders

cannot provide what they try to achieve, it's not because they do not work hard enough, it's because REA Kaltim has deceived them.

### 3). The Missing Income

When they talked about monthly expenditure, almost everyone calculated for several moments and responded with "don't know" or "not sure", which was not surprising. Certainly it can happen because I was a stranger and haven't earned their trust yet, and then the statement usually followed with "don't spend much", and this alone can already make some sense.

Compare to big city such as Jakarta, or even the capital city of East Kalimantan, residents here in Kembang Jenggut area has relatively simpler life style: they get up in the morning around 7am, go to work by 8am, work until around 11:30, have a lunch break until 1pm or 1:30pm, and start their afternoon work, which usually finishes about 4 or 4:40 pm. After work, unlike multiple choices one could have in cities, people here choose to go back home, sit around the table with families and have dinner, talk a bit or watch some TV programme, then come to bed around 9:30 pm.

In accordance to this peaceful way of living, their expenditure has automatically been cut down. The only place for them to make some purchase is on the weekend bazaar, which is held every week. People buy some groceries, clothes and accessories there. Besides that, the biggest daily consumption is buying one or two cups of coffee at the nearby coffee stand.

What did make me surprised is that the higher income (compared to work on their own land) they got after trading away their land seemed not to have changed much to their living condition. Even they used the term "our financial situation did become more stable" and some gave very firm answer that their economic situation improved a lot, it didn't reflect much on daily lives.

Comparing their lives before and after becoming plasma scheme smallholders, the majority of local residents recalled, "sort of the same", "lead the live as before" or "didn't change much", because "get used to", "no need", and "got everything we need already". "The money we got from REA is still there, we didn't spend much", a 54 years old female told me, and she was not the only case. Situation is that the current needs and supply can still be met; even without the income from REA, they can manage to keep the subsistence level. And this may be the direct reason that reduced their feeling of anger and upset.

Although owing their own piece of land, they did not feel secured, and they were not capable enough either to get rid of it. The habit of saving is actually very common in this way, as they want to be secured by planning in advance and make them not too fragile when some uncertainties happen.

The temporarily higher income that lasted for three to four years may have not even been seen as a part of regular income, but as a surplus, as an “interest”. Signing the contract is like making a deposit in the bank, it’s safe (in their mind), and will generate certain amount of benefit without doing anything about it.

#### 4). REA Kaltim’s Permeation into the Families

When asked what they consider as priority in their life, almost everyone answered without hesitation, “family”. In this region, the difficulty of having access to the outside world may have pressed the whole area into a community where has higher intensity of intimacy.

For most of the local people, they rarely go in town or big cities for leisure, as it “takes too much time”, “don’t know anyone there”, and “don’t know what to do, would rather stay at home with family”. Even after losing the income from REA Kaltim, neither do they consider going to cities to find jobs as what may sounds familiar to us. In most of their free time, sitting under trees having a cup of coffee over a casual talk with family and friends is their way of relaxation and is what they enjoy the most.

One of the interesting things that I noticed is that the group of “employees for REA” has grown larger after the first round of fieldwork: the number of families that contain both plasma and employees of REA is increasing, which means that now, there are more people working for them, and it can, to some extent, consolidate the company’s control over this entire area.

Not only family, but also their neighbors and friends, have joined the team to work for REA. The idea was quite obvious: if one villager began to take any action that may irritate REA Kaltim, he would automatically put his family members/friends/neighbors in jeopardy. Needless to say, no one would ever like to hurt his or her own family, especially the one who is now responsible to pay all the bills; they simply wouldn’t do it to others as well. If they do, they are taking the side against a company that almost every family in the village relies on.

In his book of *The Rational Peasants*, Samuel L. Popkin had raised an idea of “corporate village”. In contrast to the "open" villages more common throughout the world today, corporate villages had a well-defined notion of village "citizenship," they regulated the local economy, and they imposed certain forms of discipline upon inhabitants, particularly in relation to agricultural decisions and coordination.

In this whole area, even though strictly speaking the corporate village was not precisely the case, the relationship among dwellers is still closer than it in big cities. People spent most of time together with other, no matter at work or during leisure hours, see their neighbor as very close friends. Sharing of labor, food and a lot of time, deepened the sense of belonging towards the community. And no one has the courage to change this perfect solidarity, especially when everyone one is now having a good life by working for REA Kaltim.

#### 5). Benefiting from REA Kaltim’s Infrastructure

PT REA Kaltim Plantations has set up a Community Development program, headed by a Community Development Manager, which is implemented and monitored by a team member permanently based in a number of villages (Long Beleh Modang, Pulau Pinang, Perdana, Kembang Jenggut, Kelekat and Bukit Layang, etc.).<sup>2</sup>

According to company report, the Community Development Programme is going very well and communities feel they can approach the team with their requests easily. Community development programmes include the provision of electricity (free in some villages) and clean water, the building of schools and clinics and generators.<sup>3</sup>

Overall, PT REA Kaltim Plantations demonstrates a proactive stance towards accommodating and supporting the needs and demands of local communities, through a process of negotiation and dialogue, backed by concrete actions taken to this end.

### **Making Senses**

---

<sup>2</sup> Sophie Chao, Emil Kleden, Agustinus Karlo Lumban Raja, Isal Wardhana and Intan Cinditiara, *PT REA Kaltim Plantations and the Dayak and Kutai peoples of Kutai Kartanegara and Tabang, East Kalimantan*.

<sup>3</sup> REA Holdings PLC, *Plantations*. <http://www.rea.co.uk/rea/en/business/plantations>

In recent decades, palm oil industry has drawn great attentions from scholars and academic institutions. However, most of the discussions are focus on its impact on environmental issue, especially deforestation, and some focus on land loss of indigenous community. This research is trying to explore normal Indonesian peasants' lives and explain their "idle" behavior under the specific context of this industry. I hope this research can provide some useful information to policy-makers when they consider related policies and provoke the thinking of what peasants really pursue and need in their lives.

The action one individual is likely to take depends on his or her social identity, which is formed under social control. Social control as an order, has the power to regulate people to get obeyed social decisions. It maintains the equilibrium and stability in the society. And also, it helps in mitigating tensions and conflict among members. It breeds conformity in society.<sup>4</sup> In this sense, through all these normal and frequent daily interactions, the idea that they are part of the community has been repeatedly emphasized. One living in certain community, especially a rural farming community, is more easily influenced, as their intimacy among the residents is higher. Through informal form of social control, institutions relating to socialization, education, family, marriage and religion have been established, gradually shared and accepted by its members. One is no longer an entirely independent individual anymore, no matter whether he or she is aware of this or not. Living in a frequently interacted community, residents rely on each other, trust each other; their behavior is based on how others perceive them. It's also the case for Kembang Jenggut area. All the decisions that people make are based on their knowledge and experience and were restrained by their social identity.

Rural areas tend to share higher rates of poverty, unemployment and underemployment, and uninsured and underinsured compared to urban areas.<sup>5</sup> They also place emphasis on family bloodlines, kinship relationships, family preservation and a cultural emphasis on taking care of kinfolk.<sup>6 7</sup> This living environment has a great role in determining local villagers' way of thinking and performing. The disadvantage of traditional farming has always been noticeable, as the production process can be easily influenced by multiple factors, which leave the peasants in a passive position. And the idea to avoid this passivity is the exact source of their desire towards a low-risk, in another word, "stable" life.

---

<sup>4</sup> John Lewis Gillin, John Philip Gillin. (1942). *An Introduction to Sociology*. Macmillan. P.143

<sup>5</sup> Mohatt, D. F., Bradley, M. M., Adams, S. J., and Morris, C. D. (2005). *Mental Health and Rural America, 1994–2005*. U.S. Department of Health and Human Services: Health Resources and Services Administration Office of Rural Health Policy. P10.

<sup>6</sup> Boswell, J. (1980). *Christianity, social tolerance, and homosexuality: Gay people in Western Europe from the beginning of the Christian era to the fourteenth century*. Chicago: University of Chicago Press. P23.

<sup>7</sup> Murry VM, Brody GH.(2004). "Partnering with community stakeholders: Engaging rural African American families in basic research and the Strong African American Families preventive intervention program." *Journal of Marital & Family Therapy*, No.3, pp.271–283.

Popkin develops a model of rational peasant behavior and shows how village procedures result from the self-interested interactions of peasants. This political economy view of peasant behavior stands in contrast to the model of a distinctive peasant moral economy raised by James Scott in which the village community is primarily responsible for ensuring the welfare of its members. There are several distinctive features of Scott's program. One is his critique towards narrow agent-centered theories of political motivation, particularly rational choice theory. Against the idea that peasants are economically rational agents who decide about political participation based on a narrowly defined cost-benefit analysis, Scott argues for a more complex political psychology going along with socially shared norms and values. But a second important feature is Scott's goal of providing a general basis for explanation of peasant behavior. He wants to argue that the subsistence ethic is a widely shared set of moral values in traditional rural societies -- with the consequence that it provides a basis for explanation that goes beyond the particulars of Vietnam or Burma. And he has a presumed explanation of this commonality as well -- the common existential circumstances of traditional family-based agriculture.

The goal of local residents in Kembang Jenggut is never to truly raise up the subsistence level, but to keep it, which testify Scott's argument of "moral peasants". Even when they made the decision of becoming a plasma scheme, what they had in mind is not to "make a fortune" or "become rich", but to "be able to live worry-freely". They have always been "reasonable", not "rational" if it means they need to maximize benefits all the time, but consistently behave according to the principal of keeping the subsistence level, and at the same time, try to achieve this goal by taking the minimum risks. Peasants tend to follow the principal of "safety-first", especially under the condition that their living demand can still be satisfied in a certain way, that they do not want to lose what they already owned. Even when they dropped below that safety-line temporarily, the method that they would like to adopt is not the one that brings them the biggest benefit; instead, it's the one that likely to cost them the least. Any behavior involving protesting against REA is considered to generate only negative utility; therefore, they tend to avoid these possible consequences by not taking the action. They are very much aware of the "risk aversion" as they have been doing this for their whole life. The possible gains by taking certain action are not as noticeable as the losses, as the result of losses might be fatal: losing their subsistence security.

The more I talked to the local people, the more their image changed in my mind: the way they choose to achieve what they want might be different from our imagination, yet it still makes sense considering the larger context. Land in their life, may never be an initiate option, it's the



symbol of responsibility. Instead of being “lazy”, they are just trying to respond to the change and uncertainties in a way they are familiar with.

In conclusion, the motivation for them to join the plasma plot was not actually because they are “lazy”, on the contrast, it’s their way of trying to go after for a better life with taking the minimal risks. They are driven by the desire to obtain a sounder living environment, which also makes sense in a modern urban environment. The stable life they are pursuing is actually what they perceive as “lower risk”, as at that moment, the biggest threaten to their livelihood is the instability coming from their family land.

REA Kaltim was able to satisfy their need at that time by removing the obstacles for them to lead a stable life. Unfortunately, they were not capable to figure out the risks by letting them do so. Peasants tend to follow the principal of “safety-first”, especially under the condition that their living demand can still be satisfied in a certain way, that they do not want to lose what they already owned. Even when they dropped below that safety-line temporarily, the method that they would like to adopt is not the one that brings them the biggest benefit; instead, it’s the one that likely to cost them the least. And this belief is shared by almost all the residents in the neighborhood.

During the interview, local residents did mention a lot about “choice” and “option”; perhaps they are more aware of the situation than I imagined before. To them, it seems that the incentive to join plasma scheme is not because they want to get easy money; quite on the contrary, perhaps it is the gesture of taking a rather small chance to have a “worry free” life. In the beginning, they did realize their goal. All of a sudden, the situation developed into another direction, which didn’t leave the local residents many choices: fight or not fight. Considering all the factors and what they really try to protect, they first one seemed to be too reckless and risky. Now they gradually began to talk about it in a rather positive way: being “liberated” from family land, getting rid of long-time heavy work, being able to spend more time with family and friends; it’s like a self-adjustment mechanism to cope with risks and uncertainties in order to keep living. Indeed, they have encountered more possibilities after REA Kaltim reached to them, and to some extent, saved them from the old troubles that they couldn’t do anything about. And having not received payment for several years may have been considered only a small episode when they think about it now: that currently and eventually, they are actually living the peaceful life that they intend to lead.

What makes this situation here in Kembang Jenggut sub-district so puzzling is that the local villagers seems not to be threatened by this missing income at all. Through various resources, for

instance, previous savings, getting involved in new occupations, they managed to keep a life which is not too different from previous one. And by doing so, the current outcome looks quite rewarding: no one got arrested, no one got fired, they can still enjoy the better infrastructures that provided by REA Kaltim and supporting their family has even become easier due to the current month salary coming from the company.

All these assumptions have suggested, that they are “reasonable” actors who are trying all the methods to maintain their subsistence level. Ignoring the fact that their employer is the one who broke his promise and took away their land, being employed by REA Kaltim is considered to be an ideal job according to villagers’ description; the salary is not bad, working hours is usually regular so no need to sacrifice one’s free time, no need to worry about production as it doesn’t influence their income at all, and meanwhile, they don’t have to travel far; can even come back home for lunch every day. All these factors are considered more appalling than merely “protesting against the company”. No one can blame them for not taking a firm stand to fight against REA Kaltim, since everyone knows how difficult to do that and how easy to move on.

Still, the open question that left for this region is that how long they can manage to keep the current condition. At the moment, almost everyone has to make a living relying on the presence of REA Kaltim, and they found it even more reliable than working on their own land. By now, the only reason local residents can still live normally is because REA hired their family members as employees and is paying them regularly. The prerequisite to sustain their family subsistence level is the company keeps them at work. In other words, this peaceful picture might be devastated when REA Kaltim no longer has the intention to hire them.

This worry is actually shared by some, but not many, that during the interview they showed a little concerned that they didn’t know whether they would be out of job the next day, since there is neither written contract nor any social insurance for the workers at all. If this problem happens, how would they act? Will they still choose to stay silent and idly? Or are they going to explore a brand-new method to be less dependent on REA? These questions may also provide some clues for researchers in the future.

## References

1. Afrizal, (2007). *The Nagari Community, Business and the State*. Sawit Watch and Forest Peoples Programme.
2. Bachriadi, D., Sardjono, M, (2006). Local Initiatives to Return Communities Control over Forest Lands in Indonesia: Conversion or Occupation?, 11th Biennial Conference of the International Association for the Study of Common Property, Bali.
3. Barber C., (2002). Forests, Fires and Confrontation in Indonesia Forest, In Matthew, R., M. Halle, and J. Switzer. *Conserving the Peace: Resources, Livelihoods and Security*. IISD, IUCN, CEESP. Foreign and Commonwealth Office.

4. Bernama, (2007). Indonesia: Many Corruption Cases In Regions Because Of Poor Supervision.
5. Borneo: Treasure Island at Risk, (2005). WWF-Germany, Frankfurt am Main.
6. Boswell, J. (1980). Christianity, social tolerance, and homosexuality: Gay people in Western Europe from the beginning of the Christian era to the fourteenth century. Chicago: University of Chicago Press.
7. Carol Barner-Barry, Robert Rosenwein, (1985). Psychological perspectives on politics. Prentice-Hall.
8. Colchester, M., et al., (2006). Promised Land, Forest Peoples Programme. Sawit Watch, HuMA and World Agroforestry Centre.
9. Daniel Kahneman, (2012). Thinking, Fast and Slow. Penguin.
10. Daniel Kahneman, Amos Tversky, (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*. 47 (2): pp.263.
11. Dengan Rahmat Tuhan Yang Maha esa Presiden Republik Indonesia, (2011). Peraturan Presiden Republik Indonesia Nomor 35 Tahun 2011 Tentang Perubahan atas Peraturan Presiden Nomor 54 Tahun 2010 Tentang Pengadaan Barang/Jasa Pemerintah.
12. Embassy of the United States in Indonesia Website, Indonesia Infrastructure Forum, November 1-3, (2006), <http://www.usembassyjakarta.org/econ/infra-summit05/infrastructure-summit06.html>.
13. Eric Robert Wolf, (1966). Peasants. Prentice-Hall.
14. Eurocham Whitebook 2012.
15. Fauzi, N. and Setiawan, U., (2005). Acquisition of Land for Development, SMERU Newsletter No.16.
16. Friends of the Earth, (2006). Notes from RSPO (Roundtable on Sustainable Palm Oil). RTIV.
17. Harry Elmer Barnes (ed). The History and Prospects of the Social Sciences. New York: Knopf.
18. Haslam, S. Alexander; Reicher, Stephen D.; Platow, Michael J, (2011). *The new psychology of leadership: Identity, influence and power*. New York, NY: Psychology Press.
19. Indonesia's Investment Law, (2007), *iNusantara Networks: Socio-Economic & Political Analysis*.  
[http://www.fdi.net/documents/WorldBank/databases/indonesi/indonesia\\_investment\\_law\\_07.pdf](http://www.fdi.net/documents/WorldBank/databases/indonesi/indonesia_investment_law_07.pdf).
20. James C. Scott, (1976). *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. Yale University Press.
21. Jan Knörich Axel Berger, (2014). *Friends or foes? Interactions between Indonesia's international investment agreements and national investment law*. Studies / Deutsches Institut für Entwicklungspolitik.
22. Joel S. Migdal. (1974). *Peasants, Politics, and Revolution: Pressures Towards Political and Social Change in the Third World*. Princeton University Press.
23. John Lewis Gillin, John Philip Gillin. (1942). *An Introduction to Sociology*. Macmillan.
24. Kartodihardjo, H. and Supriono, A., (2000), The impact of sectoral development on natural forest conversion and degradation – The case of timber and tree crop plantations in Indonesia, *CIFOR Occasional Paper* No. 26.
25. Laporan Akhir, Keterpaduan Kebijakan Antar Sektor dalam Peningkatan Daya Saing Kawasan Andalan dan Percepatan Pembangunan Daerah Tertinggal, Direktorat Kewilayahan II Kementerian Negara Perencanaan Pembangunan Nasional / BAPPENAS, (2006). *Analisis*

*Implementasi Kebijakan Pengembangan Wilayah Strategis Cepat Tumbuh Dalam Rangka Mendorong Pengembangan Wilayah Tertinggal.*

26. Mansbridge, Jane J., (1993). Self-interest and political transformation, in Marcus, George E; Hanson, Russell L, *Reconsidering the democratic public*, University Park, Pennsylvania: Pennsylvania State University Press.
27. Max Weber, (1978). *Economy and Society*. University of California Press.
28. Mohatt, D. F., Bradley, M. M., Adams, S. J., and Morris, C. D. (2005). *Mental Health and Rural America, 1994–2005*. U.S. Department of Health and Human Services: Health Resources and Services Administration Office of Rural Health Policy.
29. Murry VM, Brody GH.(2004). Partnering with community stakeholders: Engaging rural African American families in basic research and the Strong African American Families preventive intervention program. *Journal of Marital & Family Therapy*. 30. pp.271–283.
30. President of the republic of Indonesia, (2007). *Law of the Republic of Indonesia Concerning Investment*.
31. REA Holdings PLC, a Company history.
32. REA Holdings PLC, Plantations. <http://www.rea.co.uk/rea/en/business/plantations>
33. Samuel L. Popkin, (1979). *The rational peasant: the political economy of rural society in Vietnam*. University of California Press.
34. Sawit Watch and Forest People, (2007). Research on No. 26/Permentan/ar.140/2.
35. Sawit Watch, AMAN, other Indonesian organisations and Forest Peoples Programme, (2007). *Request for Consideration of the Situation of Indigenous Peoples in Kalimantan, Indonesia*.
36. Sidney Verba, Norman H. Nie, (1972). *Participation in America: Political Democracy and Social Equality*. New York: Harper & Row.
37. Simon, Klandermans, (2001). Politicized collective identity: A social psychological analysis. *Am Psychol*. Apr; 56(4). pp.319-331.
38. Sophie Chao, Emil Kleden, Agustinus Karlo Lumban Raja, Isal Wardhana and Intan Cinditiara, (2013). *PT REA Kaltim Plantations and the Dayak and Kutai peoples of Kutai Kartanegara and Tabang, East Kalimantan*.
39. Tajfel, H., (1978). Interindividual and intergroup behaviour. *Differentiation between groups: Studies in the social psychology of intergroup relations*. London: Academic Press.
40. Tajfel, H., & Turner, J. C., (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel. *The social psychology of intergroup relations*. Monterey, CA: Brooks/Cole.
41. Turner, J. C. & Reynolds, K. J., (2010). *The story of social identity*. In T. Postmes & N. Branscombe. *Rediscovering Social Identity: Core Sources*. Psychology Press.
42. Turner, J. C., (1999). Ellemers, N.; Spears, R.; Doosje, B., eds. *Some current issues in research on social identity and self-categorization theories*. *Social identity*. Oxford: Blackwell. pp.6-34.
43. Turner, J. C.; Reynolds, K. H., (2001). Brown, S. L.; Gaertner, eds. *The Social Identity Perspective in Intergroup Relations: Theories, Themes, and Controversies*. *Blackwell Handbook of Social Psychology: Intergroup processes*. 3 (1). PP.133-152.
44. Turner, John; Oakes, Penny, (1986). *The significance of the social identity concept for social psychology with reference to individualism, interactionism and social influence*. *British Journal of Social Psychology*. 25 (3). pp.237-252.

45. Verdier, A.C., Oki, T., and Suardy, A., (1980). *Geology of the Handil Field (East Kalimantan-Indonesia)*, in *Giant Oil and Gas Fields of the Decade:1968-1978*, AAPG Memoir 30, Halbouty, M.T., editor, Tulsa: American Association of Petroleum Geologists.
46. Wakker, E. (2005). *Greasy Palms, The social and ecological impacts of large-scale oil palm plantation development in Southeast Asia*. Friends of the Earth.
47. William A. Gamson, (1975). *The strategy of social protest*. Dorsey Press.
48. World Rainforest Movement / WALHI, (2004). *Meeting report of Southeast Asia regional meeting on Oil Palm and Pulpwood Plantations*, Jakarta.

## **DISRUPTING THE AUTOMOTIVE INDUSTRY: TESLA STRIVES FOR SUCCESS**

**Ahmed Zouhair (DBA student at UIWTX)**

**Dr. Ryan Lunsford (DBA Professor and Chair at UIWTX)**

Tesla is one of the world's fastest-growing electrical-vehicle (EV) companies. With reasonably priced, zero-emission vehicles and eco-friendly designs, it is disrupting the traditional fossil-fuel automotive industry. The company's approach incorporates excellent customer service, superior products and services, R&D, a talented workforce, and innovative technology. Tesla is not just an automaker, but also a product and service conglomerate that integrates its automation, energy, neurotechnology, artificial intelligence (AI), and software solutions into its vehicles.

This study investigates Tesla's unique business strategy. It addresses Tesla's main risk factors along with its performance through the lens of a SWOT analysis. A SWOT methodology is employed to analyze the data, resulting in some critical findings regarding Tesla's infrastructure, performance, pricing, marketing, production, and customer service. Findings are Tesla's business model duplicates that of Apple (Strength). Its Battery Electric Vehicle (BEV) pricing is still costly, its assembly line is inefficient due to a production bottleneck, and its charging stations are too scarce (Weaknesses). The company should expedite the expansion of its Gigafactory battery plant to meet customer demand (Opportunity), and Tesla is facing some fierce competition (Threat). This research is crucial to professionals and students in the disciplines of management and marketing because of the way Tesla is disrupting the traditional fossil fuel business model. Competitors are watching very closely and following in Tesla's footsteps to keep up with EV technology.

### **INTRODUCTION**

Tesla, started by a group of Silicon Valley entrepreneurs in 2003, strives to create a revolution and accelerate the world's transition to electric mobility with a full range of increasingly affordable electric vehicles (EVs). Tesla EVs are transforming the way people drive and move. Its CEO is one of America's serial entrepreneurs, Elon Musk. Tesla's mission and vision are to accelerate the world's transition to sustainable energy and to "create the most compelling car company of the 21st century by driving the world's transition to electric vehicles" (Musk, 2013). The company went public in 2010 with a market cap of \$34.32 billion. It is now one of the most valuable automotive companies in America (Lee, 2017). Its value is \$51 billion, compared with \$50 billion for GM and \$45 billion for Ford. The goal of this paper is to assess how a newcomer like Tesla, with fewer resources and less automotive experience, is staying ahead of its top competitors.

Tesla plans to sell fewer EVs compared to its competition but make the most profits. Tesla is aiming to be the "Apple" of the automotive business (Lee, 2017). Tesla's goal is to

produce more EVs by using its own showrooms instead of third-party dealerships and selling its own custom-made, high quality powertrain to other automakers like Toyota and Mercedes.

This paper provides an overview of Tesla, discussing the company's background, description, market, and industry. It then addresses Tesla's performance, disruptive design and business model, conflicts, competition, and business best-practices through the lens of a SWOT Analysis. Finally, it offers recommendations for the optimization of strengths and opportunities along with suggestions for mitigation of weaknesses and threats.

## SWOT ANALYSIS

According to Helms and Nixon (2010), a SWOT, or Strengths, Weakness, Opportunities, and Threats analysis is a tool used to assess alternatives and complex decision situations. It also provides a foundation for realization of the desired alignment of organizational variables or issues. Wheelan and Hunger (1998) used SWOT to find gaps and matches between competencies and resources and the business environment as part of their well-known business policy and strategy model. SWOT analysis is one of the most respected and prevalent tools of strategic planning and is the highest ranked set of tools/techniques of analysis used by firms (Glaister and Falshaw, 1999).

## RESULTS

<b>Table 1</b> <b>SWOT Analysis</b>		
	<b>Strengths</b>	<b>Weaknesses</b>
<b>Internal Organizational Attributes</b>	R&D Powertrain technology Supercharger network infrastructure Customer satisfaction Master plan Marketing business model Energy economics Innovative technology Subsidies Portfolio diversification Automation Artificial intelligence Neurotechnology Engineering	High cost structure Availability of charging stations Cash flow problems Battery prices are too high
	<b>Opportunities</b>	<b>Threats</b>
<b>External Environmental</b>	Outlook for EVs Vehicles in pipeline Development of the	Increasing costs of input Competitive scenario Dependence on suppliers

Attributes	Gigafactory Public policy Forecast	Environmental regulations Low fuel prices Subsidy elimination
------------	--	---

Note: Adapted from “The Globalization of Tesla Motors: A Strategic Marketing Plan Analysis,” by M.E. Mangram, 2012, *Journal of Strategic Marketing*, 20(4), p. 289-312.

## Strengths

A SWOT analysis indicates that Tesla has numerous strengths. These include its business model and its R&D department. BEV performance and powertrain components are also assets. Its level of overall customer satisfaction exceeds that of all its competitors.

### Business Model

Musk is following in the footsteps of Steve Jobs by using a marketing model that worked for Apple (Mangram, 2012b). In fact, some people are calling Tesla “the Apple of automakers” (Mangram, 2012b). Tesla’s showrooms use the same design and layout as Apple stores. The only difference is that Tesla highlights EVs instead of iPhones. In a marketing approach similar to the one Apple used with its MacIntosh, Tesla targeted a niche market of celebrity and rich consumers when it started its business with the Roadster.

Tesla has applied Apple adviser Mike Markkula’s 3-point marketing philosophy. This entails understanding customers’ needs better than any other company, prioritizing and eliminating unimportant opportunities, and “imputing” product qualities in a more creative and professional manner, (Moorman, 2012).

Tesla has modeled its marketing after Apple by using the same strategies. It does this by, first, recruiting the best customers—obsessed, empathetic employees who want to interact with technology. Second, it creates ongoing customer involvement. This means continuous discussions between the customers and the sales representatives about the features and functionality of the products and services. Third, it allows customer discovery and differentiation through Tesla a retail presence. Experienced and carefully selected, recruited, and trained Tesla sales associates support and help customers with their products and services. Like Apple, Tesla does not try to be all things to all customers. Instead, it offers products that are tailored to deliver business value and stand out in the crowd (Moorman, 2012).

### Battery Electrical Vehicle Performance

Battery Electrical Vehicle (BEV) performance is much faster than fuel vehicle performance because BEV has higher torque ratio than a gas vehicle. This higher torque means that EV motors are faster than fuel motors at any level of RPM output. For example, a gas motor has low torque capability in the low RPM range with limited and discontinuous horsepower. However, an electric motor has high torque capabilities even at low RPMs or when stationary,



delivering near continuous torque within the 6,000 RPM range with power exceeding at least 3,500 RPMs (Eberhard & Tarpenning, 2006).

EVs are six times as efficient as the most efficient fossil-fuel powered vehicle and produce less than one-tenth the pollution, with low to even zero emissions (Eberhard & Tarpenning, 2006). BEVs are mechanically much less complicated (10 times fewer moving parts, no combustion engine, no transmission) than both gasoline-powered vehicles and hybrid EVs. Consequently, servicing Tesla's EVs is limited to routine vehicle inspection, possible simple software updates, and tire maintenance for the first 100,000 miles (Mangram, 2012b). Furthermore, some maintenance services can be done over the air (OTA) to repair bugs or defects. Greater speed and fewer maintenance requirements and costs are two of Tesla vehicles' great strengths.

### **Research and Development**

Tesla has a robust R&D department. Money budgeted for advertising is spent instead on deploying new and innovative products and services (Hoovers, 2017). Tesla's core components are powertrain engineering, vehicle engineering, innovative manufacturing, and energy storage. Some of the R&D activities are the development of manufacturing processes, Model S cost reductions, and Model 3 automation (Hoovers, 2017). Moreover, they include the significant engineering and design activities carried out by the company to support its Model X development and other secretive R&D activities that are currently taking place (Mangram, 2012a).

### **Robust Powertrain Technology**

The electric powertrain, which is the electric power unit that manages the flow of electrical current throughout the car, is Tesla's core intellectual property. It includes the battery pack, power electronics, motor, gearbox, control software, and sophisticated control software for safety and performance systems. All these components are put together to form a single complete EV driving system. Tesla manufactures the powertrain for its own vehicles but also custom designs them for other EVs like Toyota RAV 4 EV. (Hoovers, 2017). This gives Tesla core competency and provides additional income for its operation division.

### **Customer Satisfaction**

Tesla gets high ratings from its customers. Prenzler (2016) compiled 296 survey responses from Tesla owners. The results indicated 93% overall satisfaction, 92% satisfaction with its direct-to-consumer (DTC) purchase process, and 90% satisfaction with customer service. Another survey conducted by Consumer Reports returned equally favorable results. The Annual Owner Satisfaction Survey, designed to determine how subscribers feel about the cars they have bought, was sent to 300,000 car owners. Model satisfaction was determined by the percentage of owners who responded "definitely yes" in response to the question, "Would you purchase the same vehicle if you had it to do all over again?" (Monticello, 2016). Ninety-one percent of Tesla

owners said that would buy a Tesla again. This rating is significantly higher than the responses its top competitors received, 73% for both Chrysler and GM, and just 53% for Fiat. The complete results are included in Table 2.

<b>Table 2</b> <b>Consumer Reports Annual Survey of Car Owner Satisfaction</b> <b>Brand Rankings</b>		
Rank	Brand	% That Would Buy Again
1	Tesla	91
2	Porsche	84
3	Audi	77
4	Subaru	76
5	Toyota	76
6	Honda	75
7	Mazda	74
8	Chrysler (top competitor)	73
9	Chevrolet	73
10	Lexus	73
11	GMC (top competitor)	73
12	Lincoln	73
13	Hyundai	73
14	BMW	72
15	Ford (top competitor)	72
16	Mini	71
17	Ram	70
18	Kia	70
19	Mercedes-Benz	69
20	Volvo	69
21	Buick	68
22	Cadillac	68
23	Dodge	66
24	Volkswagen	64
25	Jeep	60
26	Acura	58

27	Infiniti	58
28	Nissan	58
29	Fiat (top competitor)	53

## **Weaknesses**

Tesla's strengths far outweigh its weaknesses. The SWOT analysis targeted just two, its supercharger network and its management strategy. Its management strategy is the more significant of the two weaknesses. Tesla is still operating as a startup with no set processes and procedures in place.

### **Supercharger Infrastructure and Network**

Tesla offers several options for charging its vehicles. It offers a 240 V (Level 2) wall charger that takes between 8-12 hours to fully charge a battery. This is too slow. Most consumers are not willing to wait for longer than five minutes to charge their vehicles. People expect to charge their EV batteries as quickly as they refill their gas tanks.

In addition to home chargers, supercharging stations and small charging stations are available throughout cities across the country. However, there are far too few stations to support growing customer needs. So far, according to Tesla, there are currently only 1,130 Supercharger stations with 8,496 Superchargers. A single battery charge is estimated to power the Model 3 for a distance ranging between 230 – 310 miles (Hoovers, 2017). U.S. customers, however, often travel farther than 310 miles in one trip, so a greater battery range and more charging stations are necessary.

### **Management Strategy**

Tesla is growing at a fast pace. It is still operating and being managed like a small startup company, with urgencies and escalations based on no priorities. Tesla is lacking a set of internal and external processes and procedures for the management of its projects. A communication plan is lacking; instead, communication consists of tweets from Musk.

## **Opportunities**

Because Tesla is a pioneer in the EV arena, it has several opportunities. They include a positive outlook for EVs, growth, the development of new vehicles, the development of its Gigafactory, and public policy. The market share of electric vehicles is anticipated to grow by 20% across the globe by the year 2020.

### **Increased Demand for EVs**

There is an increased desire to improve the usage of EVs across the world, mainly in Asia (China) and Europe. It is driven by oil prices, pollution, wars, rapid technology advances, and growing congestion (Hoovers, 2017). The Renewable Global Status Report suggests that around 20 million BEVs are expected to be operating by 2020 due to policy initiatives in several countries. China overtook the U.S. as the largest market for electric cars in 2015. The U.S. Department of Energy predicts that battery manufacturing could grow to \$100 billion a year by 2030. This expected growth is due to the substantial investment in advanced vehicle technologies and the related infrastructure subsidized through the Department of Energy's initiatives such as the Recovery Act, the American Recovery and Reinvestment Act, and the Advanced Energy Manufacturing Tax Credit Program (Hoovers, 2017).

### **Growth**

Business acquisitions provide various inorganic growth and expansion opportunities for Tesla. In August 2016, Tesla entered into an agreement to acquire SolarCity Corporation. The deal doubled Tesla's workforce to nearly 30 thousand employees and created a combination of solar energy, power storage, and transportation facilities. Tesla became the world's only integrated sustainable and 100% EV company (Ramsey & Sweet, 2016). SolarCity is building solar panel components that will go into Tesla vehicles. By combining Tesla's new EVs with SolarCity's latest solar products, the companies expect to lower hardware costs, reduce installation costs, and improve their manufacturing efficiency. (Hoovers, 2017).

Tesla manufactures and markets its own BEVs, but unlike many traditional manufacturers, it also operates as an original equipment manufacturer, producing electric powertrain components that other automakers may purchase and retail under their brand names (Aden & Barray, 2008). Tesla currently has confirmed strategic partnerships with two major automakers (Daimler and Toyota), one with electronics manufacturer Panasonic, and a manufacturing partnership with Lotus Cars (Mangram, 2012a). This will increase demand for the auto parts and EVs that Tesla manufactures.

### **Vehicles in the Pipeline**

Tesla is engaged in developing new products to cater to the changing requisites of its customers. These include enhanced versions of the Roadster, the Model X and Model S along with the electric semi-truck and autonomous vehicles. Plans for other products such as self-driving software, AI, neurotechnology, and automation of its product suite are still classified.

### **Development of the Gigafactory**

Tesla is currently developing a Gigafactory as a facility where it will work with suppliers to integrate battery material, cell, and module and battery-pack production in one location. Its completion will allow the company to achieve a significant reduction in the cost of its battery packs once the company is in volume production with the Model 3. The company plans to use

the battery packs manufactured at the Gigafactory for the vehicles and its Tesla Energy applications. The Gigafactory is expected to attain full production capacity in 2020 and will produce approximately 500 thousand vehicles annually as well as the energy storage products. By 2020, the company plans for battery-pack production capacity to reach 50 GWh. Tesla also plans to build 35 GWh of cell production capacity at the Gigafactory and purchase 15 GWh of cells from other manufacturers (Hoovers, 2017).

### **Public Policy**

Governments across the globe are encouraging EV adoption as an alternative transportation technology. This encouragement comes in the form of government subsidies for EV producers, consumer price incentives, tax credits for producers and consumers, and sponsorship of technological R&D (Cunningham, 2009). Other countries, including ones in the European Union, have focused on promoting technology-neutral measures such as strict new vehicle carbon-emission standards.

In addition, China is currently committed to supportive policies and annual government investments of \$150 billion a year in the clean energy industry, citing the ‘emerging’ EV sector as a core strategic industry component. Moreover, many countries, including the United States, China, and Japan, have established near-term EV production targets which serve to drive investments and resources toward the EV sector (Mangram, 2012b). These and similar government policies help Tesla cut costs for its EV production and for its consumers.

### **Threats**

No organization is immune to threats. Some of Tesla’s top risks are costs of input, competition, and dependence on suppliers. Others are its distribution system, environmental regulations, and cuts in government subsidies.

#### **Increasing Costs of Input**

Tesla uses numerous raw materials in the production of its products. The principal raw materials used include aluminum, steel, cobalt, nickel, and copper. In the past 20 years there has been a significant increase in processed metal and steel prices (Hoovers, 2017). Also, its manufacturing facilities rely principally on natural gas, electrical power, and other energy sources. Increasing prices of those materials could affect Tesla’s profit margin.

#### **Competitive Scenario**

Tesla operates in a highly competitive market which is influenced by price, product and service quality, capital, and the capacity for innovation. It faces competition from various other players in the market in the acquisition of contracts, licenses, concessions, and skilled personnel. Tesla's top competitors have better financial resources, staff, and facilities. Consequently, these

competitors may be able to develop and acquire more and better prospects and productive properties than Tesla (Hoovers, 2017).

Furthermore, the company faces significant competition from many established and new automobile manufacturers in the alternative-fuel vehicle market like FCA, GM, and Ford. Other automotive manufacturers such as BMW, Daimler, Lexus, Audi, Volkswagen, BYD, and Volvo are also focusing on developing EVs. An inability to compete successfully may hamper Tesla's control of the market share. As a result, its sales could face a setback with the launch of competitive products (Hoovers, 2017).

### **Dependence on Suppliers**

Tesla's manufacturing operations may be affected by its reliance on suppliers, the majority of which are single-source suppliers (Hoovers, 2017). The inability or refusal to promptly deliver necessary components of the vehicles at prices, quality levels, and volumes acceptable to the company would have a material adverse effect on financial conditions and operating results. Tesla's vehicles use over 3,000 purchased parts, which it sources globally from over 350 suppliers (Hoovers, 2017). Changes in business conditions and governments, labor issues, wars, and natural disasters could affect suppliers' ability to deliver components in a timely manner. Such dependence on suppliers for its raw materials could adversely affect the company's operations, hampering its financial performance (Hoovers, 2017).

### **Environmental Regulations**

As an automobile manufacturer, Tesla is subject to environmental, health, and safety laws and regulations at numerous levels, including laws relating to the use, handling, storage, disposal, and human exposure to hazardous materials, in both the U.S. and international markets (Tesla, 2018). The cost of compliance, including remediating contamination found on the company's properties, and any changes to the operations mandated by new laws or amendments to existing laws, may be significant. Unexpected delays in obtaining the necessary permits and approvals required by such regulations in connection with manufacturing facilities would hinder the operation of these facilities.

Such costs and delays may adversely impact business prospects and operating results. Furthermore, any violations of these laws may result in substantial fines and penalties, remediation costs, third party damages, or a suspension or cessation of operations. In line with this, the Tesla factory located in Fremont, California, is already obligated to pay for the remediation of specific environmental conditions existing at the time it purchased the property from New United Motor Manufacturing, Inc. The company is responsible for the first \$15 million of remediation costs and any costs more than \$30 million or costs incurred after the ten-year anniversary of closing (Hoovers, 2017). These are uncertain events beyond Tesla's control that could hinder its success.

### **Distribution**

Tesla markets and sells cars directly to consumers through an international network of company-owned stores, showrooms, and galleries. It sells its cars online, and the prices are non-negotiable. The company faces some challenges to this system though, like the ban on direct distribution in the state of Michigan. Michigan House Bill 5606 prohibits Tesla from selling cars directly to consumers in Michigan (Crane, 2015).

According to Crane (2015), Governor Rick Snyder made some changes to "Anti-Tesla" Bill 6506, which will make it impossible for Tesla to compete against fossil-fuel automakers like GM, Ford, and Chrysler. Instead of saying that a manufacturer had to distribute only through "its" franchised dealers as the original bill read, the word "its" was struck from the statute so that it said that a manufacturer had to distribute through franchised dealers (Crane, 2015). Todd Maron, Tesla's general counsel, said that the Michigan bill goes beyond requiring sales through a franchised dealer to prohibiting the use of a gallery to display cars and communicate in-person with consumers simply (Gardner, 2014).

A crucial part of Tesla's strategy involves its custom-built supply-chain system that allows for direct sales to consumers. Tao (2014) states that Tesla maintains zero to very little inventory by having customers wait for the cars they ordered a few months in advance. He added that Tesla's sales model is based on consumer demand and uses the Just-in-Time inventory system. Tesla has eliminated the traditional franchise dealership fees either by offering customers the freedom to purchase their customized vehicles online or from its showroom. Replacing dealerships with a direct-to-consumer model results in immediate savings for consumers of approximately \$2,225 for a \$26,000 vehicle, or roughly 8.6% (Tao, 2014).

### **Cuts in Government Subsidies and Rebates**

Governments around the world have offered subsidies for EVs that have helped Tesla owners, but they have masked the full cost of the cars and could now leave Tesla on its own for sales. In the US, for example, California's rebate program is nearing the end of its existing legislated state funding, which provides \$2,500 to battery-electric car buyers and \$1,500 for plug-in hybrid purchases (Voelcker, 2017).

Hong Kong's government, too, offered a tax exemption by reducing the initial price of a Model S sedan from about \$130,000 to under \$75,000. This incentive worked to Tesla's advantage and led consumers to purchase its vehicles by offsetting the effect of China's 25% import tariff. In the month leading up to the removal of the tax exemption, when Hong Kong consumers knew the price of Tesla was set to rise dramatically, sales increased in March before dropping off entirely in April after the tax break expired (Newman, 2017).

The elimination of subsidies, battery pricing, and inefficient production in both the assembly line factory and the Gigafactory are the three most serious threats to Tesla's survival. Furthermore, competition from Google, Apple and Uber, in addition to top car manufacturers is something Tesla has to monitor very closely. The other threats are less serious but warrant Tesla's attention.

### **SWOT Summary**

Among Tesla's strengths are its powertrain technology, self-driving software, excellent customer satisfaction, and its CEO, Elon Musk. Its Apple-inspired business model, \$5 billion Gigafactory, and its Belmont manufacturing assembly plant that can produce all its models (S, X and 3) are further assets. Its weaknesses are that it is an immature startup with less experience than its automotive industry competitors.

Tesla's opportunities include the products it has in the pipeline along with a positive outlook for EVs. Rapid development of its Gigafactory, public policy, continuous growth, and penetration of global market share are also opportunities the company should take advantage of. Threats to the company's success include the underdevelopment of its Supercharger Network and lack of a management strategy that is aligned with its goals and growth.

### CONCLUSION

A SWOT analysis was used in this research because it is a tool that helps organizations like Tesla assess, monitor, and integrate their risk factors. According to "Tesla's 10-K 2018 Annual Report", Tesla forecast a production of 500,000 vehicles by the end of 2018. This is equivalent to a production rate of 5,000 Model 3 vehicles per week. That said, there is always the possibility of delay in the production ramp-up of the Model 3 due to Tesla's lack of experience to date in manufacturing vehicles at high volumes when compared to its top competitors FCA, GM and Ford. Tesla is still not fully equipped and will need to ramp-up both its BEV Gigafactory along with its assembly line capabilities to produce such volumes.

In addition, Tesla needs to make sure that its suppliers will continue to produce the necessary components on time and according to quality standards to meet the high production volume forecast for the Model 3. Finally, Tesla will have to continue to acquire, develop, and manage the skilled labor needed for its planned high-volume production. It should continue to focus on customer satisfaction and resolve the production bottleneck for the Model 3 to generate more cash flow and meet forecast and delivery timelines.

Musk is not afraid to set highly ambitious goals for Tesla and has a history of pushing the company hard to achieve them. Whether he can transition Tesla from a highly valued niche brand into a true mass-market automaker remains to be seen. The company intends to offer its lowest priced Model 3 for \$35,000 and expects to produce it at higher volumes than the Model S or Model X. Tesla should continue to focus on its cash cows like prestigious, luxury, low-volume, high-end EVs (the Roadster, Model S, and X) and low-end, mass-produced EVs (the Model 3). Finally, it should continue developing its autonomous EVs by integrating neurotechnology, AI, and automation to manufacture cars that will compete with Uber's, and Apple's cars of the future. While Tesla has a long way to go, it is on the right track and has momentum.

### REFERENCES

- Adén, E., & Barray, A. (2008). *Go green in the automotive industry: Open and networked innovation applied by Tesla Motors and Renault* (Doctoral thesis, Växjö, Sweden). Retrieved from <http://www.diva-portal.org/smash/get/diva2:1139/FULLTEXT01.pdf>



- Crane, D. A. (2015). Tesla, dealer franchise laws, and the politics of crony capitalism. *Iowa Law Review*, 101, 573-607.
- Cunningham, J. S. (2009). *An analysis of battery electric vehicle production projections* (Doctoral dissertation, Massachusetts Institute of Technology). Retrieved from <https://dspace.mit.edu/bitstream/handle/1721.1/54532/565948939-MIT.pdf;sequence=2>
- Eberhard, M., & Tarpenning, M. (2006). The 21st century electric car. Retrieved from [http://www.evworld.com/library/Tesla\\_21centuryEV.pdf](http://www.evworld.com/library/Tesla_21centuryEV.pdf)
- Gardner, G. (2014, October 17). Gov. Snyder signs bill banning direct Tesla sales. *Detroit Free Press*. Retrieved from <http://www.freep.com/story/money/cars/general-motors/2014/10/17/michigan-verge-banning-tesla-stores/17386251/>
- Glaister, K. W., & Falshaw, J.R. (1999). Strategic planning: Still going strong? Long range planning. *Elsevier Science Ltd.*, 32(1), 107-116.
- Helms, M. M., & Nixon, J. (2010). Exploring SWOT analysis—where are we now?: A review of academic research from the last decade. *Journal of Strategy and Management*, 3(3), 215-251.
- Lee, T. B. (2017, April 10). How Tesla surpassed GM and Ford to become America's most valuable car company. *Vox*. Retrieved from <https://www.vox.com/new-money/2017/4/4/15176904/tesla-ford-stock-price>
- Mangram, M. E. (2012a). The emperor's new clothes: A framework for market-based management at Tesla Motors. *Journal of Strategic Management Education*, 8(3), 179-204.
- Mangram, M. E. (2012b). The globalization of Tesla Motors: A strategic marketing plan analysis. *Journal of Strategic Marketing*, 20(4), 289-312.
- Monticello, M. (2016, December 22). Car brands ranked by owner Satisfaction. *Consumer Reports*. Retrieved from <https://www.consumerreports.org/car-reliability-owner-satisfaction/car-brands-ranked-by-satisfaction/>
- Moorman, C. (2012, July 10). Why Apple Is a Great Marketer. *Forbes*. Retrieved from <https://www.forbes.com/sites/christinemoorman/2012/07/10/why-apple-is-a-great-marketer/2/#162766ac521e>
- Musk, E. (2013, November 18). The mission of Tesla. Retrieved from <https://www.tesla.com/blog/mission-tesla>
- Newman, P. (2017, July 11). Hong Kong shows how tax rebates drive Tesla sales. Retrieved from [http://www.businessinsider.com/hong-kong-shows-how-tax-rebates-drive-tesla-sales-2017-7?utm\\_source=feedburner&utm\\_medium=referral](http://www.businessinsider.com/hong-kong-shows-how-tax-rebates-drive-tesla-sales-2017-7?utm_source=feedburner&utm_medium=referral)

- Prenzler, C. (2016, April 20). Results of Tesla owner survey. Retrieved from <https://cleantechnica.com/2016/04/20/results-tesla-owner-survey/>
- Ramsey, M. & Sweet, C. (2016, August 1). Tesla and SolarCity agree to \$2.6 billion deal. *Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/tesla-and-solarcity-agree-to-2-6-billion-merger-deal-1470050724>
- SWOT Analysis. (2017, June 16). D&B Hoovers™.
- Tesla Motors Company overview. (2011). Retrieved from [http://files.shareholder.com/downloads/ABEA-4CW8X0/1404747030x0x494001/dd297293-ec2d-4dc5-8db4-63d491fb6bd0/Company\\_Overview\\_Q3\\_2011.pdf](http://files.shareholder.com/downloads/ABEA-4CW8X0/1404747030x0x494001/dd297293-ec2d-4dc5-8db4-63d491fb6bd0/Company_Overview_Q3_2011.pdf)
- Tao, R. (2014). Tesla supply chain—custom-build world class supply chain [Blog post]. Retrieved from <https://www.tradegecko.comblog/tesla-custom-built-supply-chain>
- Voelcker, J. (2017, July 11). California electric-car rebates out of cash again; legislature neglected to fund them *Green Car Reports*. Retrieved from [https://www.greencarreports.com/news/1111465\\_california-electric-car-rebates-out-of-cash-again-legislature-neglected-to-fund-them](https://www.greencarreports.com/news/1111465_california-electric-car-rebates-out-of-cash-again-legislature-neglected-to-fund-them)
- Wheelen, T. L., Hunger, J. D., Hoffman, A. N., & Bamford, C. E. (2017). *Strategic Management and Business Policy*. New York: Addison-Wesley Longman.

## **Are consumers ready for sustainable electrical vehicles?**

**Author 1: Ahmed Zouhair (DBA student at UIWTX)**

**Author 2: Dr. Ryan Lunsford (DBA Professor and Chair at UIWTX)**

### **Abstract**

Pollution caused by carbon dioxide (CO<sub>2</sub>) emissions from fossil fuel vehicles has caused a lot of environmental, political, economic, and health issues globally. Sustainable energy vehicle technologies have emerged to address these problems. In particular, pure electrical vehicles (EVs) are possible solutions to lower carbon pollution and transition from fossil-fueled cars to fix these critical problems. A lot of companies are competing to penetrate into the global EV market. This study investigated some critical factors that attract consumers to buy or not buy EVs. Key findings showed that education and income correlated with purchasing EVs. Range, recharge time, lack of charging stations, brand loyalty and high purchase price influenced participants to not purchase EVs. Readiness, awareness and resistance to change need to be investigated in further research to build understanding that will facilitate transition to EVs.

### **Introduction**

There is an emergence of new sustainable and renewable energy vehicle technologies in the global market. These technologies include 100 percent electrical vehicles (EVs). A lot of companies are competing to penetrate and tap into EVs global market share. This study investigates some of the critical factors that attract consumers to buy or not buy EVs. Some of these factors are speed, range, performance, pricing, and consumer preferences. The research design included the use of interviews and an online survey targeted mainly to participants at the University of the Incarnate Word (UIW) San Antonio. Participants were identified from directories of students, staff and faculty. Data collected included demographic factors like income, age, marital status, education and employment status. Qualitative and quantitative data was gathered from questions about various topics including: pricing along with the electric range (i.e., distance/battery charge load), speed, recharge time, electric efficiency, and performance.

One of the major stars and pioneers of EVs is Tesla Motors which is one of the fastest growing electrical-vehicle companies in the world. It is an incredibly effective and efficient small start-up firm using a genius business model like Apple's and Toyota's. Its reasonably priced, zero-emission vehicles with eco-friendly designs are disrupting the traditional fossil-fuel automotive industry. The company's approach incorporates excellent customer service, superior products and services, an extensive R&D department, a talented workforce, and an efficient distribution system (Mangram, 2012a). Tesla's mission statement is "to accelerate the world's transition to sustainable transport" (Tesla, 2018). However, investors and analysts remain deeply divided on the future of Tesla. Many detractors view the company, which has experienced only limited profitability since its inception in 2003, as an "emperor with no clothes," (Mangram, 2012a) while more bullish proponents are calling it the "Apple of automakers" (Mangram, 2012a). Wang and Liu (2015) did a large study of over 1000 online consumers in China to assess readiness to adopt EVs. This study supported my research findings, especially about perceived barriers being short driving range and long charging time as well as demographic findings of

more likely to purchase corresponding to more education, high income, having EVs as a second vehicle and environmental friendly. Other studies will be discussed in this research paper under Literature Review.

This research study will discuss some of some of the problems caused by fossil fuels vehicles and possible solution being the transition to pure electric vehicles., purpose of this research study is to investigate reasons consumers purchase or do not purchase electric vehicles.

This study will provide findings along with analysis and recommendations that address gaps in the existing literature and warrant further discussion. Key findings identified in this research and supported in existing literature include barriers to adoption of EVs are purchase pricing and service issues, along with battery life/range, recharge duration timing. Recommendations are made base on this research and crucial to professionals and students in the disciplines of management and marketing because of the way this new technology will be disrupting the traditional fossil fuel business. I will finally discuss next steps and call for actions.

### **Statement of the Problem**

Most governments worldwide are seeing the impact of pollution caused by carbon dioxide (CO<sub>2</sub>) emissions from fossil fuel vehicles. Electrical Vehicles (EVs) emerged as a possible solution to fix this critical environment problem. Most of these EVs are reasonably priced, quiet, zero-emission vehicles and eco-friendly designs. They are disrupting the traditional fossil-fuel automotive industry. This study investigates what key determinants to purchasing/not purchasing an EV. The research is crucial to professionals and students in the disciplines of management and marketing because of the way EVs are competing and disrupting the traditional fossil fuel business model. "If you own a cell phone, you know how easy it is to plug it in when you need to recharge it. Imagine that same convenience applied to your vehicle" (CPS Energy, 2018, para. 1). Oil has been the sources of many of the energy-related problems that we have been dealing with for the last few years. Some of the problems are for example, the volatile prices of gas, American dependence on foreign oil, and most importantly, the negative health issues caused by CO<sub>2</sub> emissions for humans and all living creatures on this planet.

### **Purpose of the Study**

This research study was designed to determine likely factors that drive consumers to buy Electrical Vehicles like a Tesla. Some of the factors considered in this study include vehicle performance, battery range, recharge time/availability and consumer adoption. The metrics that were analyzed in this research include model availability, electric range, energy efficiency, battery production and cost, and electric vehicle production.

Also, this research study is designed to determine which consumers are likely to transition to sustainable vehicles powered by a new source of sustainable energy (e.g., electrification, battery, etc.). This research study seeks to assess target consumers based on their demographic data, mainly income, age, ethnicity, education, marital status, location and brand and loyalty preferences.

The impetus of this study as a former petroleum engineer was to determine factors that would lead to transitioning to EVs in order to ensure that our future generations will have a clean, safe, and healthy environment. The benefits of air quality that is clean and free from hazardous waste, especially eliminating the high levels of CO<sub>2</sub> emission from fossil fuel combustion that are causing health issues worldwide is self-evident. For example, according to the Air Quality Index (AQI), San Antonio is at an AQI of 51. This means that it is in yellow bracket (an AQI  $\geq 50$  means that the air quality contains a moderate health concern for a very small number of people who are unusually sensitive to air pollution) and warrants concern

(AirNow, 2018). According to the Union of Concerned Scientists, there are an estimated 150 million people who live in areas that don't meet federal air quality standards. Automotives and trucks are the main sources of air pollution, which includes ozone, particulate matter, and other smog-forming emissions. As results, there are some serious health concerns due to air pollution. For example, poor air quality increases respiratory ailments like asthma and bronchitis, it may also cause cancer and these costs inundate our health care system with higher medical costs (Union of Concerned Scientists, n.d.).

### **Research Question/Hypothesis**

The research question is simply to determine if UIW college students, faculty and administrators, as consumers are willing to purchase Electrical vehicles (EVs). Some of the concerns that were brought up in this research include transition timing, costing, environmental friendliness, safety, and reliability. This research seeks to understand the following:

- What are some of the drivers that would help consumers make the transition from Internal Combustion Engine (ICE) vehicles to Electrical Vehicles (EVs)?
- Which consumers are ready to give up their beloved combustion engines for an unexciting, quiet, and environmentally friendly electrical vehicle?
- What are some of the factors that would prevent consumers from purchasing EVS vehicles?

### **Definition of Terms**

There are three types of consumers identified in this study. The first, consumer type are the environmentalists who are readily willing to switch to EVs like a Tesla Model 3. These are people who previously may have owned a Toyota Prius and/or another hybrid model, are of course committed to reducing their impact on the environment by buying as "green" a car as possible. Second, there are traditional "auto enthusiasts" that are interested in buying high-performance cars that can compete with the best sports cars and performance cars in the world. Tesla has gained such a reputation This group is highly impressed by innovation, such as the Tesla Model 3's exceptional performance that can accelerate from 0-60 mph in less than six seconds, compared to the Toyota Prius, that takes nearly 10 seconds to reach 60 mph. Third, there are buyers who just want a "cool car" meaning that it has some cool features like autopilot and infotainment (IoT). Many people in this category are also tech enthusiasts (Levine-Weinberg, 2016).

Power train: The intervening mechanism that transmits power from an engine to an axle that it drives (Merriam-Webster.com, 2018).

EV: An electric vehicle (EV) is a vehicle that is powered, at least in part, by electricity. EV configurations include battery electric vehicles (BEVs) which are powered 100 percent by electric energy, various hybrid-electric vehicles (HEVs) which are powered by an internal combustion engine or other propulsion source that can run on conventional or alternative fuel in combination with an electric motor that uses energy stored in a battery. Plug-in hybrid electric vehicles (PHEVs) which are a mix of both a petroleum and a plug in electric. They use batteries to power an electric motor and use another fuel, such as gasoline or diesel, to power an internal combustion engine or other propulsion source (U.S. Department of Energy, 2017.).

Process: is a "sequence of interdependent and linked procedures which, at every stage, consume one or more resources (employee time, energy, machines, money) to convert inputs (data,

material, parts, etc.) into outputs. These outputs then serve as inputs for the next stage until a known goal or end result is reached” (“Process”, n.d.).

### **Literature Review**

The literature review for this study included articles from Hoover Online database, Google Scholar, ABI Inform, and Tesla’s website. In 2012, the Chinese government issued the “Planning for the Development of the Energy-saving and New Energy Automobile Industry (2012-2020),” in which the electric vehicle has been chosen as the main strategic roadmap for using new energy technology for the automotive industry. It is forecasted that the sales volume would rise to 30 million by 2020 and the growth would last for a long time. The growing number of cars will lead to the increasing oil demand and greenhouse gas emission, which will pose a great challenge for the development of the social economy and environment (Wang and Liu, 2015).

Adnan, Nord, Rahma, and Amini, (2017) showed that as a result of environmental changes along with the rise of air pollution the Malaysian Government implemented a new policy to support scientific research to mitigate environmental problems caused by fossil fuels and automotive vehicles. This policy was to promote energy efficiently and the reduction of CO<sub>2</sub> emission.

Adnan, et al. (2017) reported that there was not much difference between electrical and internal combustion engine in terms of driving range and performance. This study showed that electric vehicles have helped in the reduction of greenhouse gas as well as a reduction in oil dependency. For these benefits to be achieved there requires awareness and adoption by the consumer of EVs.

Kodjak (2012) conducted a survey to assess future demand for EVs using interviews with executives from major auto companies, start-ups, energy companies, dealers, and 2,000 current vehicle owners. He developed consumer profiles to help measure consumer behavior and adoption trends for EVs. The first group were the “early adopters” who were similar to the early adopters of hybrid vehicles. They were a higher income demographic of young people who were concentrated in Southern California with good weather and a recharging infrastructure. They used their EV as a second vehicle. The second group were the “early majority,” less wealthy than the first group (income above \$114K), they were environmentally conscious and concerned about dependence on foreign oil (Kodjak, 2012).

Another theory that informed this research identified various drivers of consumer behavior mainly the cost structure, income levels, culture, along with the consumer’s adoption relationship (i.e., early adopters, early majority adopters), environmentally-friendly, safety, loyalty to the original brand, EV and Tech enthusiasts, and “desire to be perceived as “cool.” Automakers and governments alike are actively researching what factors will promote a transition from fossil fuels to EVs in various markets around the world. One study of 15 major auto manufacturing groups found that this transition was being driven by the pace of the development of the battery technology and its cost reduction as well as longer range, greater production of EVs, more charging stations, recharge time, and battery packs. Manufacturers are continually making technological improvements by increasing range in miles and reducing costs that are improving the economy of scale for battery costs and electric vehicle range (Slowik, Pavlenko, & Lutsey, 2016). Also, manufacturers are striving to improve the performance of electric vehicles to better meet the demands of consumers. Most electric vehicles sales globally are in markets with consumer incentives to cover technology costs and the supporting policy (Yang, Slowik, Lutsey, & Searle, 2016).

According to Kodjak (2012) the US Outlook predicted that Battery Electrical Vehicles (BEV) sales projection would equal 107K in 2020, or one percent of light-duty vehicles (LDV) sales. Profile of U.S. BEV Consumers (based on HEV buyers), showed the most prominent characteristic is higher education (42% postgrads) versus (25%). Other factors included age, marital status, income. In terms of purchasing behaviors, HEV buyers cite gas mileage (90%) compared to (40%) of all buyers; environmental impact (70%) versus (10%); and, advanced technology (70%) versus (32%). In terms of differences from other buyers, HEV buyers cared far less about interior comfort and exterior styling compared to all buyers.

Some of these reports relevant findings were that there is only less than 2% of global sales by 2020; 1% in US. The Kodjak conducted a study for the International Council on Clean Transportation (2012) and surveyed 13,000 individuals in 17 countries between November 2010 to May 2015 to determine which factors are most important when purchasing an EV. The core finding was that a significant gap existed between consumer expectations and EV performance. These results\* can be found below:

1. Range Gap: Expectations outpaced reality by factor of 2 or 3. Energy density expected to increase 20 to 50% by 2020.
1. Recharge time: less than 2 hours (Japan less than 30 minutes); only small percentage viewed 8-hour recharge as acceptable.
2. Price premium: Majority of consumers not willing to pay a premium; EVs 50% price premium.
3. Purchase price: Vast majority of consumers expect to pay less than \$30,000.
4. Fuel price: With higher fuel prices, consumers more interested in EVs.
5. Fuel Efficiency: When fleet fuel economy reaches 50 mpg, consumers less interested in
6. Federal Tax Break: Would you take advantage of \$7500 Government subsidies toward your purchase

\*) Which of the following are the most important to you if you decide to purchase Tesla?

### **Findings**

Based on a survey with executives from major auto companies to assess future demand for EVs using interviews,

start-ups, energy companies, dealers, and 2,000 current vehicle owners. Surveyed 13,000 individuals in 17 countries from November 2010 to May 2011 Early adopters similar to the early adopters of hybrid vehicles.

They were rich young from Southern California. They used their EV as a second vehicle. Early majority: Less wealthy than the first group (income above \$114K). They were environmentally conscious & concerned about dependence on foreign oil Kodjak (2012).

According to a primary data was obtained from an online questionnaire of 1057 Chinese consumers on Sohu auto website. Wang, & Liu (n.d.) list some of the factors affecting consumers' willingness to purchase electric vehicles in China include the following: The internal factors (1) Demographic, (2) perceived risks (product knowledge & awareness, battery life and range/charging stations availability) and (3) Consumers personality characteristics (Env/Non-

Env, technology enthusiasts/Innovators). External Factors which are (1) Reliability of electric vehicles (battery technology & the mileage range). (2) Financial Benefits (utility grid cost per kWh with day/night rate). (3) Marketing Effectiveness. (4) Charging Infrastructure “range anxiety” (5) Government Policies (monetary incentives and non-monetary incentives). (6) Social Influence Values.

### Summary

Price is a major concern for most consumers when compared to internal combustion engine (Less than 30K & When Gas prices are high). Some of the key drivers to transitioning to EVs are battery charging time, battery costs associated with materials and technology should be optimized, and government interventions by providing tangible/intangible incentives, charging Infrastructure, service stations availabilities, and range anxieties,

### References

- Adnan, N., Nord, S. M., Rahma, I., & Amini, M. H. (2017). *A market modeling review study on predicting Malaysian consumer behavior towards widespread adoption of PHEV/EV* (pp. 1-21).
- AirNow. (2018). Retrieved April 13, 2018 from [https://airnow.gov/index.cfm?action=airnow.local\\_state&stateid=45&mapcenter=0&tabs=0](https://airnow.gov/index.cfm?action=airnow.local_state&stateid=45&mapcenter=0&tabs=0)
- Börjesson, S., Elmquist, M., & Hooge, S. (2014). The challenges of innovation capability building: Learning from longitudinal studies of innovation efforts at Renault and Volvo Cars. *Journal of Engineering and Technology Management*, 31, 120-140.
- CPS Energy. (2018). Electric Vehicles. Retrieved from <https://www.cpsenergy.com/en/about-us/programs-services/electric-vehicles.html>
- Dell, R., Holleran, S., & Ramakrishnan, R. (2002). Sample Size Determination. *ILAR journal*, 43(4), 207-213.
- Electric Powertrains. (2008, April). MIT Electric Vehicle Team, April 2008, 1-4. Retrieved April 13, 2018 from [http://web.mit.edu/evt/summary\\_powertrains.pdf](http://web.mit.edu/evt/summary_powertrains.pdf)
- Florey, C. D. (1993). Sample size for beginners. *BMJ*, 306(6886), 1181-1184.
- Hardman, S., Chandan, A., Tal, G., & Turrentine, T. (2017). The effectiveness of financial purchase incentives for battery electric vehicles—A review of the evidence. *Renewable and Sustainable Energy Reviews*, 80, 1100-1111.
- How Many Electric Cars Are There in the USA? (2017, March 10). In *nanalyze*. Retrieved April 23, 2018, from <https://www.nanalyze.com/2017/03/electric-cars-usa/>
- Kodjak, D. (2012). Consumer Acceptance of Electric Vehicles in the US. *The International Council on Clean Transportation*, 1-21. Retrieved from <https://www.epa.gov/sites/production/files/2014-09/documents/kodjak121312.pdf>
- Levine-Weinberg, A. (2016). Who Are All These Tesla Model 3 Buyers Anyway? *The Motley Fool*. Retrieved from <https://www.fool.com/investing/general/2016/05/10/who-are-all-these-tesla-model-3-buyers-anyway.aspx>
- Mangram, M. E. (2012a). The emperor’s new clothes: A framework for market-based management at Tesla Motors. *Journal of Strategic Management Education*, 8(3), 179-204.



- Mangram, M. E. (2012b). The globalization of Tesla Motors: A strategic marketing plan analysis. *Journal of Strategic Marketing*, 20(4), 289-312.
- Mangram, M. E. (2013). Tesla Motors: A balanced scorecard approach to more effective performance management—Case Analysis. *Journal of Strategic Management Education*, 9(1), 1-16.
- Power train. 2018. In Merriam-Webster.com. Retrieved April 13, 2011, from <https://www.merriam-webster.com/dictionary/power%20train>
- Process. (n.d.). In Business Dictionary. Retrieved from <http://www.businessdictionary.com/definition/process.html>
- Slowik, P., Pavlenko, N., & Lutsey, N. (2016). Assessment of next-generation electric vehicle technologies. *International Council on Clean Transportation*, 1225. Retrieved from <https://www.theicct.org/publications/assessment-next-generation-electric-vehicle-technologies>
- Tesla. (2018). About Tesla. (2018). Retrieved from <https://www.tesla.com/about>
- Union of Concerned Scientists. (n.d.). Clean Vehicles. Retrieved April 13, 2018 from <https://www.ucsusa.org/clean-vehicles/vehicles-air-pollution-and-human-health#.WtEfKWbMwci>
- U.S. Department of Energy. (2017). Retrieved April 13, 2018 from [https://www.afdc.energy.gov/vehicles/electric\\_basics\\_ev.html](https://www.afdc.energy.gov/vehicles/electric_basics_ev.html)
- Wang, N. & Liu Y. (2015). City readiness system assessment of electric vehicle adoption in China. *SAE International Journal Materials and Manufacturing*, 8(3):678-684. <https://doi.org/10.4271/2015-01-0469>
- Wang, N. & Liu Y. (2015). Key factors influencing consumers' willingness to purchase electric vehicles in China. Retrieved April 11, 2018 from <https://pdfs.semanticscholar.org/791a/df83edd72b11b8d32c61000f142dec2155aa.pdf>
- Yang, Slowik, Lutsey, & Searle (2016). *Principles for effective electric vehicle incentive design*. Retrieved from <https://www.theicct.org/publications/principles-effective-electric-vehicle-incentive-design>

## **Challenges of Arabic Language on Students with Dyslexia**

**Name: Mahmoud Fahd Gharaibeh**

**Institution: United Arab Emirates University**

The paper identifies the challenges faced by individuals suffering from dyslexia in Arabic Language. It highlights how Arabic is a language with a deep orthography as opposed to others that have a shallow orthography like German, Dutch, Italian, and Spanish, which have a consistent orthography. In these languages, grapheme-phoneme correspondence is rather consistent, and as a result, the main difficulty for children with dyslexia is not decoding. Arabic Language creates more challenges to students with dyslexia. Thus, Arabic Language deep orthography creates difficulty for students with dyslexia to learn the process of decoding words (Martin-Chang, Ouellette & Madden, 2014). The written Arabic language deviates largely from the normal spoken Arabic language hence little correspondence to the simple one-to-one letter-phoneme.

As identified, Arabic language entails up to three categories within it such as classical Arabic, modern standard Arabic and dialectal or colloquial Arabic (Layes, Lalonde & Rebaï, 2014). The structure of composition of Arabic language makes it difficult for young learners with dyslexia to grasp the language.

The purpose of the study involved identification of the challenges faced by dyslexic students while learning Arabic language. The study looked at the features of Arabic language and how it affects the learning ability among students with dyslexia. The findings indicate challenges faced by Dyslexics of Arab language. Therefore, it is clear that the unique feature of the Arabic language has influenced dyslexia among students from the Arab world.

### **Introduction**

Dyslexia involves a disability in learning that has often been misunderstood over time. The notion suggests that inability to read without proper assessment of the factors that make it hard for dyslexia students to read and learn ("Dyslexia - NHS Choices", 2017). There are several hypotheses identified in attempts for an explanation of dyslexia. Therefore, the study looked at the features of the Arabic language and how it affects the learning ability among students with dyslexia. The Arabic language was the primary language of focus, ranging from its structure to its features that have an impact on its speakers who are suffering with dyslexia.

### **Findings**

The lexicality of reversal of letter positions connects to the under-specifications of vowels, which generates various extents of liberty in reading the sequence of letters that emerges from the transposition (Taha, 2013). The increased freedom results in increased probability of migration producing an already present word. The morphology of Semitic dialects contributes to

the high possibility of having a lexical transposition within the Arabic language. It generates several word sets that vary in the conditional directive of its three root letters.

Dyslexia portrays a variety of itself while under different or various orthographies (Erdman, 2014). An example, neglect dyslexia, which regularly influences the left side of words, resulting in letter substitution, omission, and addition at the start of words in Italian and English, but at the ending of words in Arabic, which is written from right to left. The second example is surface dyslexia. It involves less distinct dialects with a superficial orthography compared to languages with deep orthography.

Letter position dyslexia is the third example where a deficit exists in the orthographic-visual analysis system that carefully damages the capacity to convert the corresponding location of letters in words hence cause errors in letter position such as confusing “form” as a substitute of “from.” LPD, Letter position dyslexia, is more plainly noticeable and creates additional inaccuracies in dialects such as Arabic, where transposition of the middle letter often produce other words that already exist.

Dyslexia involves a learning disability among children and causes problems related to writing, reading, and spelling (“Dyslexia - NHS Choices”, 2017). The intelligence of the children with dyslexia is never affected. The child suffers from specific learning challenges such as writing and reading. The signs of dyslexia often come out during the initial stages of schooling among children. The signs become apparent when such children start focusing on how to write and read during learning (Friedmann, Gvion & Nisim, 2015).

Some of the signs among children with dyslexia include slowness in reading and writing, confusion of orders of letters or putting them in the wrong way (Martin-Chang, Ouellette & Madden, 2014). The students also have inconsistent or poor spelling and understand verbal information but experience challenges with down written information. In addition to struggling with organization and planning, they also cannot conduct a series of directions. Despite the challenges experienced, students with dyslexia have excellent skills in problem-solving and creative thinking among other areas. The students have conventional schooling, adequate intelligence and enough sociocultural opportunities yet have unexpectedly low ability in reading.

Several prominent researchers here in the Arab countries have assessed matters concerning reading among the children (Erdman, 2014). Such research is vital in having a comprehension on the challenges faced by individuals from the Arab world in teaching and learning Arabic. Several features of the Arabic language is mentioned in the study, but only two was applied to clarify the importance of language structure in learning a language. The two features that were discussed in detail include vocalization and diglossia. The study has been looked at various variables such as primary environmental, instructional and linguistic that influence the success of reading among children with dyslexia.

The most common challenge among the students with dyslexia involves awareness on phonological/phonemic issues (Friedmann, Gvion & Nisim, 2015). The troubles identified among the students get worse with a complicated language structure. The Arabic language is a combination of several dialects, and there is a need to determine its influence among its speakers with dyslexia (Taha, 2013). Children with dyslexia have trouble aurally differentiating the phoneme [ح] from [خ] or [س] from [ش] alongside other sounds sharing multiple structures. The

students have problems in identifying a phoneme. In multiple representations of visual word identification, scholars have suggested that smooth readers avoid using phonological information transmitted by words in print until after identification of their meaning.

### Challenges

Learners of writing experience difficulties of regional dialects or variations. It acquires the form of a strange word or pronunciation or a turn of expression. Incomprehension is merely temporary for most languages, and the resemblance—often referred as mutual intelligibility by linguists—between the regular semantic educated to foreigners hence maintenance of the regional speech pattern (Taha, 2013). For some languages, variances between the standard dialect and other dialects become so high, hence utterly incomprehensible to its learners (Martin-Chang, Ouellette & Madden, 2014). The Arabic language has varied dialects that makes it incomprehensible to students.

The modern Arabic emerged in two forms, the North Arabic and South Arabic (Erdman, 2014). There are various notable differences in the two styles ranging from their vocabulary, script to their grammar. South Arabic in the present is identified through inscriptions while the North Arabic form became the Arabic language. Arabic, possess Semitic morphology and has short vowels in its orthography. Therefore, Language Processing Disorder (LPD) can easily be detected in Arabic depending on its features. However, a different aspect of Arabic orthography exists which can be relevant for errors in letter positions. The Arabic language possesses unique and peculiar characteristics described below in brief:

#### (a) Directionality

The features of the Arabic language include uniqueness in direction (Erdman, 2014). The language has its text running from right to left as opposed to numbers that run left to right. The effect entails a mixed direction for script segments. Despite writing from right to left, the screen applications or documents printed in Arabic are read starting from the top right-hand corner. This particular feature affects the presentation of information on the screen or a page (Friedmann, Gvion & Nisim, 2015). Text direction influences both icons and graphics. Therefore, the graphical user interface of charts and tables produced in an Arabic nature has to be mirror-image on a horizontal plane for the layouts of items to be understood (Martin-Chang, Ouellette & Madden, 2014).

(b) The language has three numbers (Boumaraf & Macoir, 2015). These are singular, the dual and the plural. The three numbers are applied in the use of verbs, nouns and adjectives. Therefore, as opposed to the English language that has several numbers, the Arabic language has only three. About gender, there are the feminine and masculine like in any other language.

#### (c) Character shaping

The number of alphabets in the Arabic alphabet is 28 letters, and they all resemble consonants (Boumaraf & Macoir, 2015). Whether in print or handwritten, the Arabic writing is constantly cursive. Words in Arabic are created from roots, which are often tri-consonantal. Due to its cursive trait, twenty-two letter of Arabic script, relying on their surrounding characters and position, can take four diverse shapes in a word despite their position.

(d) Nouns, as well as adjectives, have genders in the Arabic language (Erdman, 2014). Also, the feminine nouns accept masculine numerals and vice versa.

(e) A complete action in the Arabic dialect gets indicated by a suffix, in the verbal tenses during the incomplete by a prefix (Boumaraf & Macoir, 2015). However, „ta, “ the feminine suffix is applied to a grammatical gender.

(f) In a sentence, the general order of words begins with the verb, followed by the subject, and finally the object for the predicate (Friedmann, Gvion & Nisim, 2015).

(g) The Arabic language is rich in vocabulary. For example, there are 52 synonyms for darkness, 164 for short, 91 for long 34 for the rain, 21 for the light, 16 for the moon, and 50 for the cloud (Erdman, 2014).

However, our primary focus was on two unique structures of the Arabic dialect that influence the learning process to read. These are vocalization and diglossia.

#### a. Vocalization

Modern Standard Arabic (MSA) involves writing without marking of short vowels (Erdman, 2014). Early grade students have diacritics in their texts that assist them in reading. However, they get removed in subsequent stages and required to learn how to read un-voweled and un-vocalized texts. The Arabic orthography becomes transparent with short vowel markings or vocalization in the early grades. The orthography of this language, as opposed to that of French or English, is predictable since it has vowel markings and there are no homonyms or silent letters that easily confuse readers (Martin-Chang, Ouellette & Madden, 2014). Words get pronounced just the way they are put in print. Short vowel makings help struggling readers as they begin to read. However, vocalization has no impact on the speed of reading or fluency among skilled readers. Students with dyslexia have trouble with the Arabic language as it relies more on un-vocalized texts among skilled learners (Layes, Lalonde & Rebaï, 2014). The vocalization during early stages does not help students with dyslexia as it does not affect the speed of speech.

#### b. Diglossia

Diglossic dialects often have both a “low” and a “high” form that can substantially vary (Friedmann, Gvion & Nisim, 2015). The “high” form is usually applied to a written message while the “low” dialect for verbal communication. Diglossia offer challenges for teachers as well as pupils, as children in school, have to learn a dissimilar form of Arabic from the spoken Arabic in normal daily lives. The research focused on recognizing instructional and linguistic factors, has identified early exposure to MSA as positively impacting the progress of pupils in learning to read (Boumaraf & Macoir, 2015). Early exposure to MSA helps children to familiarize themselves with different sounds or pronunciation, vocabulary, and syntax. However, the transition to MSA from local dialect is made easier through shared writing and story reading in addition to alphabet games. The use of the low language is easy for the students with dyslexia, but confusion and difficulty arise during the transition from a local dialect to MSA.

## Discussions

Alphabetic knowledge and phonological awareness are among the most substantial contributory elements to fluent reading in Arabic (Layes, Lalonde & Rebaï, 2014). Research identified that use of spelling methods and whole word recognition get utilized in the early grades (Martin-Chang, Ouellette & Madden, 2014). Children who are competent in recognizing symbols alongside identifying individual sounds, have an easier time reading at higher levels than their counterparts who memorize word syllables and word shapes. Knowledge of syllables or letter names alone is not sufficient in enabling children in sounding out words as written, which is a fundamental component of comprehension and reading fluently in Arabic. The variable would provide ease of reading among students with dyslexia.

Recognition of hints obtained from using sentence context and word morphology. The nature of Arabic provides word roots that are constructed from groupings of three and four consonants. Several words in a family get obtained from one root by use of infixes, suffixes, and prefixes. Additionally, some infixes, suffixes, and prefixes provide clues to roles of words within a sentence.

Morphological knowledge assists in the mitigation of lack of short vowel markers. Children encounter these markers in later elementary school. The transition process from vocalized to unvocalized text poses a challenge to students with dyslexia despite being a serious step for every reader of Arabic in advancing their learning (Martin-Chang, Ouellette & Madden, 2014). The transition has to be well facilitated and managed among students with dyslexia or struggling readers. Application of morphological knowledge assist dyslexia readers in word identification and determine its function within a sentence. Lastly, in unvoweled Arabic, another critical factor is sentence context that helps in differentiating between the several homographs in Arabic dialect. Contextual variables provide necessary clues applicable by skilled readers' incorrect identification of unvowelized words.

## Recommendations

In essence, educators must help children navigate the differences between their dialects and MSA, as they transition into school, so that they become proficient readers and writers of MSA. At present it seems that strategies to help children move from dialect to MSA are done more on an ad hoc than a systematic basis in many countries of the Arab world.

Most Arabic learners are the radical difference between written language and the different local languages are spoken across the Arab world (Layes, Lalonde & Rebaï, 2014). The diglossia matter creates complications for both native Arabic and non-native speakers alike. The differences can be seen in the form of vocabulary, pronunciation, syntax, and tenses of verbs. However, increased human creativity and innovation encourages learning standard or colloquial Arabic.

Research pointed to exposure to MSA as an essential factor in helping children navigate the differences between their dialect of Arabic and MSA. Studies that exposed children at the preschool or kindergarten level to spoken MSA through listening to stories had a significant, positive effect on the development of reading abilities and other methods and strategies. The Arabic language requires twice as much commitment and effort for non-native speakers to learn

and read in a meaningful way. The level of engagement and effort applies to students with dyslexia.

### Conclusion

It is certain that the unique features of diverse writing systems are exceptionally significant in how dyslexia gets defined and manifested. The process of acquiring skills in spelling and reading is challenging for children and entails an adequate change of diverse psycholinguistic and cognitive abilities. Within various language systems, the learning acquisition process becomes even more challenging and complex for children with low readiness due to the orthographic and linguistic complexity of their particular written language, such as the Arabic dialect. The study has opened up the Arab language and provided insight on the challenges passed faced by children with dyslexia from that part of the world.

### References

- Boumaraf, A., & Macoir, J. (2015). The influence of visual word form in reading: single case study of an Arabic patient with deep dyslexia. *Reading And Writing*, 29(1), 137-158. <http://dx.doi.org/10.1007/s11145-015-9583-y>
- Dyslexia - NHS Choices*. (2017). *Nhs.uk*. Retrieved 2 October 2017, from <http://www.nhs.uk/conditions/dyslexia/Pages/Introduction.aspx>
- Erdman, M. (2014). *Is Arabic Really Just One Language?*. *Slate Magazine*. Retrieved 2 October 2017, from [http://www.slate.com/blogs/lexicon\\_valley/2014/09/22/arabic\\_diglossia\\_the\\_many\\_varieties\\_of\\_what\\_s\\_popularly\\_considered\\_a\\_single.html](http://www.slate.com/blogs/lexicon_valley/2014/09/22/arabic_diglossia_the_many_varieties_of_what_s_popularly_considered_a_single.html)
- Friedmann, N., Gvion, A., & Nisim, R. (2015). Insights from letter position dyslexia on morphological decomposition in reading. *Frontiers In Human Neuroscience*, 9. <http://dx.doi.org/10.3389/fnhum.2015.00143>
- Layes, S., Lalonde, R., & Rebaï, M. (2014). Reading Speed and Phonological Awareness Deficits Among Arabic-Speaking Children with Dyslexia. *Dyslexia*, 21(1), 80-95. <http://dx.doi.org/10.1002/dys.1491>
- Martin-Chang, S., Ouellette, G., & Madden, M. (2014). Does poor spelling equate to slow reading? The relationship between reading, spelling, and orthographic quality. *Reading And Writing*, 27(8), 1485-1505. <http://dx.doi.org/10.1007/s11145-014-9502-7>
- Taha, H. (2013). Reading and Spelling in Arabic: Linguistic and Orthographic Complexity. *Theory And Practice In Language Studies*, 3(5). <http://dx.doi.org/10.4304/tpls.3.5.721-727>

## **Effect of Etymology Instruction on EFL Students' Vocabulary Learning and Reading Comprehension**

**Author : LICHU CHEN**

**University name : Shu-Zen Junior College of Medicine and Management**

**Country: Taiwan**

### **Abstract**

The present study mainly focused on the effect of etymology instruction on EFL students' vocabulary learning and reading comprehension. Fifty second-year English majors of 5-year junior college participated in this study. With their English proficiency was determined by the TOEIC score, the subjects were examined in two different groups of elementary and pre-intermediate level respectively. In order to investigate the effects of the etymology approach, all the subjects were taught and instructed the etymological knowledge, the concept of word formation and the knowledge of the roots, prefixes and suffixes to facilitate their vocabulary development and in turn help them apply what they learn to the reading comprehension. To elicit the outcome of the study, a pretest and posttest of vocabulary recognition as well as a reading comprehension were administered and conducted before and after the course. To determine the statistical significance of the difference between the means of the two sets of scores, t-test was employed to analyze the data of the subjects of the two groups. The results of the study revealed that subjects showed improvements in their performance of vocabulary learning. Positively, 75% of the participants indicated from their self-report that they regarded the instruction as beneficial to their English vocabulary learning and reading comprehension.

**Keywords:** etymology 、 roots 、 prefix, suffix 、 reading comprehension 、 vocabulary strategy

### **1. Introduction**

Vocabulary acquisition has long been considered a vital role in language learning. Being equipped with extensive vocabulary is no doubt beneficial to language development in reading comprehension, writing ability and speaking ability. However, in most of EFL classrooms, grammar translation teaching approach still prevails over other teaching approaches as well as learning strategies. In the long term, students, without knowledge of the formation and origins



of vocabulary, tend to memorize as many words as possible, which in turn impels them to quit vocabulary learning and then the language itself. As a result, the language learning process from elementary school to college is disappointing and helpless due to a lack of efficient and effective strategy for learners to take advantage of in their learning experiences. Different from grammatical knowledge and speaking ability, which can be acquired gradually with adequate exposure to L2 environment, O'Malley and Chamot (1990) indicate that vocabulary learning strategies are the most frequently used learning strategy for L2 learners. Finocchiaro (1973, p.122) believes that students can develop basic learning skills with the basic concepts of roots, synonyms, antonyms, and word family. Many methodologists also maintain that having word formation knowledge can help students strategically elevate their ability to read difficult texts and ability to analyze unknown words or recall the learned words. Hashemi (2004) points out that teaching the knowledge of formation of words is an effective way of teaching vocabulary. Schmitt (2000) and Nation (2001) in their researches have examined the use of vocabulary learning strategy to facilitate and improve L2 learners' vocabulary knowledge.

With an eye to examining the efficacy of vocabulary learning strategy in facilitating students' vocabulary learning and enlarging their vocabulary size, there is no doubt that it is necessary to know how vocabulary learning strategies are utilized by language learners of different proficiency levels, ages, purposes so as to guide the instructors toward the more effective vocabulary teaching approaches. To foster learners' development in vocabulary learning, etymology instruction will be adopted to observe learners' progress in learning English words of different affixes and roots.

## **2. Literature Review**

Etymology is the study of the formation and the original meanings of words. In etymology, the knowledge of suffixes, prefixes and roots plays a crucial role in guiding learners to get acquainted with how English words are made up, which serves as a fundamental concept for learners to analyze words and figure out the underlying meaning of words. Pierson (1989) indicates that etymology instruction is helpful for students to acquire meaningful linguistic knowledge, especially for those who are of intermediate and advanced proficiency levels. Nation (2001) asserts that an effective vocabulary learning strategy enables learners to acquire a great deal of vocabulary. Also, researchers (Davoudi and Yousefi, 2009; Bellemo, 2009) claim that etymology instruction enables students to adopt vocabulary learning strategy to enhance their learning ability. There is no doubt that etymological approach has a positive influence on language learning and brushes up learners' learning skills with the linguistic conception and knowledge of the makeup and meaning of the words.

In the process of acquiring a second language, it is imperative for learners to enlarge their vocabulary size and be able to memorize long or difficult words in an efficient way. How to provide learners with an effective vocabulary learning approach and instruct them to apply what they learn about words to reading comprehension can't be made light of for the purpose of improving learners' language proficiency. Without useful and easy-to-adopt learning strategy, it takes learners more time and effort in dealing with a large amount of unfamiliar or unknown words, which in turn makes it easy for learners to give up learning due to the fact that they don't know how to figure out the possible meanings of words in reading context.

Furthermore, researchers lay emphasis on the importance to familiarize students with word elements, including prefixes, suffixes, roots, synonyms and antonyms. It is believed that students can work on difficult words by recognizing word clues while encountering words of different types. According to Farid (1985, p.7), learning roots is proven helpful and useful in that students will be able to guess what the word means while coming across a new word with commonly-seen roots or affixes. Another benefit is that knowledge of prefixes and roots makes it easier for students to analyze difficult words and apply the frequently-used prefixes or roots to newly learned or complicated words. Equipped with the etymological learning strategy, students can make sense of the words and analyze them when they attempt to retain and recall the meanings of the words.

In recent years, many researchers have shown in their studies that receiving etymology instruction has a beneficial effect on students' second language learning. Knowing pragmatic learning techniques of memorizing, predicting or guessing words is more important than merely understanding grammatical structures of languages. With a large vocabulary size, learners can have better performance on reading comprehension and learning outcome. Yamazaki & Yamazaki (2006) contends that our brain can store vocabulary by grouping words with the similar word parts. Likewise, Fekri (2011) believes that learning the makeup of words can help students to recall words faster and understand the content better. And he further states that learners are capable of connecting and recalling words with the similar prefixes and roots by organizing and remembering words in groups.

It is suggested in many studies and researches that students can benefit themselves from the etymological knowledge, and experiencing new learning technique in vocabulary acquisition is regarded as beneficial to language learning process. How to incorporate the etymology instruction into normal English-learning setting seems urgent and critical to enhance students' learning ability and helps swift the traditional vocabulary teaching and learning approach to a new and practical technique in terms of long-term memory and experiential learning.

### **3. Research Questions and Design**

#### **3.1 Research Questions**

In order to investigate the effects of the etymology instruction during the course, pretest and posttest of vocabulary, the following research questions were generated:

1. What is the effect of etymology instruction on second-year English-majors' vocabulary learning of two different groups?
2. Is there any difference between the performance of students' reading comprehension before and after the etymological instruction?

Based on the research questions, the following hypotheses were aroused:

1. Etymology instruction has no effect on second-year English majors' vocabulary learning of two different groups?
2. There is no difference between the performance of students' reading comprehension before and after the etymological instruction?

#### **3.2 Research Design**

Participants who took the vocabulary course would be instructed the etymology strategy to facilitate their vocabulary learning. During the teaching sessions, pretest and posttest of vocabulary, reading comprehension test, as well as a self-report feedback, were administered to investigate the impact of the learning strategy.

### **Method**

#### **4.1 Participants**

50 second-year students from Applied English Department participated in this study. Based on their TOEIC score, all of the subjects were divided into elementary and pre-intermediate level with 29 and 21 students respectively to see if the etymology instruction had equal impact on their learning. Those students majoring in English were required to take the vocabulary course designed in the second semester. Throughout the course, all the subjects received etymology instruction and training to examine the influence on their vocabulary learning.

## **4.2 Instruments**

The research instrument used in the study is comprised of 3 sections:

1. Scores of pretest and posttest of vocabulary recognition ability: Multiple-choices vocabulary testis considered reliable measure of intelligence (Read, 1997). The pretest and posttest designed for this study included 40 multiple choices respectively in bilingual version with 20 of questions in English words made up of prefix, suffix as well as roots and four choices of Chinese definition attached to each question and the other 20 questions in the opposite way. As Nation (2001) argued that first language translation is a very useful means in vocabulary testing in that it allows learners to respond to the vocabulary item sensitively and directly within a given period of time, which shows that learners can get higher scores and can better reflect real vocabulary recognition ability. The test was comprised of 2 parts of vocabulary: two-third of the words were taught in class and one-third extracted from TOEIC reading section. The scores of pretest and posttest were collected and analyzed to decide how the etymology instruction affected students' vocabulary development.

2. Reading Comprehension Test: Reading comprehension test would model multiple-choice format in part 5 of TOEIC reading comprehension section and the test consisted of 25 questions with four choices of words with recognizable origins. The test serves as a good way to check students' reading comprehension ability while encountering unknown or unfamiliar words in the context by practicing etymological strategy.

3. Self-Report Feedback: Questionnaire on English Learning would be adopted. Ten questions would be included in this questionnaire to analyze students' self-report on their own learning process. The purpose was to see if students would be furnished with knowledge of the etymology instruction and if they would adopt and practice the strategy in learning vocabulary and reading comprehension.

## **4.3 Procedures**

Students were required to complete an 18-week course in order to meet the course requirement. Except the midterm and final sessions, students would obtain 16 weeks (32 hours) training. On the first class of the course, the instructor introduced the etymology strategy to

students, talking of the etymological knowledge and the formation of words. For the rest of the course, students would be informed of 2-3 types of roots as well as the varieties of prefixes and suffixes in each class. Throughout the course, it was estimated that students would get to know approximately 40-45 frequently-seen roots which are selected in accordance with the commonly-used vocabulary on TOEIC test. In addition, a review quiz after each class would be given to students not only to recall their memory but acquaint them with the strategy taught in class. Vocabulary for the quiz would be extracted from learning materials specifically designed for the course and words from TOEIC reading passages. In this way, students would have the chance to practice applying etymological knowledge to what they learn. It needed to mention that the teaching materials were collected and designed by the researcher and instructor.

All the subjects attending the course would follow the steps to help themselves familiarize with the taught words composed of different affixes:

1. Identify the words of different parts. This step is to enable them to recognize the prefix and suffix of the words so that when they encounter unknown words, they will be able to break them down.
2. Learn clusters of the same or similar word parts. This step is to enhance students' memories of the meanings of prefixes or roots by learning groups of words of the common affixes.
3. Practicing applying etymological knowledge to new words. This step is help students to relate the meanings to the words with the same prefix or roots by doing he practice such as matching items, blank sentence completion and guessing.

Given the etymological instructions, subjects had a chance to acquire and practice using various affixes and roots taught in class.

## **5. Results & Findings**

### **5.1 Results of Pretest & Posttest for Both Groups**

The major question addressed in this study was whether etymology instruction would affect English learners' vocabulary learning. Before and after the instruction, a researcher-made vocabulary pretest and posttest were conducted and given to the participants to compare students' performance on the two tests. To compare the differences between the pretest and posttest, a t-test was applied. A t-test is exerted to see whether significant differences can be

found between two means when the number of participants is less than 30. For the purpose of finding out whether the etymology instruction caused any significant differences in two groups of different English proficiency, the statistical analyses would be run respectively based on two groups' mean score obtained from the tests.

Based on Table 1, the means of pre-intermediate group were 68.00 on the pretest and 72.55 on the posttest. Based on Table 2, paired sample t-test was employed and the results obtained indicated that there was significant difference between pretest and posttest. As shown on Table 2, a mean difference of -4.552 between the means of the two tests was significant and the level of significance is smaller than the probability value. That is, P-value was  $.00 < \alpha = .05$ , meaning that the instruction affected the pre-intermediate group.

**Table 1**

**Paired Sample Statistics for pre-intermediate group based on their pre-and post-test**

	Mean	N	Std. Deviation	Std. Error
pair 1 pretest	68.00	29	13.342	2.477
posttest	72.55	29	12.011	2.230

N= Number of Participants

Std.= Standard

**Table 2**

**Paired Sample Test Comparing the pre-intermediate students' performance in pre-and post-test**

	Paired Difference	T	Df	Sig. (2-
--	-------------------	---	----	----------

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				tailed)
				Lower	Upper			
pair 1 pretest-posttest	-4.552	5.096	.946	-6.490	-2.613	-4.810	28	.000

Std = Standard

T = Computed value for t

Df = Degree of freedom

Sig = Significance

The results of the elementary group obtained from the statistical tests were presented in Table 3 and 4. Based on Table 3, the means of elementary group were 48.48 and 54.19 on the pretest and posttest respectively. On table 4, another paired sample t-test was carried out and the results revealed that P-value was  $.006 < \alpha = .05$ . Therefore, it was manifest that the instruction also affected the elementary group with a mean difference of -5.714.

According to the statistical analyses, it was concluded that given the etymology instruction, both groups had better learning outcome. As a result, the first null hypothesis that Etymology instruction has no effect on second-year English majors' vocabulary learning of two different groups can be rejected. In other words, with the word approach, both groups demonstrated better performance in vocabulary learning.

**Table 3**

**Paired Sample Statistics for elementary group based on their pre-and post-test**

	Mean	N	Std. Deviation	Std. Error Mean

pair 1	pretest	48.48	21	10.806	2.358
	posttest	54.19	21	10.274	2.242

N= Number of Participants

Std.= Standard

**Table 4**

**Paired Sample Test Comparing the elementary students' performance in pre-and post-test**

	Paired Difference					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 - pretest - posttest	-5.714	8.445	1.843	-9.558	-1.870	-3.101	20	.006

Std = Standard

T = Computed value for t

Df = Degree of freedom

Sig = Significance

## 5.2 Results of Reading Comprehension

With a view to seeing whether the participants of the two different groups have improvements in their reading comprehension as well as whether they could apply the approach to the reading, mean scores were compared between pre-test and posttest to elicit the results of two groups respectively. The results of pre-intermediate group was shown on Table 5, with the mean scores 57.38 on the pretest and 62.07 on the posttest. The significant t value (P-value=.004<α=.05) was observed from Table 6, which revealed that participants of this group made progress in reading. It was manifest that the P-value, at 0.05 level of significance and 28



degrees of freedom, was 0.002, smaller than the critical value ( $\alpha$ ). Given the statistical outcome, it was apparent that the instruction did help participants in reading comprehension.

**Table 5**

**Paired Sample Statistics for pre-intermediate group based on their pretest and post-test**

	Mean	N	Std. Deviation	Std. Error Mean
pretest	57.3793	29	8.29980	1.54123
posttest	62.0690	29	8.59373	1.59582

N= Number of Participants

Std.= Standard

**Table 6**

**Paired Sample Test Comparing the pre-intermediate students' reading performance on pre-test and post-test**

	Paired Difference				T	Df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper

**Paired Sample Statistics for pre-intermediate group based on their pretest and post-test**

		Mean	N	Std. Deviation	Std. Error Mean				
pair 1	pretest	57.3793	29	8.29980	1.54123				
pair 1	posttest	4.68966	7.33438	1.36196	-7.47950	-1.89981	-3.443	28	.002

Std = Standard

T = Computed value for t

Df = Degree of freedom

Sig = Significance

On the other hand, the analysis of elementary group's reading outcome was gained from Table 7 and Table 8. Shown on Table 7, the mean scores measured from the pretest and posttest were 32.57 and 36.38 respectively. With paired sample test on Table 8, the mean difference of -3.809 points were acquired after comparing the two sets of mean scores from pretest and posttest. Observed in Table 8, the level of significant .001 is smaller than the critical value of 0.05, indicating that there was significant influence on participants' reading comprehension with the  $P\text{-value}=.003 < \alpha=.05$ . As the results for two groups illustrated, significant change was found in both groups' reading comprehension performance. That is, the second null hypothesis stating that there is no difference between the performance of students' reading comprehension before and after the etymological instruction is rejected. Though different progress was shown on both groups' reading performance, it was concluded that the etymology approach affects students' learning outcome.

**Table 7**

**Paired Sample Statistics for elementary group based on their pre-and post-test**

	Mean	N	Std. Deviation	Std. Error Mean
pair 1 pretest	32.5714	21	6.36059	1.38800
posttest	36.3810	21	6.56107	1.43174

N= Number of Participants

Std.= Standard

**Table 8**

**Paired Sample Test Comparing the elementary students' reading performance on pretest and post-test**

	Paired Difference					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
pair 1 pretest-posttest	-3.809528	4.28508	.93508	-5.76007	-1.85898	-4.074	20	.001

Std = Standard

T = Computed value for t

Df = Degree of freedom

Sig = Significance

## 6. Discussion & Conclusion

The study aims to investigate the effect of etymology instruction on students' vocabulary learning and reading comprehension. The data obtained from pretests and posttests for both groups of different English sufficiency indicates that etymology instruction had significant influence on students' learning outcome.

For the first null hypothesis stating that etymology has no effect on second-year English majors for both groups, it was rejected based on the results showing both groups did make progress in the learning process. In other words, the etymology approach was helpful for students' vocabulary memorization. Given the two groups' analytical result, elementary group outperformed pre-intermediate group although the latter group's mean score was higher than the former, pointing out that participants of elementary group could learn well with the conception of word formation. Therefore, students with low English proficiency can also benefit from the word learning method if properly instructed. That is, some simple and basic prefixes and roots can be taught to students of lower level like learners of basic English proficiency so that they can familiarize themselves with how a word is composed of and they can learn to make good use of the learning strategy at an early stage of learning English. In contrast, participants with higher English proficiency also made advances in their vocabulary learning partly because they knew more words and partly because they could better apply this method to their vocabulary learning, indicating that those with better English proficiency can learn more and better if taught more prefixes and roots of words. The second null hypothesis of that there is no difference on students' reading comprehension before and after the etymological instruction was also rejected based on the data collected and compared by the tests. However, considering the reading questions and the given score for each correct answer, the progress on participants' reading comprehension didn't seem as significant as their vocabulary learning, especially for those in the elementary group. It is obvious that etymology instruction can benefit students' word memorization in a shorter period of time, while it takes longer time to investigate whether they can take advantage of the learning strategy in reading comprehension questions.

From participants' self-reports, it is positive that etymology instruction provides them a different and new way to learn vocabulary, which appears that participants benefit from the instruction. However, within the limited time, it is difficult to determine whether they are capable of applying this vocabulary learning strategy to their following learning process. Therefore, to better examine the effect of etymology instruction, some intriguing questions are generated from this study for further research:

1. How to find out whether students form a long-term memory of the taught prefixes and roots?

2. How to determine that students use the vocabulary learning strategy to the extent they need to improve their reading comprehension.

Taking the teaching time and students' participation time into account, the results in this study are manifest that the etymology instruction has positive influence on students' learning both in vocabulary and learning within a limited time. To help students create long-term memory with prefixes and roots in word formation, specific teaching materials and design, such as matching cards or memory-related activities are needed to facilitate class teaching and enhance students' participation so that the teacher can better observe students' exertion of the strategy in activities run in class. With the ultimate goal of improving students' efficient learning in vocabulary and reading, more reading comprehension practices and tests should be conducted in different stages of the following classes or courses to elicit needed data with higher credibility for further studies and researches.

In addition, in this study, two groups of different English proficiency were observed and their results were analyzed respectively. With the same instruction in the same course, whether participants of two groups should be instructed with distinct teaching pace and materials wasn't inspected. What's more, other English courses can be regarded as variable factors affecting participants' learning performances. As a result, the etymology instruction can be implemented in more classes to find out whether participants with varied English proficiency do benefit from the learning strategy, and the findings can later be widely integrated into vocabulary courses in EFL learning environment and in turn can be applicable to English proficiency tests. With more researches done in this field, etymology instruction is viewed as feasible and effective and can be properly adopted by teachers and instructors equipped with linguistic background so that more and better vocabulary strategies and teaching materials will be discussed and designed to make EFL class teaching and learning more interesting and effective.

## 7. References

- Bellomo, T. S. (1999). *Etymology and Vocabulary Development for L2 College Students*. TESL-EJ Journal, 4(2), 1-7.
- Bellomo, T. S. (2009). *Morphological Analysis and Vocabulary Development: Critical Criteria*. The Reading Matrix, 9 (1), 44-54.
- Davoudi, M., &Yousefi, H. (2009). *English Vocabulary Made Simple*. Sabzevar, Iran: Ketabesefid.
- Farid, A. (1985). *A Vocabulary Course Book: Prefixes, Roots, And Suffixes for ESL Students*. NJ: Prentice Hall.

- Fekri, A. (2011). *The Effect of Teaching Etymology Strategy on Learning Vocabulary by Iranian Intermediate EFL Learners*. (Unpublished master's thesis). SabzevarTarbiatMoallem University, Sabzevar, Iran.
- Hashemi , M ( 2004 .) *The impact/s of Teaching Word - Formation knowledge in increasing the Nursing Students' Reading Comprehension Ability*. Unpublished MA thesis , Islamic Azad University , Tehran Central Branch, Iran
- Hashemi, M (2011). *A word attack strategy for learning the English vocabulary*. *Procedia - Social and Behavioral Sciences* 28 (2011) 102 – 106.
- Nation, I. S. P. (2001). *Learning Vocabulary in Another Language*. Cambridge, UK: Cambridge University Press.
- O'Malley, M. J., & Chamot, A. U. (1990). *Learning Strategies in Second Language Acquisition*. Cambridge, UK: Cambridge University Press
- Pierson, D. H. (1987). *Using Etymology in the Classroom*. *ELT Journal*, 43 (1), 57-63.
- Read, J. (1997). *Vocabulary and testing*. In Norbert Schmitt and Michael McCarthy, *Vocabulary: Description, Acquisition and Pedagogy* (pp. 303-320). Cambridge: Cambridge University Press.
- Schmitt, N. (2000). *Vocabulary in Language Teaching*. Cambridge, UK: Cambridge University Press.
- Zhou, M. (2010). *On Teaching Vocabulary to Non-English Majors*. *Journal of Language Teaching and Research*, 1(4), 485-487.

## **Small Projects for Jordanian Women's Empowerment**

**Dr. Fadi soud Samawi**

**Associated professor Al- Balqa Applied University**

### **Abstract**

The purpose of this research was to study the extent to which small projects were enabled in the development of Jordanian women in Balqa Governorate. The descriptive approach was used on a sample of (144) beneficiaries of small projects, they were randomly selected, and a scale of women's empowerment in the economic, social, and educational domains was developed, the results indicate the moderate role played by small enterprises in the women empowerment. The study recommends that women entrepreneurs with various scientific levels should be subjected to programs and training courses, including the administrative, financial and marketing aspects of each project.

**Keywords:** woman, small projects.

### *Introduction*

Since the beginning of the 1970s, many institutions and official bodies in Jordan have carried out programs, projects and studies to improve the basic aspects of Jordanian society. The most important of these are the economic fields as the most important pillars of society. Since the society consists of families, through the support of the head of the family itself whether to provide support or grant or loan or training and rehabilitation and create jobs to provide a decent and sustainable living for all members of society.

The small projects have effectively highlighted the role of woman and her economic empowerment, as she acquired skills in new sectors and made her more able to make decisions relating her and her family and stimulate leadership within her as the concept of women's empowerment has become a common concept in most countries, Which is to optimize the use of funds through the decision-making process of investing these funds and to exploit opportunities so that they can have the greatest possible return.

Small enterprises, especially in the rural world and remote areas, are key to increasing exports, expanding the production base and creating new jobs, as well as alleviating the imbalance between the different regions of the country, transforming rural areas into industrial zones, and to achieve justice in the distribution of the country's wealth and national income (Latha & Murthy, 2009), working to solve the unemployment problem, and treating the balance of payments deficit (Mahrouq & Maqableh, 2006).

Women and the development process are two sides of a single coin since development is no longer limited to the rehabilitation and development of society, whether economic or social but also concerned with the fair distribution of these benefits, which provides environmental protection, participation and opportunities for working and decision-making with a view to achieving equality at all stages of development (Wahiba et al,2001).

The empowerment of women is meant to support the potential of women and their ability to influence social institutions that affect their lives (Sayed., 2010), namely, the sense of value and right of women in their families and society as a whole by providing them with appropriate employment opportunities and the impact of this on their psyche and their performance in their families and society, and its reflection on building their community socially, economically, and politically (Khadr, 2003).

A study conducted by Al-Khaza'leh (2009) aimed to identify the role played by small enterprises in empowering women in Mafraq governorate and to clarify the most important problems and difficulties facing women working in small projects. The study sample reached (330) women. The study found that small enterprises play an important role in empowering women through their contribution to strengthening the economic and social status of female entrepreneurs and reducing the problems of poverty and unemployment.

A number of Jordanian universities and charities have highlighted the importance of the role of small enterprises in the empowerment and development of Jordanian women. A workshop entitled "The Role of Small Enterprises in Empowerment of Women" was held at the German Jordan University (2013) for the young women of Naor and Madaba, which showed that small enterprises have a role in supporting economic development in supporting economic development and empowerment of women and the importance of qualifying the training capacity for women participating in the workshop to meet the requirements of the labor market in terms of how to establish and manage small projects because of its importance to find jobs for graduates and relieve pressure on the public sector by absorbing the large number of university graduates, a workshop entitled "Small Projects and Their Role in Economic Development" was held at the University of Jordan (2012) and stressed the importance of women's participation in economic and social activity, which is one of the most important criteria used to measure the progress and development of societies, while the Chairperson of the Association for the Development of Rural Women (2007) stressed the importance of the project to strengthen the role of rural women in the parliamentary system, through the adoption of small productive projects to create jobs to support needy families, raise the level of work and support citizens in improving the social life and development and rehabilitation of women in all regions of the Kingdom.

This research aims at clarifying the role of women and their importance as a basic partner for men in the process of development that is taking place in Jordan by presenting a proposal such as the creation of a council of women's affairs from work in Balqa governorate by employing them and enabling them to practice their real role in the environment through the establishment of many small projects that help to increase household income and reduce the problems of unemployment and poverty and solve problems that may hinder its work and advancement.

### *Research problem*

In order to improve the role of women in work and enable them to practice various activities and works alongside men in the labor market and its fields, so it is necessary to frame this role and work to encourage and practice within the institutional, legal, cultural and social framework appropriate to the nature of women in this environment, the statistics indicate that the participation rate of women in the labor force in Jordan is estimated at (16%) in 2010, and the percentage dropped to (12.6%) in 2014 to reach (14.9%) for the year 2015, as the percentage of women working in the industrial sector doesn't exceed (4%), and the high proportion of educated



women, but they are still in the search for work and this may be due to the lack of a women's employment institution.

In view of the importance of strengthening the position of women in the labor market, it is necessary to provide many institutions for the financing of small projects and support them through official bodies, with a view to reducing unemployment through women's access to equitable opportunities for economic and financial resources and managing it in order to ensure their contribution to economic growth, poverty eradication and the well-being of their families and society, as well as work to provide administrative competencies capable of making this type of projects, hence, the present study attempts to answer the following main question: What is the role of small projects in empowering the Jordanian women?

### *The importance of the research topic*

The importance of the research stems from the importance of the role of women in society as half of society, and because small enterprises have become the focus and attention of most governments of developing countries because of the great role they play in increasing production and job creation, in addition to their significant contribution to increasing economic growth rates, increasing national income, supporting for the gross national product of many countries, and attention to women and their role in the development of society has become an essential part of the development process itself. In addition to their direct impact as they form half of the society and thus half of its productive capacity. They have to contribute to the development process equally footing with men. The importance of this research paper is also that it seeks to identify projects that concern women and try to develop the pros for these projects and alleviate the negatives, as well as focus on small projects that are popular among women to focus future attention on such projects and expand their programs, all of which seek to develop, qualify and improve the capabilities of Jordanian women and enable them to raise their efficiency and improve their economic and social situation.

### *The limits of the research*

The current research limits are represented by the following:

Human limits: Women benefiting from small projects

Spatial limits: Balqa Governorate, Jordan

Time limits: 2015.

### *Research Methodology*

The descriptive approach was used in this research because it suits its purposes.

### *Population and sample of the study*

The study population consisted of all females benefiting from microfinance institutions in Al Balqa governorate, with a total number of (1875) women. The study sample consisted of (150) women, they were selected purposefully. The number of questionnaires returned and valid for the analysis after the distribution process was (144) questionnaires, i.e.(96%) of the actual sample.

Presentation and discussion of the results of the main question: What role do small projects play in empowering Jordanian women?

Means, standard deviations, rank and rate of the responses of the study sample members in the four fields and the overall scale of the role of small projects in the empowerment of Jordanian women in Balqa Governorate were shown in table (1).

**Table (1): means, standard deviations, ranks and rates of the four domains related to the role of small projects in empowering Jordanian women in Balqa**

Domain	Mean	SD	Rank	Rate
Economic domain	2.65	.20	1	Moderate
Social domain	2.47	.22	4	Moderate
Cultural domain	2.49	.19	3	Moderate
Educational domain	2.62	.18	2	Moderate
Total	2.56	.17	Moderate	

Table (1) shows that all areas related to the role of small enterprises in the empowerment of Jordanian women have obtained a moderate degree through the responses of the study sample members to the specific items of each domain, as the economic domain got the highest average score of (2.65), followed by the educational domain with an average of (2.62), in the third place came the cultural domain with an average of (2.49), the social field ranked fourth and last with an average of (2.47), the total arithmetic mean reached (2.56) and the standard deviation (0.17) with a moderate total score, which shows the importance of the role played by small projects in the empowerment of domains (Economic, social, educational and cultural) for Jordanian women in the governorate of Balqa, this demonstrates the importance of women's participation because they are human cadres that fall under the framework of investment and development to qualify them to push the process of development and catch up with progress. The study agrees with the study of Al-Khaza'leh (2009), which emphasized that small enterprises play an important role in empowering women through their contribution to the strengthening the economic and social status of female entrepreneurs.

### *Recommendations*

Through research, the researcher recommends the following:

1. To empower women to work in the Balqa Governorate community by encouraging women to create small income-generating projects and to enable them to be socially and economically empowered by various financial institutions both on the governmental and private sectors in the context of community traditions and values.
2. To subject women entrepreneurs at various scientific levels to programs and training courses, including the administrative, financial and marketing aspects of each project, for the purposes of renovation and innovation rather than imitating other projects.

*References*

- Al-Khaza'leh, A. (2009) Small Projects and Empowerment of Women, **Unpublished Master Thesis**, Yarmouk University
- Al-Sayed, R. & Mustafa, M. (2010) **Gender and the dimensions of women's empowerment in the Arab world**, Arab Women Organization: Cairo, Egypt
- Khader, A. (2003) The reality of the concept of empowering women, Al-Aluka Network: For more details: <http://www.alukah.net/web/khedr/0/53818/#ixzz4edhmjpyM>
- Latha, K. & Murthy, B. (2009) "Problems of small scale entrepreneurs in Nellore district" **Journal of Chinese Entrepreneurship**, Vol.3 No.1pp, 268-278
- Mahrouq, M. & Maqableh, E. (2006) **Small and Medium Enterprises, Importance and Constraints**, Small and Medium Enterprises Center, Amman, Jordan
- Wahiba, F.; Saeed, S.; Abdullah, F.; & Mikhlaifi, S. (2001) Woman and development and population, **Second National Conference on Population Policies**, Yemen Arab Republic

## **Does Voluntary Integrated Reporting Reduce Information Asymmetry?**

**Dewi Sriani, Vrije Universiteit Amsterdam, Netherlands**

**C. Camfferman, Vrije Universiteit Amsterdam, Netherlands**

### **Abstract**

This study examined the existence of a negative relationship between voluntary integrated reporting and information asymmetry and the size effect as the moderator of this relationship. Using a final sample of 103 firms in Europe and Asia in the period of 2017, the Ordinary Least Square is then performed to analyze the data. The results show that there is the insignificant relationship between the integrated reporting quality and information asymmetry which is captured by the spread. In addition, the insignificant effect of size to moderate this relationship is also found. Additional testing is performed to ensure the primary results. The findings also suggested the same results that in a nutshell, voluntary integrated reporting is not negatively associated with the information asymmetry and insignificant size effect as a moderator variable is also obtained.

**Keywords:** Integrated reporting, voluntary, information asymmetry

### **1. Introduction**

Today, there is a high demand for corporate reporting in the form of environment, social, and governance metrics (Velte and Stawinoga, 2017). While there have been a number of attempts to develop or increase the value relevance of the information established by companies, a novel initiative called Integrated Reporting (<IR>) has the likelihood to change the landscape of corporate reporting (Zhou et al., 2017). Integrated reporting provides a distinct link between financial and non-financial elements, and it integrates Corporate Social Responsibility (CSR) and corporate governance aspects to the strategy formulation and implementation (Velte & Stawinoga, 2016).

The extant research found that voluntary information disclosure is a way to mitigate the information asymmetry problem and lead to better business transparency (Brammer & Pavelin, 2006). Asymmetric information occurred when some investors hold private information about the firms (Akerlof, 1970). Diamond (1985) and Diamond and Verrecchia (1991) predicted that a proper disclosure could reduce the information asymmetry as it is related to the less informed trading. Accordingly, one of the mechanisms to solve the information asymmetry problem is corporate disclosure practice (Verrecchia, 2001).

Currently, the complexity of the business has contributed to the high demand of the disclosure that is not limited to the quality of the financial report, but also the disclosure of corporate governance, sustainability, and other aspects (Maria et al., 2017). The establishment of integrated reporting aims to reduce the clutter of corporate reporting which is sustainability

report by disclosing aspects they consider to be material and useful about the value-creating activities in the short, medium, and long-term into a concise and coherent report (Zhou et al., 2017; IIRC, 2013a).

Although <IR> is a relatively new area of practice and policy, both organizational practices and public policy in this area have evolved rapidly (De Villers et al., 2014). The impact of <IR> has gained a great deal of academic attention (De Villers et al., 2014), although the empirical research related to integrated report benefit to the capital market is relatively scarce (Zhou et al., 2017). Most of the existing research concentrates on the <IR> adoption, not the <IR> quality (Velte & Stawinoga, 2016). The previous studies conducted by Maria et al., (2017), Akker (2017), Martinez (2016), Lee and Yeo (2015) found that <IR> offers more relevant information. Thus the alignment of corporate reporting with the integrated report is negatively associated with the asymmetric information. Barth et al., (2015) also suggested the evidence that <IR> quality reduces information asymmetry as captured in a lower bid-ask spread. On the contrary, Stubbs and Higgins (2014) found evidence that <IR> did not affect a decrease of the level of information asymmetry.

The size effect is becoming an interesting area for research as well, especially whether <IR> gives benefits for small firms, large firms, or both. Larger firms tend to have a higher disclosure level than smaller firms. One reason is that the cost of disclosure for larger firms is lower because of the economics of scale (Lang & Lundholm, 1996). More disclosure delivers more risk for the smaller firms, but on the other hand, disclosing more information will reduce information asymmetry. Therefore it makes the firm shares more attractive to investors and increases its liquidity (Kumar, 2004). Regarding this case, there is still a big question whether <IR> reduces information asymmetry for large firms, small firms, or both. To the best of the author's knowledge, no previous studies as well that have examined the role of size as a moderator to the relationship between the voluntary integrated reporting and information asymmetry.

This research aims to examine the effect of voluntary integrated reporting quality on the asymmetric information and the effect of size on the relationship between integrated reporting and information asymmetry using European and Asian firms. These two continents are chosen because they have the most significant number of firms which voluntarily adopt integrated reporting, Europe has 159 adopters, followed by Asia with 116 adopters.

In a nutshell, the results show that there is an insignificant negative relationship between the integrated reporting quality and information asymmetry. The insignificant result for size effect as moderator variable is found as well. The consistency of these two results is then confirmed by the additional testing by using the different research design. Conclusively, the results after this additional test remain consistent.

This study has several contributions. First, from the literature aspect, this finding contributes to the enrichment of the literature related to the impact of integrated reporting to the market notably the information asymmetry as suggested by the previous researchers (De Villers et al., 2014; Cheng et al., 2014; Akker, 2017). This research also examines the size effect whether <IR> gives the more benefits for smaller firms, larger firms, or both by splitting the sample and using product term (interaction) as well. To the best of author's knowledge there are no previous studies that examine the role of size as a moderator variable to this relationship.

From the research design, this study extends the method to measure the integrated report quality by using content analysis with the current <IR> framework and continuous scoring. Hence, as one step further analysis, this content analysis result is also used to investigate the effect of each integrated report's component on the information asymmetry. This kind of analysis is not found yet in the previous research. Second, there has been a debate on whether <IR> has benefits or not. By suggesting the empirical evidence, therefore this research can give practical insights for the companies whether to make voluntary <IR> adoption or not. These findings are also expected to have valuable regulatory implications for IIRC and the government bodies in each country as well who are concerned with the implementation of integrated reporting.

The remainder of this paper is organized as follows: section 2 discussed a literature review of the effect of integrated reporting on the information asymmetry and how the hypotheses are formulated. It is then followed by the section 3 that reviews the methodology used and section 4 that discusses the empirical findings. In the end, section 5 summarizes the conclusion, limitations, and suggestions for the future research.

## **2. Literature Review**

### **2.1. Adverse Selection Theory**

Investor trade is based on a subset of information. Information asymmetry occurs when some parties gain private information than the others about the firms. It can generate adverse selection problem because the better-informed investors use their private information in their trading activities. Therefore, this different subset of information among the investors yields the difference between the bid and ask price (Stoll, 2000). A proper disclosure policy may alleviate the information asymmetry problem as it is associated with less informed trading (Diamond and Verrecchia, 1991).

Disclosure quality can affect the information asymmetry in two ways (Brown and Hillegeist, 2007). First, disclosure quality changes the behavior of uninformed investors. When higher disclosure quality increases the firm's appearance and reduces the cost of collecting specific information, hence a higher disclosure quality will encourage more trading by uninformed investors (Merton, 1987). Second, disclosure quality alters the incentive to look for private information (Brown and Hillegeist, 2007). The amount of costly private information for investors is diminished in the amount that the firms disclose public information (Verrecchia, 1982).

### **2.2. Integrated Reporting**

#### **2.2.1. Integrated Reporting Framework**

The International <IR> framework includes guiding principles and content elements (IIRC, 2013). The guiding principles consist of seven points, and it underpins the preparation and presentation of the integrated report, inform the content of the integrated report, and how it should be presented. The guiding principles are strategic focus and future orientation;

connectivity of information; stakeholder relationships; materiality; conciseness; reliability and completeness; consistency and comparability.

The integrated report consists of eight content elements and they are linked to each other (IIRC, 2013). These content elements also depend on the individual circumstances of the companies. The eight content elements are :

First, organizational overview and external environment: “ What does the organization do and what are the circumstances under which it operates?”. The integrated report should identifies the firm’s vision and mission and provide the prominence matters, for instance, culture, ethic, and value, the operating structure and ownership, firm’s market positioning and their competitive landscape, and supported by the key quantitative information and the important factors that affect the organization to create the value.

Second, governance: "How does the organization's governance structure support its ability to create value in the short, medium, and long-term?". Integrated reporting should provide the information on how the governance, such as organization's structure, strategic decisions, organization's culture, ethic, and value, etc are connected to organization's ability to create value.

Third, the business model: “What is the organization’s business model?”. This part is essential as indicated by providing an insight about the organization’s system to transform the inputs through their business activities into outputs and outcomes, which is aiming to reach the organization’s goal and create the value. This part could be enhanced by identifying the business model’s element explicitly, a diagram, a narrative flow, or explaining the stakeholder dependencies.

Fourth is risks and opportunities: "What are the specific risks and opportunities that affect the organization's ability to create value over the short, medium, and long-term, and how is the organization is dealing with them?". This component consists of crucial specific risk and opportunities coming from internal, external, or the mix of these two.

Fifth, it is related to the strategy and resource allocation: “Where does the organization want to go and how does it intend to get there?”. An integrated report should identify the organization's objective in the short, medium, and long-term, the resource allocation policy, and the linkage between the strategy and resource allocation, including how they relate to the business model and what the organization's competitive advantage that can enable them to create the value.

Sixth, it depicts performance: “To what extent has the organization achieved its strategic objectives for the period and what are its outcomes in terms of effects on the capital?”. An integrated report should identify the quantitative and qualitative information about the organization’s performance, for instance, target and risk opportunities, organization’s effect on capital, and the linkage between the past and current performance, and also Key Performance Indicators (KPIs).

Seventh, it describes the outlook: “What challenges and uncertainties are the organization likely to encounter in pursuing its strategy, and what are the potential implications for its business model and future performance?”. An integrated report should provide the insights

into the anticipated changes and its transparent analysis, including the potential implications to the future performance.

Eight, it provides a basis of preparation and presentation: “How does the organization determine what matters to include in the integrated report and how are such matters quantified and evaluated?”. An integrated report should consist of the summary of the organization’s materiality process and the key judgments.

### 2.3. Hypotheses Development

Given the recent development of <IR>, there is still a scarcity of the research in this area (De Villers et al., 2014) particularly on the effect of voluntary integrated reporting on the information asymmetry. Some previous studies conducted by Martinez (2016) and Lee and Yeo (2015) found that in the mandatory <IR> adoption in The Johannesburg Stock Exchange (JSE) in South Africa, <IR> reduced the information asymmetry because it enhanced the information transparency. In the voluntary context, a number of the researchers also suggested that voluntary integrated reporting is negatively associated with information asymmetry because it is crucial for an efficient capital market (Healy & Palepu, 2001).

Maria et al., (2017) found the existence of a negative association between the integrated reporting and the information asymmetry because those companies that voluntarily disclose the integrated information provide a higher amount of information to the market. Another study is conducted by Akker (2017). He investigated the <IR> effect in the 29 Northern- American listed companies and their 32 control group in 2010-2015 and suggested the evidence that <IR> provides more relevant information.

The author finds 1 research only that voluntary <IR> has an insignificant effect on the asymmetry information. This study is performed by Martinez (2016) in 96 pairs of treated and control firms. He also used spread and a dummy variable for <IR> and found that <IR> has an insignificant effect on the information asymmetry. Based on these theoretical arguments, the hypothesis is:

H1: The quality of the firm’s voluntary integrated reporting is negatively associated with information asymmetry problem.

Previous research also suggested that size is positively associated with disclosure level (Ahmed & Courtiz, 1999; Eng & Mak, 2003). Larger companies tend to have a higher disclosure level than smaller companies. One reason is that the cost of disclosure for larger firms is lower because of the economics of scale (Lang & Lundholm, 1993), they have more expertise and resources as well than the smaller ones (Kolsi, 2017). Therefore, there is no incentive for smaller companies to voluntarily disclose additional information when they find that the benefits did not outweigh the cost (Kolsi, 2017). A Firm size is related to the amount of information available. Myers and Majluf (1984) pointed out that the information asymmetry is not as severe in big firms. However, the information cost is lower than in the small firms. Hence providing a greater volume of disclosure in large firms will lower the adverse selection and information asymmetry.



The author did not find the previous research that investigates the size effect to moderate the relationship between the integrated reporting and information asymmetry. Based on this above explanation, there is a possibility that firm size can moderate the relationship between voluntary integrated reporting quality and information asymmetry. Hence, the second hypothesis is formulated below:

H2: Firm size moderates the relationship between the voluntary Integrated Reporting quality and information asymmetry.

### 3. Methodology

#### 3.1. Research Method

This research used the mixed method. In data collection stage, the author used a qualitative method by content analysis for assessing the integrated reporting quality. This data and other financial data are then analyzed with Ordinary Least Square in STATA. Regression assumption is also tested especially for the data normality and consider the skewness between +2 and -2 (George and Mallery, 2010), heteroscedasticity, and multicollinearity problem.

#### 3.2. Sample

The final sample in this study is 103 firms which are comprising of 80 European firms and 23 Asian firms which publish integrated report 2016. The effect on the information asymmetry is examined in the subsequent 3 quarters after the publication of integrated report 2016; therefore there is 309 observation. Assuming the firm's integrated report publication is on March 2017, hence the effect of <IR> is investigated on June 2017 (quarter 1), September 2017 (quarter 2), and December 2017 (quarter 3). After checking the availability of data on March 2018 (quarter 4), most of them are not available, hence this study uses 3 quarters only after integrated report publication. The year 2017 is chosen in order to get the recent data and <IR> framework is relatively a new area which is officially launched in March 2014. The integrated reporter data are retrieved from the IIRC official website, meanwhile, for the financial data are retrieved from Thomson Reuters Datastream. The sample excludes the financial institutions because they have different nature (Chelcele et al., 2012). The selected criteria are the companies which adopt the integrated reporting in or before 2016 and have no omitted data for all variables.

#### 3.3. Model and Operational Definition

The first research question is to examine the relationship between integrated reporting quality and the information asymmetry. Accordingly, the author proposes this model 1 to test the first hypothesis:

##### Model 1:

$$\text{Spread}_{it} = \beta_0 + \beta_1 \text{IRQ} + \beta_2 \text{Size}_{it} + \beta_3 \text{Leverage}_{it} + \beta_4 \text{Growth}_{it} + \beta_5 \text{Profitability}_{it} + \beta_6 \text{LNPrice}_{it} + \beta_7 \text{Revenue}_{it} + \beta_8 \text{OCF}_{it} + \beta_9 \text{Country} + \varepsilon$$

The core variable in model 1 is integrated reporting quality (IRQ); therefore it is expected to be a significantly negative coefficient. A negative coefficient indicates that integrated reporting quality can reduce the information asymmetry. For testing the second hypothesis, the product term IRQ\*size is used to capture the size effect for the relationship between the integrated reporting quality and information asymmetry. The coefficient of IRQ\*size is expected to be significant as well. The model 2 below is used to examine the hypothesis 2.

### Model 2:

$$\text{Spread}_{it} = \beta_0 + \beta_1 \text{IRQ} + \beta_2 \text{Size}_{it} + \beta_3 \text{IRQ} * \text{Size} + \beta_4 \text{Leverage}_{it} + \beta_5 \text{Growth}_{it} + \beta_6 \text{Profitability}_{it} + \beta_7 \text{LNPrice}_{it} + \beta_8 \text{Revenue}_{it} + \beta_9 \text{OCF}_{it} + \beta_{10} \text{Country} + \varepsilon$$

This study used spread to measure the information asymmetry. Spread is calculated by the quarter average of the ratio of the daily closing bid-ask spread to the closing price for firm *i* in quarter *t* in the fiscal year 2017 multiplied by 100. This study computed spread quarterly which is different from the previous research that used annual spread (Martinez, 2017).

The quality of <IR> is an independent variable used in this study. Some of the recent studies used a dummy variable to measure <IR> (Akker, 2017; Maria et al., 2017). Integrated Reporting quality is captured by the alignment of an integrated report with the <IR> framework following the previous study (Zhou et al., 2017). The author used total Integrated Reporting Quality's score (IRQ) derived from International Integrated Reporting Framework issued by the IIRC.

This paper extends the previous research by: *first*, using IIRC framework 2013 as the most current thinking of <IR> while the previous research using the Prototype IR framework issued in 2012 (Zhou et al., 2017). *Second*, before content analysis is performed, the author firstly construct a coding framework from International <IR> Framework and then employ an independent review from Integrated Reporting expertise including academic personnel and practitioner from EY. The independent reviewer is asked to comment on the appropriateness and completeness of the coding framework.

The current International <IR> framework includes eight content elements and guiding principles (IIRC, 2013). Instead of using a binary variable (1 and 0, 1 means the components exist in the firm's integrated report, 0 is otherwise), this study extends the method used by Zhou et al. (2017) by using continuous scoring to deeper analyze and capture more IRQ score's variation. The author used 0,1,2: 0 means the firms do not mention the <IR> component in their report, 1 means they already mentioned it but with the limited explanation, and 2 means they clearly mentioned and supported with an extensive explanation (Aktas et al., 2013). The finalized coding framework has 30 components and 1 guiding principle (please refer to Appendix 1), thus the maximum total score of integrated report quality (IRQ) is 67.

The higher the total score of <IR> implies that the companies report is more aligned with the <IR> framework. So it will increase the information transparency and reduce the information asymmetry. Thus, IRQ is expected to be a negative coefficient. However, there is also a possibility of subjective nature for the coding process, therefore the content analysis should be carefully done.

This study used some control variables as they are considered important in determining the information asymmetry. Accordance with Maria et al., (2017), Akker (2017), Martinez (2017), and Ferrero et al., (2015), this study used size, leverage, growth, profitability, LNPrice, revenue, Operating Cash Flow (OCF) and the country as the control variables.

Size is measured by the natural logarithm of total assets (Ferrero et al., 2015; Akker, 2017). Leverage is calculated by dividing total liabilities with total assets (Lang et al., 1996). Growth is defined by the market to book ratio (Akker, 2017; Ferrero et al., 2015). Profitability is calculated by dividing net income before taxes by book value of shareholder equity (Akker, 2017). LNPrice is the natural logarithm of the adjusted price. Revenue is measured by net revenue divided by total assets and OCF is also defined as the Net Operating Cash Flow divided by total assets. Country is dummy variable, 1 means European firms, 0 is Asian firms.

## 4. Result and Discussion

### 4.1.Descriptive Statistic

Table 1 depicts the descriptive statistic for quarter 1 in June 2017 (assuming the publication of annual report 2016 on March 2017). The other quarters have the similar results.

**Table 1.** Descriptive Statistic (Quarter 1: June 2017)

Variable	Obs	Mean	Std. Dev	Min	Max
Spread	103	0.131288	0.1996644	-0.5984	0.9898
IRQ	103	44.03786	7.218754	22	61.5
Size	103	7.637582	1.035006	4.8927	10.0864
Leverage	103	0.583609	0.2089893	0.0506	1.3412
Growth	103	2.615825	2.296395	-0.37	14.39
Profitability	103	0.0599155	0.0579197	-0.1515	0.2784
LNPrice	103	5.162766	2.378093	-2.9004	9.6274
Revenue	103	0.7564282	0.572258	0	2.8611
OCF	103	0.0938835	0.078065	-0.0879	0.3832
Country	103	0.776699	0.4184949	0	1

Table 1 shows that there is no high difference for spread, size, leverage, growth, profitability, LNPrice, revenue, and Operating Cash Flow (OCF) as indicated by a low standard deviation. Meanwhile, the high variation of Integrated Reporting Quality (IRQ) is obtained. The

mean of IRQ is 44,03786 with the minimum value of 22 and the maximum value of 61,5. This considerable variation of IRQ can be due to the <IR> framework adopts a principle-based to strike a proper balance between the prescription and flexibility for firms, while allowing for comparison across the organizations to provide the information (Lee and Yeo, 2015). Hence, each firms have discretion and latitude for <IR> disclosures based on their organizational circumstances.

**Figure 1.** The Average of IRQ Score

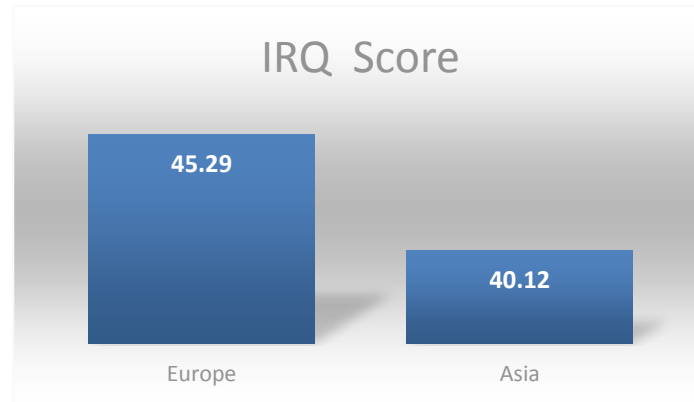
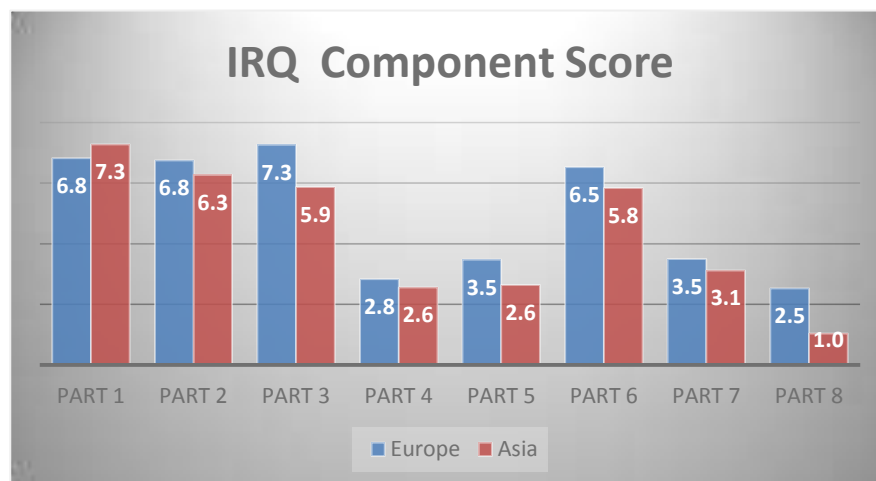


Figure 1 presents the average IRQ scores for European and Asian firms. Overall, this figure shows that the European companies have a higher score than the Asian firms. One of the reason is they have a more extended page in their annual report which is more than 100 pages. Another reason is that the firms have discretion and latitude for <IR> disclosures that they consider essential to portray their business and provide useful information for the market.

**Figure 2.** The Average of IRQ's Component Score



**Note Part 1:** Organizational overview and external environment; **Part2:**

Governance; **Part 3:** Business model; **Part 4:** Risk and opportunities; **Part 5:** Strategy and resource allocation; **Part 6:** Performance; **Part 7:** Outlook; **Part 8:** Basis of preparation and presentation.

In general, this figure clearly presents that European firms outweigh the Asian firm in mostly IRQ's component disclosure, except for part 1 only which is related with the organizational overview and external environment. The substantial difference is witnessed in part 3 (the difference is 1.4) and part 8 with the difference of 1,5.

Table 2 below provides Pearson correlation between variables in this regression model particularly for quarter 1. The correlation values here are significant at the 5% level. This table shows the negative correlation between Integrated Reporting Quality (IRQ) and spread (-0.03191). It means that the spread becomes smaller with 0.03191 when the firm's Integrated Reporting Quality (IRQ) increase, although it is not significant.

**Table 2.** Pearson Correlation for Quarter 1 (June 2017)

	Spread	IRQ	Size	Leverage	Growth	Profitability	LNPrice	Revenue	OCF	Country
Spread	1									
IRQ	-0.032	1								
Size	-0.264*	-0.222*	1							
Leverage	0.066	0.065	-0.158	1						
Growth	-0.069	0.134	-0.200*	0.103	1					
Profitability	0.1888	0.040	-0.001	0.001	0.016*	1				
LNPrice	-0.337*	0.076	0.369*	-0.376*	0.134	0.098	1			
Revenue	-0.133	-0.118	-0.314*	0.183	0.463*	0.079	0.273	1		
OCF	-0.141	-0.036	-0.148	-0.090	0.146*	0.353*	0.079	0.273*	1	
Country	0.064	0.309	0.643	0.211	0.137	-0.425	-0.425	-0.024	0.038	1

## 4.2. Results and Discussion

#### 4.2.1. Findings

This section presents the performed regression to examine the hypothesis 1 and 2. Table 3 depicts the hypothesis 1. It shows that the F-statistic for quarter 1 and 2 remains significant with the R-Squared of 32.74% ( $p$ -value < 0.01) and 30.34% ( $p$ -value < 0.1), however it is not significant for quarter 3. The core variable of interest here is IRQ. The result of model 1 provide the finding that there is the existence of a negative association between the Integrated Reporting Quality (IRQ) and the information asymmetry in quarter 1 and 2 (the coefficients are -0.0013898 and -0.0056745, respectively), but it is not significant.

**Table 3.** Regression result for hypothesis 1

Variable	Quarter 1 (June)	Quarter 2 (Sept)	Quarter 3 (Dec)
IRQ	-0.0013898 (0.0021469)	-0.0056745 (0.0081505)	0.000422 (0.0083853)
Size	-0.0913165*** (0.0276106)	-0.2075346* (0.1022735)	-0.0751567** (0.0379158)
Leverage	-0.0062870 (0.1278477)	-0.5107703 (0.6561860)	0.2163700 (0.4913581)
Growth	-0.0042871 (0.0080155)	0.0054035 (0.3529400)	-0.0423717 (0.0387062)
Profitability	1.131551*** 0.4766291	4.753526* (2.3932530)	3.5535530** (1.8696680)
LNPrice	-0.0233323*** (0.0077876)	-0.0375136* (0.0261757)	-0.05701490** (0.0251906)
Revenue	-0.0808114*** 0.0372060	-0.4361064** (0.2107946)	-0.0904875 (0.0814407)
OCF	-0.6373874* (0.4248605)	-3.61168* (2.6669580)	-0.9603574 (1.3500710)
Country	-0.1776971***	-0.1396192	-0.2860242**

	(0.0550268)	(0.2236778)	(0.1560276)
Cons.	1,216,452	-2.916224	1.134971
	(-0.3352244)	(1.3153070)	(-0.5225813)
Number of obs	103	103	103
F Statistic	3.71***	1.84*	1.22
R-Squared	0.3274	0.3034	0.1646
Prob > F	0.0005	0.0712	0.295

**Notes:** \*\*\*, \*\*, \* indicates significance at the 0.01, 0.05 and 0.10 level (1-tailed test), respectively. Cell statistics are unstandardized coefficients and standard error.

Table 4 describe the result for hypothesis 2. In general, table 4 shows that the F-statistic model in quarter 1 is significant with R-squared of 33.05% ( $p$ -value < 0.01), however for the rest of quarters remain insignificant. For the core variable here, IRQ\*Size in quarter 1 has a positive coefficient (0.0021804), but it is not significant. We first found in the model 1 that there is no significant relationship between the IRQ and spread, then in the model 2, we find an insignificant coefficient as well for IRQ\*Size. Therefore, it means that the firm size does not have moderator effect.

**Table 4.** Regression result for hypothesis 2

Variable	Quarter 1 (June)	Quarter 2 (Sept)	Quarter 3 (Dec)
IRQ	-0.0183203 (0.0238579)	-0.0324602 (0.0975763)	-0.0564739 (0.0768362)
Size	-0.1904225 (0.1457549)	-0.3643235 (0.6203451)	-0.4360333 (0.4711033)
IRQ*Size	0.0021804 (0.0030175)	0.0034419 (0.0120900)	0.0072780 (0.0094577)
Leverage	-0.0126126	-0.5206559	0.1862531

	(0.1315547)	(0.6775039)	(0.5210170)
Growth	-0.0042977	0.0055274	-0.0398758
	(0.0080484)	(0.3514910)	(0.0375883)
Profitability	1.123142**	4.738808*	3.4408990*
	(0.4829880)	(-4.7338808)	(1.9585050)
LNPrice	-0.0225014***	-0.0362009	-0.0510048**
	(0.0080831)	(0.0267573)	(0.0249351)
Revenue	-0.0827269**	-0.4393123**	-0.1203574
	(0.0388680)	(0.2156312)	(0.0901966)
OCF	-0.6487968	-3.6302640	-1.0474680
	(0.4197823)	(2.6565750)	(1.2513260)
Country	-0.1844782***	-0.1504286	-0.3441040**
	(0.0546700)	(0.2282417)	(0.1372294)
Cons.	1.9968820	4.1509490	4.0242820
	(1.2058140)	(5.3174720)	(4.0713340)
Number of obs	103	103	103
F Statistic	3.37***	1.63	1.24
R-Squared	0.3305	0.3040	0.2738
Prob > F	0.0009	0.1102	0.1706

**Notes:** \*\*\*, \*\*, \* indicates significance at the 0.01, 0.05 and 0.10 level (2-tailed test), respectively. Cell statistics are unstandardized coefficients and standard error.

#### 4.2.2. Discussion

This result of hypothesis 1 is in line with the previous researcher, Martinez (2016) who suggested that there is the insignificant effect of voluntary <IR> adoption on the information asymmetry. His research was applied in 96 paired non-JSE listed firms during the period of 2011 and 2014. However, these findings contradict the previous results performed by Maria, et al



(2017) and Akker (2017) who conclude that voluntary integrated reporting significantly reduce the information asymmetry. The different research design is found as well. From the adverse selection theory, this insignificant result also could not deliver the evidence that managers view the corporate information to reduce information asymmetry and avoid the cost of adverse selection (Maria, et al., 2017)

Although this finding is not significant and different with the 2 previous studies, this result should be interpreted carefully due to some reasons for this discrepancy. It could be:

First, three main differences in this research design could clarify this discrepancy. The 3 previous studies (Maria et al, 2017; Akker 2017; Martinez, 2016) use dummy variable to capture the Integrated Reporting <IR>, meanwhile content analysis is performed in this research for assessing <IR> quality. There is also the difference for spread measurement. Akker (2017) used the annual spread. Meanwhile, this study used the quarter spread. This study also used cross-section data in 2017 for 103 firms, but examine the <IR> effect in the subsequent 3 quarters in 2017 after 2016 integrated report publication (assuming the publication of 2016 report is on March 2017). These three different research design might yield the different effect. Besides that, some companies have a missing value in their daily bid-ask price. Although the author has tried to solve it by using winsorization, these values could potentially affect the results as well.

Second, the <IR> concept is still relatively new in the capital reporting trend. The IIRC published its final <IR> framework in December 2013; hence it still needs a long journey. Moreover, it is still voluntary adoption in the European and Asian context, hence the market might not pay considerable attention to this reporting trend.

Third, most of the sample are multinational firms that already had a high information environment before the adoption of Integrated Reporting, hence it becomes difficult to capture the <IR> effect. This circumstance is different with some of JSE firms in South Africa, particularly the firms with a low information environment before the <IR> adoption, therefore <IR> significantly affect the market (Zhou, et al 2016; Lee and You, 2015).

This insignificant result presented here, therefore reject the hypothesis 1 stating that the quality of a firm's voluntary integrated reporting is negatively associated with the information asymmetry problem.

To the best of the author's knowledge, since this is the first research that examines the effect of size in the relationship between the integrated reporting quality and information asymmetry, hence the author cannot compare this result with the previous findings in the same field. For this insignificant result in this study, the reason might be similar to the previous result in testing the hypotheses 1. Based on this result, hypothesis 2 is rejected.

### **4.3. Additional Analyses**

In this next section, the additional analysis is performed to gain evidence, notably how the core regression coefficients (IRQ) behave when the regression specification is modified. First, the regression analysis is performed by testing each IRQ's component on the information asymmetry in all 3 quarters both in 3 firm's grouping: all firms, large firms, and small firms.

Hence it leads to 72 testing (3 firms group \* 3 quarters\* 8 IRQ's part). Table 5 summarizes the regression result.

**Table 5.** Summary of IRQ's component effect on the spread

IRQ	All Firms			Large Firms			Small Firms		
	Q1 (June)	Q2 (Sep)	Q3 (Des)	Q1 (June)	Q2 (Sep)	Q3 (Des)	Q1 (June)	Q2 (Sep)	Q3 (Des)
Part 1	-.**	-.*	-	-	-	-	-	-	-
Part 2	-	-	-	+	-	+	-.*	-	-
Part 3	+	+	+	+	+	+	+	+	+
Part 4	+	+	+	-	-	-	+	+	+
Part 5	+	-	-	-	-	+	-	-	-
Part 6	+	+	+	-.**	-	-	+	+	+
Part 7	-.**	-	-	-	-	+	-.**	-	-
Part 8	-	-	+	-	-	+	-	-	+
<p><b>Note: Part 1:</b> Organizational overview and external environment; <b>Part2:</b> Governance; <b>Part 3:</b> Business model; <b>Part 4:</b> Risk and opportunities; <b>Part 5:</b> Strategy and resource allocation; <b>Part 6:</b> Performance; <b>Part 7:</b> Outlook; <b>Part 8:</b> Basis of preparation and presentation.</p> <p>+ - is the coefficient sign.</p> <p>***, **, * indicates significance at the 0.01, 0.05 and 0.10 level (1-tailed test)</p>									

In general, table 5 clearly shows that most of the regression results have an insignificant coefficient. Some parts have significant results, for instance part 1 quarter 1 and quarter 2 in all firms. It could be that the integrated report, especially for this part has a potential to provide a valuable information to the market, hence it diminishes the information asymmetry. However, the significant result here is less than 10% for all test performed (6 out of 72 testing), therefore it is not material enough to support the hypothesis 1. Moreover, there is also a potential for the coincidental result, hence hypothesis 1 is rejected.

In the next step, to examine the hypothesis 2, following Embong, et al (2012), the sample is divided into 2 categories based on their median: large firms (51 firms or 103 observations) and small firms (52 firms or 156 observations). Those above median are classified

as large firms and below the median is small firms. To ensure that these 2 groups are distinct, the *t-test* is performed for the proxy of size namely log of total assets. The result shows that the two groups are significantly different.

Overall, these additional results reveal the same finding that there is no significant negative relationship between the Integrated Reporting Quality (IRQ) and information asymmetry in the two groups (table 6 and 7). But the difference here is that the effect of IRQ for large firms is negative in the quarter 1 after the annual report publication, then it turns to be positive in the third quarter (table 6). For small firms, the IRQ's effect remains negative in quarter 1 only, however, it is not significant as well (table 7). Besides that, the F-statistic model is significant at 5% in the first quarter only. All in all, this findings confirm the main results for rejecting the hypothesis 2.

**Table 6.** Regression result for large firms

Variable	Quarter 1 (June)	Quarter 2 (Sept)	Quarter 3 (Dec)
IRQ	-0.0006769 (0.0026888)	-0.0090909 (0.009518)	0.0009174 (0.0022215)
Leverage	-0.1355492 (0.117855)	-1.291937* (0.7175944)	-0.0764502* (0.0520756)
Growth	0.0193296 (0.0157328)	0.0983765 (0.0911366)	0.0148704** (0.0061791)
Profitability	0.2983397 (0.5848979)	2.592915 (3.833917)	0.0152131 (0.274851)
LNPrice	-0.0123549 (0.0110632)	-0.006734 (0.0318122)	-0.0212895** (0.0104308)
Revenue	-0.1374062*** (0.0412253)	-0.7686907** (0.3613114)	-0.0105098*** (0.0004734)
OCF	-0.6535198** (0.2717905)	-4.612473** (2.412627)	-0.339498 (0.1119689)
Country	-0.0878317** (0.0493376)	0.1175238 (0.1552459)	-0.01205996 (0.0439416)
Cons.	0.4076258 (0.131328)	1.664837 (0.7328427)	0.3045641 (0.0944997)
Number of obs	51	51	51
F Statistic	4.18***	1.05	2080.75***
R-Squared	0.4433	0.6388	0.8266

Prob > F      0.0010      0.4141      0.0000

**Notes:** \*\*\*, \*\*, \* indicates significance at the 0.01, 0.05 and 0.10 level (1-tailed test), respectively. Cell statistics are unstandardized coefficients and standard error.

**Table 7.** Regression Result for Small Firms

Variable	Quarter 1 (June)	Quarter 2 (Sept)	Quarter 3 (Dec)
IRQ	-0.0017051 (0.0027743)	0.0030147 (0.0158445)	0.0026183 (0.0179588)
Leverage	-0.0643368 (0.2065714)	-0.3527762 (0.9179036)	-0.0700045 (0.7723973)
Growth	-0.0152704 (0.0152559)	-0.0243128 (0.0353818)	-0.0375658 (0.0537033)
Profitability	0.9184161 (0.7807462)	2.361237 (3.062338)	3.474076 (3.034906)
LNPrice	-0.0415323** (0.0169584)	-0.101375** (0.0524053)	-0.0954107 (0.0547622)
Revenue	0.0222185 (0.0489186)	0.0651321 (0.1081401)	-0.0574589 (0.1176534)
OCF	-0.0067189 (0.776848)	0.402458 (3.637476)	-1.071954 (3.393429)
Cons.	0.44714 (0.1954738)	0.7006199 (1.085566)	0.5773643 (1.102503)
Number of obs	52	52	52

F Statistic	2.81**	0.98	1.11
R-Squared	0.2754	0.1377	0.143
Prob > F	0.0164	0.4545	0.3759

---

**Notes:** \*\*\*, \*\*, \* indicates significance at the 0.01, 0.05 and 0.10 level (1-tailed test), respectively. Cell statistics are unstandardized coefficients and standard error.

---

## 5. Conclusion

This research examined the existence of a negative relationship between voluntary integrated reporting and information asymmetry for 103 firms in Europe and Asia in 2017. The results show that there is an insignificant relationship between the integrated reporting quality and information asymmetry which is captured by the spread. There is no significant effect as well for size effect to moderate the relationship between the integrated reporting quality and information asymmetry. The consistency of these two results then is confirmed by the additional testing by using the different research design. For the hypothesis 1, the IRQ's component test is performed. It is then followed by dividing the sample into large and small firms to test the hypothesis 2. Conclusively, the results after this additional test remain consistent that there is no significant negative relationship between the integrated reporting quality and information asymmetry. Insignificant findings are also found for the size effect to moderate the relationship between the integrated reporting and information asymmetry.

These findings could be relevant for some aspects of the literature especially in the research design where this study used a continuous variable based on detailed content analysis instead of a dummy variable to measure the integrated reporting quality. Other innovations of this study are that it investigated the <IR> effect on a quarterly instead of an annual basis and that it includes separate analyses for components of IRQ. For the practical perspective, as the significant effect are not seen yet, this result can give the companies insight on whether to implement the integrated reporting immediately or not. The companies don't need to adopt immediately because it does not diminish a bid-ask spread. However, these results should be complement with the other research in the future, hence it can provide more evidence that will be beneficial for companies. Investors who are interested in the integrated reporting also can consider this finding in their decision making. Last but not least, the IIRC as the regulator body can conduct some improvements to see how the integrated reporting is going on, particularly in the voluntary context. As the <IR> concept as relatively a new area for the corporate reporting in the world, the governments are given the consideration and insight as well whether to encourage the companies in their countries to adopt this trend immediately or not.

The results of this research should be seen in the light of its limitation. First, it used a relatively small sample, 103 firms in 3 quarters in the period of 2017 only, hence there are 309 observations. The generalization aspect should be treated carefully since the sample is relatively small. Second, there is the potential for subjective assessment in the content analysis performed for the integrated reporting quality since the author only did it by her self.

To partially deal with these limitations, further research can expand the sample using Asian, European, or other setting and a longer window. In addition, since this research used 0,1,2 category to assess the integrated reporting quality through the content analysis, the future research can improve this measurement by using 1-5 or 1-7 rating, therefore it can deeper analyze the quality of the integrated reporting. Even, if it is possible, a second assessor can be used to deal with the subjective assessment. Another proxy for information asymmetry, for instance, analyst forecast accuracy and cumulative abnormal return (CAR) can also be used to capture the information asymmetry in the market. Last but not least, IRQ's component testing is also an interesting area to be examined in the future. This study found a consistently negative effect on the organizational overview and external environment (IRQ part 1) to decrease the information asymmetry, although most of the coefficients are not significant. Further research can also investigate which part of the integrated reporting significantly affects the information asymmetry, hence it can deeper provide the evidence of how the integrated reporting as a whole and as a part is going on and affecting the market.

## References

- Aceituno, J.V.S., Ariza, L.R., & Sanchez, I.M.G. (2014). Is integrated reporting determined by a country's legal system? An exploratory study. *Journal of Cleaner Production*, 44, (45-55).
- Ahmed, K. and Courtis, J.K. (1999). Associations between corporate characteristics and disclosure levels in annual reports: a meta-analysis. *The British Accounting Review*, 31 (1): 35-61.
- Akerlof, G.A. (1970). The market for 'lemons': quality uncertainty and the market mechanism. *The quarterly journal of economics*, 84(3): 488–500.
- Akker, M.V. (2017). The association between integrated reporting and information asymmetry (Theses, Erasmus University Rotterdam, Netherlands). Retrieved from [https://research.eur.nl/pub/39317/vdAkker\\_373542.pdf](https://research.eur.nl/pub/39317/vdAkker_373542.pdf).
- Aktas, R. Kayalidere, K. Kargin, M. (2016). Corporate Sustainability Reporting and Analysis of Sustainability Report in Turkey. *International Journal of Economic and Finance*, 5(3), 113-125.
- Barth, M., Beaver, W., & Landsman, W. (2001). The relevance of the value relevance literature for financial accounting standard setting: another view. *Journal of accounting and economics*, 31(1), 77-104.
- Brammer, S. & Pavelin, S. (2006). Voluntary environmental disclosures by large UK companies. *Journal of Business Finance & Accounting*, 33(7-8), 1168-1188.
- Brown, S., & Hillegeist, S.A. (2007). How disclosure quality affects the level of information asymmetry. *Rev Acc Stud*, 12: 443–477.

- Cheelchele, A., Abbasi, E., & Bosra, S.A.H. (2012). Investigating the Relationship between the Probability of Bankruptcy and Firms' Intentional Income Smoothing in Tehran Stock Exchange. *International Research Journal of Applied and Basic Sciences*, 3(5), 1077-1087.
- Cheng, M., Green, W., Conradie, P., Konishi, N. & Romi, A. (2014). The international integrated reporting framework: key issues and future research opportunities. *Journal of International Financial Management & Accounting*, 25(1), 90-119.
- De Villiers, C., Rinaldi, L. and Unerman, J. (2014). Integrated reporting: insights, gaps and an agenda for future research. *Accounting, Auditing and Accountability Journal*, 27 (1):1042-1067.
- Diamond, D.W. (1985). Optimal release of information by firms. *The Journal of Finance*, 40(4): 1071–1094.
- Diamond, D.W., & Verrecchia, R.E. (1991). Disclosure, liquidity, and the cost of capital. *The Journal of Finance*, 46(4): 1325–1359.
- Eng, L.L. and Mak, Y.T. (2003), “Corporate governance and voluntary disclosure”, *Journal of Accounting and Public Policy*, Vol. 22 No. 4, pp. 325-45.
- Ferrero, J.M., Cano, D.R., & Sanchez, I.M. (2016). The causal link between sustainable disclosure and information asymmetry: The moderating role of the stakeholder protection context. *Corporate Social Responsibility and Environment Management*, 23: 319-322.
- George, D., & Mallery, M. (2010). SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 update (10a ed.). *Boston: Pearson*.
- Healy, P.M., Palepu, K.G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31(1): 405–440.
- International Integrated Reporting Council (IIRC). (2013). The International <IR> Framework, available at <http://integratedreporting.org/resource/international-ir-framework/>, accessed 19 January 2018.
- Kolsi, M.C. (2017). The determinants of corporate voluntary disclosure policy: Evidence from the Abu Dhabi Securities Exchange (ADX). *Journal of Accounting in Emerging Economies*, 7 (2): 249-265.
- Kumar, P.C. (2004). Bid-ask spreads in U.S. equity markets. *Quarterly Journal of Business and Economics*, 43 (3/4): 85-111.
- Lang, M., & Lundholm, R. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research*, 31(2): 246-271.
- Lang, M., & Lundholm, R. (1996). Corporate disclosure policy and analyst behaviour. *The Accounting Review*, 71(4): 467–492.

- Lee, K., & Yeo, G. (2015). The association between integrated reporting and firm valuation. *Review of Quantitative Finance and Accounting*, 47(4): 1221-1250.
- Maria, I., Sanchez, G., & Gamez, L.N. (2017). Integrated Reporting and Stakeholder Engagement: The Effect on Information Asymmetry. *Corporate Social Responsibility and Environmental Management*, 24, 395–413.
- Martinez, C. (2016). Does the level of alignment with the Integrated Reporting framework reduce information asymmetry? (Dissertation: University of St. Gallen, Swiss). Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2684784](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2684784).
- Martinez, C. (2016). Effect of the Integrated Reporting on the firm's value: evidence from voluntary adopters of the IIRC framework. Retrieved from [https://www.researchgate.net/profile/Carloz\\_Martinez152/publication/314461013\\_Effects\\_of\\_Integrated\\_Reporting\\_on\\_the\\_Firm's\\_Value\\_Evidence\\_from\\_Voluntary\\_Adopters\\_of\\_the\\_IIRCs\\_Framework](https://www.researchgate.net/profile/Carloz_Martinez152/publication/314461013_Effects_of_Integrated_Reporting_on_the_Firm's_Value_Evidence_from_Voluntary_Adopters_of_the_IIRCs_Framework).
- Merton, R.C. (1987). A simple model of capital market equilibrium with incomplete information. *J. Finance*, 42: 483-510.
- Myers, S.C. & Majluf, N.S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Finance Economics*, 13: 187-221
- Stubbs, W., & Higgins, C. (2014). Integrated reporting and internal mechanisms of change. *Accounting, Auditing & Accountability Journal*, 27(7), 1068-1089.
- Stoll, H. (2000). Presidential address: Friction. *Journal of Finance*, 55 (4): 1479-1514.
- Velte, P., & Stawinoga, M. (2017). Integrated reporting: The current state of empirical research, limitations and future research implications. *J Manag Control*, 28: 275–320.
- Verrecchia, R. E. (1982). Information acquisition in a noisy rational expectations economy. *Econometrica* 50, 1415-1430.
- Verrecchia, R.E. (2001). Essays on disclosure. *Journal of Accounting and Economics*, 32, 91–180.
- Zhou, S., Simnett, R., & Green, W. (2017). Does Integrated Reporting Matter to the Capital Market?. *A Journal of Accounting, Finance, and Business Studies*, 53 (1): 94-132.



**GeoTourism GIS: Case Study Failaka Island, Kuwait**  
**Mohamed Alkhuzamy Aziz**  
**Fayoum University, Egypt**

**Abstract:**

Tourism is today one of the most important themes of the global economy, especially in countries that lack a strong economic fundamentals and relies on natural ingredient in stimulating tourism as one of the main themes of the national economy. Statistics show that tourism constitutes more than 10% of the global operating, employing more than a quarter of a million people, where the Arabic States moved recently to bilateral tourism development it is necessary to take advantage of modern techniques in Arabic tourism development.

The present paper focuses on the role of the historic maps and geographic information systems in the field of tourism, then categorize applications that have been implemented in this area and learn about their features and design. The paper ends by asking an empirical study of GIS technique in construction of tourist geographic information system for Failaka Island in the State of Kuwait as a case study, which focus on themes of tourist information system design and areas of use and how to play it.

**Key words:**

Automated mapping, GIS, Geo-Tourism, Failaka Island, Geography of Kuwait.

**Introduction:**

Geographical studies on economic interest in tourism as an essential element of the foreign trade of any country and represents one of the most important elements for rich and poor alike because of global financial variables that require a diversity of sources of national income and not rely on one element. And the success of tourism in any country depends on how much the government gives attention to the development of tourist services and activities, management and marketing (Dondo, Ch. Et al., 2002, p.197).

Gulf States are in General and particularly Kuwait tourism development goal do, where Kuwait established in 1976 special intergovernmental organ tours "tourist projects company" and the current role is concentrated on the development of tourist activities and events, Failaka Island represents a tourist attractions for internal tourism and is currently in need of tourist development so you can attract foreign tours because they contain historical and cultural heritage since Alexander the great. GIS techniques represent a tourist development modes for its ability to develop tourist information to visitors on hand before making the decision and determine through destination online with maps, photos and information. If the tourist information the way they contribute to revitalize the tourist navigation and then develop tourism resources, and that's what GIS technology. Current research seeks to reveal the applied studies of geographic information system for Failaka Island in the State of Kuwait.

**Previous studies:**

The previous studies related to geographic information systems applications in tourism can be categorized into the following groups:

*Studies in tourism planning:* planning is the most important tourist areas of application of modern technologies to the development of tourism and one of the first studies in this field study (Berry, 1991) about Vergin Islands USA, focusing on how to use geographic information systems to determine the most appropriate locations for entertainment and recreation based on historical and engineering and environmental data. As well as (Boyed & Butler, 1993) devoted to

the Northern Ontario Canada and rely on natural resources and environmental criteria in selecting the most appropriate sites and tourist areas. Examining (Minagowa Tanaka readings, 1998), about the most appropriate tourist sites on the island of Iliok Indonesia, and spatial standards has adopted a variety of land uses. The study of (Van de Knaap, 1999), which was adopted to establish a system to help tourists to choose tourist destination based on the environmental standards of the tourist. The study of (Chen, R., 2002), about the application of GIS on tourism planning and spatial analysis of tourism standards. The study of (Fraster, Y. and Prastacos, 2004), about the application of GIS in planning and management of tourism. The study of (Bas Bores, M.S., 2005), about planning infrastructure services for sustainable tourism in Colorado, where depends on the achievement of the integration between tourism service network, a network of urban contract, tourist interest areas with the aim of achieving sustainable tourism development to exclude cons tourist activities.

#### **Tourist service studies:**

One of the most important studies on portable electronic services such as (Longmatey et al, 2001), the management and operation of tourist services in Ghana, the study of (Biuk-Aghai, 2003), about designing a mobile service system for tourist services and study of (Jovanovic, V. & Njegus, 2008), about tourist service information system components in Yugoslavia. And study of (Plastinin, L. et al, 2009), about the role of GIS in supporting decision makers in Russia and Mongolia. And study of (Xiao, B. et al, 2002), about putting up a portable geographic information system on hand and running the field routing method based on Magellan devices and uses the system in Australia in many activities including emergency services and all kinds of sea and land traffic and cars. The study of (Biuk-Aghai, 2003), about designing a mobile tourist geographic information system that offers many possibilities for all tourist sites and hotels and the field direction and the public transportation network and information on museums and other attractions in Makhau province, China.

#### **Studies on design of multimedia tourist information systems:**

One of the most recent studies in multimedia systems and progress field guidance systems and others, including a study of Greece's Christodoulakis (S. Christodoulakis, et al, 1997), which relates to the construction of a multifunctional tourist geographic information system named Minotaurus, and contains the field guidance systems and audio and video systems, etc. The study (Ouy, B.N. & Phuong, H. L., 2009), which introduces multimodal geographic information system in Viet Nam, including information about tourist sites such as beaches and guest houses, and various services and others, contains audio and video services and instructional text and other video.

The study of (Almer, A. & Stelzl, H., 2007), about the design of geographic information system of Visual multimodal Schladming tourism in Austria, and applied studies are integrated SOA-related and can be operated in a number of ways to get through the compressed cylinders or on their mobile phone or through the Internet. Distinguished studies in this aspect that the study from Nigeria (Ayeni, O.O. et al, 2003), which focuses on building a multimedia tourist geographic information system allows to interact with the system based on spatial data like near a specific location of certain environmental conditions in addition to providing pictures and videos about the selection area to allow for distinguishing the different areas as tourist.

#### **Studies on tourism governmental systems:**

These are systems that take Government style and supervised by government agencies for the purpose of tourism development in the country, including the study of (Dono, Ch. Et al, 2002), about the design of tourism geographical information system of the Republic of Zimbabwe

depends on tourism and natural resource planning, human resources, and tourism marketing. The study of (Allen, J. et al, 1999), about the design and operation of tourist geographic information system for coastal region of the State of South Carolina, which rely on coastal land use and allocation of tourist activities consistent with different parameters.

The study of (Shojaee, D., 2005), about the design of geographic information system for the region of Isfahan Iran, which depends on tourism and natural resource planning standards and archaeological, cultural and religious sites, the system allows the user to select potential tourist spots, historical and religious sites and the shortest way to the hotels proximity to tourist attractions, religious, and determine distances and time periods to move between sites and tourist attractions. The study of (Turk, M. T. Gumusay, readings, 2006), about the design of tourism geographical information system Istanbul in Turkey, which depends on the construction of network analysis systems for tourist services and tourist sites to contribute to reduce periods of tourist mobility. The study of (Kim, D., 2004), about the design of a centralized system for decision support and national tourism in Korea, as it takes into account the regulations and laws governing tourism and offers a national network of tourist information check the flexibility and benefit in tourist services.

#### **Tourist systems on the Internet:**

These studies concentrated basically of the usage of Internet, the study of (Wessel, H. et al., 2006), about the design of tourism geographical information system on the internet for tourism service in Viet Nam, so lets all information about beaches, hotels and tourist information that linked to the environment and natural resources so that the tourist can select destination beforehand. And study of (Kokalj, Z. et al., 2006), about putting up tourist geographic information system for the management of historic sites in the territory of Slovenia, that allows the recognize of the archaeological and historical sites and locations and spaces leading to them and related information in addition to the digital maps and map database based big tourist. The study of (Duran, E. et al., 2004) about setting up tourist geographic information system for the city of the bounty hunter in the southern region of Turkey, overlooking the Mediterranean Sea, on the Web so lets potential geographical enquiry tourist sites and especially the beaches, hotels nearby and environmental characteristics, weather, climate and other information.

#### **Studies on Failaka Island in Kuwait:**

The Failaka Island did not receive sufficient geographical studies except study Mustafa (1988), which represents the only Arabic-language geographical study, which dealt with aspects of regional geographic Island. The study (Alzaher & Aziz, 2004), which relied on my technology geographic information systems and remote sensing in urban planning optimization of Failaka Island. The study of (Aziz, Alzaher & Alotaibi, 2007), about the use of GPS technology in urban centers in different civilizations settlements on Failaka Island, where they allocated all historic sites on the modern map depending on the historical old maps and GPS devices GPS, Failaka Island had many historical studies concerned with historical aspects and effects on the island and subjected to detailed archaeological sites on Failaka Island and mission outcomes and historians around age archaeologist.

Historical scientific publications containing some parts of them on Failaka Island Solomon study Bader (1974) on the Arabian Gulf in the fourth and third millennia BC, and rational study of elephant (1972) on the historical geography of Kuwait, The study of Saif marzooq Al-shamlan (1959) titled the history of Kuwait, that was exposed to Failaka Island as one of the most important historical sites of Kuwait. This along with many foreign studies concerning the history

of Kuwait including Dickson (1956) about Kuwait and her neighbours, the study of Bibby (1961) entitled look at the civilization of Failaka Island.

One of the most important Arabic studies attached to historical documentation of Failaka Island come Canadian studies group (1980, 1993, 1994, 2000), which represent the main current study historical background as the only produce a distinctive Island historical documentation for the island and its attractions, and even made a rare map of approximate locations of ancient villages on the island based on the survey conducted by since 1957 alongside personal interviews of pioneers.

The current study aims to provide some global applications of geographic information systems in the field of tourism development, and then provide a geographic System Guide for Failaka Island in the State of Kuwait as a model of study.

### **Subject of the current study and justification of choice:**

Study focuses on technical application maps and geographic information systems in the field of tourism development with applied study on Failaka Island in Kuwait, where the State relies on three scientific investigations as follows: first section: devoted to showing the importance of maps and geographic information systems in the field of tourism development. Second topic: dedicated to the presentation and discussion of selected global models and identify the themes of design and techniques used. Third topic: dedicated to the design and production of tourist geographic information system for Failaka Island in the State of Kuwait as a paradigmatic Arabic tourism development.

This study lies in the following:

- The role of tourism as a promising economic element in the national income of all the developed and developing world countries.
- Take advantage of modern techniques in applied studies, particularly in the field of Arabic tourism development.
- The historical importance of Failaka Island since ancient civilizations and its role as a commercial crossing between East and West.
- Development of tourism on the island.

### **Study questions:**

The current study raises the following questions:

- what is the importance of new technologies in the development of tourism?
- What are the features of global applications in this area?
- What are the different civilizations that Failaka Island there?
- What are the archaeological sites which are linked to different civilizations?
- What are the real sites of different civilizations centers?
- What are the components of the geographical information system of tourism to the island?

### **Objectives of the study:**

The study aims to achieve the following:

- Discussing previous studies in the field of application of GIS in tourism.
- Discuss areas of maps and geographic information systems in the field of tourism development.
- Discussion of selected global models and how to design.
- Learn to design and produce a form of Arabic tourism development.
- Take advantage of modern techniques in geographic studies.

### **Study approach:**

This study relies on the following approach:

- On inductive documents and writings and historical maps.
- Spatial analysis approach to identify the nearest real archaeological sites in different civilizations until the beginning of the 20th century.
- Employing modern technologies in the production of tourist geographic information system.

**Advantages of the application of GIS in tourism development:**

The advantages can be mentioned as the following aspects:

- Allowing flexibility in the spatial distribution of tourist services, and detailed information and historical and cultural and recreational activities along transportation services.
- Coastal zone management systems development, tourist and recreational programs, and not about tourists flow from administrative matters.
- Support systems for the management of natural resources and wildlife in tourist areas, especially protected areas and nature resources and wildlife properties, besides the regulatory regimes for wildlife conservation and development.
- Enhancement the tourist information management systems, which include all tourist information including hotels, restaurants, clubs, resorts and tourist traffic paths.
- Provide decision support for applied research studies, and relies on the spatial variables standards contribute to making the right decision to avoid negatives that may arise on the movement and flow of tourists, environmental and other disasters in addition to possibilities for evaluating tourist sites and determine suitability for reception of tourism.

**Methodology and data sources:**

This study has been done based on studies published in a field of specialization and field study of the island using GPS systems and data sources, the research methodology can be introduced as follows:

- Published studies on the applications of GIS in tourism at the global level. Historical information and data of historical books and documents about the island.
- Geographic information and data from published books and maps of the island.
- Field survey data using GPS systems are the coordinates for various archaeological sites are extrapolated in geographic information systems and match them to the base map of the island, from the results of an earlier study by researcher with other colleagues.
- Basic map of the island, and contour map, together with published maps on archaeological sites.
- Satellite Images from Landsat 8 of 2017 to help identify the various sites.
- And rely on geographic information systems program known as Arc/GIS 10.5 and GPS MAP software by Garmin GPSMAP Garmin type 276C.

**Study Analysis:**

The importance of maps and geographic information systems in the field of tourism development:

It can articulate the importance of using maps and geographic information systems in the field of tourism development as follows:

- *Contribution to the inventory of tourism resources:* this involves an inventory of natural resources in order to determine their suitability for tourism uses, as well as the areas of land use and infrastructure available.

- *The possibility of spatial analysis to identify suitable sites for tourism projects:* choosing the right location is crucial for the future of business and the degree of attractiveness to tourist activities. Corporate sites or projects must be located within the area to be beneficial not only for business needs, but also to meet consumer needs for tourist activities. Geographic information systems rely mainly on spatial database with geographical features and detailed data that define the most appropriate sites. This is considered one of the most important ways that are used to determine which sites are suitable for the development of tourism. One of the most important studies published in this field that studies of tourism planning (see paragraph previous studies).
- *The possibility of assessing the negative effects of tourism:* geographic information systems can be used to identify spatial effects on different economic sectors and urban areas through spatial and time series analysis and forecasting the size of the cumulative negatives to contribute to the development of strategic plans to address them.
- *Ability to manage and stimulate the flow of tourists:* this involves the use of geographic information systems in identifying major tourist spaces within a specific tourist destination and flows between different destinations. The authorities depend on the implementation of strategic plans for tourism development to high-quality basic information infrastructure.
- *Possibility analysis of spatial relations associated with the use of tourism resources:* this involves the use of geographic information systems with regard to the issue of environmental justice, where it is possible that tourism could not benefit all segments of society.
- *Potential good tourism planning:* based on numerous spatial standards and broad values of weights for each degree of spatial standards on the feasibility of tourism activity and then get alternative or suitable substitutes for land uses.

**Selected global models and identify the themes of design and techniques used.**

**Model of Austria:** (Almer, and A. Stelzl, H.,2007): a geographic information system a multimedia tour was designed at the University of Graz in Eastern Austria, the world's ski tourism " Dachstein Stein" is the highest topographical area on the northern edge of the Alps and reach heights up to 4500 meters above sea level and extends the territory to a distance of 170 km between the villages of Schladming and Ramsau, where receive more than 2 million tourists annually, is the most attractive region for winter tourism in the world, and the annual world Olympiad.

Fig (1) shows the design axes of the system, which relies on integrating digital maps 2D and 3D, Remote Sensing, GPS systems, GPS Navigation Systems, routing systems, Multimedia including sound and pictures of Touristic sites, instructional text, animated maps, Panorama (statues of nature). The system works on all systems of Windows systems and maps, Internet networks and other systems.

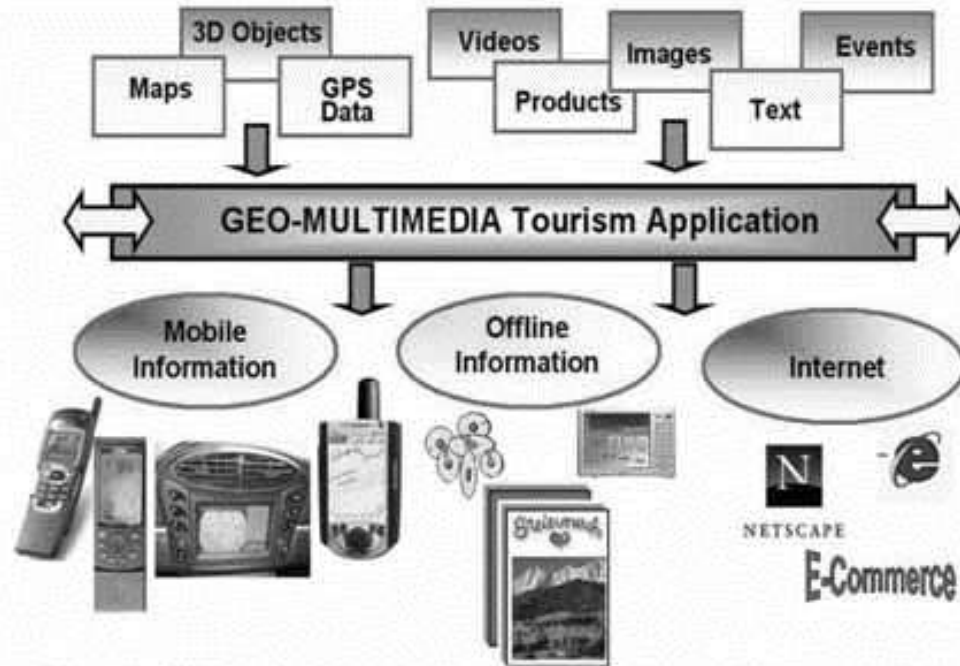


Fig. (1): Geographical information system design axes multimodal tourism Austria.  
source: Almer, and A. Stelzl, (2007)



Fig. (2): Geographical information system output of tourism in Dach Stein, Austria.  
source: Almer, and A. Stelzl, (2007)

Fig. (2) shows major applications offered by the system as follows:

- Panorama ski lines, a written network on stereoscopic background to show deviations in the ski lines path and help tourists to choose the appropriate tracks for fitness level and experience in the sport of skateboarding to avoid dangerous paths.

- Guiding system for hotels and locations where services specification and the nature of the site and its relationship to the transport network.
- Bicycle travel itinerary on the mountain and are beloved sports with tourists and you need to provide a portable guide for grading to guide tourist and avoid losing track.
- Mobile mapping systems, and integrated tourist information systems on mobile devices supported by guidance systems, or portable computers known as "PDA".
- Landscape tourist information systems supported by statues of terrain.
- Tourist guide and integrated systems that enable search for tourist information about the region.

### Model of Turkey (Aydinoghu, A.C. and Yomralioglu, T. (2008):

Is the tourist information system of the Eastern Black Sea Beach Tourism along with renowned historical, have adopted the system design process integrating geographic information systems and remote sensing and automatic mapping systems to produce a sophisticated service tourism system on the Web, information integration process has relied on information modeling methodology for cartographic layers and tourist information and can develop system design axes as follows (Figure 3) :

- Analysis of spatial visualization and extraction of cartographic layers in geographic information systems.
- Cartographic layers modeling based on simplistic approach to information so the system can move between different drawing scales and show informational density map fit the drawing scale.
- Cartographic layers converted to automated publishing style online Internet system GIS and Internet Mapping and linking databases.
- Information enquiry systems, historical and tourist sites show the search result in the form of maps and data, images, etc.

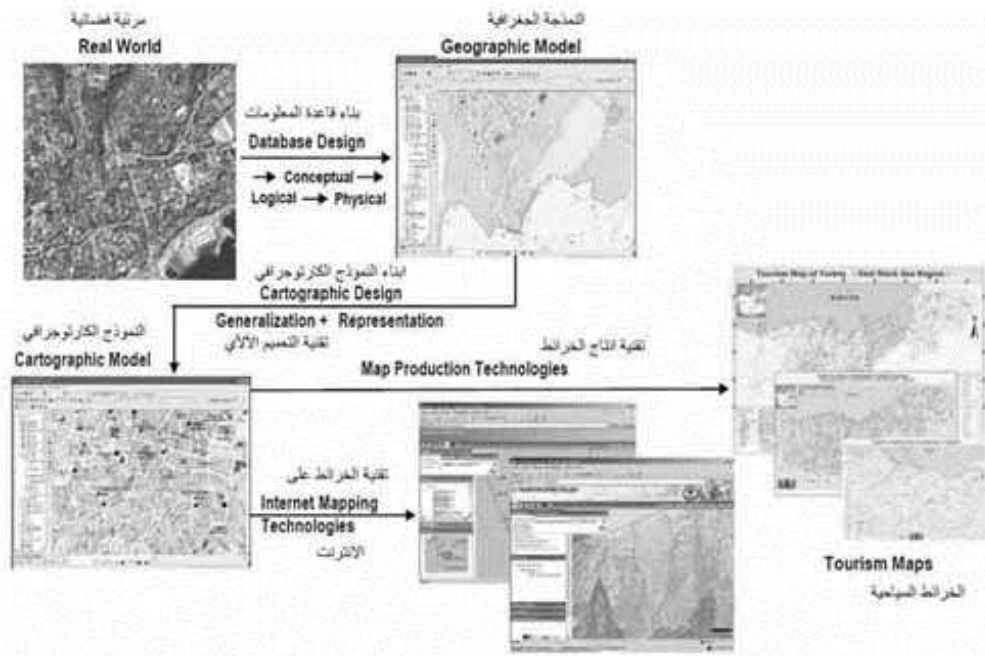


Fig. (3): GIS design hubs in Eastern Black Sea region in Turkey

Source: Aydinoghu, A.C. and Yomralioglu, T., 2008



**Model Viet Nam (Quy, B.N. and Ha, Le.Phuong (2009):**

Is a Government Tourist geographic information system supervised by the Ministry of tourism, production of Hanoi University, available on the Internet to promote tourism throughout Viet Nam including tourist beaches or in cities where there are historic monuments, the system consists of a general interface moves into a series of different interfaces depending on the user's choice as the interface surfaces coastal or inshore, interface for marine tourism, historical tourism interface in addition to the various tourist information on hotels, resorts and other Clubs for recreational activities (Fig. 4).



Fig. (4): geographical information system in Viet Nam

Source: Quy, B.N. and Ha, Le.Phuong, 2009

**Design and production of tourism geographical information system for Failaka Island****Location of Failaka Island:**

Failaka Island is located between the Latitude 23 29 16 and 28 29 North and between longitude 16 48 24 48 10 eastern at a distance of 26 km from the coast of Kuwait City when the old header and 20 km from the top of the floor (Figure 5), and up the island to about 43 km<sup>2</sup>, is the second largest islands of Kuwait in terms of size, it's also the only planet populated since ancient times due to its privileged geographical as input for the Kuwait Bay played A prominent trade between the far East and Mediterranean basin and as a bridge between the maritime trade routes and methods of trade convoys wilderness, marked the site of particular importance to marine trade routes across the River Tigris and Euphrates, where the island play a prominent role in providing food supplies and drinking cruises.

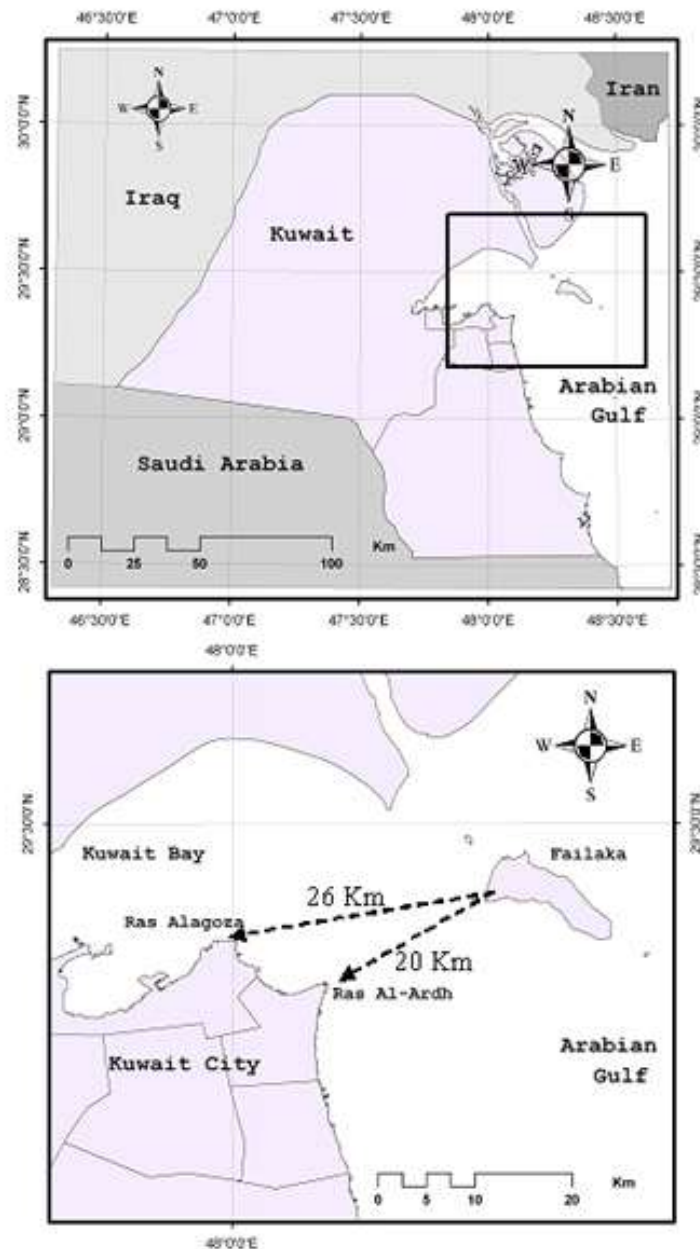


Fig.5: Location map of Failaka Island

### **The origin of the name "Failaka":**

Little Hamad saidan (1972: p 1155) in the "encyclopedia" shortcut "Kuwaiti Faylakah Greek word meaning" White Island ". Salim said (1980: p 15) that the Arabic word "label Faylakah – as stated in the writings of viral Sapphire —" cocoon "is the ancient Arabic pronunciation" misrepresented fligh "meaning muddy land suitable for agriculture, it refers in the same reference that local retelling saying he was passing out of date (falaj) of water torture, gif with the passage of time, and is still visible effects, when Al wa'ab area walmshab in the Centre of the island. Historical sources from her book "from Kuwait" date author Saif marzooq Al-shamlan

(1986: p 94) to open the Housing f Failaka z and open the LAAM ancient Greek meaning happy or unhappy, so atakloa named "Icarus" which means "happy island".

There are historical references to change the name of the island in different time periods, where Khalid Salem (2000:31-33) that the Portuguese called the island "ailhadi" island "means things well or water," asserted that name appear in the French charts in 1692 "Agoda.com Aguada" also appeared in other French maps in 1740 as "aublishah ou Agoada Agoda.com Peluche". All of these labels mean "island rich in freshwater, and agrees with the Arabic name" cocoon "WarGames" today "tharft".

### **Geographic information system design axes for Failaka Island:**

Geographic information database design on the island:

Geographic information database includes the following elements:

- Modern topographic map of the island
- land uses of the Island
- historical maps of the island

Tourist information database design on the island:

Includes tourist information:

- Spatial distribution of archaeological sites on the island by different civilizations
- Photographs from some archaeological sites
- Text information about some archaeological sites

Program interface design:

Program consists of expressive and easy operational capabilities, allowing the following functions:

- For viewing historical sites as the cultures and time periods
- To view the map of space and Visual Basic
- To view historical charts and results of archaeological prospecting missions
- To display text information on each site
- To view important tourist information.

Building an information system to enquire about tourist sites:

The system has the following capabilities:

- Possibilities to inquire about various historical sites.
- Cartographic layers and view detailed information tables for each layer.
- Search for archaeological and tourist information given the spatial location or the given name or historical period or spacing for other sites.
- Others.

Running the System:

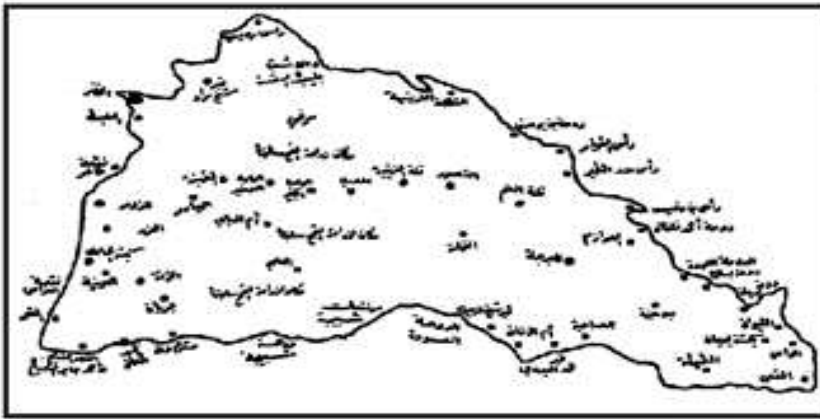
Produce simple operational programme works under Acrobat Reader program trading environment for all users for free on their computers, as well as a sophisticated version of the system immediately below the Arc environment/Reader 9.3.1 is a free program available to all users and can be downloaded to any computer from prisoner Foundation website : <http://www.esri.com/software/arcgis/arcreader/download.htm>, so the system can be run on all computers independently without the need for other GIS programs.

### **Geographical information system design Steps for Failaka Island:**

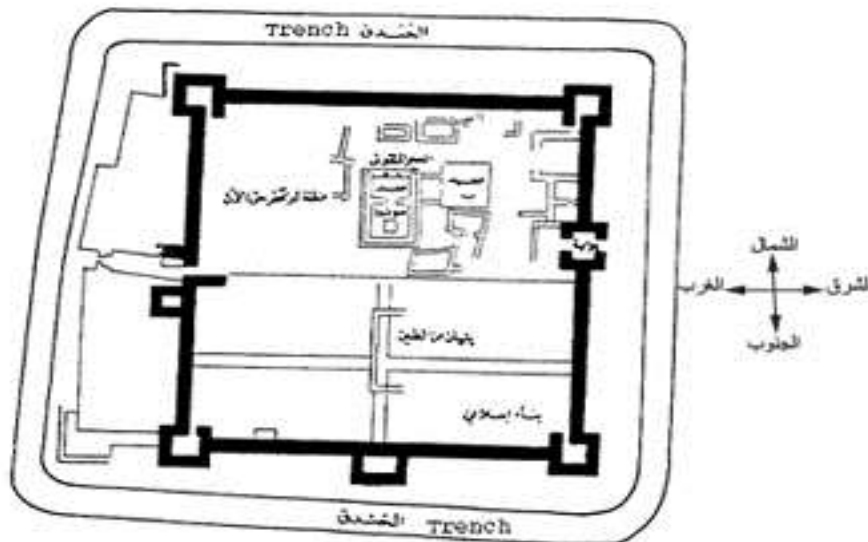
Collect and enter historical maps (Figure 6):

This phase depends on historical maps of excavation missions as well as various historical sources and published in an earlier study by researcher (Aziz, M., Alzaher, A. and Alotaibi, O, 2007) and can be classified as follows:

- The Danish mission map: developed by the Mission in the context of field studies to look for effects in the island in 1958 and included in the Mission's report to the Governor of Kuwait.
- Map of ancient monuments by researcher Khaled Salem: Returns the map in 1959, researcher of spatial experience – as Islanders-and helping the elderly, the comprehensive survey of the island's territory and its attractions, the signing of various landmarks.
- Dalmoun town on Failaka Island map: a map from the book: Vine and Casey, Kuwait. Kuwait. A Nation's Story, 1992., illustrating various charts historical sites in the city Dalmoun.
- Greek Castle on Failaka Island map: map from the report achievements of the French mission to uncover archaeological Failaka Island between 1983-1987.



Khaled Salem Map 1959



Greek Castle Plan

Fig. (6): historical maps of ancient sites on Failaka Island  
Source: Aziz, M., Alzaher, A. and Alotaibi, O, 2007

Modern map production (Figure 7):

Study based on modern cartographic documents produced using geographic information systems technology to help make the spatial signature of sites in different civilizations by the aforementioned historical cartographic documents, as follows:

- Topographic map of Failaka Island: a digital map was produced in geographic information systems based on a variety of maps including a map of contour shapes of terrain on the island 1:5000 scale and contour 50 cm capacity interval, due to tropical surface in most parts of the island (1971 Kuwait Municipality). Alkhraith also includes topographic elements such as current urban agglomerations which concentrated in the West of the island known as the village of Zor, tourist project in the southwest of the island, besides tourist chalets along the northern coast and is abandoned since the Iraqi invasion of Kuwait in 1990, and a map of urban centers such as electricity distribution station, water station, the weather gauge station, sewage, household waste collection station, an industrial area, and also map includes sites for cattle pens. As for the road network is limited to non-circular road paved mostly with internal extension connects Central and West island.
- Surround the topographical map of the island 3D map: the topographical model was produced based on 3D program Analyst as a subprogramme for geographic information systems used in the study, known as Arc Vegas Arc/GIS 9.3. Holographic production process adopted on the contour map data by contour 50 cm value separator and the topographical model shows a range of heights in South, North and center of the island, according to historical explanations indicate the importance of those heights as a citizen of various civilizations in terms of centers etc to achieve safety and control components on the coast of the island.
- Satellite Image of the island: the Images has been collected by the Landsat in 2003, where it was processed and produced using Image processing Analyst program as one of the main sub-systems of the well known Software as Arc/GIS 9.3. The composite method used domain spectroscopy VII, IV, first to get better clarity to the nature of the island (Land escape works).

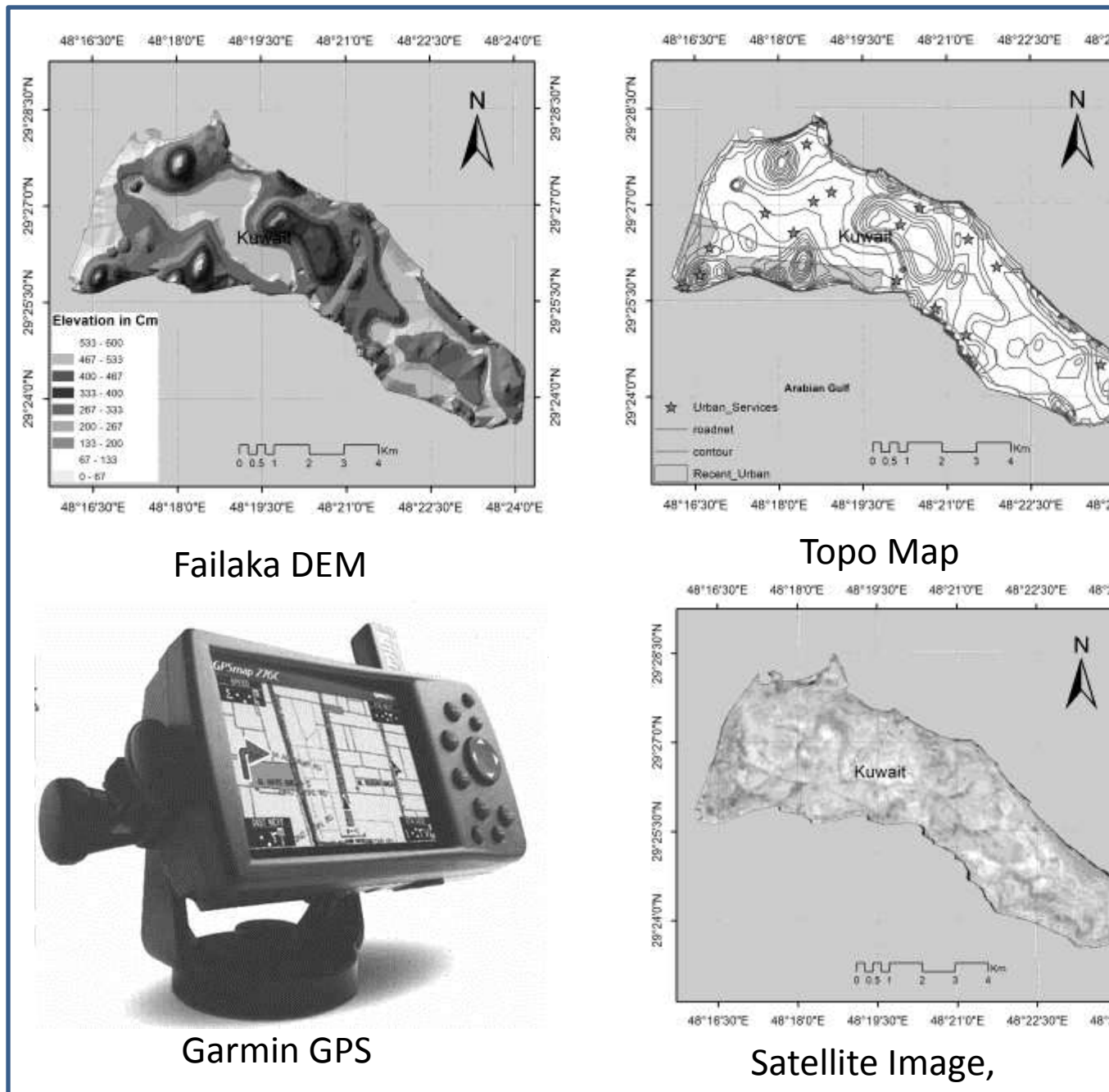


Fig. (7): New maps of Failaka Island

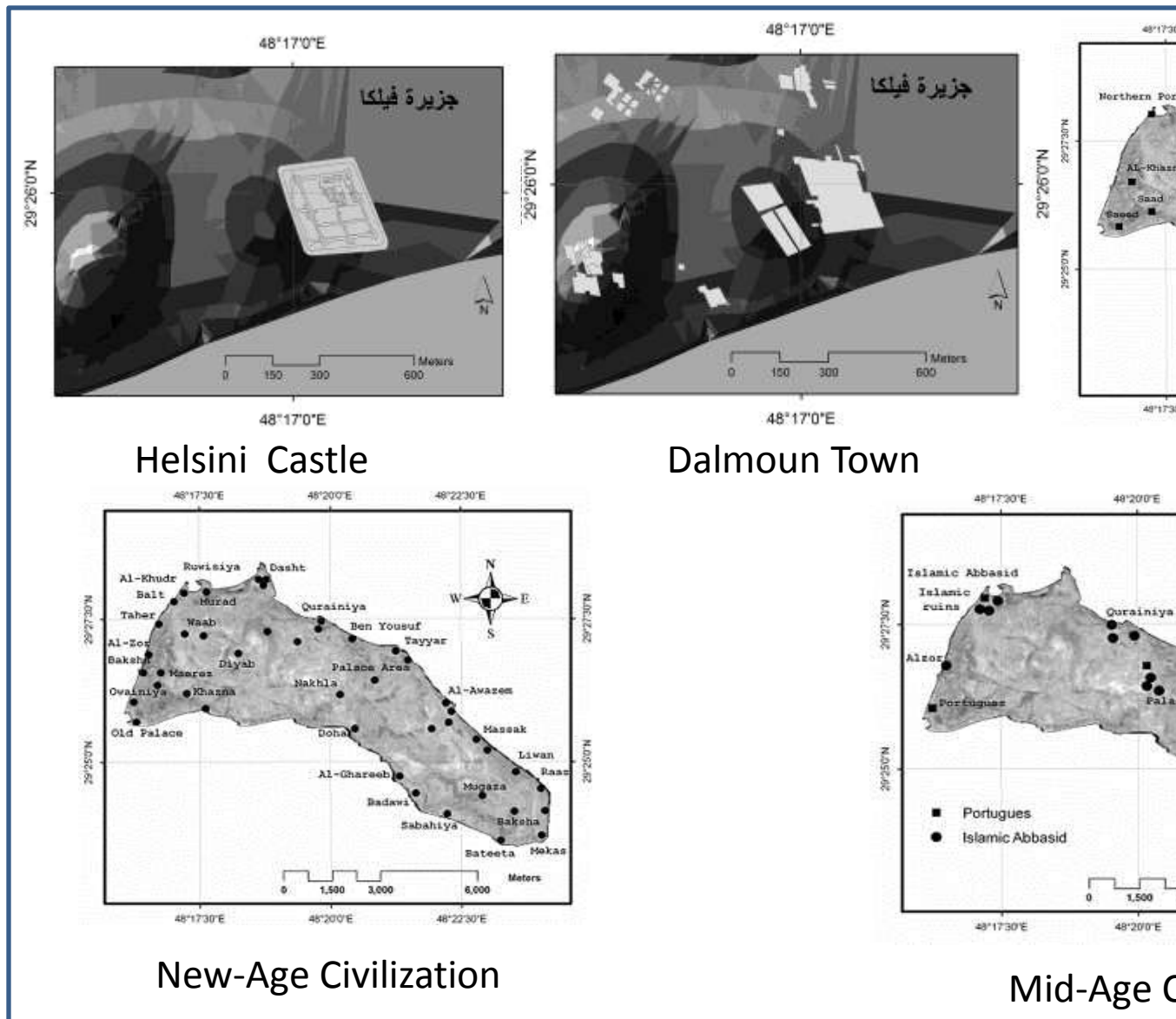


Fig. (8): Spatial allocation results of historical sites

### Spatial allocation stage of archaeological sites on the new maps:

#### The spatial allocation of the city Aldlmonet:

The cartographic allocation process depends to archaeological sites of civilization on the topographical surround Delmon based on GPS technology, where they were monitoring settlements centers coordinates aldlmonet (F3, F4, F5, F6) in the field of GPS on maps.

#### The spatial allocation of the Greek Castle (Alhilsini Fort):

Various reports on the results of the excavations of Danish and French missions to Alhilsini castle dating back to the third century BC, built his box-shaped Northern and southern portals. Confirming it belonged to Greek civilization is found within the structure of the mythological and local gods reign of Alexander the great, besides finding a stone slab known as "stone Icarus" writing Greek (Aladdin Shaheen, 1997:71-72). Based on the field study to identify the location of the Castle fortress and could be noted the coordinates of the four corners of the castle in order to allocate on the DEM.



### **The spatial signature of archaeological sites dating back to ancient civilizations:**

By reviewing the map developed by the Danish mission of archaeological sites by different civilizations, it was fixed the number of archaeological sites which follow ancient civilizations and in particular aldlmonet and civilization Greek civilization resides on Failaka Island in sites other than the southwest corner which focused on ancient civilizations.

### ***The spatial allocation of the medieval archaeological sites:***

This phase covers the civilizations that existed on Failaka Island and especially the Islamic Abbasid and until the end of the Portuguese presence in the sixteenth century AD. Archaeological sites can be identified in the medieval field survey based on civilizations that existed on Failaka Island and one of the most important Portuguese civilizations and Islamic civilization and most importantly the Abbasid.

### ***The spatial allocation of the historic sites in modern times even before the 20th century:***

Here means the modern times are those time centuries after the Portuguese presence in the sixteenth century until the early 20th century. And represent the ancient map (Khaled Salem 1958) an important source of archaeological sites on Failaka Island in modern times, which was relied upon in the field survey to determine coordinates using GPS and then prevented on Failaka Island map.

### **Operational and system output:**

After finishing the build and design system in Arc/Arc GIS software environment/Info 9.3.1 the system were produced, Melvin hires as follows:

An operational file depending on the sub program known as Arc/Publisher to produce an operating system file name "geographical information system of tourism to the island of Failakah to run under the Arc program environment/Reader 9.3.1, Fig. (9) model for output file.

An operational file depending on possibility to export files from GIS program Arc/GIS 9.3.1, export pattern file selection to be of the type ".pdf" to work directly under the free software environment known as "Acrobat Reader" directly Fig. (10) model for output file.

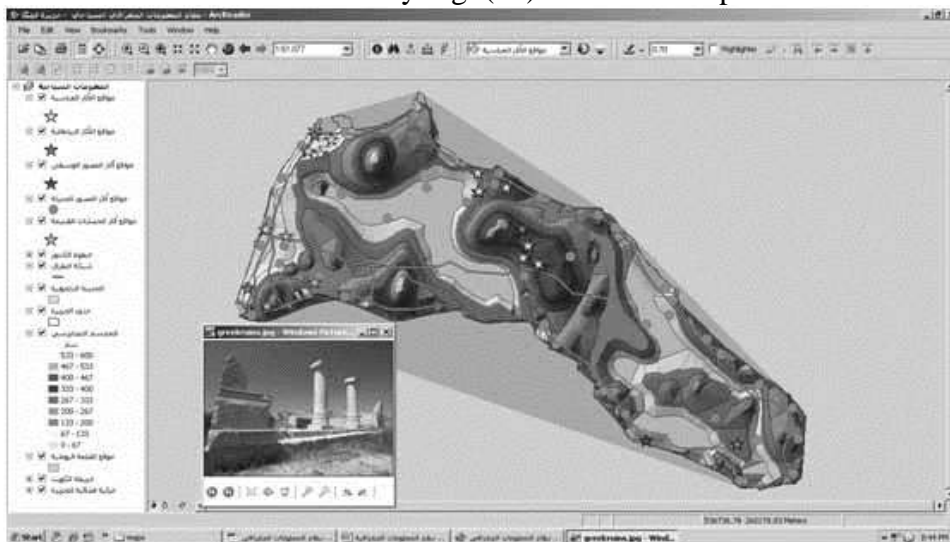


Fig. (9): the output of the system under the environment of Arc /Reader program



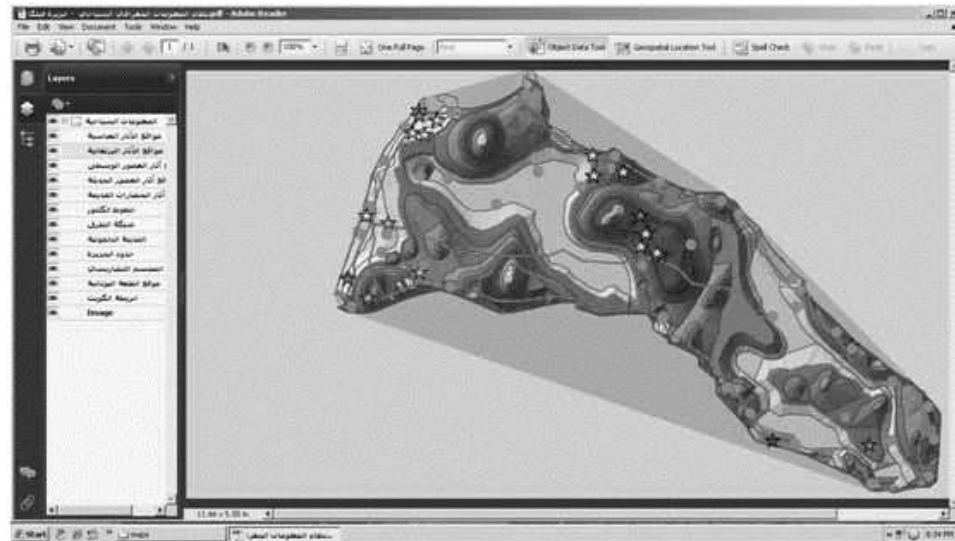


Fig. (10): System output screen in Acrobat Reader environment

### The results and recommendations of the study:

The study confirmed the importance of relying on modern technologies in the design and production of tourist geographic information systems contribute to the development of tourism and economic benefit to national income, and increase the flexibility of such an important production of such systems in different styles and multiple media and broadcast on the Internet so that the visitor can take advantage of them and select the most suitable destination as well as tourist information acquisition on those areas before embarking on the visit and focusing on productive and important sites as tourist interests.

Search the different studies was introduced, which took care of GIS applications in tourism and rated to scientific and practical themes, search also provided some definition of models applied in Austria, Turkey and Viet Nam, as done research to provide practical model on Failaka Island in the State of Kuwait as one of the most important Persian Gulf Islands from where the relay where civilizations and their importance in the history of Kuwait and the Northern Gulf where played a major role as a maritime border crossing between East and West. Failaka Island application provides a system called "tourist geographic information system for the island of Failaka and can be run by free software and work on all computers.

The study recommends the following:

- Arabic States with modern techniques, including GIS technology and employ them in various developmental areas, including tourism development.
- Continue to develop Failaka Island application system to include multimedia in an integrated manner.
- Create a museum devoted to anthropology and geography information about various civilizations there island as major props to document the history of ancient and contemporary Kuwaiti, illustrate the inherent dimensions since antiquity and determine his independence about civilizations that existed in Mesopotamia to confirm profile independent Kuwaiti exclusion concerns to the contrary.
- Geographical Atlas-historical-anthropological urban settlements of the island in different civilizations, to support the document profile independent Kuwait since the dawn of history.

## **References:**

### **Arabic References:**

- Abd Allah Alhatem (2005): Kuwait began, modern printing press, Lebanon, third edition.
- Ahmed Mustafa Abu Hakmah (1970): the history of Kuwait, part I, section I and II, Kuwait.
- Aladdin Shaheen (1997): history of the Bay and the island of old Arabic strings for printing and publishing, Kuwait.
- Contour Hussain (1987): a modern vision of tourism planning in Egypt and the developing countries, unfortunately, the Egyptian General book, Cairo.
- Ghada UNO (2001): archaeological evidence on the history of Kuwait, scientific symposium research folder altraikh society and the effects of the Gulf Cooperation Council (GCC) Arabic, Kuwait, y 37-50.
- Hassaneen Tawfiq (1993): history of Kuwait and Al Jazeera Arabic, Cairo.
- Haya Al Thani (1997): the Arabian Gulf in prehistoric times prehistory – links between webalamorien bamoro Delmon 2050-1530 b.c., book publishing center, new Egypt, Cairo.
- Khaled Salem Mohamed (1977): Failaka Island – a brief history between the Greeks and the twentieth century, Renaissance magazine, issue 523, October 1977, page 45. Kuwait.
- Khaled Salem Mohamed (1980): Failaka Island – a brief history and social life, the Kuwaiti newspaper news.
- Khaled Salem Mohamed (1985): images of ancient life on Failaka Island, Dar Al-rubaian, Kuwait.
- Khaled Salem Mohamed (1993): Failaka Island historical and social profiles, Second Edition, Foundation books, Kuwait.
- Khaled Mohamed Salem (1994): Failaka Island last pages, third edition, Foundation books, Kuwait.
- Khaled Mohamed Salem (2000): Kuwait in the eighteenth and nineteenth centuries – incidents and news, Second Edition, Dar Al orouba publishing, Kuwait.
- Khalil al-Mashhadani (1989): tourism planning, Mustansiriyah University, Baghdad publications, 1989.
- Loimr (c) Khalid Zaid (1969): Kuwait in Gulf travel guide, part two, Arabic House Publishing, Beirut.
- Ministry of information (2001): Kuwait National Atlas, first edition, Kuwait.
- Mohamed Rashid elephant (1972): historical geography of Kuwait, Agency publications, Kuwait.
- Nabeel Ruby (1987): tourism planning, University Culture Foundation, Alexandria.
- Omar Mustafa (1988): Failaka Island – a study in regional geography, Kuwait Foundation for scientific presentation, Kuwait.
- Osman Ghneim and Benita Saad (2003): spatial planning in tourism planning for an integrated and comprehensive, clarity publishing, Oman Jordan. 171 pages.
- Sabri Al-Hamdi (2005): Kuwait arose and developed 1750-1871, the House of wisdom, London, 1st Edition.
- SAIF marzooq Al-shamlan (1986): the history of Kuwait, with strings for printing and publishing, Kuwait.
- Sal (c Francois) Azzedine Ishmael (1992): report of the French mission to uncover archaeological Failaka Island between 1983-1987, the Ministry of information. Kuwait.

Suleyman Al-Bader (1974): the Gulf region during the fourth and third millennia kosmas, chains for printing and publishing, Kuwait.

Zahraa freeze, translate Ullah alkhtrsh (1997): Kuwait was my home, with strings of printing and publishing, Kuwait.

### English References:

Allen, J.S., et al. (1999): A GIS-Based Analysis and prediction of parcel Land-use change in A Coastal Tourism Destination Area, World Congress on Coastal and Marine Tourism, Vancouver, British Columbia, Canada. <http://web.deu.edu.tr/maritime/CMT2005.htm>

Aydinoghu, A.C. and Yomralioglu, T. (2008): Managing Tourism Services of Balck Sea Region of Turkey with maps. <http://www2.itu.edu.tr/~tahsin/yayinlar/p34.pdf>

Ayeni, O.O. et al. (2003): Developing a multimedia GIS Database for Tourism Industry in Nigeria, Proceedings 1st AGA/Conference of Geoinformation Society of Nigeria, Nov. 2003.

Ayeni, O.O. (2006): A Multimedia GIS Database for Planning Management and Promotion of Sustainable Tourism Industry in Nigeria, XXXIII FIG Congress Munich, Germany, 8-13.

[http://www.fig.net/pub/fig2006/papers/ts72/ts72\\_07\\_ayeni\\_0771.pdf](http://www.fig.net/pub/fig2006/papers/ts72/ts72_07_ayeni_0771.pdf)

Al-Mnais W.A. (1996): The Settlement Geography of Kuwait, A sociocultural and historical perspective, Faculty of Arts Bulletin, Alexandria University, Vol., 45, pp. 57-127.

Al-Zaher A. and Aziz M. (2004): Optimal Urban Landuse in Failaka Island – Kuwait: applied Study using GIS and remote Sensing, Bulletin of the Egyptian Geographical Society, Vol. 77, Cairo, pp.105- 134.

Aziz, M. (2001): Development of the Functional structure of Cities in small countries – a cartographic case study of Kuwait, Zeitschrift fuer Geog-und Umweltwissenschaften, Petermannes Geographische Mitteilungen (PGM), Justus Perthes Verlag, Gotha GmbH, 145, 2, pp 3-43.

Aziz, M., Al-Zaher, A., and Al Otaibi, O. (2007) :Spatial assessment of Pre-20<sup>th</sup>-Century Settlements on Failaka Island, Kuwait: An analytical Study Based on GIS and GPS, in: The Arab World Geographer, Toronto, Canada AWG 10, No. 2.

Bas Boers, M.S. (2005): Sustainable Tourism Infrastructure Planning: A GIS Based Approach, in: Proceedings of the 2005 Nrtheastern Recreation Research Symposium, GTR-NE-341, pp. 151-160.

Biuk-Aghai, R.P. (2003): Macau Map: Tourism-Oriented Mobile GIS Application, MapAsia, 2003, pp. 1-8.

Bibby, G. (1961): Four Thausend Years Ago, Alfred A. A. Knopf, Inc., New York.

Chen, R. (2002): Geographic Information Systems (GIS) Applications in Tourism Business, Network, and Spatial Analysis: Applied Research and Teaching Curriculum, International Society of Travel and Tourism Educators )ISTTE), vol 14, pp. 171-184.

Christodoulakis, S. et al. (1997): A Software Bench for the production of Multimedia Tourism Applications, Information and Communication Technologies in Tourism, Springer-Verlag.

Dickson, H. (1956): Kuwait and Her Neighbours, George Allen & Unwin, Ltd, London.

Dono, Ch. Et al. (2002): GIS in Tourism – A Zimbabwean perspective, The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, vol. XXXIV, Pat 6/W6, pp.197-200.

Duran, E. et al. (2004): Web Based Information System for Tourism Resorts; A Case study for Side/ Manavgat, Turkey, in: Istanbul, ISPRS Congress.

- Farasi, Y. and Prastaces, P. (2004): GIS Applications in the planning and management of Tourism, in: Alan A. Lew, C. Michael Hall, and Allan M. Williams (eds.) A Companion to Tourism: Blackwell Companions to Geography, Oxford: Blackwell Publishing, pp. 596-607.
- Hojlund, F. (1987): Failaka & Dilmun: The second Mill. B.C. Settlements, Vol.2, the Bronze Age Pottery, Aarhus, Jutland Archaeological Society Publications, pp. 115-121.
- Jovanovic, V. (2008): The application of GIS and Its components in Tourism, Yugoslav Journal of Perations Research, Vol. 18, No. 2, pp. 261-272.
- Kim, D. (2004): GIS for a Policy Decision Support in National Tourism Portal, ESRI User's Conference, <http://proceedings.esri.com/library/userconf/proc04/abstracts/a1277.html>
- Kjaerum, P. (1986): Architecture and Settlement Patterns in the 2<sup>nd</sup> Mille B.C. Failaka, Proceedings of the Seminar for Arabian Studies, London, pp. 77-88.
- Kokalj, Z. et al. (2006): Application of Internet GIS Tools for Heritage Management, Arkas Case Study, in International Conference of Territorial Intelligence of Ilba Luia, pp. 267-272.
- Longmatey, D. et al. (2001): Management and Promotion of Tourism in Ghana: A GIS approach, ESRI User's Conference. <http://www.sis.esri.com/library/userconf>
- Quy, B.N. and Ha, Le.Phuong (2009): Multimedia Map for Tourism Advertisement of Ha Noi, Vietnam, 7th FIG Regional Conference, Hanoi, Vietnam.  
[http://www.fig.net/pub/vietnam/papers/ts02e/ts02e\\_quy\\_ha\\_3662.pdf](http://www.fig.net/pub/vietnam/papers/ts02e/ts02e_quy_ha_3662.pdf)
- Rachel, J.C. et al. (2004): Integration or Disintegration: the use of Geographic Information Systems (GIS) in Island Policy, ISLANDS of the World VIII International Conference, Taiwanm pp. 529-535.
- Schofield, R. (1994): Territorial Foundation of the Gulf States, UCL Press, London.
- Shiber, S. (1964): The Kuwait Urbanization, Kuwait Government Printing Press, 643 pages.
- Shojaee, D. (2005): Using GIS and Application for Tourism in Iran.  
[http://www.gisdevelopment.net/application/miscellaneous/me05\\_011.htm](http://www.gisdevelopment.net/application/miscellaneous/me05_011.htm)
- Turk, T. and Gumusay, M.U. (2006): GIS Design and Application for Tourism, in: XXXIII FIG Congress, Munich, Germany. Coomission VI, WG VI/6.
- Vine, P. and P. Casey (1992): Kuwait A Nation's Story, IMMEL Publishing, London.
- Wessel, H. et al. (2006): Web-Based GIS-usage in Tourism, in: International Symposium on Geoinformatics for Spatial Infrastructure Development in Earth and Allied Sciences,  
<http://wgrass.media.osaka-u.ac.jp/gisideas06/viewpaper.php?id=144>

## **Algebraic Content and Pedagogical Knowledge of Sixth Grade Mathematics Teachers: Through Document Analysis**

**Dr. Mariyam Shahuneeza Naseer**

**Islamic University of Maldives**

**Republic of Maldives**

### **Abstract**

Research indicates that mathematical content and pedagogical knowledge of teachers play a crucial role in teaching mathematical concepts in a way that helps students develop conceptual understanding of the subject matter. Conceptual understanding has been linked with the ability of the teacher to explain certain concepts. It is proven that teachers who have a deep understanding of the content and pedagogy foster better student performance as they will employ better instructional practices than teachers who lack an in-depth understanding of the content and pedagogy. Documents and written materials such as lesson plans and notes can provide rich information and evidence in qualitative studies. Research shows that pedagogical knowledge of teachers could be observed through teachers' lesson plans and lesson notes. This paper examined algebraic content and pedagogical of sixth grade mathematics teachers through analysis of lesson plans, lesson notes, textbooks, and reference materials they used. Content of all algebra lesson plans and notes (N=80) and prescribed textbooks (N=3) were analyzed. Results showed that some of the algebraic concepts explained in the textbooks were incorrect. As teachers failed to detect these incorrect concepts it raised serious questions with regard to algebraic content and pedagogical knowledge of sixth grade mathematics teachers. Moreover, analysis of the textbooks showed that the focus of the textbooks was on procedural fluency rather than conceptual understanding. Last, but not least, teachers followed these textbooks word for word blindly indicating that they not only lacked content knowledge but also pedagogical knowledge to teach algebra.

**Key words:** content knowledge, pedagogical knowledge, algebra, document analysis

### **Introduction and Background**

A baseline survey conducted by UNICEF and NIE to assess student performance during 2012 and 2013 in the Maldives showed that algebra is the lowest performing area of mathematics, with only 27.1% students obtaining the correct answers to algebra questions

(UNICEF & NIE, 2014). Algebra is a fundamental topic in mathematics that lays foundation for further studies in mathematics and quantitative sciences. Interviews with the local project manager of the baseline study, mathematics teacher educators, heads of fourteen 1-10 schools, and heads of teacher training institutions gave rise to serious questions regarding the algebraic content and pedagogical knowledge of the teachers, and, therefore, the teachers' ability to teach the subject. In the Maldives, algebra is first introduced in sixth grade, and teachers who introduce algebra are responsible for laying a solid foundation on which students can later construct their algebraic understanding. It is proven that teachers who have a deep understanding of the content and pedagogy foster better student performance as they will employ better instructional practices than teachers who lack an in-depth understanding of the content and pedagogy (Ball, Lubienski, & Mewborn, 2001; Brown, Davis, & Kulum, 2011; Darling-Hammond & Sykes, 2003; Ojose, 2014; Shirvani, 2015). Therefore, the research represented by this paper aimed to examine the algebraic content and pedagogical knowledge of sixth grade mathematics teachers to identify their strengths and weaknesses in these areas through analysis of lesson plans, lesson notes, textbooks, and reference materials they used.

The purpose of this study was to examine algebraic content and pedagogical knowledge of sixth grade mathematics teachers through analysis of documents they used to determine their relative strengths and weaknesses to serve as the foundation for the development of teacher professional development curriculum. It is believed that the results of this study also could also contribute towards improving mathematics education in the country by informing teacher training institutions about the strengths and weaknesses with regard to teachers' knowledge of algebraic content and pedagogy, which could prove invaluable in designing their courses. Moreover, it is expected that the results of this study would contribute positively towards strengthening the national mathematics curriculum and the content development of prescribed textbooks and teacher resource books.

## **Theoretical Framework**

The theoretical framework that guided this study is the domains of mathematical knowledge for teaching proposed by Ball, Thames, and Phelps (2008). The domains of mathematical knowledge for teaching was built on Shulman's theoretical framework connecting content knowledge to practice of teaching (Ball et al., 2008). According to Ball et al. (2008), in 1986 Lee Shulman and colleagues put forward a domain of teacher knowledge which linked content knowledge and teaching, and they called it pedagogical content knowledge. Since then, this domain has gained the popularity and Shulman's idea has been cited in more than 1,200 refereed journal articles in 125 different journals in "professions ranging from law to nursing to business, and regarding knowledge for teaching students preschool through doctoral studies" (Ball et al., 2008, p. 392).

Ball et al. (2008) proposed six domains, namely, common content knowledge; horizon content knowledge; specialized content knowledge; knowledge of content and students; knowledge of content and teaching; and knowledge of content and curriculum. These six domains come under two main categories – subject matter knowledge and pedagogical content knowledge.

**Subject matter knowledge.** Subject matter knowledge is the subject specific knowledge of content. This category is subdivided into common content knowledge, horizon content knowledge, and specialized content knowledge.

**Common content knowledge.** Common content knowledge is defined as “the mathematical knowledge and skill used in settings other than teaching” (Ball et al., 2008, p. 399). This includes knowing the materials they teach; being able to identify incorrect answers given by students; recognizing inaccurate definitions presented in textbooks; and being able to use terms and notations correctly. In short, common content knowledge is defined as “the mathematical knowledge known in common with others who know and use mathematics” (Ball et al., 2008, p. 403). Some research indicated that teachers’ high school mathematics knowledge is positively correlated with students’ learning gains (Shirvani, 2015).

**Horizon content knowledge.** Horizon content knowledge is defined as the awareness of how mathematical topics are related over the span of mathematics included in the curriculum (Ball et al., 2008, p. 403). For example, primary teachers may need to know how categorization of shapes and pattern generalizations can set the mathematical foundation for formal algebra, which is taught in sixth grade in the Maldives.

**Specialized content knowledge.** Specialized content knowledge is defined as “the mathematical knowledge and skill unique to teaching” (Ball et al., 2008, p. 400). An example of this could be the analysis of a student’s incorrect answer to find out the nature of the error because, this would require dexterity in thinking about numbers, being aware of the patterns, and being able to critically examine the meaning in ways that are unique to teaching (Ball et al., 2008).

**Pedagogical content knowledge.** Ball et al. (2008) cited Shulman’s definition of pedagogical content knowledge as follows:

The most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations - in a word, the most useful ways of representing and formulating the subject that make it comprehensible to others. Pedagogical content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons. (p. 391 – 392)

Magnusson, Krajcik, and Borko (as cited in Ball et al., 2008) defined pedagogical content knowledge as a teacher’s understanding of how to help students understand specific subject matter. It includes knowledge of how particular subject matter topics, problems, and issues can be organized, represented and adapted to the diverse interests and abilities of learners, and then presented for instruction. The defining feature of pedagogical content knowledge is its conceptualization as the result of a *transformation* of knowledge from other domains (p. 394).

In short, pedagogical content knowledge is the unique knowledge required to teach subject-specific content. Ball et al. (2008) subdivided the pedagogical content knowledge into three domains. These domains are knowledge of content and students; knowledge of content and teaching; and knowledge of content and curriculum. Pedagogical knowledge of the teacher is important as teachers who have content knowledge but lack pedagogical knowledge not only find it difficult to explain mathematical concepts to the students in a way that they would understand but also are likely to make errors in classroom teaching (Ojose, 2014).

***Knowledge of content and students.*** Knowledge of content and students is defined as the “knowledge that combines knowing about students and knowing about mathematics” (Ball et al., 2008, p. 401). This means teachers should be able to recognize how the students would think when presented with a certain problem and also teachers should be able to judge what the students would find confusing with the presented problem. In addition, teachers not only should be able to predict what kind of examples would make it easier for the students to grasp the concept but also what type of examples would maintain or build their interest in the lesson presented.

***Knowledge of content and teaching.*** Ball et al. (2008) defined knowledge of content and teaching as “knowing about teaching and knowing about mathematics” (p. 401). In other words, teachers should be able to identify which instructional strategies would suit a certain lesson and also the sequence of the lesson, for instance, teachers being able to recognize which example would work best in the beginning or the introduction phase of the lesson.

***Knowledge of content and curriculum.*** Ball et al. (2008) cited Shulman’s definition of curricular knowledge instead of proposing a definition. Shulman defined curricula knowledge as

[knowledge] represented by the full range of programs designed for the teaching of particular subjects and topics at a given level, the variety of instructional materials available in relation to those programs, and the set of characteristics that serve as both the indications and contraindications for the use of particular curriculum or program materials in particular circumstances (as cited in Ball et al., 2008, p. 391).

Ball et al. (2008) developed the framework domains of mathematical knowledge for teaching after analyzing existing literature on knowledge base for teaching. This specifically focused on mathematics teaching and had identified the necessary aspects of mathematics knowledge for teaching.

The aim of this study was to examine algebraic content and pedagogical knowledge of sixth grade mathematics teachers through analysis of documents these teachers used, namely, lesson plans, lesson notes, textbooks, and reference materials.

## **Materials and Methods**

### ***Research Design***

This study used a qualitative research design, specifically, document analysis method. Document analysis is a form of qualitative research in which documents are interpreted to give voice and meaning around a desired topic (Bowen, 2009). Bowen (2009) highlighted that document analysis is an important research tool. In document analysis it is better to gather as many documents as possible, however, it is also important to realize it is a quality not the quantity which matters (O’Leary, 2014). It is also vital to take into account the purpose of the document and target audience (Bowen, 2009). O’Leary’s (2014) eight-step planning process was followed and the original documents were collected for the purpose of this study. In addition, producers of the documents were contacted to clarify doubts which arose at the time of document analysis to avoid personal bias and subjectivity.



The purpose of this study was to examine algebraic content and pedagogical knowledge of sixth grade mathematics teachers through analysis of documents these teachers used. According to Patton (2002), documents and written materials provide rich information and evidence in qualitative studies. Algebra lesson plans and lesson notes of the sixth grade mathematics teachers who consented to take part in this study were collected and analyzed to gain an in-depth understanding of the algebraic content and pedagogical knowledge of the sixth grade mathematics teachers. According to Chick, Pham, and Baker (2006), pedagogical knowledge of teachers could be assessed through teachers' lesson plans and lesson notes. The sixth grade algebra was divided into sixteen lessons and for each lesson it was expected that a separate lesson plan would be prepared with lesson notes.

### ***Setting and Sample***

Participants of this study are in-service sixth grade mathematics teachers who were working in a similar environment with access to similar resources and trained from the same higher education institution in the Maldives. Teaching experience of the participants varied from 2-20 years. Sampling strategy used in this study was homogeneous, purposive sampling as this study aimed to algebraic content and pedagogical knowledge of sixth grade mathematics teachers through analysis of documents they used. In homogeneous sampling the researcher purposefully selects individuals based on common characteristics (Creswell, 2012).

All the sixth grade mathematics teachers working in the selected schools were briefed about the research and only five teachers consented to take part in the study. Therefore, a total of 80 lesson plans and lesson notes were analyzed, in addition to the three prescribed textbooks which were *Mathematics in the National Curriculum Key Stage 2* (Naseer, Adam, & Shiunee, 2014) which gave detailed explanations to each of the strands in the curriculum with learning outcome indicators, *Exploring Mathematics 6 Teacher's Guide* (Adam & Shiunee, 2016a) which explained the pedagogy to be used in detail, and *Exploring Mathematics 6* (Adam & Shiunee, 2016b) which is the student book containing worked examples and explanations for students.

### ***Data Collection and Analysis***

Participants who consented to take part were requested to handover all the lesson plans, lesson notes, reference materials, and textbooks they used after each algebra lesson they taught. Data collection and data analysis was done concurrently. The doubts that arose while analyzing the documents were clarified by discussing with the respective teachers.

Content analysis was carried out to analyze the documents. According to Merriam (2009) all qualitative data analysis involves content analysis. Krippendorff (2003) stressed that content analysis is a scientific tool and defined content analysis as a "research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (p. 18). According to Bowen (2009), content analysis, then, is used as a "first-pass document review" (p. 32) that can provide the researcher a means of identifying meaningful and relevant passages.

The process of content analysis involved coding of raw data and categorizing them into themes according to characteristics of the content gathered. Bowen (2009) also notes thematic analysis, which can be considered a form of pattern recognition with the document's data. This analysis takes emerging themes and makes them into categories used for further analysis, making it a useful practice for grounded theory. It includes careful, focused reading and re-reading of data, as well as coding and category construction (Bowen, 2009). In this study, major themes were algebraic content knowledge and pedagogical knowledge and subthemes were the subdivisions in Ball and colleagues' (2008) model, namely, common content knowledge, horizon content knowledge, specialized content knowledge, knowledge of content and students, knowledge of content and teaching, and knowledge of content and curriculum.

## Results and Discussion

Documents and written materials such as lesson plans and notes can provide rich information and evidence in qualitative studies. Pedagogical knowledge of teachers could be observed through teachers' lesson plans and lesson notes (Chick, et al., 2006; Patton, 2002). Algebra lesson plans and lesson notes of the sixth grade mathematics teachers who consented to take part in this study were analyzed to gain an in-depth understanding of the algebraic content and pedagogical knowledge of the sixth grade mathematics teachers.

***Lesson plans.*** Only one of the five teachers had a lesson plan. However, all the teachers had prepared some sort of lesson notes. Interestingly, it was the teacher who had two years teaching experience and that lesson plan was prepared when she taught mathematics for the first time which was two years ago. The lesson plan had three sections, namely, lesson starter, main activity, and plenary. Each of these sections had two parts, that is, teacher activity and student activity. The lesson plan was a one-page document and it lacked details.

***Lesson starter.*** The teacher activity included greeting the students and introducing the lesson. Student activity was 'greet back' [teachers enter the class and say "good morning/ afternoon students" and the students are expected to say "good morning/ afternoon teacher"]. That was the only role students were expected to play in the "lesson starter" activity.

***Main activity.*** The teacher activity was to explain examples on a certain page in the textbook. The student activity was to listen, clarify the doubts, doing the exercises on a given page, and give the students chance to present their answers. No other information was included.

***Plenary.*** The teacher activity in this section read "summarize the lesson and check students' work" whereas student activity read "let them response to the teacher."

Four of the five teachers did not have a lesson plan. Some of them cited length of their teaching experience as the reason for not having a lesson plan while others said that they used the textbook so there was no need to have one.

***Lesson notes.*** Analysis of lesson notes showed that they were just chunks taken from the prescribed textbooks indicating their over dependence on these prescribed textbooks. Lesson notes were mainly solutions to problems given in the student's book. Only the lesson plan and lesson note prepared to teach the first lesson included examples which were not in the prescribed textbooks. However, they followed the same pedagogy explained in the textbook (discussed

below). For example, all the five teachers introduced algebra using what Tennant and Colloff (2014) referred to as ‘fruit salad’ approach to algebra. Two of the five teachers actually used fruits while one used fruits and vegetables, one used stationery (that is, books and pens), and the remaining teacher used front and the back of the teacher’s hands to demonstrate like and unlike terms. This clearly indicated that the teachers lacked the common content knowledge as they were unaware that the “letters” or “variables” used in algebra represented numbers, not objects. Ball et al. (2008) placed common content knowledge as a subdivision of subject matter knowledge (content knowledge) and defined it as knowledge of mathematics that is common to everyone who knew and used mathematics.

Upon inquiry it became clear that those were “real-life” examples they used to introduce and relate the topic (algebra) to real-life. Participants believed that these real-life examples gave meaning to the topic and that helped to keep students’ interest in the topic. To clarify, teachers were asked “why can’t we write  $3a + 2b = 5ab$ ” to which the teacher simply said that “you cannot write because they are unlike terms”. In short, it became clear that teachers lacked pedagogical knowledge required to teach algebra. It is noteworthy that teachers’ lack of algebraic content and pedagogical knowledge could lead students to develop misconceptions with regard to the concept of variables, making it difficult for students to understand problems involving algebraic expressions or equations (Ball et al., 2001; Koency & Swanson, 2000; Tajudin, 2014).

**Prescribed textbooks.** Prescribed textbooks were specifically developed to cater the New National Key Stage 2 Mathematics Curriculum which was first implemented in 2016. This set of books contained three textbooks, namely, *Mathematics in the National Curriculum Key Stage 2* (Naseer, Adam, & Shiunee, 2014), *Exploring Mathematics 6 Teacher’s Guide* (Adam & Shiunee, 2016a), and *Exploring Mathematics 6* (Adam & Shiunee, 2016b). Upon inquiry it became clear that it is mandatory that teachers used these prescribed textbooks and not any other materials to “ensure all the students across the country are exposed to the same learning experiences in terms of content and pedagogy” (S. Aishath, personal communication, May 29, 2018).

It is noteworthy that this set of books were developed specifically to cater the new national curriculum with the curriculum reform which was first implemented in 2015. In 2015 Foundation Stage (that is, pre-primary level) and Key Stage 1 (Grades 1, 2 and 3) was implemented, which was followed by Key Stage 2 (Grades 4, 5, and 6) in 2016. Key Stage 3 (which is Grades 7 and 8) was implemented in two phases, that is, phase 1 (Grade 7) was implemented in 2017 and phase 2 of Key Stage 3 (Grade 8) was implemented this January [January 2018] (S. Aishath, personal communication, May 29, 2018).

**Mathematics in the National Curriculum Key Stage 2.** All five teachers used Mathematics in the National Curriculum Key Stage 2 which gave detailed explanations to each of the strands in the curriculum with learning outcome indicators. Analysis of Mathematics in the National Curriculum Key Stage 2 revealed that this book was developed by a team of three curriculum developers from two institutions and eight mathematics teachers from eight different schools in the Maldives. This book included learning outcomes, indicators that showed the learning outcomes had been achieved in addition to teaching strategies. This is the prescribed textbook that was introduced with the New National Key Stage 2 Mathematics Curriculum which was implemented in 2016.

In-depth analysis of the topic Algebra showed that some of the explanations, suggested teaching strategies, and indicators were incorrect. This raised questions as to whether the team members were equipped with algebraic content and pedagogical knowledge required to develop such a book or teach algebra at sixth grade (or any grade for that matter). Figure 1 and Figure 2 shows such examples taken from this book (Naseer, Adam, & Shiunee, 2014).

<b>Topic: Algebraic Techniques</b>	
<b>Outcome PA2.1:</b>	<b>Indicators:</b>
<i>Model algebraic expressions and carryout addition and subtraction.</i>	<b><i>This is evident when the student:</i></b>
	a. Models algebraic expressions using objects. Eg: $%%%% = 4\%$ $!!!!!! = 8!$
	b. Uses objects to add and subtract simple algebraic expressions. Eg: $ff + fff = 2f + 3f = 5f$

Figure 1. An incorrect indicator of learning (Naseer, Adam, & Shiunee, 2014, p. 78).

<b>Topic: Algebraic Techniques</b>	
<b>Outcome PA2.1:</b>	<b>Indicators:</b>
<i>Model algebraic expressions and carryout operations. Write algebraic expressions and evaluate them by substitution. Simplify simple expressions. Solve simple linear equations.</i>	<b><i>This is evident when the student:</i></b>
	a. Uses objects to add and subtract simple algebraic expressions. (Eg: $ff + fff = 2f + 3f = 5f$ ; $11j - 7j = 4j$ ; $\mu\mu + ... = 2\mu + 3$ ; $\dot{E} + \dot{E}\dot{E} - 7 = 3\dot{E} - 7$ )
	b. Adds and subtracts algebraic expressions involving 1-3 terms (exclude terms with exponents). (Eg: $w + 13 + w$ ; $11s - 9t - 16s$ ).

Figure 2. An incorrect indicator of learning (Naseer, Adam, & Shiunee, 2014, p. 105).

The examples given in part (a) under indicators (both Figure 1 and Figure 2) are what Tennant and Colloff (2014) referred to as “fruit salad” algebra approach. This approach is one of the main factors contributing to the formation of misconceptions. Kuchemann (as cited in Welder, 2012) reported that only a few students between ages 11-13 were able to identify letters as a generalized number. The majority of the students identified variables as objects which is incorrect (Tennant & Colloff, 2014; Welder, 2012). For example, in part (a) it was also stated  $!!!!!! = 8!$  which is incorrect as  $8! = 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 40,320$  in mathematics. The example in the first part of (b) read  $ff + fff = 2f + 3f = 5f$  which is mathematically incorrect as  $ff = f^2$  and  $fff = f^3$  in algebra (in the Maldives students will come across multiplication of like terms in grade seven). It is worth mentioning that when inquired how they explained multiplication of algebraic terms all five teachers said “multiply the numbers and write the letters next to the number” which is how it was explained in the lesson notes they used.

Unfortunately, these misconceptions go undetected at this level due the way mathematics curriculum is spread across the grades. It is also noteworthy that this book is used since 2016

with the implementation of new national curriculum, and this is a book written by a team of three curriculum developers and eight mathematics teachers. This not only raises serious questions regarding the state of the state of mathematics education in the country but also urgency in addressing the issue.

**Exploring Mathematics 6 Teacher's Guide.** All five teachers used Exploring Mathematics 6 Teacher's Guide, which explained the pedagogy to be used in detail for each of the topics and subtopics in the curriculum. Interestingly, the content of this book did not differ from what was explained in the Naseer, Adam, and Shiunee (2014). It was observed that greater emphasis was on procedural fluency than conceptual understating. Moreover, "fruit-salad" approach was used in explaining how teachers could relate the lesson to real-life. It became obvious from the lesson notes that teachers heavily relied on the prescribed textbooks in planning their lessons and making notes. Figure 3 shows an extract from this book which explained how the topic "algebra" can be introduced.

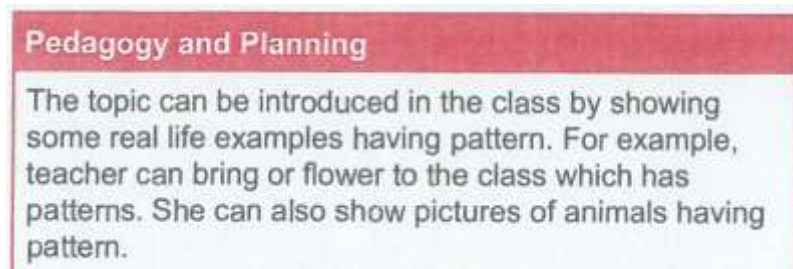


Figure 3. Suggested introduction to algebra (Adam & Shiunee, 2016a, p. 226)

From the analysis of documents, it became clear that teachers not only lacked algebraic content knowledge but also pedagogical knowledge. For example, all five teachers were unable to distinguish abbreviations from variables. They all used the "fruit-salad" approach to introduce algebra, indicating that all five teachers treated the variables as objects. It is important to highlight that teacher's lesson notes were a reflection of teacher's guide (Adam & Shiunee, 2016a). Teachers not being able to detect these incorrect explanations provide evidence that these teachers lack common content knowledge as well as knowledge of content and teaching (Ball et al., 2008). Ball et al. placed common content knowledge as a sub-category of subject matter knowledge (which in this study is algebraic content knowledge) whereas knowledge of content and teaching was placed under pedagogical knowledge. In short, this confirmed that teachers lack algebraic content and pedagogical knowledge required to teach at sixth grade.

**Exploring Mathematics 6.** All five teachers used Exploring Mathematics 6 which is the student book containing worked examples and explanations for students. Teacher's lesson notes made it clear that this is the main reference the teacher's used. Each of the students also had a copy of this book. This book offered little explanation of the topics and focused more on worked examples promoting procedural fluency over conceptual understanding. The explanation provided in the textbook did not include what the topic was about or why a certain approach was used. Instead, the book focused on explaining the steps that would guide students to obtain the correct answer to problems of similar kind. Moreover, the explanation offered with each step of the example showed how the steps were carried out instead of explaining or justifying the approach used in solving the problem. Furthermore, real-life applications of the topic were not included in the text. This could be the reason why teachers did not relate the topics to real-life or

the misconception teachers had with regard to relating the topics to their real-life applications. For example, teachers thought using fruits or stationery to objectify variables was a real-life application of the topic. Figure 4 shows an extract from the book showing how the topic “algebraic techniques” is explained in the book and Figure 5 shows an example where a “skeleton” explanation is offered (Adam & Shiunee, 2016b).

**Example 2:** A fisherman has certain number of fishes in one box. He has 7 such boxes. He gave away three boxes of fish to his relatives. How many number of fish are left with him?

**Answer:**  
 Let the number of fish in one box be  $a$ .  
 Number of fish in 7 boxes =  $7a$   
 Number of fish he gave =  $3a$   
 Remaining fish =  $7a - 3a$   
 $= 4a$

Remember that multiplication is repeated addition.

Figure 4. Algebraic techniques explained (Adam & Shiunee, 2016b, p. 252).

**Example 4:** Simplify the following expressions.

a.  $8(x-6)$       b.  $-q(-2p-4r)$

**Answer:**

a.  $8(x-6) = 8 \times x - 8 \times 6$   
 $= 8x - 48$

b.  $-q(-2p-4r) = (-q) \times (-2p) + (-q) \times (-4r)$   
 $= 2qp + 4qr$

Multiply each term inside the bracket with the variable or the number outside it.

Remember,  $(-) \times (-) = +$

Figure 5. “Skeleton” explanation (Adam & Shiunee, 2016b, p. 255).

It was also observed that the explanations provided for similar kind of questions were not consistent. It is not only important to maintain consistency in explanations to ensure students develop a firm understating of the procedures but also offer complete explanations and justify why a certain approach was used and why it works all the time. Incomplete or inconsistent explanations followed by dismissal of students concerns could lead to formation of misconceptions. As Naseer (2015) and Schnepfer and McCoy (2013) stated, incomplete explanations and distorted definitions were the root cause of misconceptions. Figures 6 and 7 show extracts from the exercise section of the book where the variables were treated as objects, in other words, use of “fruit-salad” approach.



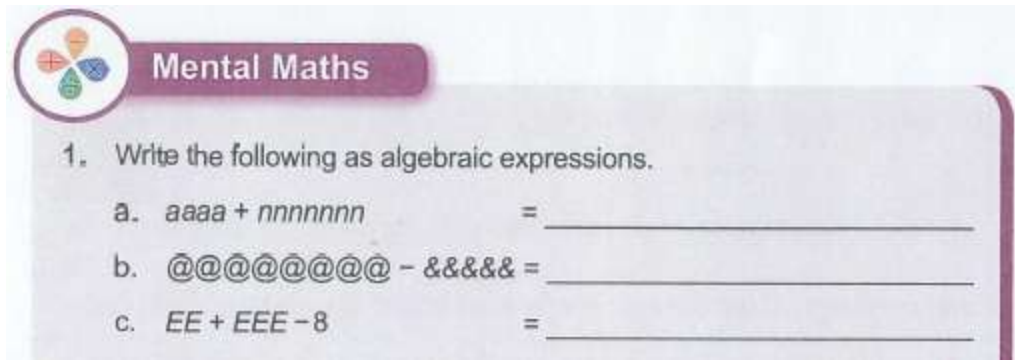


Figure 6. Use of “fruit-salad” approach in Mental Maths (Adam & Shiunee, 2016b, p. 253).

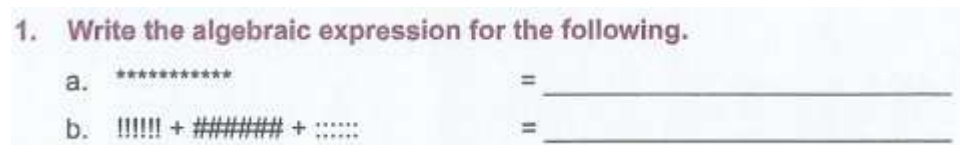


Figure 7. Use of “fruit-salad” approach in Exercise PA1.3 (Adam & Shiunee, 2016b, p. 257).

**Analysis of exercise questions and examples given revealed that** questions given in this book were very similar to the examples given in the book. Precisely, the difference between the examples and the exercise questions could be the use of a different a number or use of a different variable. For example, if how to expand  $2(a+3)$  is explained, then in the corresponding exercise would include questions such as  $4(a+3)$  and  $2(w+3)$  for students to practice. The difference between the example  $2(a+3)$  and the problem  $4(a+3)$  is that the number 2 had been replaced with a 4 while, the difference between  $2(a+3)$  and  $2(w+3)$  is that the letter  $a$  had been replaced with the letter  $w$ . There were no questions that required students to put to use their critical thinking ability, analytical skills, or problem-solving strategies.

Analysis of lesson notes revealed that teachers followed the book in explaining the concepts to students. For example, teachers would state what the students were going to learn. After that the teacher would briefly explain the topic in two or three statements. This would be followed by various worked examples, indicating that they heavily depended on the textbooks. In summary, this textbook focused on explaining the procedures that would lead students to obtain the correct solutions to the problems given (which were of similar kind or pattern). The examples, explanations, and given questions did not promote conceptual understanding, critical thinking or even creativity. Lack of higher-order questions that required analytical skills and critical thinking made it difficult to identify whether students fully understood what was taught. Moreover, it hindered the opportunity to bring out misconceptions students might have.

## Conclusion and Recommendation

Document analysis showed that the prescribed textbooks and other resource books prepared for the Maldivian schools had focused on computational procedures rather than developing conceptual understanding, problem-solving skills, or analytical skills. It also became clear that teachers were following the textbook and resource materials sent to them word for word. However, in order to promote knowledge growth and conceptual understanding it is important that explicit attention is given to differentiated instruction and open discussions rather than simple textbook exposure (Rittle-Johnson et al., 2011). Moreover, in-depth analysis of the textbooks and resource materials used by these teachers revealed that algebraic concepts were explained incorrectly in the prescribed textbooks, and resource materials. Teachers not being able to detect these incorrect explanations provide evidence that these teachers lack common content knowledge as well as knowledge of content and teaching (Ball et al., 2008). Ball et al. placed common content knowledge as a sub-category of subject matter knowledge (which in this study is algebraic content knowledge) whereas knowledge of content and teaching was placed under pedagogical knowledge. In short, this confirmed that teachers lack algebraic content and pedagogical knowledge required to teach at sixth grade.

An assumption of this study is that these teachers would have the same experience and exposure to mathematics content and pedagogy as they belong to similar kind of schools with similar resource allocations. A limitation of this study is that these findings cannot be generalized to the entire population. A delimitation of this study is that participants are trained from the same institution and belong to same nationality.

As teachers need a solid understanding of the concepts they teach so that they can teach for understanding by giving reasons for following certain procedure, it is recommended that mathematics teacher training programs emphasized the importance of teaching for understanding (Olanoff, Lo, & Tobias, 2014). It is also recommended that a study be carried out to assess the in-service teachers' content and pedagogical knowledge of algebra and based on the results a professional development program be developed to build on the strengths of the teachers and address the weaknesses of these teachers so that they are better equipped with the knowledge to teach mathematics for understanding. Last, but not least, it is recommended that the prescribed textbooks are revised urgently in the light of recent research and best and most effective ways of teaching algebra to ensure that a strong algebraic foundation is laid for the students which promotes not only procedural fluency but also conceptual understanding. Conceptual understanding has been associated with the way teachers introduced early algebraic concepts, which depends on the algebraic content and pedagogical knowledge of the teacher (Ball & McDiarmid, 1990; Chick et al., 2006; Tennant & Colloff, 2014).

## References

- Adam, A. & Shiunee, A. (2016a). *Exploring Mathematics 6 Teacher's Guide*. Maldives: National Institute of Education.
- Adam, A. & Shiunee, A. (2016b). *Exploring Mathematics 6*. Maldives: National Institute of



Education.

- Ball, D. L., Lubienski, S. T., & Mewborn, D. S. (2001). Research on teaching mathematics: The unsolved problem of teachers' mathematical knowledge. *Handbook of Research on Teaching*, 4, 433-456.
- Ball, D. L., & McDiarmid, G. W. (1990). The subject matter preparation of teachers. In W. R. Houston (Ed.), *Handbook for Research on Teacher Education* (pp. 437-449). New York, NY: Macmillan.
- Ball, D. L., Thames, M. H., & Phelps, G. (2008) Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, 59(5), 389-407.
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27-40.
- Brown, I. A., Davis, T. J., & Kulum, G. (2011). Pre-service teachers' knowledge for teaching algebra for equity in the middle grades: A preliminary report. *Journal of Negro Education*, 80(3), 266-283.
- Chick, H. L., Pham, T., & Baker, M. K. (2006). Probing teachers' pedagogical content knowledge: Lessons from the case of the subtraction algorithm. *Identities, Cultures and Learning Spaces*, 139-146.
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (Laureate custom ed.). Boston, MA: Pearson Education.
- Darling-Hammond, L., & Sykes, G. (2003). Wanted, A national teacher supply policy for education: The right way to meet the "highly qualified teacher" challenge. *Educational Policy Analysis Archives*, 11(33).
- Koency, G., & Swanson, J. (2000). The special case of mathematics: Insufficient content knowledge a major obstacle to reform.
- Krippendorff, K. (2003). *Content analysis: An introduction to its methodology* (2<sup>nd</sup> ed.). Thousand Oaks, London: Sage Publications.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Naseer, M. S. (2015, September). Analysis of students' errors and misconceptions in pre-university mathematics courses. In M. N. Salleh, & N. F. Z. Abedin, (Eds.), *Proceedings: First International Conference on Teaching & Learning 2015* (p. 34-39). Langkawi, Malaysia: MNNF Publisher. ISBN 978-967-13637-1-3.
- Naseer, A., Adam, A., & Shiunee, A. (2014). *Mathematics in the National Curriculum Key Stage 2 (Grades 4, 5, & 6)*. Maldives: National Institute of Education.
- Ojose, B. (2014). Teaching Certain Mathematical Axioms: The Role Played by Conceptual Knowledge of Algebra Teachers. *National Teacher Education Journal*, 7(1).
- Olanoff, D., Lo, J. J., & Tobias, J. M. (2014). Mathematical content knowledge for teaching elementary mathematics: A focus on fractions. *The Mathematics Enthusiast*, 11(2), 267.
- O'Leary, Z. (2014). *The essential guide to doing your research project* (2nd ed.). Thousand Oaks, CA: SAGE Publications, Inc.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). London: Sage.
- Rittle-Johnson, B., Matthews, P. G., Taylor, R. S., & McEldoon, K. L. (2011). Assessing knowledge of mathematical equivalence: A construct-modeling approach. *Journal of Educational Psychology*, 103(1), 85-104.
- Schnepper, L. C., & McCoy, L. P. (2013). Analysis of Misconceptions in High School Mathematics. *Networks*, 15(1).

- Shirvani, H. (2015). Pre-service Elementary Teachers' Mathematical content Knowledge: A Predictor of Sixth Graders' Mathematics Performance. *International Journal of Instruction*, 8(1), 133-142.
- Tajudin, N. M. (2014). Exploring prospective mathematics teachers' mathematical knowledge for teaching algebraic problem-solving. *Proceeding of the Social Sciences Research ICSSR 2014* (e-ISBN 978-967-11768-7-0). Malaysia: Kota Kinabalu, Sabah.
- Tennant, G., & Colloff, K. (2014). Fruit salad algebra: Alive and kicking!. *Mathematics Teaching*, (239), 40-43.
- United Nations Children's Fund (UNICEF) & National Institute of Education (NIE). (2014). *Longitudinal study on the impact of curriculum reforms 2012-2013*. Maldives: UNICEF Maldives Country Office.
- Welder, R. M. (2012). Improving algebra preparation: Implications from research on student misconceptions and difficulties. *School Science and Mathematics*, 112(4), 255-264.

## **Investigating the Acquisition Order of English Restrictive Relative Clauses: Evidence from Egyptian EFL Learners**

**Dr. Inas Hussein Hassan**

**Lecturer and Vice Dean for Graduate Studies Affairs**

**College of Language and Communication (CLC)**

**Arab Academy for Science, Technology and Maritime Transport (Alexandria)**

**Email: [inas.hussein@staff.aast.edu](mailto:inas.hussein@staff.aast.edu)**

### **Abstract**

The research area of relative clauses (RCs) has been a significant topic in the field of language acquisition due to the complex syntactic structures of RCs and the difficulties they pose to language learners in processing them. The aim of the present study is to investigate the learnability of English restrictive RCs by Egyptian adult EFL learners, thus testing four different hypotheses on the acquisition of RCs in English: Keenan's (1975) Relativized Subject Accessibility; Kuno's (1975) Perceptual Difficulty Hypothesis (PDH); Sheldon's (1974) Parallel Function and Hamilton's (1994) Subject-Object Hierarchy Hypothesis (SOHH). A total of 61 Egyptian English-major first-year college students participated in the study. In addressing this objective, the researcher employed two tests: a Sentence Combination Production Test (SCPT) and a Grammaticality Judgement Test (GJT) in order to examine the learners' knowledge of English RCs. In the SCPT, the participants were instructed to combine two sentences together using a suitable relative pronoun and in the GJT, they were asked to judge the grammaticality of the given sentences. The results reveal that Egyptian EFL learners might not be fully aware of the formulation rules of RCs in English (total mean= 56.6% in the SCPT and 72.4% in the GJT). Findings of the study show that for Egyptian learners, SS and OS relative clause types would be easier to acquire than SO and OO types. The most marked types of errors made by Egyptian learners were inappropriate positioning of the RC, use of wrong relative pronoun and repetitive use of resumptive pronouns where they are not called for. The concluding section of the paper ends with some pedagogical implications and recommendations for future research.

**Key words:** Relative Clauses - Restrictive/ Non-restrictive Relative Clauses –  
Relativized Subject Accessibility – Perceptual Difficulty Hypothesis –  
Parallel Function – Subject-Object Hierarchy Hypothesis

### **1. Introduction**

The research area of relative clauses (RCs) has attracted the attention of many educators and researchers in the field of second language acquisition due to the complex syntactic behavior

of RCs compared to other structures and the difficulties that language learners encounter in processing them (Abdolmanafi & Rahmani, 2012; Gao, 2014). In spite of the fact that RCs are syntactic structures that are common across all languages, they are expressed differently in each language. As a result, the diverse syntactic structures existing in different languages might pose difficulties to learners attempting to comprehend these grammatical constructions. Therefore, due to their complex nature, a number of studies have investigated the acquisition of this phenomenon by EFL learners (Khan & Al-Namer, 2017).

Additionally, several hypotheses have been proposed in order to account for the acquisition of RCs by EFL learners. Among these, the three hypotheses that have received most attention are Keenan and Comrie's (1977) Noun Phrase Accessibility Hierarchy Hypothesis (NPAH), Kuno's (1974) Perceptual Difficulty Hypothesis (PDH) and Hamilton's (1994) Subject-Object Hierarchy Hypothesis (SOHH). Much research has been conducted to verify these hypotheses in both first and second languages. There were noticeable variations among such research studies not only in terms of the focus of investigation but also in terms of the participants and the data collection instruments employed by the researchers (Gao, 2014).

However, a survey of the literature on the acquisition of RCs has revealed that the acquisition of this phenomenon by Arab-speaking EFL learners has been given little attention (Khan & Al-Namer, 2017, p. 193). Hence, the purpose of this study is to address this gap by exploring the learnability of English RCs by Egyptian adult EFL learners. The study purports to answer the following research questions:

1. What is the difficulty order of the four types of English restrictive RCs: SS, SO, OS and OO by Egyptian EFL learners?
2. To what extent do the results of the study lend support to any of the different hypotheses of RC acquisition: Relativized Subject Accessibility, Perceptual Difficulty Hypothesis, Parallel Function and Subject-Object Hierarchy Hypothesis?
3. What are the most marked errors made by Egyptian EFL learners in the acquisition of English restrictive RCs?

In this way, the present study attempts to test the hypotheses of four language researchers- Kuno (1975), Keenan (1975), Sheldon (1974) and Hamilton (1994) with regard to the sequence of acquisition of four types of RCs in English- SS, SO, OS and OO. It is an attempt to determine whether there is an order of difficulty or accessibility among the four types of RCs produced by Egyptian learners which is in agreement with any of the hypotheses produced by the aforementioned researchers. Furthermore, it explores the main difficulties that learners encounter throughout the process of acquiring RCs and attempts to account for them. A total of 61

Egyptian adult EFL learners have participated in this study. The researcher employed a Sentence Combination Production Test (SCPT) and a Grammaticality Judgement Test (GJT) in order to measure the ability of the participants to comprehend and produce RCs in English.

The paper is structured as follows: the first part gives theoretical background information about RCs, the most common hypotheses on RCs in the literature and a brief survey of previous studies on the acquisition of English RCs; the second part presents the methodology of the study: participants, data collection instruments and statistical analysis, and the third part outlines the main results. Finally, the paper concludes with some pedagogical implications and recommendations for future research.

## **2. Literature Review**

### **2.1 Relative Clauses: Definition and Types**

The acquisition of RCs has been a significant area of research in linguistic and psycholinguistic fields of study. In fact, this complex grammatical construction has been studied extensively by many researchers in both first and second language acquisition due to its complex syntactic structures and the difficulties it poses to EFL language learners (Abdolmanafi & Rahmani, 2013; Gao, 2014). It can be argued that the main difficulty in RC acquisition stems from the fact that learners attempt to understand the embedded clause on the one hand and to track the main clause on the other hand. The main function of RCs is giving more information about the noun head. Such a function is essential for communication; hence, mastering RCs by children and EFL/ESL learners alike is vital (Alotaibi, 2016, p. 57). Previous studies related to RC acquisition in L2 can be characterized by three tracks of research: the first examining the "implicational" universals of language; the second investigating the effects of instruction on RC acquisition and the third exploring the cross-linguistic influences on RC acquisition in L2 (Chang, 2004).

The RC construction is considered a universal phenomenon since it is "ubiquitous" to all languages; however, it appears in different forms. Some languages make use of relative pronouns and complementizers (e.g. English); some may use pre-verbal relative pronouns in conjunction with post-verbal resumptive pronouns in an encasing construction (e.g. Arabic); whereas others tend to use case-marked relative pronouns to relativize the head noun; e.g. German (Khan & Al-Namer, 2017, p. 193). It is also worth noting here that English is a Right Branching Direction (RBD) language in which RCs appear to the right of the head noun. In contrast, other languages such as Chinese rely on a Left Branching Direction (LBD) in which RCs pre-modify the head (Abdolmanafi & Rahmani, 2013).

An English RC can be defined as a subordinate or dependent clause which is often referred to as an adjective clause. It acts as an adjective modifying a noun or a noun phrase in the

matrix clause by making it more specific or by giving additional information about a person, thing or idea. A RC should be located immediately after the noun it modifies. It typically starts with a relative pronoun such as *who*, *whom*, *which*, *that* and *whose*. The selection of the pronoun depends on the noun which the RC refers to and the type of the RC. A relative pronoun can have different functions in a sentence; e.g., subject, direct object, indirect object, object of a preposition (Abdolmanafi & Rahmani, 2013; Gao, 2014; Alroudhani, 2016; Khan & Al-Namer, 2017).

English RCs can be categorized into two types: restrictive and non-restrictive. This depends upon the necessity of information that a RC provides. Whereas a restrictive RC provides essential information to define or clarify the noun or noun phrase that it modifies, a non-restrictive RC provides additional information. Following are illustrative examples of the two types of RCs:

- a) The woman who lives next door is a famous writer
- b) Ms. John, who lives next door, is a famous writer

In example (a), the RC 'who lives next door' is used to make the noun head in the main clause more specific; i.e. without this information, the meaning of the sentence would not be clear to the listener or reader. On the other hand, in example (b), the RC 'who lives next door' only gives additional information since 'Ms. John' itself conveys enough information about the person. According to Izumi, restrictive RCs are more commonly used than non-Restrictive ones (as cited in Abdolmanafi & Rahmain, 2012, p. 30). Hence, in the present study, the focus will be on restrictive RCs.

Additionally, previous studies on RCs in SLA literature has categorized English RCs into four main types: SS where both the head noun to be relativized and the gap are in the subject position; SO where the head noun is the subject and the gap is the object; OS where the head noun is the object and the gap is the subject; and OO where both the head noun and the gap are in the object position (Hamilton, 1994). Examples of these types are shown as follows:

- 1. The student who got an A is a friend of mine. (SS)
- 2. The house in which Jack lives is very old. (SO)
- 3. Sally likes the dog that bit John's leg. (OS)
- 4. I know the woman who(m) you are looking for. (OO)

## 2.2 Hypotheses on RC Acquisition

In their attempts to define a potential natural sequencing of RCs, researchers put forward a number of hypotheses on language universals. These are Noun Phrase Accessibility Hierarchy

(NPAH), Relativized Subject Accessibility, Perceptual Difficulty Hypothesis (PDH), Parallel Function and Subject-Object Hierarchy Hypothesis (SOHH).

### 2.2.1 Noun Phrase Accessibility Hierarchy (NPAH)

Keenan and Comrie (1977) established a universal implicational relativization hierarchy (subject > direct object > indirect object > object of preposition > genitive > object of comparison) which reflects the acquisition order of the different types of RCs. According to the NPAH, if a language can form RCs on a given position in the hierarchy, it can also form RCs on all positions higher in the hierarchy. For example, if a language can form RCs on OPREP, it can also form RCs on SU, DO and IO but not necessarily on GEN or OCOMP. This hypothesis reflects the natural order of acquisition and it predicts that RCs formed on the subject are easiest to learn whereas those on the object of a comparative are the most difficult. Following are examples of each of the six types of RCs:

1. Noah's sister who lives in France is a teacher. (Subject)
2. I carried the child whom the dog bit. (Direct object)
3. The man to whom she gave the flower is very handsome. (Indirect object)
4. The house in which Jack lives is very old. (Object of adposition)
5. The student whose exam the teacher marked is very intelligent. (Genitive)
6. The bike than which the car is faster was stolen yesterday. (Object of comparison)

Much of the research on RC acquisition in L2 has been conducted to test Keenan and Comrie's NPAH on language acquisition. Following such extensive studies, a number of research studies were conducted in order to identify the difficulties that EFL with different backgrounds encounter (e.g. Abdolmanafi & Rahmani, 2013; Gao, 2014; Alotaibi, 2016; Khan & Al-Namer, 2017).

### 2.2.2 Relativized Subject Accessibility

Keenan (1975) asserted that relativized subjects are more accessible than relativized objects. Thus, he argued that SS and OS types should be easier than SO and OO types.

### 2.2.3 Perceptual Difficulty Hypothesis (PDH)

Based on the limitations of the human memory system, Kuno (1975) claimed that sentences with center embedding are perceptually more difficult to process than sentences with right branching. This is due to the fact that center embedding interrupts the processing of the matrix clause whereas right embedding does not. Therefore, he argued that OS and OO types should be easier than SS and SO types:

$$OS/OO > SS/SO$$

where > means "is easier than" and / means "as difficult as".

#### 2.2.4 Parallel Function

In this hypothesis Sheldon (1974) argued that RCs having the same function as the head noun are easier to process. Thus, she claimed that SS and OO should be easier than SO and OS types.

#### 2.2.5 Subject-Object Hierarchy Hypothesis (SOHH)

Hamilton's (1994) SOHH has received much attention. This hypothesis is based on the notion of processing discontinuity. The SOHH proposes an implicational relationship between the four types of RCs, namely OS, OO, SS and SO. In each of these labels, the first code refers to the head noun as either subject (S) or direct object (O) of the matrix clause and the second code refers to the role of the NP target of relativization within the RC. Accordingly, the SOHH predicts the following difficulty order:

$$OS > OO/SS > SO$$

According to this hypothesis, the number of discontinuities determines the level of difficulty. Therefore, the OS type should be the easiest to acquire since it contains only one discontinuity. OO and SS types are of equal difficulty since they contain two discontinuities. SO type is assumed to be the most difficult since it contains three discontinuities.

The following section briefly reviews a number of recent research studies that concentrated on investigating the acquisition hierarchy of RCs by EFL learners belonging to different linguistic backgrounds.

### 2.3 Previous Studies on the Acquisition of English RCs

Abdolmanafi and Rahmani (2012) investigate the acquisition of RCs by a number of 78 Persian-speaking EFL learners of a high intermediate proficiency level in English using a Sentence Combination Test. The researchers attempt to explore the sequence of acquisition of four types of RCs in English – OS, OO, SS and SO by testing the hypotheses put forward by three language researchers: Kuno's Perceptual Difficulty Hypothesis (1974) which is based on the idea that centrally embedded RCs are more difficult to process due to the fickleness of the human memory system, Keenan's Relativized Subject Accessibility Hypothesis (1975) which posits that the head noun as a subject is easier to relativize than if it were an object; and Sheldon's Parallel Function Hypothesis (1974) which proposes that RCs sharing the same function as the head noun are easier to process. The findings of the study have shown that the acquisition rank order of the four types of RCs is  $OS > OO > SS > SO$  and that OS and OO types of RCs would be easier to acquire than SS and SO types.

Gao (2014) conducts a study on the acquisition of RCs by a number of 40 Chinese-speaking learners. The purpose of the study is to test three different hypotheses: Keenan and Comrie's Noun Phrase Accessibility Hierarchy (NPAH). Kuno's Perceptual Difficulty



Hypothesis (PDH) and Hamilton's Subject-Object Hierarchy Hypothesis (SOHH). The SOHH suggests that of the four types of clauses, the hierarchy in terms of the ease of acquisition is as follow: OS > OO/SS > SO where '>' implies 'easier to relativize' and '/' indicates 'as easy to relativize as'. Gao has adopted the same data elicitation tools as were previously employed by Izumi (2003): a Sentence Combination Test in conjunction with a Grammaticality Judgement Test in order to assess the participants' intuitive knowledge as well as their production of RCs. The results lend support only to Kuno's PDH (1974); however, the other two hypotheses are not borne out.

Alotaibi (2016) conducts a study that aims to investigate the learnability of English RCs by a number of 120 Kuwaiti EFL learners; 60 of which were Advanced Learners (ALs) and the other sixty were Intermediate Learners (ILs). More specifically, the purpose of the study is to examine the extent to which the participants are aware of the structure of RCs in English. The researcher employs a Sentence Combination Test as his elicitation tool. He concludes that though both groups have made several errors on the task, there is a clear distinction between the number of correct errors that the participants are able to produce and their proficiency level in English. The findings of the study have shown that the participants have made the least number of errors when asked to relativize the head noun in the subject position; therefore, supporting the normal acquisition hierarchy. Regarding the SOHH, the results of the study have shown that the easiest type of RCs to relativize is OS. The researcher claims that this might be due to the fact that participants only needed to replace the head NP with the relative pronoun. In addition, he finds out that the most obvious type of error is in the unnecessary use of the resumptive pronoun which implies the negative transfer of L1.

In a more recent study, Khan & Al-Namer (2017) have conducted a study to examine the extent to which 50 Arabic-speaking EFL learners comprehend RCs. The aim of the study is to test which relative pronoun among the seven pronouns is the most problematic and which is the easiest to comprehend. Moreover, it aims to measure whether the English proficiency level of the participants affects their performance on the test. The researcher has employed a multiple-choice test where the participants have been asked to choose the correct answer out of four choices. The results have shown that the participants may not be fully aware of English RCs. The t-test has shown that the English proficiency level affected the participants' performance on the test; i.e. there is a significant difference between the answers of the advanced learners and those of the intermediate learners. The results have also revealed that the easiest pronoun to comprehend is the pronoun *when* and the most difficult one is the pronoun *whom*.

### **3. Methodology**

#### **3.1 Research Questions**

The study attempted to answer the following research questions:

1. What is the difficulty order of the four types of English restrictive RCs: SS, SO, OS and OO by Egyptian EFL learners?
2. To what extent do the results of the study lend support to any of the different hypotheses of RC acquisition: Relativized Subject Accessibility, Perceptual Difficulty Hypothesis, Parallel Function and Subject-Object Hierarchy Hypothesis?
3. What are the most marked errors made by Egyptian EFL learners in the acquisition of English restrictive RCs?

### 3.2 Setting and Participants

The study was conducted at the College of Language and Communication (CLC), Arab Academy for Science, Technology and Maritime Transport (AASTMT), Alexandria, in Miami Headquarters in October 2017. The participants are Egyptian first-year undergraduate students who are registered at the Department of Humanities in Term September 2017 before majoring in either Language and Translation or Media on starting their third term at the college. They learned EFL as a mandatory course for at least ten years. Participants' age ranged from 18 to 19 years old. Most of the participants were female (n=56). Based on the results of the students' scores in a Placement Test given to nearly 90 students, 61 upper-intermediate to advanced students whose scores were above 50% in the Placement Test were selected as the sample group for this study. This sample of students was purposively selected since the grammatical construction under investigation is a complex one; therefore, an intermediate to advanced level of English language proficiency was considered a prerequisite for the selected participants in this study.

With these participants, two different research designs, each containing a different data collection instrument eliciting relative clauses, were tried out. The SCPT was chosen to elicit data on students' production whereas the GJT was chosen to get insights into what students think is correct without producing any sentences themselves or providing any corrections to incorrect sentences. The time given for the completion of the two tests was 25 minutes.

### 3.3 Instruments

The first data collection instrument was a SCPT (see Appendix A). In this task, the students were given 16 pairs of sentences and were then asked to combine these into sentences containing RCs. There were four sentences for each RC type under study. The task was chosen because it was productive in nature. In this task, students were expected to perform the following operations:

1. Identifying the co-referential noun/ pronoun in order to be able to form an accurate sentence in English.
2. Inserting one sentence into the other without violating the structure or the meaning of the sentence.

The distribution of the items in the SCPT with respect to the types of relative clauses they represent is demonstrated in Table 1.

**Table 1: Item Distribution of the Four Types of RCs in the SCPT**

	<b>SS</b>	<b>SO</b>	<b>OS</b>	<b>OO</b>
<b>Items</b>	<b>1, 5, 10, 13</b>	<b>2, 8, 12, 15</b>	<b>3, 6, 9, 14</b>	<b>4, 7, 11, 16</b>

The second data collection instrument was a GJT (see Appendix B). According to Crystal, a GJT can be defined as "the conformity of a sentence, or part of a sentence, to the rules defined by a particular grammar of the language; also called well-formedness" (as cited in Baysal, 2000, p. 135). It is a test that assesses the students' intuition about what they think is grammatically acceptable in the target language. In this way, it is not production-based; it is rather directed towards understanding students' competence with the target structure.

In the GJT, there were four sentences for each of the RC types: two grammatically correct and two incorrect. The random distribution of the items is shown in table 2 below.

**Table 2: Item Distribution of the Four Types of RCs in the GJT**

	<b>SS</b>	<b>SO</b>	<b>OS</b>	<b>OO</b>
<b>Items</b>	<b>1, 5, 10, 13</b>	<b>3, 7, 12, 14</b>	<b>4, 6, 8, 16</b>	<b>2, 9, 11, 15</b>

### 3.4 Procedure (Scoring)

In studies on the order of acquisition, the number of errors plays a significant role in determining the order of acquisition. Dualy, Burt and Krashen (as cited in Baysal, 2000, p. 136) have claimed that in acquisition order studies, 80% of correct responses are enough for a structure to be regarded as learned. However, the analysis in this study is based on the number of correct responses. Whereas all correct responses were counted as (1), an error is given a score of (0).

In the two data collection instruments, there were four items for each of the RC types. As shown in Table 3, each type was elicited by a total of 8 items and a total of 4 items when considered separately.

**Table 3: Total Number of Items According to Test**

Test	SS	SO	OS	OO
SCPT	4	4	4	4
GJT	4	4	4	4
Total	8	8	8	8

### 3.5 Statistical Analysis

In each of the two tests, the SCPT and the GJT, the average of correct responses for the four items representing each of the four types of RCs was calculated. Accordingly, the difficulty order of the four types of RCs was calculated.

## 4. Results

In order to investigate the rank order of mastery over the four types of RCs: SS, SO, OS and OO, the raw scores and percentages of both the SCPT and the GJT were calculated and presented according to each of the four types of RCs.

### 4.1 Sentence Combination Production Test (SCPT)

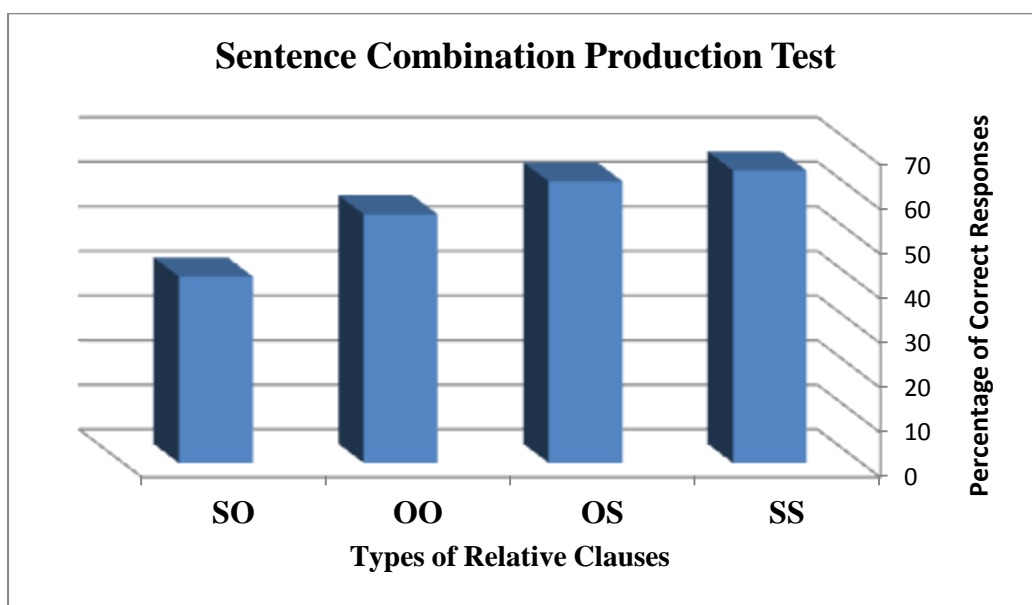
As shown in Table 4, the difficulty order of the production of the four types of RCs for the target group in the SCPT was SS (65.6%) > OS (63.1%) > OO (55.7%) > SO (41.8%) and that the easiest type for mastery in the target group was SS relative clause type while the most difficult type for mastery was SO relative clause type.

**Table 4: Numbers and Percentages of Correct Responses of the Four Types of RCs in the SCPT**

Raw Scores (N = 976)				
RC	SS	SO	OS	OO
	(n=244)	(n=244)	(n=244)	(n=244)
Mean	(160)	(102)	(154)	(136)
Percentage	65.6%	41.8%	63.1%	55.7%

Note: (n=the total number of test items)

Raw scores: (N= 976) = SS (n=244) + SO (n=244) + OS (n=244) + OO (n=244)



**Figure 1: Percentage of Correct Responses for the Four Types of RCs in the SCPT**

#### 4.2 Grammaticality Judgement Test (GJT)

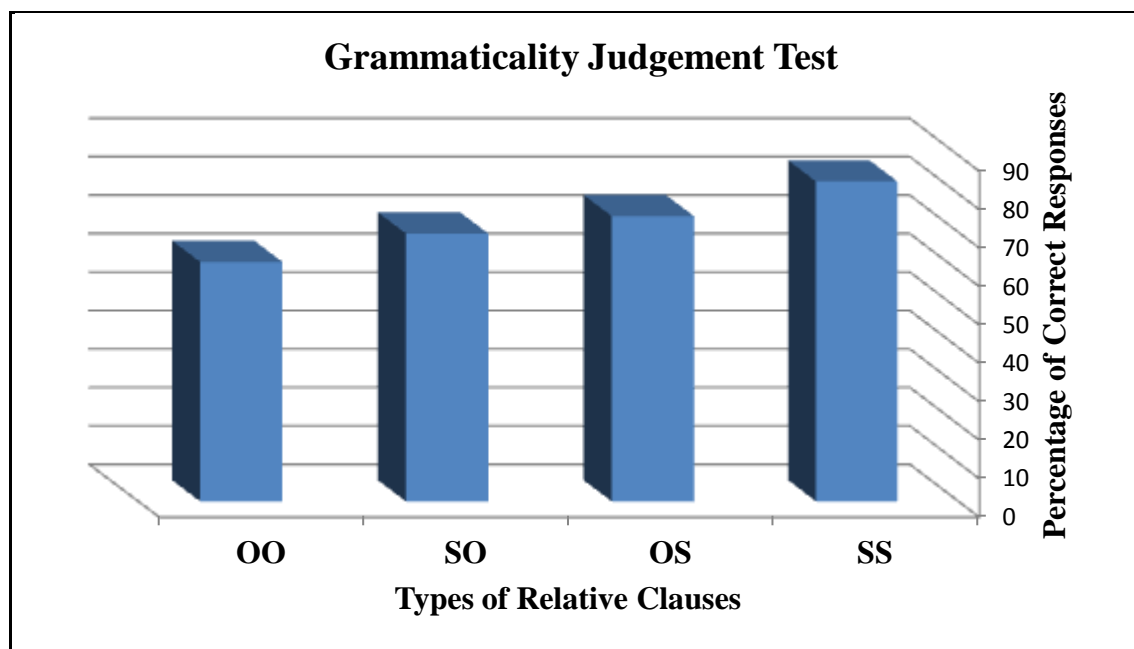
As shown in Table 5 below, the difficulty order of the recognition of the four types of RCs for the target group in the GJT was SS (83.2%) > OS (74.2%) > SO (69.7%) > OO (62.3%) and that the easiest type for mastery in the target group was SS relative clause type while the most difficult type for mastery was OO relative clause type.

**Table 5: Numbers and Percentages of Correct Responses for the Four Types of RCs in the GJT**

Raw Scores (N = 976)				
RC	SS (n=244)	SO (n=244)	OS (n=244)	OO (n=244)
Mean	(203)	(170)	(181)	(152)
Percentage	83.2%	69.7%	74.2%	62.3%

Note: (n=the total number of test items)

Raw scores: (N= 976) = SS (n=244) + SO (n=244) + OS (n=244) + OO (n=244)



**Figure 2: Percentage of Correct Responses for the Four Types of RCs in the GJT**

## 5. Discussion

The findings of the study have revealed that Egyptian adult EFL learners are not fully aware of the structure of RCs. Though their performance in the GJT, where the total average of correct responses was 72.4%, revealed much better results than the SCPT where the total average of correct responses was 56.6%, still they are not in good command of this complex grammatical structure.

As previously shown, the data in both tests given to the target group were analyzed with the frequency count of the four types of RCs and were put into four different categories. The results show that, for Egyptian EFL learners, SS and OS types of RCs are easier than OS and OO types.

The data were checked against the acquisition hypotheses put forward by four different researchers. Accordingly, the following results were produced:

- Keenan (1975) asserted that relativized subjects are more accessible than relativized objects and, therefore, SS and OS types should be easier than SO and OO types. In the SCPT,  $SS + OS = 160 + 154 = 314$  while  $OO$  and  $SO = 102 + 136 = 208$ . In the GJT,  $SS + OS = 203 + 181 = 384$  while  $OO$  and  $SO = 170 + 152 = 322$ . The data seem to fully support this hypothesis.

- Kuno (1975) argued that center embedding is perceptually difficult and, therefore, OS and OO types would be easier than SS and SO. Referring to the data, in the SCPT,  $OS + OO = 154 + 136 = 290$  while  $SS + SO = 160 + 102 = 262$ . In the GJT,  $OS + OO = 181 + 152 = 333$  while  $SS + SO = 203 + 170 = 373$ . The data from the SCPT fully support Kuno's hypothesis while the data from the GJT partially support this hypothesis.
- Sheldon (1974) claimed the parallel function hypothesis which asserts that RCs easiest to acquire are those in which the relative pronoun has the same function as the head noun. It follows that SS and OO types are expected to be easier than SO and OS types. In the SCPT,  $SS + OO = 160 + 136 = 296$ , while  $SO + OS = 154 + 102 = 256$ . In the GJT,  $SS + OO = 203 + 152 = 355$ , while  $SO + OS = 181 + 170 = 351$ . Thus, the data in this study fully support Sheldon's hypothesis.
- Hamilton's (1994) SOHH posits that the OS type should be the easiest to acquire since it contains only one discontinuity. OO and SS types are of equal difficulty since they contain two discontinuities. SO type is assumed to be the most difficult since it contains three discontinuities. In this study, in both the SCPT and the GJT, neither the OS type is the easiest to acquire nor SO type is the most difficult to acquire. Furthermore, OO and SS types proved to be of unequal difficulty. Thus the findings of the study did not lend any support to this hypothesis.

Concerning Research question 1: "What is the difficulty order of the four types of English RCs: SS, SO, OS and OO by Egyptian EFL learners?", the difficulty order of RCs in the SCPT is as follows:

$$SS > OS > OO > SO$$

And in the GJT, the order of difficulty is as follows:

$$SS > OS > SO > OO$$

Then it can be concluded that, for Egyptian learners, the SS and OS types of RCs are considered easier to acquire than OO and SO.

Regarding Research question 2: "To what extent do the results of the study lend support to any of the different hypotheses of RC acquisition: Relativized Subject Accessibility, Perceptual Difficulty Hypothesis, Parallel Function and Subject-Object Hierarchy Hypothesis?", on the one hand, the results of the study fully support Keenan's Relativized Subject Accessibility (1975), Sheldon's Parallel Function Hypothesis (1974) and partially support Kuno's Perceptual Difficulty Hypothesis (1975). On the other hand, the result do not lend any support to Hamilton's (1994) SOHH hypothesis.

With regard to Research question 3: "What are the most marked errors made by Egyptian EFL learners in the acquisition of English Restrictive RCs?", through analyzing the responses of the participants in the SCPT, the most marked errors are: incorrect positioning of RCs, the choice of wrong relative pronouns, maintaining resumptive pronouns, maintaining both relative pronouns and subject pronouns and, finally, problems with genitive and indirect object types of RCs. These can be outlined and further explained as follows:

**1. Incorrect positioning of RCs.** Examples of the participants' incorrect responses are:

- (1) \* The taxi driver was friendly who took me to the airport.  
(Correction: The taxi driver who took me to the airport was friendly.)
- (2) \* The man is standing over there that Ann brought him to the party.  
(Correction: The man that Ann brought to the party is standing over there.)
- (3) \* The man called the police whose wallet was stolen.  
(Correction: The man whose wallet was stolen called the police.)
- (4) \* The candidate didn't win the election whom I voted for her.  
(Correction: The candidate whom I voted for didn't win the election.)
- (5) \* The vase broke in half which fell on the floor.  
(Correction: The vase which fell on the floor broke in half.)
- (6) \* The picture was beautiful which she was looking at.  
(Correction: The picture which she was looking at was beautiful.)
- (7) \* The flowers were growing in the park which the old man picked.  
(Correction: The flowers which the old man picked were growing in the park.)
- (8) \* The film was directed by David Lean which Mary had seen in Venice.  
(Correction: The film which Mary had seen in Venice was directed by David Lean.)

In these examples, the RCs do not immediately follow the nouns or noun phrases they modify; therefore, these were marked as wrong responses. For instance, in example (1), the RC 'who took me to the airport' should come immediately after the noun phrase, 'the taxi driver', that it modifies. In example (3), the RC 'whose wallet was stolen' should come immediately after the noun phrase it modifies: 'The man'. In example (7), The RC 'which the man picked' should immediately follow the noun phrase that it modifies: 'The flowers'.

**2. The choice of wrong relative pronouns.** Following are illustrative examples of the participants' incorrect responses in relation to this error:



- (9) \* The taxi driver whom took me to the airport was friendly.  
(Correction: 'who' instead of 'whom')
- (10) \* The man whose Ann brought to the party is standing over there.  
(Correction: 'who/whom' instead of 'whose')
- (11) \* I must thank the people whose I got a present from.  
(Correction: 'who/ whom' instead of 'whose')
- (12) \* The man whom wallet was stolen called the police.  
(Correction: 'whose' instead of 'whom')
- (13) \* I always visit the child which I told my life story to  
(Correction: 'who/ whom' instead of 'which')
- (14) \* The candidate which I voted for didn't win the election.  
(Correction: 'who/ whom' instead of 'which')
- (15) \* John telephoned the girl whose sold a car yesterday.  
(Correction: 'who' instead of 'whose')
- (16) \* Olga wrote on a topic who she didn't know anything about.  
(Correction: 'which' instead of 'who')
- (17) \* The child ate the cookies whom the neighbors baked.  
(Correction: 'which' instead of 'whom')

In the aforementioned examples, it is evident that Egyptian EFL learners are sometimes confused regarding the differences in meaning between various types of relative pronouns. For instance, they sometimes mistakenly replace 'whom', a direct object pronoun, by 'who', a subject pronoun, as in "The taxi driver whom took me to the airport was friendly" (example 9), or 'whose', a possessive pronoun, by 'whom', a direct object pronoun, as in "The man whom wallet was stolen called the police." (example 12).

**3. Maintaining resumptive pronouns.** Examples of incorrect responses by the participants with regard to this error are:

- (18) \* The man who Ann brought him to the party is standing over there.  
(Correction: 'him' must be omitted)
- (19) \* I must thank the people who I got a present from them.  
(Correction: 'them' must be omitted)
- (20) \* The candidate that I voted for her didn't win the election.  
(Correction: 'her' must be omitted)
- (21) \* Olga wrote on a topic that she knew nothing about it.  
(Correction: 'it' must be omitted)
- (22) \* The picture which she was looking at it was beautiful.

(Correction: 'it' must be omitted)

This clearly indicates the negative transfer of L1. Resumptive pronouns are considered a major feature of RCs in Arabic. The Longman Dictionary of Language Teaching and Applied Linguistics (2010) defines resumptive pronouns as "in the position of a trace left behind when forming a wh-phrase. [...] Resumptive pronouns are ungrammatical in Standard English, but they are acceptable or obligatory in many languages (e.g. Arabic)" (as cited in Alroudhan, 2016, p. 36). The resumptive pronoun is known as *الضمير العائد* in Arabic. This resumptive pronoun functions as a referent for the head noun and is usually attached to a verb. The resumptive pronoun agrees with the head noun in number, gender and case (Alroudhan, 2016). Following is an illustrative example:

- رأيت الرسالة التي كتبها الطالب

I saw the message that the student wrote

Due to the negative transfer of L1, the participants incorrectly produced sentences such as "The man who Ann brought him to the party is standing over there" (example 18) where the pronoun 'him' should not be retained or "Olga wrote on a topic that she knew nothing about it" (example 21) where the pronoun 'it' should not be kept.

**4. Maintaining both relative pronouns and subject pronouns.** Following are illustrative examples of the participants' incorrect responses in the SCPT with regard to this error:

(23) \* Algebra problems contain letters which they stand for unknown numbers.

(Correction: 'they' must be omitted)

(24) \* She was looking at a picture which it was beautiful.

(Correction: 'it' must be omitted)

(25) \* The old man picked some flowers which they were growing in the park.

(Correction: 'they' must be omitted)

In these examples, the participants sometimes mistakenly keep both the relative pronoun (e.g. which) and the subject of the subordinate clause (e.g. they; it) where the latter must be omitted.

**5. Problems with genitive and indirect object types of RCs.** Following are illustrative examples of the participants' erroneous responses in the SCPT in relation to such types of RCs:

(26) \* I live in a dormitory which its residents came from different

countries.

(Correction: I live in a dormitory whose residents come from different countries.)

- (27) \* The dormitory which I live in its residents came from different countries.

(Correction: I live in a dormitory whose residents come from different countries.)

- (28) \* The man called the police his wallet was stolen.

(Correction: The man whose wallet was stolen called the police.)

- (29) \* The man who whose wallet was stolen called the police.

(Correction: The man whose wallet was stolen called the police.)

- (30) \* I always visit the child whom I told my life story.

(Correction: I always visit the child whom I told my life story to.)

These examples illustrate that participants are sometimes unaware of the correct structure of genitive clauses. Instead of using the relative pronoun "whose", they use "which its": a relative pronoun and a possessive pronoun or "who whose": two relative pronouns. They might also be facing difficulty in forming indirect object RCs. For instance, in example (30), the preposition 'to' should have been retained at the end of the RC 'whom I told my life'.

## 6. Conclusion

This study aimed at examining the acquisition order of English restrictive RCs by Egyptian EFL learners using a SCPT in conjunction with a GJT. It further investigated the extent to which the results of the study are in agreement with any of the hypotheses of RC acquisition. Findings of the study revealed that Egyptian learners may not be fully aware of the different syntactic structures of RCs. For Egyptian learners, SS and OS would be much easier to acquire than OS and OO types of RCs. Furthermore, these results lend full support to two hypotheses: Relativized Subject Accessibility and Parallel Function, and partial support to Perceptual Difficulty Hypothesis and are, therefore, inconsistent with the Subject-Object Hierarchy Hypothesis.

This study may contribute to the literature on the acquisition of RCs. The results of the study clearly reveal the complexity of the RC as a grammatical structure. Egyptian EFL learners are not fully aware of this structure since their performance in each of the tests employed in the study (SCPT and GJT) was below 80%. It is worth noting here that in acquisition order studies, 80% of correct responses are enough for a structure to be regarded as learned (Baysal, 2000). In this study, OO and OS are the most difficult types of RCs to be acquired by Egyptian learners. The most common errors are the incorrect positioning of RCs, the wrong use of the relative pronoun and the unnecessary maintaining of resumptive pronouns which indicate the negative

transfer of L1. In addition to these, other errors included problems with genitive clauses and the omission of the preposition with the relative pronoun whom.

Through analyzing the performance of the participants and the errors they commonly made in the two tests employed by the researcher in this study, there arise a number of pedagogical implications. Language teachers need to be aware of the most difficult RCs for Egyptian learners and the most marked errors made by Egyptian learners in particular. Taking the results of this study into consideration, it is recommended that ESL/ EFL teachers need to acquaint the learners with the different types of RCs and the rules of their formation. As far as materials design and lesson plans are concerned, more emphasis is to be given to OO and OS types of RCs since these proved to be more difficult than SO and SS types for Egyptian EFL learners. Furthermore, learners can be given practice activities where they have sufficient opportunities not only to judge the grammaticality of sentences including RCs but also to produce different types of RCs correctly. In addition, they should be given continuous feedback by their teachers for the purpose of gradually producing error-free sentences including RCs. In brief, the results of the study can inform curriculum design, teaching methodology and evaluation for Egyptian EFL learners.

Finally, it can be concluded that since the findings of this study are inconsistent with the findings of similar previous studies on Arab-speaking EFL Learners (e.g. Alotaibi, 2016) which reveal that the OS and OO types of RCs are easier than SO and SS, there is need for further research on the acquisition order of RCs by Arab-speaking EFL learners in order to obtain deeper insights into the problems that EFL learners encounter when they acquire this complex grammatical construction.

## References

- Abdolmanafi, S. J., & Rahmani, Z. (2012). An Investigation of the Learnability of Relative Clauses by EFL Learners. *World*, 2(3), 29-37. Retrieved from [file:///C:/Users/Hello/Downloads/1822-5733-1-SM%20\(1\).pdf](file:///C:/Users/Hello/Downloads/1822-5733-1-SM%20(1).pdf)
- Alotaibi, A. M. (2016). Examining the Learnability of English Relative Clauses: Evidence from Kuwaiti EFL Learners. *English Language Teaching*, 9(2). 57-65. Retrieved from <file:///C:/Users/Hello/Downloads/56219-195616-1-SM.pdf>
- Alroudhan, H. E. (2016). The Acquisition of English Restrictive Relative Clauses by Arab Adult EFL Learners. *Advances in Language and Literary Studies*, 7(1), 33-53. Retrieved from

<http://www.journals.aiac.org.au/index.php/all/article/view/1986/1797>

Baysal, A. (2000). A Study on Restrictive Relative Clauses with Particular Reference to Data Triangulation in ELT Research. *Sosyal Bilimler Dergisi*, 129-146.

Retrieved from

<https://earsiv.anadolu.edu.tr/xmlui/bitstream/handle/11421/528/153751.pdf?sequence=1&isAllowed=y>

Chang, Y. (2004). Second Language Relative Clause Acquisition: An Examination of Cross-Linguistic Influences. National Chung Hsing University. Retrieved from [https://www.researchgate.net/publication/234586883\\_Second\\_Language\\_Relative\\_Clause\\_Acquisition\\_An\\_Examination\\_of\\_Cross-Linguistic\\_Influences](https://www.researchgate.net/publication/234586883_Second_Language_Relative_Clause_Acquisition_An_Examination_of_Cross-Linguistic_Influences)

Diessel, H. & Tomasello, M. (2005). A New Look at the Acquisition of Relative Clauses. *Language*, 81(4), 882-906. Retrieved from [http://www.eva.mpg.de/documents/Linguistic%20Society%20of%20America,%20MUSE/Diessel\\_New\\_Language\\_2005\\_1555274.pdf](http://www.eva.mpg.de/documents/Linguistic%20Society%20of%20America,%20MUSE/Diessel_New_Language_2005_1555274.pdf)

Gao, Q. Q. (2014). Chinese EFL Learners' Acquisition of English Relative Clauses. *International Journal of English Linguistics*, 4(3), 82-87. Retrieved from <file:///C:/Users/Hello/Downloads/37371-126846-1-SM.pdf>

Hamilton, R. I. (1994). Is Implicational Generalization Unidimensional and Maximal? *Language Learning*, 44, 123-157. Retrieved from <http://dx.doi.org/10.1111/j.1467-1770.1994.tb01096.x>

Keenan, E.L. (1975). Variation in Universal Grammar. In Fasold and R. Shuy (eds.), *Analyzing Variation in Language*. Washington DC: Georgetown University Press.

Keenan, E. L., & Comrie, B. (1977). Noun Phrase Accessibility and Universal Grammar. *Linguistic Inquiry*, 5(1), 117-136. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.463.2048&rep=rep1&type=pdf>

Kuno, S. (1974). The Position of Relative Clauses and Conjunctions. *Linguistic Inquiry*, 5, 117-136.

Khan, S. S. & Al-Namer, L. (2017). The Comprehension of English Relative Clauses by Arabic-Speaking EFL Learners. *International Journal of Education*, 9(1), 192- 207. DOI: 10.5296/ije.v9il.11025.

Sheldon, A. (1974). The Role of Parallel Function in the Acquisition of Relative Clauses in English. *Journal of Verbal Learning and Verbal Behaviour*, 3, 271-281.

Suh, J. S. (2000). A Difficulty Ordering for the Learning of English Relative Clauses. *The Journal of English Grammar*, 4, 5-22. Retrieved from [file:///C:/Users/Hello/Downloads/jeg-4-1-1%20\(1\).pdf](file:///C:/Users/Hello/Downloads/jeg-4-1-1%20(1).pdf)

## Appendix A:

### Sentence Combination Production Test (SCPT)

Name: ..... Class: .....

Mark in Placement Test: .....

**Please combine each of the following pairs of sentences using relative clauses. Use who, which, that, whose and whom.**

1. The taxi driver was friendly. He took me to the airport.

.....

2. The man is standing over there. Ann brought him to the party.

.....

3. Algebra problems contain letters. They stand for unknown numbers.

.....

4. I must thank the people. I got a present from them.

.....

5. The man called the police. His wallet was stolen.

.....

6. I live in a dormitory. Its residents came from different countries.

.....

7. I always visit the child. I told my life story to the child.

.....

8. The candidate didn't win the election. I voted for her.

.....

9. John telephoned the girl. The girl sold a car yesterday.

.....

10. The vase broke in half. The vase fell on the floor.

.....

11. Olga wrote on a topic. She knew nothing about it.

.....

12. The picture was beautiful. She was looking at it.

.....

13. The house has a green door. The house stands on the river.

.....

14. The old man picked some flowers. Some flowers were growing in the park.

.....

15. The film was directed by David Lean. Mary had seen it in Venice.

.....

16. The child ate the cookies. The neighbors baked the cookies.

.....

## Appendix B:

### Grammaticality Judgement Test (GJT)

Name: ..... Class: .....

**Indicate whether the following sentences are grammatical or ungrammatical. If you think that the sentence is grammatical, put a tick; if you think the sentence is ungrammatical, put a cross (X) in the blanks provided. Please do not make any corrections.**

1. The woman which dress was torn got very upset. ....
2. The little boy wanted the chair which I was keeping my books under it.  
.....
3. The person which Mary spoke to took my message. ....
4. Jane helped the boy who tried to solve the problem. ....
5. Our neighbor's son who had broken our window did not apologize.  
.....
6. Jane discussed with the woman whom child had stolen her bag. ....
7. The man whom you spoke with was the principal. ....
8. John read the magazine which had scientific information. ....
9. I saw the bank manager to who I gave my cheque. ....
10. The girl who she had disappeared suddenly could not be found. ....
11. I found the taxi in which I forgot my purse. ....



12. The homework which our teacher had assigned it was very difficult. ....
13. The journalist whose interview I watched yesterday has a programme on  
TV. ....
14. The book which I borrowed from the library is now out of print. ....
15. The child ate a sandwich which his mother made at home. ....
16. I bought a wonderful car which it is right at the corner. ....

## STUDY OF ORGANIZATIONAL STRESS IN EMERGENCY MEDICAL SERVICES

**Author: SIMRAN BHATIA**  
**Pandit Deendayal Petroleum University, India**

### ABSTRACT

**Background:** Stress has come to characterize modern life; the problem of organizational stress is being increasingly recognized. Occupational stress is the interaction of work conditions with characteristics of the worker such that, the demands of work exceed the ability of the worker to cope with it. Various studies in this field have indicated a variety of additional negative outcomes related to Emergency Medical Services (EMS) professionals' exposure to critical incidents which affects their physical and mental health.

**Objectives:** To study the accumulation of stressors and job-related situations that are considered stressful by employees in medical settings, to find out the differences in response to both the genders towards stress.

**Method:** Organizational Role Stress Scale was used on 150 medical employees. Data from two government hospitals was collected for this study. To analyze the data, appropriate statistical techniques of mean, standard deviation and 't'-test were used.

**Results:** The results indicate that the highest stress is caused by the stress role factor Inter Role Distance. This indicates that the medical employees are occupied with more than one role and therefore face conflicts. Role Isolation and Planning Inadequacy also contribute to organizational stress of the emergency medical employees. The t-test analysis showed that there was no significant difference found in variation to gender this indicates that the roles and responsibilities of the medical staff are equally distributed without any gender bias.

**Conclusion:** The constant barrage of medical and trauma comes at a psychological price. Demographic factors such as age, gender, marital status, position or years of experience do not offer protection against the psychological trauma related to constant emergency traumatic exposures. The study concludes that an employee involved in medical profession experiences an adverse effect on their mental health due to constant exposure to stress.

*Keywords: emergency, medical employees, occupational stress, mental health*

### 1. INTRODUCTION

Stress is the most experienced problem of everyday life. Stress has been described historically either as a stimulus, often cited to as a stressor, that happens to the person or as a response characterized by physiological arousal and negative effect, especially anxiety. Stress, therefore, is an ongoing process that worsens by our incompetence to control either the factor that is causing the stress or our reactions to those problems. Indeed, stress has come to characterize modern life.

Occupational Stress is an accumulation of stressors, job-related situations that are 'stressful' experienced by most of the workers. These definitions examine the joint contributions to the occupational stress of worker characteristics, job conditions, and their interactions. Psychological symptoms, Physical health symptoms and behavioral symptoms are broad categories of symptoms under occupational stress. Occupational stress lowers the employees' productivity, increases absenteeism and turnover, and causes physiological changes. Prolonged stress can be a factor in the psychosomatic origins of illnesses, including heart disease, diabetes, skin disease, headaches, etc. Causes of stress may include work-family conflicts, work overload, role ambiguity, computer use, etc. Consequences may be long-term effects such as psychosomatic disorders and short-term effects on health, behavior, and job performance.

Emergency Response Service (ERS) is generally connected with medical services, police emergency, and fire service. This forms the core group of services to be provided to those in need. However, various functions can be consolidated to frame an extensive 'package' of ERS including emergencies like mountain rescue, cave rescue, mine rescue, and so forth. The different crisis like calamity relief and famine relief from some portion of the civil emergency services. Various studies have examined the psychological effects of stress exposure to critical incidents. Findings vary from non-harmful outcomes to the full development of Post-Traumatic Stress Disorder (PTSD) (Baum, Gathchel & Schaeffer, 1983; Freedy, Shaw & Jarrell, 1992; McFarlane & Papay, 1992). In the past two decades, the research has shifted from merely considering the victims who experience critical incidents to include an examination of the stress experienced by those who have provided assistance to the victims. Researchers have investigated the detrimental impact on mental health professionals and emergency services professionals who have provided professional psychological and medical care for victims (Follette, Polusny, & Milbeck, 1994; McFarlane, 1989; Schauden & Frazier, 1995). Researchers state that the level of PTSD experienced by professionals caring for victims of critical incidents frequently exceeded the level found in the general public and closely resembled the level of PTSD found in victims of critical incidents (Durham, McCammon & Allison, Jr.1985; Carlier, Lamberts & Gersons, 1997; McFarlane & Papay, 1992).

Various researchers in this field have indicated a variety of additional negative outcomes related to Emergency Medical Services (EMS) professionals' exposure to critical incidents which affects their physical and mental health. Two negative outcomes identified are high rates of dissociation and interpersonal relationship difficulties (Clohessy & Ehlers, 1999; Hodgins, Creamer, & Bell, 2001; McFarlane & Bookless)

This research endeavors to investigate the level of work-related stress, experienced by the medical emergency workers while providing health care emergency services. This research is vindicated by the UN Mehta Institute of Cardiology & Research Centre (UNMICRC), grant-in-

aid self-governing organization assisted by the Government of Gujarat, India & GMERS Medical College and Sola Civil Hospital set under the Gujarat Medical Education & Research Society, Ahmedabad. These hospitals and their emergency staff are the wide-reaching proficient Emergency Service Providers of the nation today.

### **1.1. SIGNIFICANCE OF THE STUDY**

The study in this subject and specifically in this area is important for two stakeholders: Emergency Services and Social Sciences. This study is an assessment of the ground level functioning of the medical emergency employees and the stress undergone by them on day to day basis while working on the traumatic sites. The study, not only will pave way for a greater fillip, but also enhance the reputation of the emergency services provided to the people.

### **1.2. HYPOTHESES**

1. EMS professionals exhibit a significant level of stress due to personally disturbing incidents at work.
2. There exists a significant relationship between the stress symptoms of EMS professionals in response to both the genders towards stress.

## **2. LITERATURE REVIEW**

### **2.1. EMERGENCY MANAGEMENT SERVICES (EMS) AND EMS PROFESSIONALS**

As a writer in EMS India, India's first associate inspected publication on EMS, back in 2007, Tamorish Kole, a previous leader of the Society for Emergency Medicine, India (SEMI), along with MBBS, MRCS, FRSM, expressed, "With an excess of more than 100,000 street traffic related deaths, 98.5% 'rescue vehicle runs' moving dead bodies, 90% of ambulances with no gear/oxygen, 95% of ambulances having untrained work force, most ED specialists having no formal training in EMS, misuse of government ambulances and 30% mortality because of delay in emergency care, India depicts an identical representation of the US of the 1960s. Fortunately, EMS has taken firm root in India." EMS has changed since the time it was commonly expressed that, "EMS frameworks in India are best portrayed as fragmented." Today, India gloats an EMS framework that is extended exponentially and topographically. It's gone past the early ideas, and the concentration has moved from being an injury centric to cover all crises or emergencies. It's changed from being urban-situated to being pan-India. Like in the United States, the essential focus is no longer on road traffic accidents. EMS is rapidly developing as a vital part of the healthcare framework.

In a five year study, Rogers (1998) explored the relationship between the early retirement of EMS professionals and job-related mental and physical stress. The study concluded that EMS personnel did exhibit higher rates of early retirement than other healthcare professionals, primarily due to high levels of mental and physical stress. In a study of 160 EMS personnel in the United Kingdom, Alexander and Klein (2001) found exposure to critical incidents had a negative effect on the emotional well-being and mental health of this population. The research found that emotional and physical symptoms associated with their exposure to critical incidents

included emotional reactions to increased anger, irritability, guilt, fear, paranoia, and depression. The research also found that physical problems varied from fatigue, dizziness, migraine headaches, and high blood pressure, to diabetes and cancer. Further research on exposure to critical incidents found that self-destructive and antisocial behavior may also be generated after exposure to a personally disturbing incident (Everly, 1990; Mitchell, 1982; 1983; 1986; Mitchell & Bray, 1990).

Emergency services professionals work in an environment that includes frequent exposure to adults and children who are coping with life-threatening and traumatic conditions. Conditions in the workplace for EMS professionals often include threats to their own and their partner's personal safety, exposure to chemical and bio-hazardous materials, injuries and death of children and infants, repugnant victim scenes, body handling, completed suicides and homicides, and mass casualty incidents (Beaton and Murphy, 1995; Corneil, 1995). Emergency services providers must regularly cope with the stress related to these exposures and are expected to manage it appropriately.

More than 300 EMS professionals participated in a study conducted at the Albuquerque EMS Department. The results revealed that 289 out of them, i.e., 90% of these EMS professionals reported encountering a personal assault during their career (Pozzi, 1998). The overview additionally uncovered that brutal circumstances accounted as a primary stressor for the EMS personnel.

In a similar study conducted by Grange and Corbett (2002), they examined the responses of EMS professionals to 4,102 EMS calls covering a 31-day period. The examination revealed that EMS providers were exposed to violent patient behavior on more than 8.5%. The violent behavior included acts of physical and verbal abuse directed against EMS personnel that originated with the patient in 89.7% of the time and from other individuals 10.3% of the time.

## **2.2. PSYCHOLOGICAL IMPACT AND RISKS IN PROVIDING EMERGENCY SERVICES**

In the previous two decades, the Research has moved from merely considering the casualties who encounter critical incidents to incorporate an examination of the pressure experienced by the individuals who have given help to the victims. Researchers have examined the adverse effect on the emotional well-being of the medical experts who have provided proficient mental and therapeutic care for victims (Follette, Polusny, and Milbeck, 1994; McFarlane, 1989; Schauden and Frazier, 1995). Researchers inferred that the level of PTSD experienced by experts nurturing victims of critical incidents frequently surpassed the level found in the overall population and nearly resembled the level of PTSD found in victims of critical events (Durham, McCammon and Allison, Jr. 1985; Carlier, Lamberts, and Gersons, 1997; McFarlane and Papay, 1992).

Studies additionally show that medical employees in freely subsidized hospitals encounter more prominent perceived work stress than those in privately supported hospitals. An examination of psychological well-being demonstrates that harming impacts of stress and burnout can be exasperated in institutional settings, for example, state clinics. Research also demonstrates that the adjustments in work requests anticipate future burnout and burnout predicts future absence

span. To be powerful in diminishing burnout — and along these lines absence length, two avenues may be followed. To begin with; reducing exposure to working requests, for example, workload, emotional demands and work-home interference, and second; giving employment assets, work autonomy, learning opportunities social help, and work execution feedback.

Bryant and Harvey (1996) reported emergency services professionals involved in a critical incident experienced a sensation of helplessness due to inability to prevent a trauma victim's suffering. Limited control over the outcomes in a critical incident has been acknowledged as a critical determinant in the development of PTSD (Frye & Stockton, 1982; Mikulincer & Solomon, 1988). This relationship seems to validate the idea that emergency services providers may be at high levels of risk for PTSD due to their extensive exposure to critical incidents and their sense of limited personal control over outcomes in these critical incidents.

Alexander and Kline (2001) interviewed 110 emergency service providers with respect to the most disturbing incidents experienced in crisis situations. The examination revealed the most often experienced disturbing occurrences which were related to individual's health care ignorance and suicides. Other exceptionally irritating incidences were, recorded arranged by most significant to slightest importance, caring for a child victim, administering to a casualty is known to the emergency service provider, helping people and encountering vulnerability at the scene, watching over people who have bizarre injuries, looking after people when there is an inadequate backup from their partners, and looking after people in circumstances where the medical emergency professionals are given inaccurate data in regards to the scene or state of losses. After contribution in these critical incidents, almost 70% of those reviewed showed that they "never" had adequate time to mentally recover after exposure to such critical incidents.

Empirical research has shown that emergency care providers who offer emergency care probably encounter psychological problems (Figley, 1995; Paton, 1994; McCann and Pearlman, 1990). Healthcare services experts who are persistently presented with traumatic episodes are at a huge risk of encountering post-traumatic stress symptomatology (Fullerton, McCarroll, Ursano, and Wright, 1992).

Occupational stress, work fulfillment, coping, and psychological crisis in medical emergency services providers from a substantial, urban, public emergency medical framework was examined by Boudreaux, Mandry, and Brantley in 1997. They found that occupationally related stressors were significant indicators for more extreme side effects of tension, an absence of sensitivity, and general mental trouble. They utilized The Symptom Checklist-90, Revised (SCL-90-R) to survey levels of psychological well being. The SCL-90-R (Derogatis, 1992) is used to assess a broad array of psychological symptoms summarized under nine symptom groupings and three universal dimensions. In this examination, they concentrated on depression, uneasiness, threatening vibe, and anxiety and global distress of emergency services providers.

### **3. METHOD**

#### **3.1. POPULATION**

In the *U.N. Mehta Institute of Cardiology & Research Centre (UNMICRC)*, emergency related tertiary care cardiac treatment is rendered to all classes of cardiac patients particularly the poorest of poor cardiac patients. Sample of more than 100 Emergency Medical Services (EMS) professionals from the U.N. Mehta Institute of Cardiology & Research Centre were invited to participate in this survey. *GMERS Medical College Sola Hospital* has a turnout of 70% of urban-rural patients Sample of more than 50 Emergency Medical Services (EMS) professionals were invited to participate in this survey. Participants were recruited from diverse ethnic and racial backgrounds.

### **3.2. INSTRUMENTATION**

The purpose of this study was to investigate the level of stress in EMS professionals working in U.N. Mehta Institute of Cardiology & Research Centre and GMERS Medical College Sola Hospital. At the initial session with the participants, the investigator distributed a consent form and the survey. The investigator conducted a five-minute introduction to the study, discussing the consent form, and providing instructions for completing the questionnaires. The surveys included a background/demographic questionnaire (BDQ) and the Organizational Role Stress scale (ORS).

### **3.3. RESEARCH DESIGN AND DATA ANALYSIS**

To analyze the data, the researcher used appropriate statistical techniques of mean, standard deviation, 't'-test and correlation. Analysis was done to examine the relationship between the general health of the EMS professionals and the stress experienced by them.

Two research hypotheses were investigated in this study. The first hypothesis stated that EMS professionals exhibit a significant level of stress due to personally disturbing incidents at work. To answer this hypothesis, the relationship between the subjective levels of stress in EMS providers was investigated with the help of organizational role stress scale. Under the first research hypothesis, the independent variables were the different role stress factors while the dependent variable was organizational stress. To determine which role factor contributed to stress maximum or minimum, statistical techniques were used.

The second hypothesis stated that there exists a significant relationship between the stress symptoms of EMS professionals in response to both the genders towards stress. The objective of the second hypothesis was to differentiate the association between both the genders and the stress experienced by the EMS professionals. The independent variables were age, gender, marital status, current position, and years of experience. The dependent variable was organizational stress. To determine the same, t-test was performed to check the significant effects.

### **3.4. BACKGROUND AND DEMOGRAPHIC DETAILS**

The background and demographic details were collected from the participants. It was used to collect information related to age, gender, years of EMS career experience, Marriage status, etc.

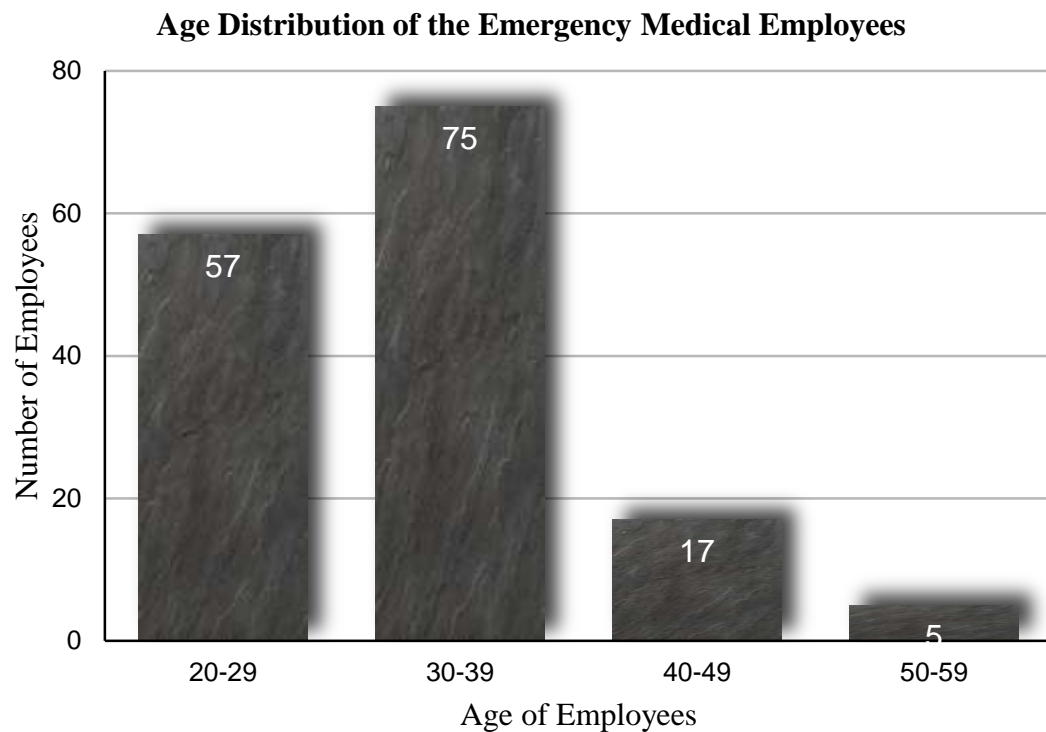
### **3.5. TOOL: ORGANIZATIONAL ROLE STRESS SCALE (ORS)**

The scale used to measure stress levels of employees in work settings is defined as an Organizational Role Stress (ORS) by Pareek in 1983. Role refers to a position one occupies in a social system, and is defined by the functions one performs in response to the expectations of the significant members of the society and one's expectation from his position or office.

The ORS was used to measure 10 role dimensions, i.e., Inter Role Distance (IRD), Role Stagnation (RS), Role Expectation Conflict (REC), Role Erosion (RE), Role Overload (RO), Role Isolation (RI), Personal Inadequacy (PI), Self Role Distance (SRD), Role Ambiguity (RA) and Resource Inadequacy (RIn). ORS is a 5 point scale (0 to 4), containing five items for each role stress range from 0 to 20.

## **4. FINDINGS AND DISCUSSION**

### **4.1. DEMOGRAPHIC DETAILS**

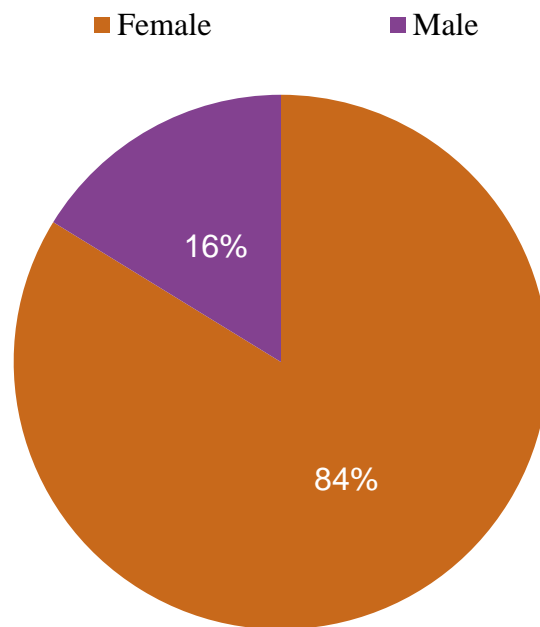


A total of 156 subjects completed the survey. Data was collected from the medical employees ranging from age groups 20 years to more than 50 years. Out of the total data collected, it was noticed that the working females dominated the male count in both the hospitals. 129 females and 25 males participated in the study.

Highest data was received by medical employees falling in the age group of 30-39 years followed by employees falling in the age group of 20-29 years. Least data was received from the medical employees exceeding the age group 50+ years. Figure 1 showcases the same.



**FIGURE 1: AGE DISTRIBUTION OF THE EMERGENCY MEDICAL EMPLOYEES**

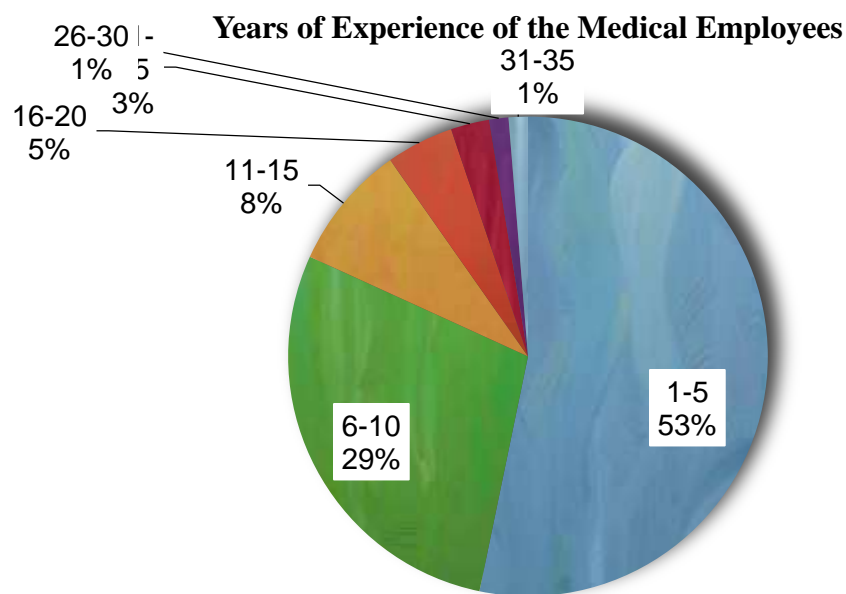


**FIGURE 2: PERCENTAGE COMPARISON ACROSS MALE AND FEMALE MEDICAL EMPLOYEES**

In this survey, the organizational stress of 84% females and 16% males was analyzed. Further, t-test was also applied to check if the gender has any significant difference in any role stress factors experienced by medical employees.

**FIGURE 3: PERCENTAGE COMPARISON ACROSS YEARS OF EXPERIENCE OF THE EMERGENCY MEDICAL EMPLOYEES OF BOTH THE HOSPITALS**

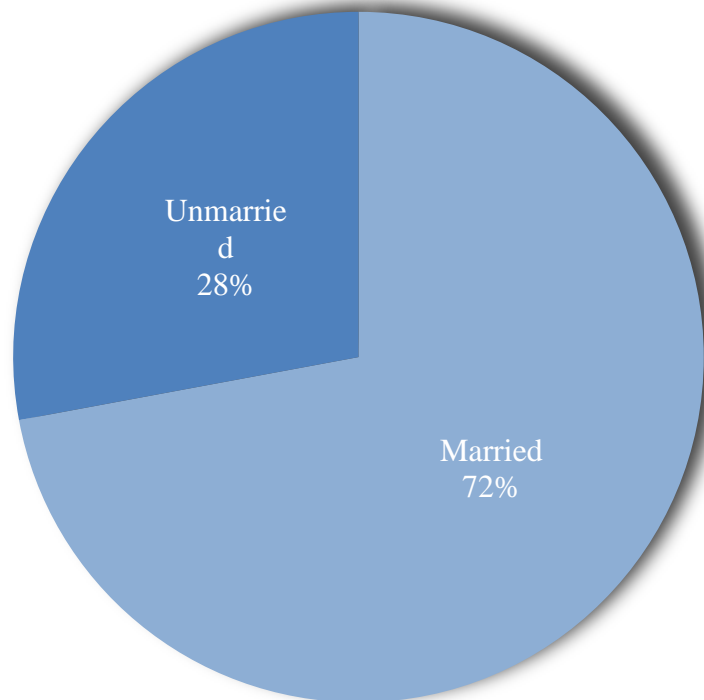
Highest number of medical employees in this study, fall in the age group of 1-5 years of experience in their profession followed by 6-10 years of experience in medical profession. However, least of them fall in the age group of 26-35 (specifically in this study).



**FIGURE 4: PERCENTAGE COMPARISON ACROSS MARITAL STATUS OF THE EMERGENCY MEDICAL EMPLOYEES OF BOTH THE HOSPITALS**

#### 4.2. ORGANIZATIONAL ROLE STRESS SCALE RESULTS

**Marital Status of the Medical Employees**



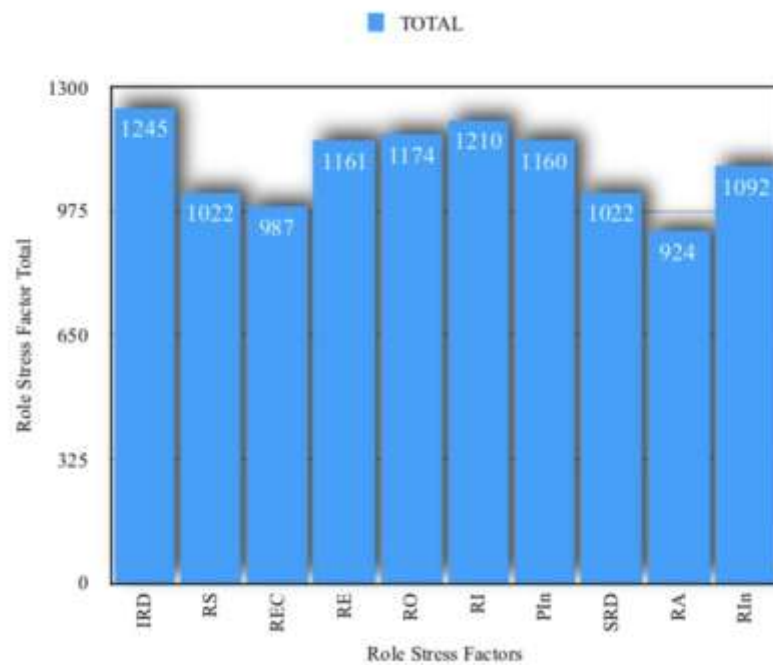
The ORS was used to measure 10 role dimensions, i.e Inter Role Distance (IRD), Role Stagnation (RS), Role Expectation Conflict (REC), Role Erosion (RE), Role Overload (RO), Role Isolation (RI), Personal Inadequacy (PI), Self Role Distance (SRD), Role Ambiguity (RA), and, Resource Inadequacy (RIn). Comparative Mean Analysis was done for all the ORS Factors. Table 7 discusses the same:

**TABLE 1: MEAN ANALYSIS OF ORS FACTORS**

FACTOR	TOTAL	MEAN	STANDARD DEVIATION	MAXIMUM	MINIMUM
IRD	1245	8.08	4.81	19	0

RS	1022	6.63	5.02	16	0
REC	987	6.40	4.88	16	0
RE	1161	7.53	4.60	18	0
RO	1174	7.62	4.99	17	0
RI	1210	7.85	4.42	16	0
PIn	1160	7.53	4.88	17	0
SRD	1022	6.63	4.29	15	0
RA	924	6	4.76	15	0
RIn	1092	14.20	4.62	17	0

**FIGURE 5: SUM OF ALL THE STRESS ROLE FACTORS AS RESPONDED BY THE EMERGENCY MEDICAL EMPLOYEES OF BOTH THE HOSPITALS**



The results indicate that the highest stress is caused by the stress role factor Inter Role Distance. This indicates that the medical employees are occupied with more than one role and therefore face conflicts. The stress role factor followed by IRD is Role Isolation which are quite common in medical settings. This may when a medical employee might feel that certain roles are psychologically closer to him while others are at much distance. Out of the five responses, participants selected any one and the maximum scored out of 20 in any stress role factor was 19 and the minimum score in every stress role factor was 0.

#### 4.3. DIFFERENTIAL ANALYSIS OF ALL THE ORGANIZATIONAL ROLE STRESS FACTORS WITH VARIATION IN GENDER BY APPLYING T-TEST

<b>TABLE 2: Comparison of the ORS Factor Inter Role Distance with variation in Gender</b>					
Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	1020	7.90	4.78	
Male	25	225	9	4.94	
From table 2, it can be inferred that the t-value i.e. 0.31 is less than the critical t-value i.e. 1.99 and is not significant at 0.05 level. Hence, the null hypothesis is accepted and it is concluded that there is no significant difference between the inter role distance factor of male and female medical emergency employees.					

<b>TABLE 3: Comparison of the ORS Factor Role Stagnation with variation in Gender</b>					
Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	836	6.48	5.00	0.38
Male	25	186	7.44	5.11	

From table 3, it can be inferred that the t-value i.e. 0.31 is less than the critical t-value i.e. 1.99 and is not significant at 0.05 level. Hence, the null hypothesis is accepted and it is concluded that there is no significant difference between the inter role distance factor of male and female medical emergency employees.

**TABLE 4:** Comparison of the ORS Factor **Role Expectation Conflict with variation in Gender**

Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	809	6.27	4.88	0.42
Male	25	178	7.12	4.91	

From table 4, it can be inferred that the t-value i.e. 0.42 is less than the critical t-value i.e. 1.99 and is not significant at 0.05 level. Hence, the null hypothesis is accepted and it is concluded that there is no significant difference between the role expectation conflict of male and female medical emergency employees.

**TABLE 5:** Comparison of the ORS Factor **Role Erosion with variation in Gender**

Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	953	7.38	4.50	0.35
Male	25	208	8.32	5.12	

From table 5, it can be inferred that the t-value i.e. 0.35 is less than the critical t-value i.e. 1.99 and is not significant at 0.05 level. Hence, the null hypothesis is accepted and it is concluded that there is no significant difference between the role erosion of male and female medical emergency employees.

**TABLE 6:** Comparison of the ORS Factor **Role Overload with variation in Gender**

Sex	No. Of Observations	Sum Total	Mean	SD	t-value
-----	---------------------	-----------	------	----	---------

Female	129	987	4.65	5.03	0.87
Male	25	187	7.48	4.86	
<p>From table 6, it can be inferred that the t-value i.e. 0.87 is less than the critical t-value i.e. 1.98 and is not significant at 0.05 level. Hence, the null hypothesis is accepted and it is concluded that there is no significant difference between the role overload of male and female medical emergency employees.</p>					

**TABLE 7:** Comparison of the ORS Factor **Role Isolation with variation in Gender**

Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	992	7.68	4.42	0.28
Male	25	218	8.72	4.39	
<p>From table 7, it can be inferred that the t-value i.e. 0.28 is less than the critical t-value i.e. 1.99 and is not significant at 0.05 level. Hence, the null hypothesis is accepted and it is concluded that there is no significant difference between the role isolation of male and female medical emergency employees.</p>					

**TABLE 9:** Comparison of the ORS Factor **Self Role Distance with variation in Gender**

Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	836	6.48	4.27	0.30
Male	25	184	7.44	4.42	

From table 9, it can be inferred that the t-value i.e. 0.30 is less than the critical t-value i.e. 1.99 and is not significant at 0.05 level. Hence, the null hypothesis is accepted and it is concluded that there is no significant difference between the self role distance factor of male and female medical emergency employees.

**TABLE 8:** Comparison of the ORS Factor **Personal Inadequacy with variation in Gender**

Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	951	7.37	4.83	0.35
Male	25	209	8.36	5.14	
<p>From table 8, it can be inferred that the t-value i.e. 0.35 is less than the critical t-value i.e. 1.99 and is not significant at 0.05 level. Hence, the null hypothesis is accepted and it is concluded that there is no significant difference between the personal inadequacy of male and female medical emergency employees.</p>					



<b>TABLE 10: Comparison of the ORS Factor Role Ambiguity with variation in Gender</b>					
Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	732	5.67	4.73	0.05
Male	25	192	7.68	4.63	
From table 10, it can be inferred that the the t-value i.e. 0.05 which is significant at 0.05 level. Hence, the null hypothesis is rejected and it is concluded that there is significant difference between the role ambiguity factor of male and female medical emergency employees.					

<b>TABLE 11: Comparison of the ORS Factor Resource Inadequacy with variation in Gender</b>					
Sex	No. Of Observations	Sum Total	Mean	SD	t-value
Female	129	1092	7.09	4.62	0.45
Male	25	196	7.84	4.98	

From table 11, it can be inferred that the t-value i.e. 0.05 which is significant at 0.05 level. Hence, the null hypothesis is rejected and it is concluded that there is significant difference between the resource inadequacy factor of male and female medical emergency employees.

## **5. CONCLUSION**

The results indicate that the highest stress is caused by the stress role factor Inter Role Distance. This indicates that the medical employees are occupied with more than one role and therefore face conflicts. Role Isolation and Planning Inadequacy also contributed to organizational stress of the emergency medical employees as per the results of this study. The t-test analysis results indicate that there was no significant difference found between stress levels of both, male and female emergency medical professionals. This indicates that the roles and responsibilities of the medical staff are equally distributed without any gender biases at the government hospitals. This is also possible due to variation in personality types.

The constant barrage of medical and trauma comes at a psychological price. Demographic factors such as age, gender, marital status, position or years of experience do not offer protection against the psychological trauma related to constant emergency traumatic exposures.

The results in this study are preliminary steps in understanding the psychological health and personality types of the EMS professionals. More research is needed to establish the baseline for psychological health and validate the optimal coping methods EMS providers. Hence, the study has argued for a further consolidation of studying organizational stress undergone by employees specifically in emergency professions. For Social and Psychological well-being of these emergency medical employees, a larger coverage of social sector and government schemes among the professionals is also essential.

## **6. REFERENCES**

1. Alexander, D.A. & Klein, S. (2001). Ambulance personnel and critical incidents. *British Journal of Psychiatry*, 178, 76-81
2. American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author
3. Beaton, R., Murphy, S, Johnson, C., Pike, K. & Cornell, W. (1999). Coping responses and post traumatic stress symptomatology in urban fire service personnel. *Journal of Traumatic Stress*, 12(2), 293-308
4. Bonanno, G. A., & Singer, J. L. (1990). Repressor personality style: Theoretical and methodological implications for health and pathology. In J. L. Singer (Ed.), *Repression and dissociation* (pp. 435-470). Chicago: University of Chicago Press
5. Durham, T. W., McCammon, S. L., & Allison, E. J. Jr. (1985). The psychological impact of disaster on rescue personnel. *Annals of Emergency Medicine*, 14, 664-668
6. Folkman, S., & Lazarus, R. S. (1988). *Manual for the Ways of Coping Questionnaire*. Palo Alto, CA: Consulting Psychologists Press

7. Fullerton, C. S., McCarroll, J. E., Ursano, R. J., & Wright, K. M. (1992). Psychological responses of rescue workers: firefighters and trauma. *American Journal of Orthopsychiatry*, 62, 371-378
8. McFarlane, A. C., & Bookless, C. (2001). The effect of PTSD on interpersonal relationships: Issues for emergency service workers. *Sexual and Relationship Therapy*, 16, 261-267
9. Renck, B., Weisaeth, L., & Skarbo, S. (2002). Stress reactions in police officers after a disaster rescue operation. *Nordic Journal of Psychiatry*, 56, 7-14
10. U.S. Department of Labor. (2006-2007 ed.). Bureau of Labor Statistics. In *Occupational outlook handbook*. Retrieved November 24, 2006 from [www.bls.gov/oco/ocos101.htm](http://www.bls.gov/oco/ocos101.htm)
11. Williams, D. M. (2006). 2006 JEMS salary and workplace survey. *Journal of Emergency Medical Services*, 31, 38-49
12. G. W. Allport, *Personality: A Psychological Interpretation* (New York: Holt, Rinehart & Winston, 1937), p. 48.
13. R. T. Hogan and B. W. Roberts, "Introduction: Personality and Industrial and Organizational Psychology," in B. W. Roberts and R. Hogan (eds.), *Personality Psychology in the Workplace* (Washington, DC: American Psychological Association, 2001), pp. 11-12
14. K. I. van der Zee, J. N. Zaal, and J. Piekstra, "Validation of the Multicultural Personality Questionnaire in the Context of Personnel Selection," *European Journal of Personality* 17, Supl. 1 (2003), pp. S77-S100
15. S. A. Birkeland, T. M. Manson, J. L. Kisamore, M. T. Brannick, and M. A. Smith, "A Meta-Analytic Investigation of Job Applicant Faking on Personality Measures," *International Journal of Selection and Assessment* 14, no. 14 (2006), pp. 317-335
16. A. H. Buss, "Personality as Traits," *American Psychologist* 44, no. 11 (1989), pp. 1378-1388; R. R. McCrae, "Trait Psychology and the Revival of Personality and Culture Studies," *American Behavioral Scientist* 44, no. 1 (2000), pp. 10-31; and L. R. James and M. D. Mazerolle, *Personality in Work Organizations* (Thousand Oaks, CA: Sage, 2002)
17. G. W. Allport and H. S. Odbert, "Trait Names, A Psycholexical Study," *Psychological Monographs*, no. 47 (1936); and R. B. Cattell, "Personality Pinned Down," *Psychology Today* (July 1973), pp. 40-46
18. I. Oh, G. Wang, and M. K. Mount, "Validity of Observer Ratings of the Five-Factor Model of Personality Traits: A Meta-Analysis," *Journal of Applied Psychology* 96, No. 4 (2011), pp. 762-773;
19. M. R. Barrick and M. K. Mount, "Yes, Personality Matters: Moving On to More Important Matters," *Human Performance* 18, no. 4 (2005), pp. 359-372
20. W. Fleeson and P. Gallagher, "The Implications of Big Five Standing for the Distribution of Trait Manifestation in Behavior: Fifteen Experience-Sampling Studies and a Meta- Analysis," *Journal of Personality and Social Psychology* 97, no. 6 (2009), pp. 1097-1114

## **7. BIOGRAPHICAL INFORMATION**

Simran Bhatia was born on January 24, 1996 in Ahmedabad, India. She has done various internships, international exposure programs, research projects, presented various papers in national and international conferences and got them published. Her International Exposure programs include, IEP to Southern Illinois University, USA and Memoir Writing Essentials at Seattle, Washington, USA. Her Research Projects include: "Multidimensional Vulnerability Assessment of Tribal and Slum Children in Gujarat" by UNICEF, "Women's Economic

Empowerment in Asia: Psychosocial and Anthropological Factors” an International Project with Edith Cowan University, Australia, “Civil Society Consultation on State Plan of Action for Children (SPAC)” by UNICEF, “Impact India World Bank 2021”an International Research Project with Fairfield University, USA. She has also presented various papers namely “Study of Organizational Stress experienced by Women Employees at 181 Women Helpline Centre in Gujarat” at an International Conference on Stress Management, “Study of Social Intelligence of Liberal Studies and Engineering Students” at the UGC Sponsored National Level Seminar on “Managing Organizational Change for Overall Efficiency”, “Cognitive Behavioral Therapy and Depression Management in Type II Diabetic Patients-A Conceptual Study” at the International Conference on Cognitive Behavioural Therapy at All India Institute of Medical Science (AIIMS) and many more.