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CONTENTS

- 1 PUBLISHER, EDITOR IN CHIEF, MANAGING EDITOR AND EDITORIAL BOARD**
- 2 THE EFFECT OF TECHNOLOGY ON PERFORMANCE OF SMALL ENTERPRISES IN NAIROBI CITY COUNTY, KENYA**
SAMUEL GATHU, EVANGELINE M. GICHUNGE, THOMAS SENAJI
- 3 GLOBAL DEVELOPMENT TREND IN MANAGING: DO FINANCIAL STRATEGIES OFFER HOPES RECOVERY?**
TATJANA BOSHKOV, LJUBOMIR DRAKULEVSKI
- 4 LEVEL OF DEEPENING FINANCIAL INFRASTRUCTURE, FINTECH COMPANIES AND FINANCIAL INCLUSION: THEORY AND EVIDENCE**
TATJANA BOSHKOV
- 5 STRATEGIC HUMAN RESOURCE MANAGEMENT PRACTICES IN A DEVELOPING COUNTRY PROFESSIONAL SERVICES FIRM**
HAVEN ALLAHAR
- 6 AN OVERVIEW TO INDUSTRY 4.0**
OZLEM SENVAR, ERKUT AKKARTAL
- 7 PREDICTING BREWERY CUSTOMER SATISFACTION USING AN ARTIFICIAL NEURAL NETWORK**
RICK BRATTIN, COURTNEY UKENA, RANDALL SEXTON
- 8 THE EFFECTS OF MINDFULNESS BASED STRESS REDUCTION INTERVENTION ON DEPRESSION, STRESS, MINDFULNESS AND LIFE SATISFACTION IN SECONDARY SCHOOL STUDENTS IN SRI LANKAN**
CHANDRASEKARA WS
- 9 MEXICAN CURRENCY CRISIS: OVERVIEW AND LESSONS**
TATJANA BOSHKOV
- 10 CHARISMATIC LEADERSHIP COMMUNICATION AND ORGANIZATIONAL REPUTATION: EMPIRICAL ANALYSIS OF BANGLADESHI PUBLIC SECTOR**
MOHAMMAD SHAIFUL ISLAM, MD. SAKIB IBNE ALI, IMRAN AHMED SHAHZAD
- 11 ANALYZE DATA WITH EXCEL POWER PIVOT: A TUTORIAL**
RADHIKA KAULA, RAJEEV KAULA
- 12 VENEZUELA CURRENCY CRISIS: ANALYSIS OF THE CAUSES**
TATJANA BOSHKOV
- 13 LIQUIDITY MANAGEMENT: COMPARISON AMONG MANUFACTURING AND**

MERCHANDISING FIRMS OF PAKISTAN

MEHWISH NASEER, NAZISH BIBI

14 THE RELATIONSHIPS AMONG SELF-CONGRUITY, CELEBRITY ENDORSER'S CREDIBILITY AND PURCHASE INTENTION IN E-COMMERCE INDUSTRY

KHAI T.N. NGUYEN, HIEN T.T. HUYNH

15 TRADITIONAL MARKET MANAGEMENT MODEL-BASED PUBLIC PARTICIPATION: AN EMPIRICAL STUDIES IN INDONESIA

ACHMAD CHOERUDIN, SEPTIANA NOVITA DEWI, ARIS TRI HARYANTO, IFAH LATIFAH

16 IMPACT OF CAPITAL STRUCTURE ON FIRMS PERFORMANCE: A STUDY ON KARACHI STOCK EXCHANGE (KSE) LISTED FIRMS IN PAKISTAN

ABDUL BASIT, ZUBAIR HASAN

17 PERFORMANCE MANAGEMENT SYSTEM – A NOBLE APPROACH FOR PERFORMANCE ENHANCEMENT OF AN ORGANISATION

UJJWAL KUMAR GHATAK

18 TEENAGERS' EXPOSURE TO INTERNET PORNOGRAPHY IN ZARIA, NIGERIA

ANTHONY OLAJIDE OREBIYI, KEHINDE JOHN OREBIYI

19 ANALYZING THE SHARE OF AGRICULTURE AND INDUSTRIAL SECTORS IN THE ECONOMIC GROWTH OF ETHIOPIA: AN ORDINARY LEAST SQUARES (OLS) APPLICATION

GEMECHU BEKANA

20 SOFTWARE QUALITY ASSURANCE TECHNIQUES: A REVIEW

MUHAMMAD UMAIR HASSAN, MUHAMMAD MUBASHIR, MUHAMMAD AHMAD SHABIR, MUHAMMAD MUHIBB ULLAH

21 INVESTIGATE THE RELATIONSHIP BETWEEN ORGANIZATIONAL LEARNING CAPABILITIES AND ORGANIZATIONAL INNOVATION IN THE FOOD INDUSTRY (SUBSIDIARY INDUSTRIAL ESTATES OF KERMANSHAH PROVINCE)

YOSRA SALEHI, AHOO NASERI

22 TRAFFIC CONTROL USING REVERSE LANE SYSTEM (A QUEUING THEORY APPROACH)

MOHAMED IRFAN SHAIKH, MOHAMED ADNAN SHAIKH, AAMIR HUSSAIN

23 DEMOCRACY, POLITICAL STABILITY AND ECONOMIC GROWTH: EVIDENCE FROM MENA COUNTRIES

NEDRA BAKLOUTI, YOUNES BOUJELBENE

24 FINANCIAL LITERACY AND INFORMATION PERCEPTION: AN EMPIRICAL ANALYSIS FROM THE TUNISIAN CONTEXT

AMARI MOUNA, JARBOUI ANIS

25 A METHOD FOR CLUSTERING BANK CUSTOMERS USING RFM MODEL AND THREE PARAMETER GREY NUMBERS

AZIME MOZAFARI, ALI BONYADI NAEINI

26 MANAGING CONFLICTS OVER AND CHANGING MUSEUM CONTEXTS FOR CONSERVATION

DECISIONS CONCERNING MUSEUM ARTEFACTS

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THE EFFECT OF TECHNOLOGY ON PERFORMANCE OF SMALL ENTERPRISES IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

This research was done with the aim of establishing the effect of technology on performance of small enterprises in Nairobi City County, Kenya. The research has in detail expressed one function of devolution that is believed to have affected the performance of small enterprises in Nairobi City County, Kenya, this has been done while citing the proponents of devolution. According to the Constitution of Kenya (2010); the fourth schedule; part two; the county governments have been allocated fourteen functions. The research study concentrated on only one function (independent variable) that has the most propensity of creating an effect on performance of small enterprises in Nairobi City County, Kenya, thus my singular research objective. This function is technology. A descriptive research design was used for this study in order to describe key variables associated with technology and performance of small enterprises in Nairobi City County, Kenya. A descriptive research design was used which helps describe current effects as they affect people or organizations. The researcher collected primary data using open and close ended questionnaires; this is in order to obtain optimal results from entrepreneurs in Nairobi City County. The sample size that the researcher worked with was one hundred and twenty. The researcher applied linear regression as a statistical tool for data analysis. The study established that technology programs by Nairobi City County have improved performance of small enterprises in the county as it has improved productivity, offering training of customer and attainment of skills and employment of more staff affecting the growth of small enterprises.

Key word:

Technology is the apparent day to day electronic or non-electronic advancements that a firm adopts in its daily affairs, this is so as to attract more customers, increase its profits and also aid in the achievement of both long term and short term objectives.

Performance; given this particular context, performance denotes the growth/decline, maturity and/or the overall prosperity of a small business that is caused by devolution

INTRODUCTION

This research was an investigation into the effect of technology on performance of small enterprises in

Nairobi City County, Kenya.

The specific research objective was to investigate the effect of technology on performance of small enterprises in Nairobi City County.

Background of the study

An enterprise is a business organization. Enterprises play a very crucial role, both domestically and economically. Domestically they avail all the basic and necessary amenities that man needs either to survive or make life comfortable e.g. food, toothpaste, clothes, drinks, household goods, electronics, hardware items etc. Some of which are basic needs and others luxuries. An enterprise, also known as a business or a firm, is an organization involved in the trade of goods, services, or both to consumers. Businesses are prevalent in capitalist economies, where most of them are privately owned and provide goods and services to customers in exchange for other goods, services, or money. Businesses may also be not-for-profit or state-owned. A business owned by multiple individuals may be referred to as a company. An enterprise may also be involved in manufacturing and processing other than a pure trading system. Small enterprises are basically businesses that are miniature in terms of capital base, staff, operation costs, turnover, sales, liquidity, physical size and market presence. Most start-ups start as small businesses, Webster (1964).

The forms of business enterprises that are most popular in Nairobi City County may include; Sole proprietorship; a sole proprietorship, also known as a sole trader, is owned by one person and operates for their benefit. The owner may operate the business alone or with other people. A sole proprietor has unlimited liability for all obligations incurred by the business, whether from operating costs or judgments against the business. All assets of the business belong to a sole proprietor, including, for example, computer infrastructure, any inventory, manufacturing equipment and/or retail fixtures, as well as any real property owned by the business, Sheffrin (2003).

Partnership; a partnership is a business owned by two or more people. In most forms of partnerships, each partner has unlimited liability for the debts incurred by the business. The three most prevalent types of for-profit partnerships are general partnerships, limited partnerships, and limited liability partnerships (Sheffrin, 2003).

Corporation; the owners of a corporation have limited liability and the business has a separate legal personality from its owners. Corporations can be either government-owned or privately owned. They can organize either for profit or as not-for-profit organizations. A privately owned, for-profit corporation is owned by its shareholders, who elect a board of directors to direct the corporation and hire its managerial staff. A privately owned, for-profit corporation can be either privately held by a small group of individuals, or publicly held, with publicly traded shares listed on a stock exchange (Sheffrin, 2003). Cooperative; often referred to as a "co-op", a cooperative is a limited liability business that can organize for-profit or not-for-profit. A cooperative differs from a corporation in that it has members, not shareholders, and they share decision-making authority. Cooperatives are typically classified as either consumer cooperatives or worker cooperatives. Cooperatives are fundamental to the ideology of economic democracy (Sheffrin, 2003). Examples of business classifications may include; agri-business, mining, financial services,

manufacturing, processing, retailers and distributors, service businesses, transportation and utilities (public services).

A county is a geographical region of a country used for administrative or other purposes in certain modern nations. Devolution is the statutory granting of powers from the central government of a sovereign state to government at a sub national level, such as a regional, local, or state level. It is a form of decentralization. Devolved territories have the power to make legislation relevant to the area. Devolution differs from federalism in that the devolved powers of the sub national authority may be temporary and ultimately reside in central government, thus the state remains, *de jure* unitary. The Constitution of Kenya 2010 provides for devolution of political and administrative authority to 47 semi-autonomous Counties. These Counties are what were known as administrative District boundaries up to 1992 under the former Constitution, National Council for Law Reporting (2012).

The starting point of this study is to suppose that from an economic efficiency point of view, separation of nations is never desirable. A unified nation is always more efficient since free trade among regions is guaranteed, there is no duplication of costs in defense and law enforcement, and public amenities can be coordinated, Bolton and Roland (1997). A good example of devolution is in Mexico. In the 1980s, the citizens of the Federal District of Mexico, being the most populated federal entity in Mexico, began to demand for home rule; a devolution of autonomy in order to directly elect their head of government and to set up a Legislative Assembly. In 1987, an Assembly of Representatives was created, by constitutional decree, whose members were elected by popular vote. The devolution of the executive power was not granted until 1997 when the first head government was elected by popular vote. Finally, in 2000, power was devolved to the delegations, though limited: residents can now elect their own "heads of borough government". This spurred economic growth and fostered the emergence of new businesses thereby creating employment. Promotion of trade was rife and the devolved units were developed (Victor 2010).

Another example of devolution is France. In the late 1980s a process of decentralization (this is the process of redistributing or dispersing functions, powers, people or things away from a central location, central authority or a central government). This was undertaken by the French government. Initially regions were created and elected regional assemblies set up. Together with the departmental councils these bodies have responsibility for infrastructure spending and maintenance (schools and highways) and certain social spending. They collect revenues through property taxes and various other taxes. In addition a large part of spending is provided by direct grants to such authorities. This decentralization promoted trade and economic prosperity more so in the private sector where most businesses are (Victor 2010).

Another example, still in Europe is Spain. The Spanish Constitution of 1978 granted autonomy to the nationalities and regions of which the Kingdom of Spain is composed. Under the "system of autonomies", Spain has been quoted to be "remarkable for the extent of the powers peacefully devolved over the past 30 years" and "an extraordinarily decentralized country", with the central government accounting for just 18% of public spending; the regional governments 38%, the local councils 13% and the social-security system the rest. This led to an increased access to technology thus increased economic activity more so for business owners. Small businesses in the devolved units of government have ripped the full benefits of devolution thus economic opulence in the said sector (Victor 2010).

Statement of the problem

Since time in memorial many enterprises have come up in Kenya, both in large and small scale. Some of them have grown from small enterprises to large enterprises while others entered the scene and still have not grown or are stagnant. Up until today, many businesses have come up, and in the same way, a few have collapsed. Some of the reasons that have contributed to the collapse of some of these businesses may include; mismanagement, lack of investors, poor management, lack of vision, economic instability and lack of popularity. The purpose of the study was to ascertain the effect of technology on performance of small enterprises in Nairobi City County, Kenya.

There is no known research in Kenya on technology and performance of small enterprises; this could be because it is new to Kenya since it is barely two years old. This led me to a theoretical worldwide researching endeavor on devolution and the performance of small enterprises. There are three empirical studies on the topic of devolution in other countries; the impact of devolution on the regulatory regime of the Inuvialuit settlement region by Higham (2012), Scotland's representation in Europe in the post-devolution era: results and expectations by Dmitrieva (2008) and exploring evidence of economic convergence in post-devolution in Wales by Godfrey (2012). The studies mentioned above all sort to ascertain the effect of devolution on social, political and economic systems; but none of them studied the effect of devolution on the performance of small enterprises in developing countries.

LITERATURE REVIEW

Theoretical orientation

This study believes that county governments should be more proactive in providing a favorable business environment for small enterprises. These proactive actions are meant to largely promote trade; thereby creating business opportunities which in turn translates to growth and prosperity. The reality in the devolved counties is that in the 21st century, there is no escaping universal trends and forces such as globalization, technology and the detonation in information. These factors are here with us to stay and cannot be wished away and the only way to cope with them is to relate with them closely and adopt them as they come, the idea here is to use the ready access to information to improve technology, foster development and promote trade. Political factors may also affect performance of small enterprises in Nairobi City County, for instance when Kenya was experiencing what would be called political unrest people remained indoors and very little economic activities were taking place. At this time trade went down by over 50%. This goes to show that politics plays a big role in the growth and performance of small enterprises. But since Kenya has greatly been experiencing peace in the political circles, this has greatly accounted for increased performance of enterprises in Kenya as a whole.

Subsidiarity theory

Subsidiarity is a devolution policy principle that states; responsibilities for regulation and allocation of public goods and services should be devolved "to the maximum extent possible consistent with the national interest", or, as often said, to the 'lowest' spatial level of government appropriate for their exercise, so that "government is accessible and accountable to those affected by its decisions" (Galligan 1995). This principle was the cornerstone of the Australian collaborative intergovernmental reform in the

1980s - 1990s, and remains a principle for which federal systems are generally seen as uniquely adapted (Grewal 1981, Wilkins 1995, Watts 1996, Oates 1999). Nevertheless subsidiarity has been identified as difficult to operationalise institutionally (Bermann 1994).

Glocalisation theory

'Glocalisation' describes the recent redistribution of economic influence from national spheres of government in two directions; into transnational spheres as described by globalization, but also back to more local and regional levels (Courchene 1995, British Council 1998). In North America and Europe, resurgences in regional economic and political identity have been described as "a form of defense, on the part of those with the greatest stake" against the new hyper mobility of capital (Markusen 1987, Andersson 1997). Party political instability such as experienced in Australia in the period of One Nation, and the ongoing political reassertiveness of non-metropolitan regional communities present a "double pressure" on existing governments, from both above and below, as also documented internationally (Dahrendorf 2000, Keating 1998). Australia has been seeking a post-globalisation regional development formula consistent with 'glocalisation' trends since the Kelty Report (1993). However attempts to import the 'new' economic regionalism described in trans-Atlantic countries are confronting a similar range of uncertainties to those compounding subsidiarity discussion, including comparative lack of institutional support for regional economic activity despite occasional appearances of "a greater devolution of power" to the regional level (Roberts 1996, Gerritsen 2000).

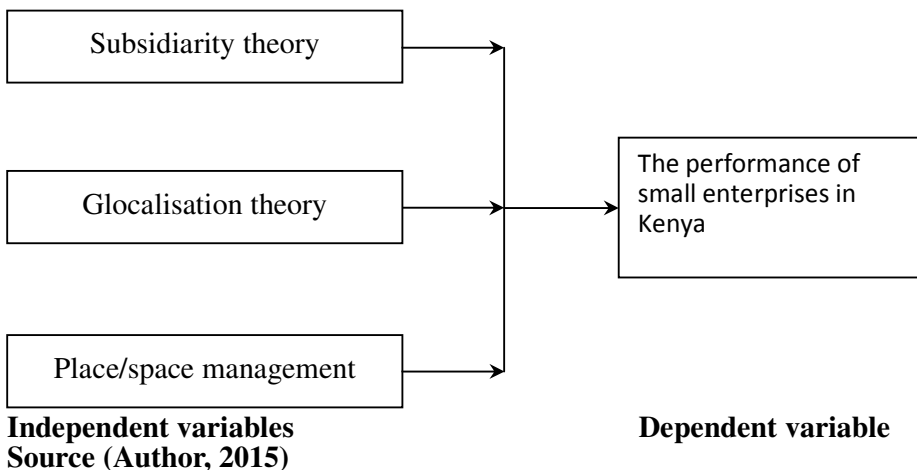
Place/space management theory

Since the late 1990s governments have attempted to compensate for the lack of regional level governance capacity through programs of community engagement aimed at active amelioration of regional social concerns. These new approaches have grown out of the 'reinvented' roles of industrialized governments as actors in their own political and economic systems (Davis & Keating 2000). As well as emphasizing the delegation of authority for planning and regulatory activity, place management approaches emphasize improved coordination between levels of government, and enhanced public participation (e.g. European Commission 2001). Governments are now consistently attempting to break down institutional 'silos' through better project-based whole-of-government coordination aimed at more "tailored responses to regional and local needs" (e.g. Vincent 1999); and place-based policy responses based on intensive, integrated intervention in areas of significant social and economic disadvantage (2001). Again, however, public institutional frameworks have not yet been configured in a way that maximizes the ability of communities to help themselves. Even when governments now openly recognize the importance of social capital to regional sustainability, uncoordinated policies may easily continue to erode that capital. Specific programs need to be created that are responsive to community needs, and that overcome the otherwise apparent tensions which arise from attempts by three existing levels of government to support change at the regional level. The partial approach (to sustainable regional development) that we have at present is one in which community participation is prominent in discussion, while the structural conditions that are so necessary to promote and support change are lacking (Cavaye 2002).

The theoretical framework

The purpose of the study was to investigate the effect of technology on performance of small enterprises in Nairobi City County, Kenya.

Theoretical framework



Empirical review

Technology

Technology is increasingly important for small enterprises, which now rely heavily on major communication networks for their communication. Without reliable technology, a small enterprise cannot hope to compete, to keep its customers and enlarge its market if it has no defined access to advanced technology. In recent years, there have been numerous studies on the role of information technology, yet scholars' research has set to be fully absorbed in the theories of an organization growth. According to Hutchinson (1998), Information technology improves services through network management, computerized diagnostics, data control, pricing systems and customer management information systems. Meyer (1985) has argued that information technology is adopted within an aim of achieving technical efficiency and enhancement of organizational aims and goals. According to Cole (1996) modern technology has brought better working conditions and has reduced labor costs. He states that IT in organizations is the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronic based combination and computing telecommunication. Whereas in the past information handling involved massive dependence on papers, emphasizes now has shifted to the creation, storage and transmission of tiny electrical impulses. The major components of IT are computers, microelectronics and telecommunications.

Kotler and Armstrong (1997) stated that the technological environment is perhaps the most dramatic force now shaping our destiny. Kotler (1999) emphasizes on internet and e-commerce as one of modern technology uses. He states that e-commerce is that it provides business-to-business exchange, provides buying and selling and it ensures security of latter transaction, which is what exactly customers are looking for; security, efficiency and utmost reliability and speedy solutions. Advantages of e-commerce are that it is an easy and convenient way of doing business transactions, it's a cheap way compared to the

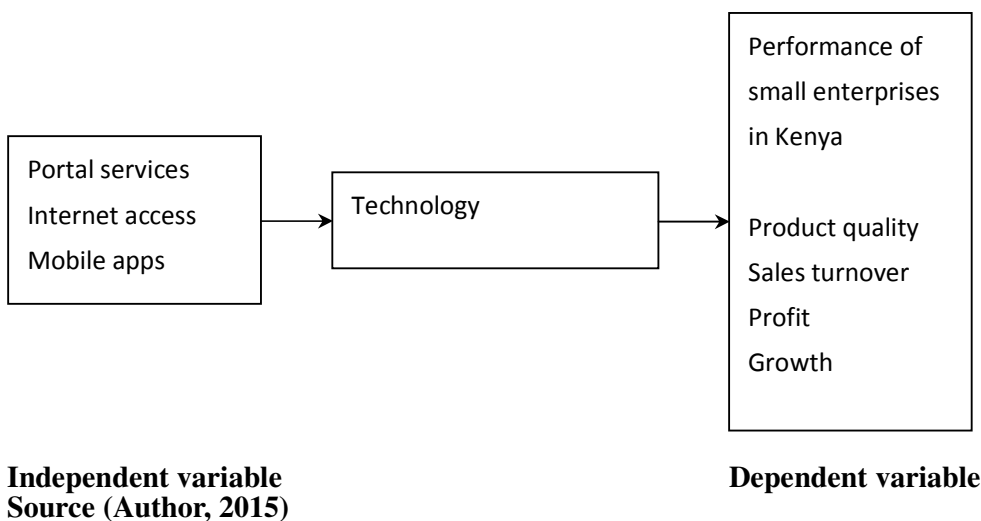
cost of printing and postage of paper. It provides promotional tools that enable small firms to compete with other companies both locally and internationally. IT is the technology, which supports activities involving the creation, storage manipulation and communication of information together with their related methods of management and application. Therefore, IT may be seen as a broadly based technology needed to support information systems.

According to the constitution of Kenya there exists two levels of government namely the national government and the county governments. In the fourth schedule of the Kenyan constitution there exists distribution of functions between the national government and the county governments. Part one of the article contains the functions of the national government. Part two of the article contains the functions of the county governments, which are fourteen in number. Devolution is realized when all the fourteen functions are devolved from the national government and are subsequently implemented in the best ways possible; this will have a positive change on performance of small enterprises in Nairobi City County. Most fundamentally is that twelve out of the fourteen functions are entrenched in the advancement of technology, if devolution in the counties is implemented entirely; this will definitely have a positive effect on performance of small enterprises in Nairobi City County.

Operational framework

The purpose of the study was to investigate the effect of technology on performance of small enterprises in Nairobi City County, Kenya.

Operational framework



METHODOLOGY

This refers to the structure, scheme, plan or outline that the researcher used to collect information from the respondents. A descriptive research design was used for this study in order to describe key variables

associated with the issue at hand. The researcher collected data from a population so as to determine the effect of technology on performance of small enterprises in Nairobi City County.

The targeted population is fundamentally small enterprises in Nairobi City County. The research study comprehensively investigated the effect of technology on performance of small enterprises in Nairobi City County, Kenya. The target population was fifty thousand small enterprises located in Nairobi City County. There are seventeen sub counties located in the said county. In this study, entrepreneurs of both genders and all ages were targeted. Entrepreneurs of goods based, service intensive and hybrid (goods and services) enterprises were targeted. The researcher intends to work with formal enterprises.

Population frame

Population Category	Population size	Percentage
Goods based enterprises	4000	8
Service intensive enterprises	9500	19
Hybrid (goods and services) enterprises	36500	73
Total	50000	100

(Source Author 2015)

The scope of the study focused on devolution and small enterprises. The research study comprehensively investigated the effect of technology on performance of small enterprises in Nairobi City County, Kenya. The researcher worked closely with small businesses located in the 17 sub counties located in Nairobi City County.

This is the process by which a relatively small number of individuals or objects or events are selected and analyzed, in order to find out something about the population from which they were selected. Out of many sampling methods, stratified random sampling will be used because the population was divided into a more relevant strata and random sampling was going to be drawn from the strata. The formula (sample size calculation by Creative Research Systems, 1982) applied to get a sample from the fifty thousand enterprises has a confidence level of 95%, a confidence interval of 9 and with a target population of 50,000; this gives the researcher a value of 118. Thus $118 + 2$ (margin of error) = 120.

Sampling frame

Population Category	Sample size	Percentage
Goods based enterprises (Offers goods to the market)	10	8
Service intensive enterprises (Offers services to the market)	23	19
Hybrid (goods and services) enterprises (Offers goods and services to the market)	87	73
Total	120	100

(Source: Author 2015)

RESULTS AND DISCUSSION

Results

This chapter presents analysis and findings of the study as set out in the research methodology. The results are presented on the effect of technology on performance of small enterprises in Kenya. The primary data was gathered exclusively from a questionnaire as a research instrument. The questionnaire was designed in line with the objectives of the study. To enhance quality of data obtained, Likert type questions were included whereby respondents indicated the extent to which the variables were practiced in a five point Likert scale.

Descriptive Statistics

Descriptive statistics on the variable of technology

The 'X₁' variable is an independent variable; this is the variable of technology.

Descriptive statistics on the variable of technology

	Technology (X ₁)				
	N	Minimum	Maximum	Mean	Std. Deviation
Extend to which Portal services have contributed to performance of small enterprises in Nairobi City County (NCC)	107	2.00	5.00	4.2804	.89858
Extend to which Internet access have contributed to performance of small enterprises in NCC	107	1.00	5.00	4.2991	.79164
Extend to which Mobile apps have contributed to performance of small enterprises in NCC	106	2.00	5.00	4.3774	.82176
Extend to which E-payments have contributed to performance of small enterprises in NCC	107	1.00	5.00	4.2336	.98651
Valid N (listwise)	106				

This table shows the descriptive statistics on the 'X₁' variable; this is the variable of technology. The idea here was to ascertain the extent to which the said parameters contributed to performance of small enterprises in Nairobi City County. According to the study findings, all the respondents agreed with all the items asked for technology. Mean >3.4.

Discussion

The study established that technology programs by Nairobi City County have improved performance of small enterprises in the county as it has improved productivity, offering training of customer and acquisition of skills and employment of more staff affecting the growth of small enterprises. From the findings, technology has improved business assets and performance and attraction of more customers.

The study revealed that technology programs contributed to increase in the performance of small enterprises in Nairobi City County. Increase in mobile applications, e-payments, internet access and portal services contributed has led to increase in product quality. Increase sale turnover, increased profitability of the small enterprises, and thus led to an increase in growth. Information technological programmes improve payment services through network management, computerized diagnostics, data control, pricing systems and customer management information systems. The study revealed that devolution of technology programs had a significance positive influence on sales turnover, profitability and growth of small enterprises in Nairobi City County.

The study concluded that devolution of technological programs contributed to an increase in the performance of small enterprises in Nairobi City County as increase in mobile applications, e-payments, internet access and portal services contributed has led to increase in product quality. Increased sales turnover increased the profitability of small enterprises and led to an increase in growth. There existed a significant positive relationship between devolution of technological programs and sales turnover thus profitability and growth of small enterprises in Nairobi City County.

The study concluded that devolution of technological programs contributed to an increase in the performance of small enterprises in Nairobi City County as an increase in mobile applications, e-payments, internet access and portal services contributed led to an increase in product quality. Increased sales turnover increased the profitability of the small enterprises and thus an increase in growth. There existed a significant positive relationship between devolution of technological programs and sales turnover, profitability and growth of the small enterprises in Nairobi City County.

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GLOBAL DEVELOPMENT TREND IN MANAGING: DO FINANCIAL STRATEGIES OFFER HOPES RECOVERY?

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Abstract

Improving the terms of trade, tends to increase the welfare of the country, its domestic demand and the prices of non-traded goods, with real appreciation of the domestic currency (effect of welfare). Growth prospects are weakened on global level, giving that it is 2.4% for 2016. Global growth is projected to be 3.0 percent by 2018 due to the stabilization of the commodity prices and the possibility for more exports on emerging markets and developing countries. Also, there are low commodity prices - low oil prices on the global market. Structural reforms could boost global growth besides persisting divergences. This is the reason why global trends require forecasts and risk assessment. The most risk indicators underline a few aspects. For example, it's very important to follow the prices of equity as the prices of oil as term spreads, too. Forecasts and analysis of risk distribution have essential meaning for global growth. This paper has the aim to recognize the signs of warming and the opportunity prospects. This is the first step for creating good and productive strategies on global market by policymakers. It is very important to understand the macroeconomic stimulus for financial stability and sustainable development in this time of changes.

Key words financial strategy, economy, growth, global market, development.

1. Introduction

The term successful economy means prosper in the industry. This is the reason to think that companies should be prepared for volatility which is characteristic for emerging markets, especially this year - 2016. According this, 2015 ended with the beginning of a tightening monetary policy of US (Frankel, 2015).

What are the forecasts for industries in 2016? The forecasts are encouraging on global level, meaning that the global GDP will grow by 3.4% in real terms. More detail, reports show that this is real for US - having prospect for rise of interest rates, but fantasy for emerging markets. So, on one side there are risen US rate and depressed oil prices. These are factors that cause volatility in Russia and Brazil (these BRIC countries are flagging). If we compared these two countries with China, the second one is better, with lasting slowdown affecting demand for everything.

As was written above, 2015 and 2016 are specific for regulatory tightening (Evenett and Fritz, 2015). For example, EU forces insurer to bolster their solvency, while Europe and US will report on banking stress tests.

The part where regulators are using their powers is environmental protection—particularly following the climate change deal. In energy sector there is a range of measures, enabling companies to raise their energy efficiency.

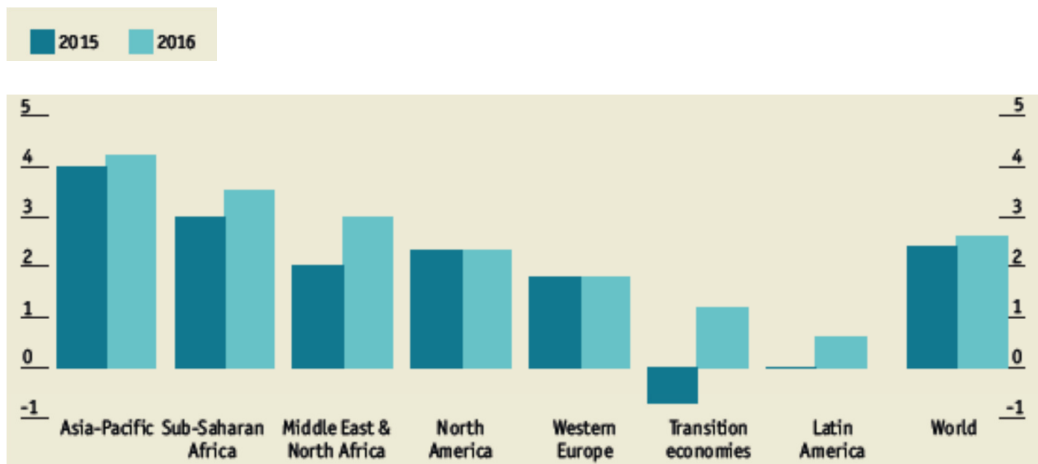
2. Recent development image: does global economy offer opportunities?

The companies in financial technology intend to run rings around the giants in their sector. The interest began from rising interest rates in US. Apart from this, on emerging markets there are vital companies with strong positions, which are able to compete on global level. These companies require collection and data analyzing which refer to the consumers, their attitude and their worries, for example energy bills. So, encouraging pan-industry will enhance more environmental use of energy in 2016.

As is mentioned above, this year is year of risen interest rate in US, low oil prices and economic slowdown in China. In other words, global GDP will speed up to 2.6% at market exchange rates and 3.4% at PPP.

Advanced OECD economies will remain on a steady course. The OECD economies will expand by 2% in PPP. Further, in 2016 are recognized low energy prices. US will grow up by 2.4% due to the strong labor markets. China is facing with structural changes, and the forecasting reports show expanding by 6.5% in 2016, as services outpace industrial output and investment accelerate. Some interesting for non-OECD countries, is their growth of 4.5% in PPP conditions in 2016, as their enjoying in liberal exchange rate regimes, too.

Figure 1. Regional dynamics: real GDP growth (%; market exchange rates)

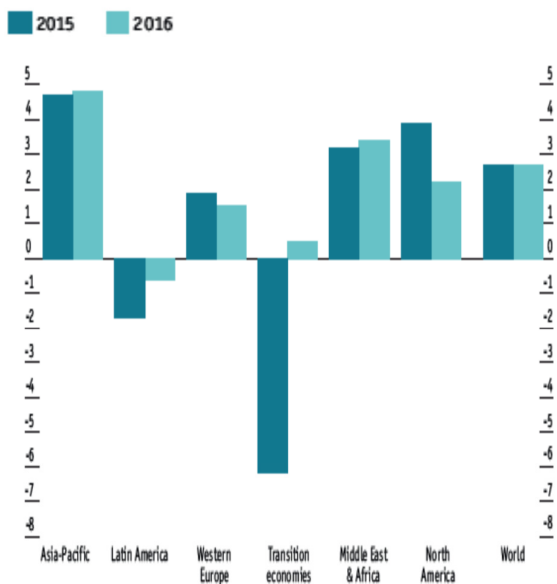


Source: The Economist Intelligence Unit.

In 2016, consumers and retail sales may be vulnerable to the crises of confidence, meaning that a lot of problems which they faced in 2015 will be moved into 2016. On global level, the projections are growing of sales volumes by 2.7% this year. The retail sales volumes by region are shown in Figure 2 and Figure 3.

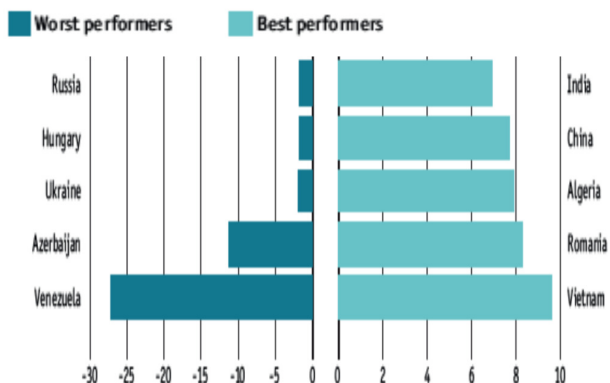
The next figure shows the best and worst performers.

Figure 2: The world is flat: retail sales volumes by region (% change)



Sources: The Economist Intelligence Unit.

Figure 3: Best and worst performers: retail sales volume in 2016 (% change)

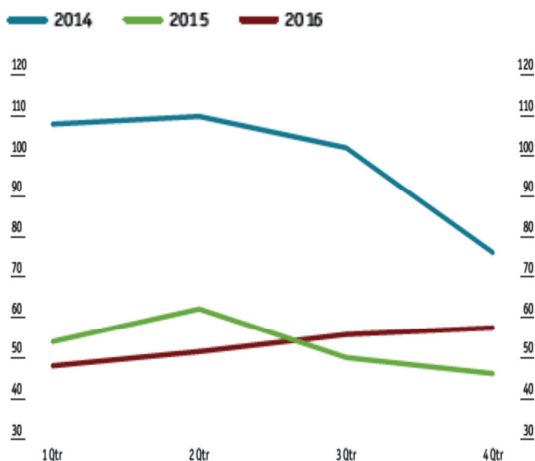


Sources: The Economist Intelligence Unit.

On a global level, 2015 was year of cheaper energy with lower fuel prices and fast growth in use of renewable energy. This trend continues in 2016 with faster decline in the carbon intensity of the global economy and faster growth in the deployment of renewable.

Since oil prices began to fall in 2014, the demand on the global oil market is resurgent and supply is robust (Forbes, 2014). In the short term, there will be no return on the oil prices to their recent highs. Oil production is contracting in US for 2016, with a forecast that it will be average of US\$53/b. This is shown in the Figure 4.

Figure 4: Oil prices (US\$/barel)



Source: The Economist Intelligence Unit.

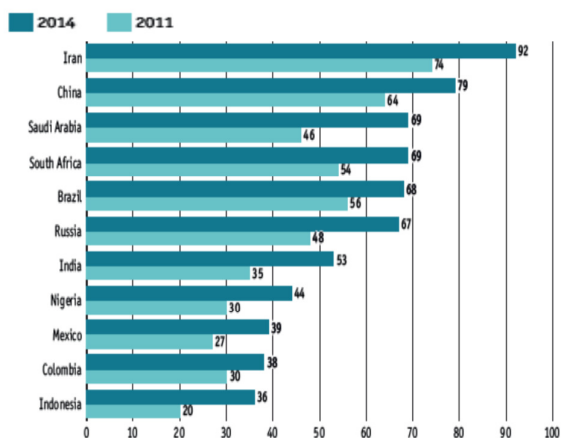
Source: IMF.

3. Signs of hope in financial services

Financial services showed signs of hope in 2016. On global level, the first good sign are the people in finance that stopped to talk about the financial crisis. It is known that the bad period in the industry started in 2008. This was challenge to think more on new developments, technological innovations and economic recovery in advanced countries.

It's good to underline the positive activities in 2016. The first one, is the rise of financial technology or FinTech. The FinTech companies use straightforward mobile applications and excellent customer services. The second promising development is the fast proliferation of bank usage in emerging markets. By bringing money out from underneath the mattress and into the financial system, will bolster the revenues of firms offering remittances, savings and lending, and eventually those with sophisticated products like insurance policies and brokerage accounts. Many companies make profits on emerging market customers which include new business models and lean tech interfaces.

Figure 5: Banking – people account at financial institutions (%).



Source: World Bank dataset.

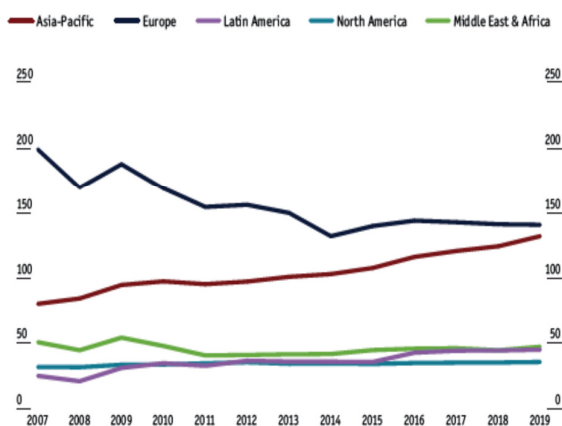
The third positive trend in 2016, is the new force that drives the sector forward stems from a growing realisation where workers will save more at the expense of current consumption—a trend that will boost the financial sector, given its key role in gathering and allocating savings.

4. The situation in advanced economies in 2016

The advanced economies will continue with the gradual recovery of the stronger markets in US, UK, and northern Europe boosting financial firms' income statements. The situation is tougher for financial firms in Japan as for Southern and Eastern Europe, too (Draghi, 2016). As it was mention at the beginning, the interest rates are gradually rising by the Central banks in US and UK. Also, the 2016 is year when

insurers and investment funds are felt.

Figure 6: Europe bank loans to GDP (%)



Source: World Bank dataset.

Continental Europe has steady rise of stock volume and bond offerings. This suggests that there is a hope for important shift as the fact that sustained fall in credit to European economies would undermine the business investment and household consumption. The other two trends will be visible among banks from advanced economies. First, the network banks with a global footprint will keep abandoning far-flung parts of their realms. Second, the banks will flock to the stable businesses of asset management and private banking, and away from volatile activities in investment banking and trading.

5. Emerging markets in 2016

Emerging economies that are dependent on commodities are especially vulnerable in the present downturn. One reason for this could be the bank crises. Financial firms in big emerging markets tend to be well-fortified, with long experience of financial storms. In 2016 emerging world financial systems became more market oriented. Financial systems have changes by new developments meaning adaptation of these.

From the beginning of 2016, lenders designated that systemically important banks will start with building of supplementary capital buffers. These are important on global level and offer much more in looking forward to financiers. The reports showed results from stress tests for EU and US – grueling exercise for bank boards and bank offices. Thus, many firms are facing with tough challenges in complying with regulations. The prospects are brighter for the future of the financial industry.

2016 is year of currency fluctuation. The ongoing slump in commodity prices since mid-2014 has been a

powerful force weakening many currencies. For example, excess supply and shrinking demand from China have decreased the value of exports from Australia, Brazil and Canada, among others, causing their currencies to wither further. Even China, which has long held a firm grip on its own currency controls, has taken repeated steps to devalue the Renminbi in the last 12 months. Also in Argentina, price inflation has done much to offset the cost-of-living decline caused by currency weakness over the last few years.

6. The crisis in Europe

The crisis in Europe is seen through the failure of the region's institutions in providing effective governance and leadership. The early stages of the region's institutional crisis were characterised by challenges to the survival of the single currency. Regional policymakers have yet to reach consensus about what types of action should be implemented at supranational level, while divisions are ever starker depending of the type of policies which should be pursued. However, Europe would find itself particularly stretched if several of these crises were to crystallise at once.

7. Europe and the Central Banks

In the most countries in Europe, monetary policy is exceptionally accommodative. Having behind the curve with its crisis response, the European Central Bank (ECB) has steadily become bolder and more creative in its policymaking. In the UK, the initial monetary response to the financial crisis was much more decisive than in the euro zone, and the economic recovery was much more robust. However, we have been cautioning for many years that the UK economy's underlying vulnerabilities would hamper the process of normalisation, and this is precisely what has happened. A significant slowdown in economic activity is under way—exacerbated by nervousness ahead of the “Brexit” referendum on June 23rd—leading the Bank of England (BoE, the UK's central bank) to adopt a more decisively dovish stance. Inflationary pressures are extremely subdued at the present, although they will build by 2018-19. Our forecast of a short-lived US downturn in 2019 leads to project where BoE will delay policy tightening until mid-2020. Meanwhile, the government's planned fiscal targets have so far been unbending in the face of downward revisions to official growth forecasts. Far from allowing, the process of fiscal consolidation to decelerate, the government is pencilling in sharper than expected adjustments to meet its target of a budget surplus in 2020 (IMF, 2016b).

Because of the ECB policy, a key challenge facing several central banks in Western and Central Europe has been the strength of their countries' currencies against the euro. This has been a concern due to the impact on export competitiveness (by extension, GDP growth), as downward pressure on import prices. The second is an issue in the context of generally weak domestic demand-pull inflationary pressure and collapsing commodity prices. The policy response from other central banks to the ECB's stance has been varied but proactive. A number, including Switzerland and Denmark, have opted for a combination of

negative interest rates and direct intervention in the foreign-exchange markets to manage the impact of upward pressure on their domestic currencies. In the Czech Republic, the central bank has resisted negative interest rates, instead relying on intervention to defend an exchange-rate ceiling. For those Central and Eastern European countries with currencies peg to or managed against the euro (Western Balkans), volatility risks have moved in line with expectations of tightening by the Federal Reserve (EC, 2016). However, we do not see significant risks to the currency boards in Bosnia and Hercegovina or Bulgaria, or to the peg in Macedonia. Croatia is more of a concern, especially in light of recent legislation in forcing banks to convert the Swiss franc-denominated loans to euros. At present, our forecast is for gradually managed weakening the kuna against the euro, rather than a dramatic sell-off.

A number of central banks in the region, including those in Poland, Hungary, Turkey and Russia, had to grapple with currency depreciation in 2015 and early 2016. Poland and Hungary are still struggling with deflation and have eased monetary policy in recent years. In Turkey, monetary policy remains an area of contention owing to political pressure on the Central Bank from the president, Recep Tayyip Erdogan, and his supporters for lower interest rates to boost economic growth. In Russia, inflation averaged 15.5% in 2015 as the sharp depreciation of the rouble fed through to import prices. Inflationary pressures weakened substantially in the first quarter of 2016, and surveys by the Russian Central Bank (RCB) suggest that inflation expectations have fallen significantly (IMF, 2016a). The RCB is under significant pressure from some policymakers and producers in loosening monetary policy, but the bank's senior management appears to have the support of the presidential administration in its efforts to control the inflation. The policy rates are reaching around 9% by the end of the year and expect further reductions in 2017 as inflation falls. In the event of a significant rise in commodity prices, the RCB is likely to buy foreign currency to build up reserves, limiting the appreciation of the currency.

8. Conclusion

According to this research and the volatility which started on the beginning of 2016, conditions on financial markets are improved. Supportive from this, capital flows to emerging countries remain vulnerable to sudden changes coming from the investors. Also, the prices of commodities and oil fell in 2016. The prospects for trade on global level are downgraded for 2016 and 2017. This is reflection from mixed structure of cyclical and structural factors.

The fact is that financial market has been turbulent. This is concern for the global economic prospects as for credit risks, too. Starting from energy companies, these are the most leveraged, driven by strong demand growth and high oil prices (IMF 2015a).

The analysis showed that, not only managers of small companies but also managers of non-internationalized companies and diversified companies are more inclined to believe that internationalization encourages the use of debt. One possible explanation is that managers of small firms find that diversification requires a significant investment that cannot be provided through internal financing and it is necessary to arrange additional borrowing for this purpose. The view for

internationalization that managers of diversified firms have, may be influenced by their experience of additional borrowing to extend product scope (i.e., diversification), leading them to conclude that additional borrowing is also necessary when it comes to extending geographical scope (Bordo et al., 2009). These strategies are formula used by companies due to the volatility and uncertain future on global level, especially for emerging markets in 2016.

The global trends require forecasts and risk assessment. The most risk indicators underline a few aspects. For example, it is very important to follow the prices of equity, the prices of oil as term spreads, too. Analyzing the risk distribution as forecasting too, have essential meaning for global growth.

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LEVEL OF DEEPENING FINANCIAL INFRASTRUCTURE, FINTECH COMPANIES AND FINANCIAL INCLUSION: THEORY AND EVIDENCE

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Abstract

Financial inclusion brings the potential benefits as big part of population gain greater access to financial instruments and services. These benefits are raised up using financial tools so the need of promoting financial inclusion is more than obvious - it is global priority. Financial infrastructure can help in reducing the risks and increase the efficiency of financial markets, but can sometimes contribute to situations where excessive risks are being taken. Financial infrastructure could be considered as a system of roads under which financial intermediation takes place. Better roads reduce travel time and costs, but also increase the potential speed, which has inherent risks. These benefits are raised up using financial tools so the need of promoting financial inclusion is more than obvious, it is global priority. This paper examines that financial developments expand economic opportunity which create positive effects as theory and evidences provide sound reasons for taking this benefits.

Key words: financial infrastructure, fintech company, financial inclusion, opportunities.

1. Introduction

Financial markets play a key role in economic development and stability, as they provide an effective mechanism for risk assessment and return on investment, and then managing and allocating risks and resources in the economy. Credit bureaus provide information needed for accurate and timely risk analysis, especially for consumer credit. Collateral systems provide information to warn creditors of the potential existence of past advocacy interests and to lend to creditors who register, securing their pledge, thereby reducing the risk to creditors and facilitating access to credit. Payments, remittances and securities settlement systems facilitate the execution of financial obligations and the safe transfer of funds over distances and institutions.

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Financial inclusion brings the potential benefits as big part of population gain greater access to financial instruments and services. This kind of inclusion offers to individuals and companies to work themselves far from poverty, women are more employee and better fating with gender equality across societies, as avenues for money laundering may be reduced. These benefits are raised up using financial tools so the need of promoting financial inclusion is more than obvious, it is global priority.

International organizations make this goal – the spread of the financial services – very important priority, especially for developing countries.

2. Literature review

Financial inclusion focuses on population which is “unbanked” to get into the formal financial system. In this way, people will have the opportunity to access to financial instruments and financial services – savings, payments as transfers to credit and insurance. This also is a kind of strategy which correct market failures and eliminate nonmarket barriers to access various financial products and services.

In total, financial inclusion is without doubt an important topic because it can influence the extent to which financial services and innovations can improve our lives. It is key to provide new opportunities for population in societies by driving forward inclusive global growth.

Defining financial inclusion as policy, contributes of finance to economic development and poverty reduction. This underlines the development of policies in finance in developing countries, and gives special place due to the positive impact that finance product and services have on misery index on the countries.

For example, the policies in financial sector take a place through three stages:

1. Fostering state-led industrial and agricultural development through directed credit;
2. Market-led development through liberalization and deregulation;
3. Institution building that aims at balancing market and government failures.

People that are not financially included, are not able to get affordable credit, and are financially at risk due to having no home insurance, struggle to budget and manage money or plan for the unexpected and not know how to make the most of their money (FSD, 2010). For example in the economic literature, Joshi (2011) defines financial inclusion as the process that ensures financial products and services needed by vulnerable groups (low income groups at low cost and transparent manner by mainstream Institutional players. According other authors, financial inclusion is defined as a strategy that should reach everyone who wants to use financial services, especial population with low incomes (Gardeva and Rhyne, 2011).

Further, Cheriyan (2011) numbers all type of accessing financial products and services - no frill bank account, financial advisory services, check in account, entrepreneurial credit, micro-credit,

savings products, healthcare, remittances & payment services, business correspondence insurance, mortgage, pension for old age and selfhelp group branchless banking. Gardeva and Rhyne (2011) conclude that financial inclusion as global strategy that utilizes on global growth will be reached in the moment when all people have access to a suite of quality financial services, provided at affordable prices, in a convenient manner for the clients.

3. Overview of the financial infrastructure in the time of crisis

Financial infrastructure can help in reducing the risks and increase the efficiency of financial markets, but can sometimes contribute to situations where excessive risks are being taken. This seems to be the case in the current financial crisis. Financial infrastructure could be considered as a system of roads under which financial intermediation takes place. Better roads reduce travel time and costs, but also increase the potential speed, which has inherent risks. For example, fixed collateral can cause a bubble when funds are used to increase lending that increases asset prices. The data of credit bureaus and other financial information have enabled more complex models of consumer behavior. These types of models were behind many derivative products that helped create the current crisis. So, reforms in the financial infrastructure are more than needed today for developing the road and rules of playing.

The current period of dynamism and changes is not a reason to stop building a financial infrastructure; it's a challenge for more creativity and building solid framework for safe lending to modern payment systems which is particularly high today when countries are facing serious economic problems. Financial infrastructure strengthens financial markets, which in turn support business investment and spending on consumption and help boost economic growth. However, the lessons from the current crisis show the importance of establishing clear "road rules", the legal and regulatory framework, and the oversight of finance. Regulators have limited resources and cope so market participants also need to help implement traffic rules. Investors and borrowers need to be educated and proactive in seeking information about the products they buy. Technology can also engage in strengthening financial infrastructure, but must be used reasonably, not justifying or hiding excessive risk taking, as was the case with some derivatives modeling. Technological solutions have the crucial implications taking in account that it could include functions for enhancing stability, such as risk monitoring and could promote diversification of assets and service providers (Demirguç-Kunt and Levine, 2008).

4. Breakthrough in Global Fintech investment

The leading countries showed that financial inclusion has been on the policy agenda for many years. Also, the leading countries underline the value of consistency across all fields of financial inclusion. The reports confirm that these countries have comprehensive, wide-ranging financial inclusion strategies. And as they approved their financial infrastructure and put

regulations and systems in place to support the supply of financial services, the leading countries also take steps to protect consumers.

National regulation and policy around financial inclusion are showing gradual progress worldwide, although increases in overall scores since 2014 are small (Figures 1 and 2). The global goal of providing financial services for the billions that do not have them is achievable, but strong momentum, rather than gradual change, is needed. Slow progress might be understandable if policies were already reasonably robust. The average overall Index score is just 49 out of 100. Similarly, fewer than half of the countries covered, 24 out of 55, score above 50. The conclusion is that the most countries are not even halfway to an entirely supportive policy environment for financial inclusion.

Figure 1. Convergence of scores, means and variance for 2014/2015/2016

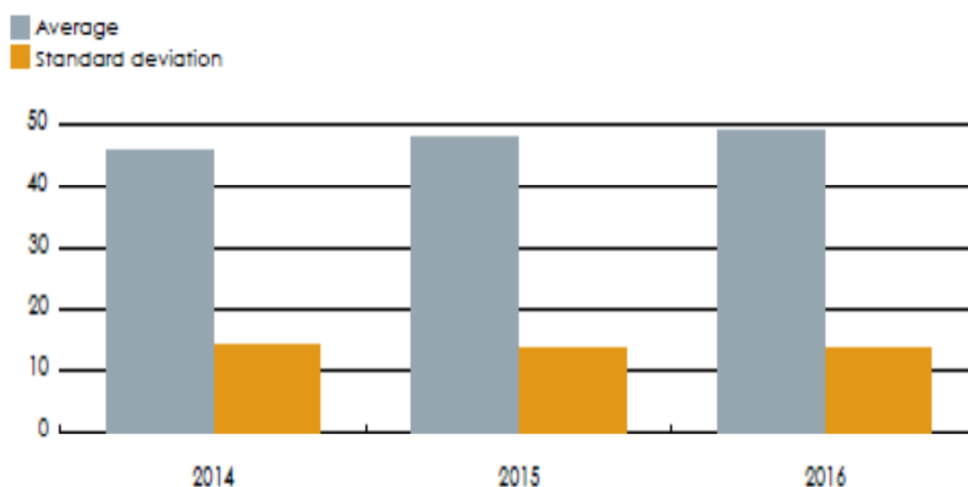
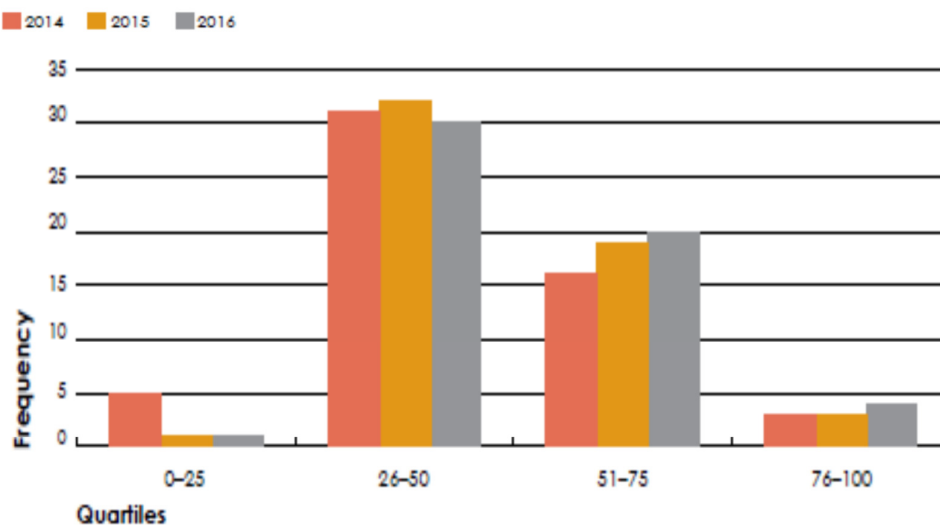


Figure 2. Histogram of country scores for 2014/2015/2016



From Figure 1 could be seen that the distribution of scores showed gradual convergence towards the mean meaning that more countries are performing closer to the average score for enabling financial inclusion, and that outliers with poor enabling environments are slowly increasing their scores with progressive or new policies. Figure 3 is an analysis made by quartile between 2014 and 2016 confirming that more countries are scoring in higher quartiles over time. Most countries, still need to make substantial improvements in the regulatory environment for financial inclusion, beside the fact that some are moving quickly toward this goal.

4.1. Fintech patterns

The new patterns of financial inclusion rely on digital technologies, and “fin-tech” continues to revolutionize the nature of provision. Very important fact is that 78% of access on financial services in developing countries involves mobile money. But on another side, here is China where stakeholders are in hand-in-hand with innovations such as (P2P) lending, which is an increasingly significant mechanism for financial inclusion, which is so far as challenge for the low-income populations.

The fundament of ambitious challenges and fast developments are regulatory and institutional environment for financial inclusion. The financial inclusion strategy and policy should ensure providers offering financial services and products and employ new technologies to deliver this. Also, key expectation here is the support that ensures safe provision services especially for populations in developing countries.

Reality underlines the need of detailed and transparent scoring system which will provide useful benchmark how developing countries are performed in enabling financial inclusion. The reason lies in existing a significant gap in most of the developing countries and the high aspirations announced at a global level to increase and strengthen financial inclusion.

Changes in the world of payments are gaining strength, as the potential of financial technology is further explored and maximized. The "era of fintech" also underlines that banks must have a clear plan in order to be able to adapt and benefit from the changes made by fintech. While the banking industry is traditionally more "conservative" of change, rapid changes include new technology thus introducing new solutions.

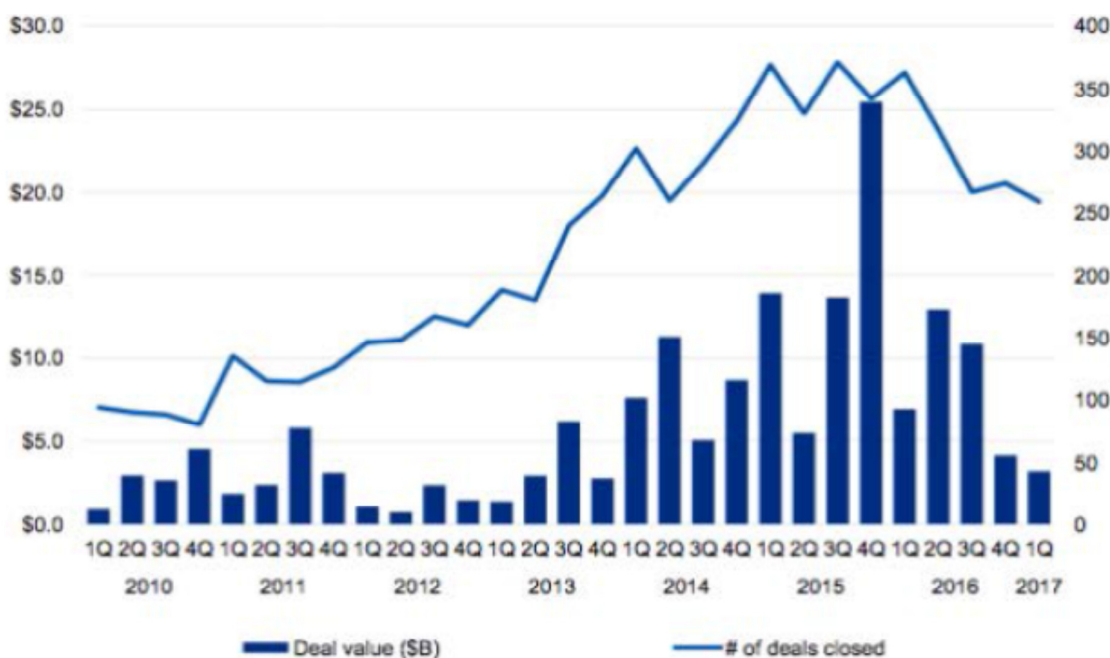
In order to position in the center of the payment industry, banks must act to understand, communicate and carefully choose from the full offer of the development of the fintech. The range of choice options is wide. As the number and type of enthusiasts, developers and branches develop a pace, new payment opportunities and ideas are already spreading in the field of corporate payments, in this way affecting corporate demand. It's important to underline that the corporate and wholesale industry is not static, and technology has already been backed up in order to introduce improvements in the industry in terms of alignment, standardization, centralization and the deployment of applications to more sophisticated solutions. The payment industry gives details for the impact of Fintech in order to assess direct impact of new technology in payments. Banks need to understand and approach these developments as opportunity to remain in the center of

global payments.

Also, there have been a growing number of new financial companies and non-bank payment providers that engage and vibrate the payment world, taking advantage of a range of new technologies and market conditions, and extending alternative business models that could bring up disruption or addition to traditional payment practices. This trend was prompted by the healthy growth of global investments in the Fintex sector, led mainly by venture capital and private equity investors. Last year in the United States, in just one year, investment in the Fintex has almost tripled, and such innovative enthusiasm is apparent throughout the world. London, San Francisco and New York have already established themselves as key innovation centers and are rapidly following new innovative centers around the world. In addition, innovations are emerging in a range of business areas within the financial industry, with a major emphasis on developing solutions that address the needs of retail and middle-sized participants, from lending, payments and "large data" to messaging, security and foreign exchange .

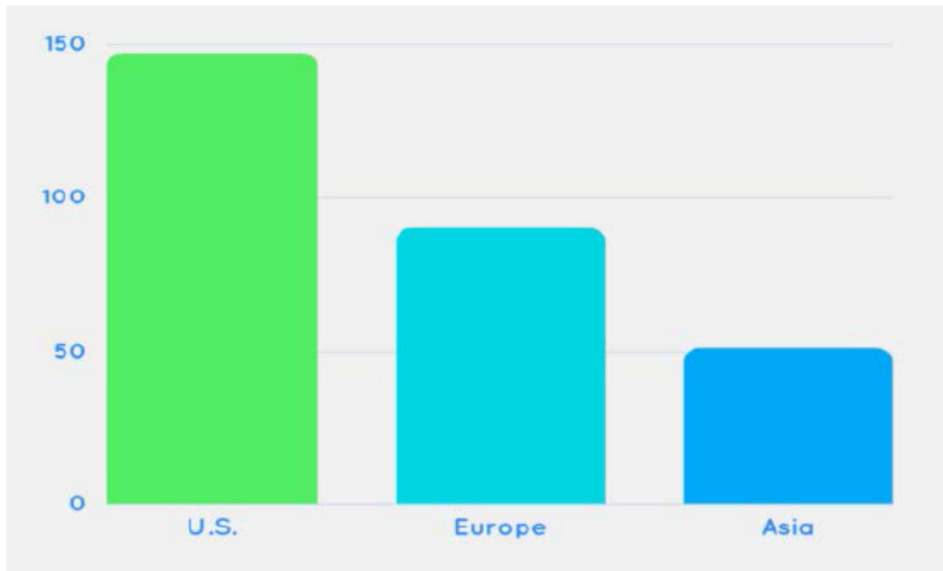
4.1.1. Fintech patterns in VCs

Figure 3. Global Investment activity in fintech companies (2010-Q12017)



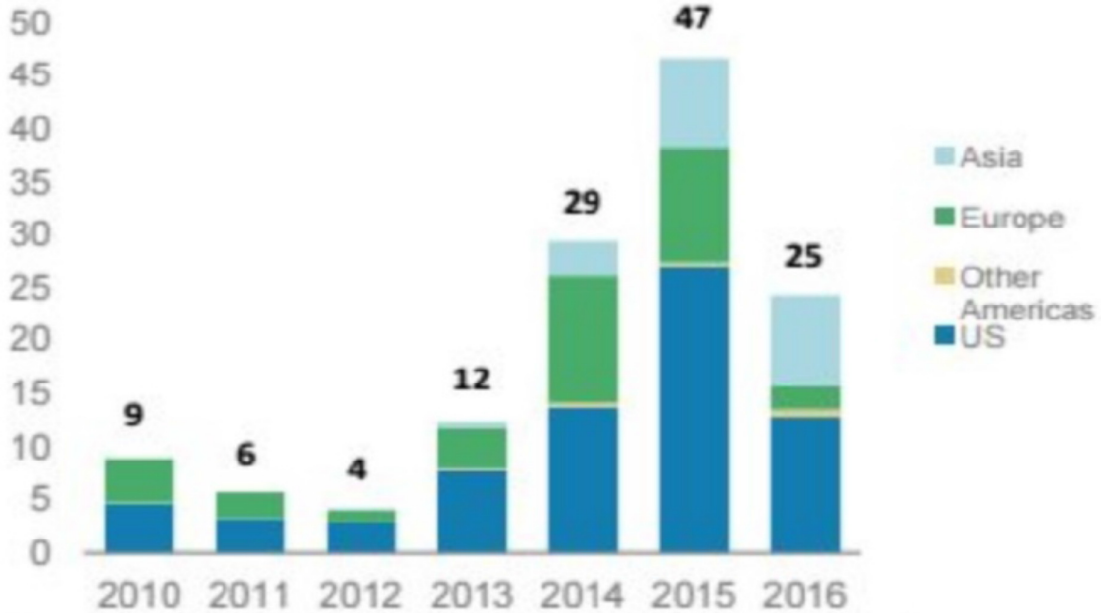
Source: Global Analysis of Investment in Fintech, KPMG, 2017.

Figure 4. Fintech Investment Deals, 2017



Source: Global Analysis of Investment in Fintech, KPMG, 2017.

Figure 5. Total global investment in fintech companies (\$bn)



Source: Global Analysis of Investment in Fintech, KPMG, 2017.

From the figures could be concluded that venture capital firms which poured into fintech from 2012 to 2016, have been pulling back on their investments. Meanwhile, established financial firms are positioned to step up their spending. These shifts will lead to an environment where legacy firms, take the reigns of financial innovation.

The numbers in the graphics confirm that the role of VCs will continue to diminish. Financial technology companies experienced a surge in funding from 2012 to 2015, during which time venture capital firms poured \$US92 billion into the space. Now it looks like those VC firms are experiencing a bit of a hangover. In 2016, global venture capital investment in fintech companies dipped to \$US25 billion, from \$US47 billion in 2015. This environment of “happy money” sent valuations for fintechs to levels that some investors view as unreasonably high. Some managers of this kind of companies conclude that valuations in fintech were foamy. Over the past year pullback in fintech investment is indicative of a realisation of lower return on investments than initially hoped due to some unique challenges to disrupting in the financials industry, and the opinion is that VC investors will continue to scale back investing.

5. Conclusion

In the 2014–15 period, countries’ scores in the area which includes an assessment of the available infrastructure for digital financial services and the services actually available, rose by a remarkable 11 points on average, indicating widespread, positive action to create a regulatory environment more conducive to digital economic activity. The most significant changes are in retail payments, resulting in the separation of a large number of financial services. Especially on the foreign exchange market are non-banking providers, who take advantage of the possibilities for cost savings. In the wholesale and corporate payments sector, innovations and emerging solutions have been supported by industry-wide initiatives such as SEPA and TARGET2, which have established market standards and have increased payment alignment. However, despite this progress, some banks are currently not sufficiently prepared when it comes to adapting to such changes. This is partly due to the abundance of the new regulation in the wake of the global financial crisis, the diversion of precious funds from research and innovation, to projects related to alignment. But it is important to remember that high regulatory standards mean that banks can usually provide much higher levels of security and reduce the risk of non-bank participants. With more and more “inclusive” bank accounts being opened, attention must now shift to the use of those accounts. In too many places inclusion still entails no more than the withdrawal of transfer payments from accounts that are otherwise dormant. The monitoring of information on transactions in such accounts is the first step to understanding what measures need to be taken to facilitate the use of those accounts and bring about real inclusion.

Designing and constructing inclusive and production-oriented financial systems can play an important role for countries growth. These mean that the countries require strong public institutions, together with prudent and countercyclical regulations. A key element is the

strengthening of public development banking institutions in the region to foster financial inclusion through new and innovative practices and instruments. Financial inclusion refers to the efforts and initiatives oriented to grant access to financial services by those segments of the population that are not part of the formal financial system and improve and perfect the use of the financial system for those that are already part of the formal financial system.

Regarding this, the investment in such a system has critical importance for societies. The start point for financial institution is to convince the population and educate them through offering benefits that ease the lives of the people, the purpose that financial institution wants to reach. It is understanding that it will vary from country to country, depending on various challenges the unbanked population faces during their daily lives. So, it is commonly understood that the simple way for financial inclusion is offering new instruments and easy digital technology to companies' employees for transferring and receiving money, even small amounts of money. New technology and innovative communication tools change the financial system improving the speed and safety as determining new lifestyle of population, the easy one.

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STRATEGIC HUMAN RESOURCE MANAGEMENT PRACTICES IN A DEVELOPING COUNTRY PROFESSIONAL SERVICES FIRM

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Abstract:

The field of human resource management (HRM) is well established in the more developed countries of the US and the UK and significant studies have been undertaken on the subject related to large organizations in those countries. The purpose of this paper is to outline the strategic HR practices employed by a small professional services firm located in a developing country in the Caribbean. The insights gleaned from the paper can serve as a guide to similar firms in small countries. The journal articles which addressed the field of HRM and Strategic HRM were examined to identify the critical themes that emerged from the literature that impact HR practices with special reference to professional services firms. This paper represents an original study in the context of a professional services firm operating in a small developing country and contributes to filling the gap in the literature in this area of research.

Keywords:

Human resource management; Strategic HRM practices; HRM in professional services firms; Frameworks for HRM; Performance management.

INTRODUCTION

The management of people in organizations was first referred to over 50 years ago as personnel management viewed as recruiting, organizing, and motivating the human resources required by an enterprise (Evans and Mohammed, 2017). The authors indicated that other functions such as training, industrial relations,

compensation, job design and manpower planning were added in the 1970s. In the 1980s, the concept of HRM was adopted in the US and became the most used label which, in the current business environment, involves attracting, developing, and maintaining a workforce (Evans and Mohammed, 2017). More recently, the concept of strategic HRM emerged which highlights the link between an organization's workforce and its strategic plans, and covers all the managerial tasks employed in developing and retaining qualified workers and creating organizational effectiveness (Armstrong, 2006; Anthony et al., 2010)

This paper explores the field of HRM and strategic HRM as they apply to the management of a professional services firm (PSF) operating in a small developing country. In particular, the key strategic HRM functions relevant to such a company are identified from the literature and elaborated in the discussion. The research on HRM is expanding in scope witnessed by the growing interest in strategic HRM which is viewed as a subset of HRM (Rosdi & Kok-Wai, 2010). This paper focuses on strategic HRM in PSFs which topic was not widely researched, but was explored in the German Journal of HRM which studied the issue of the conflict in the perception of the role of the HR specialist in a PSF (Bévort, 2015), and constructed a framework for research and practice in PSFs (Kaiser et al., 2015). The general field of HRM research is well covered in the literature but mainly focused on established firms in the manufacturing and related sectors in developed countries. Published research on HRM in the Caribbean is sparse, and the search of the literature uncovered an article that addressed the issue of HRM reform in the public services of Jamaica and Trinidad and Tobago (TT), but not PSFs operating in the private sector (Bissessar, 2001).

While research on PSFs is relatively scarce, research on such firms in small developing countries is almost non-existent. This study serves to partially fill that gap and provides an incentive for further research on HRM practices. The study is significant for young firms, particularly those operating in the professional services consulting sector, HR practitioners, students of HRM, and managers of corporations and small firms in developing countries. The article contributes to the general field of HRM and strategic HRM with a particular focus on the challenges of small service firms in developing countries and has implications for the proper management of such firms. The argument is that the adoption of appropriate strategic HRM practices by small PSFs in developing regions is critical to their long-term survival. No such study exists for the Caribbean, therefore the paper makes a significant contribution to the body of knowledge in the field. The sequence of the

article is structured as follows: an overview of the relevant literature; theoretical approach and research methodology; case of a developing country PSF; discussion of strategic HRM practices; and conclusions and implications.

RELEVANT LITERATURE

A review of the HRM literature relating to HR practices and organizational performance was undertaken by Hussain and Ahmad (2012) utilizing the leading journals that addressed the topics of: training and organizational outcomes; business strategies, managerial styles, and organizational culture as moderators of HRM; HRM research standardization; HRM practices for developing competencies and organizational knowledge; and the linking of project assignments to career development. The significant findings of the review were that: employee goals should be aligned with corporate goals; reward programs should be performance driven; learning and development should target performance gaps; the skills and competencies of top performers should guide retention and succession planning; gaps occur because of a focus on HRM policies and practices de-emphasizing the strategy formation process; HRM effectiveness is subject to the organizational culture which depends on a decentralized and expertise-oriented management style; and strategic HRM is a core competency. A subsequent study of HR research published from 2001 to 2013, revealed that the research on HRM emphasized the alignment of HRM practices such as compensation and rewards, talent management, and people management systems with organizational strategies (Arora, 2016).

The definitions of HRM and strategic HRM are debated in the literature and it is left to authors to apply definitions most appropriate to their study context. In this regard, Prowse and Prowse (2010), citing Storey, suggested an appropriate definition of HRM as: “Human resource management is a distinctive approach to employment management which seeks to achieve competitive advantage through the strategic deployment of a highly committed and capable workforce, using an integrated array of cultural, structural and personnel techniques” (p. 146). Following upon this definition, strategic HRM is viewed as an evolutionary stage from the practice of HRM and is concerned with the integration of strategic planning into HRM. The preferred definition of strategic HRM adopted for this paper states: strategic human resource management is “the pattern of planned human resource deployment and activities intended to enable an organization to achieve its goals”

(Wright & McMahan, 1992, p. 298). The relevance of this definition stems from efforts to link and coordinate various HRM practices with the strategic organizational management processes. Despite the effort of researchers to distinguish between HRM and strategic HRM, it is evident that the main difference is the link to organizational strategies and goals.

It is generally accepted in the literature that HRM represented a radical departure from the way in which the management of people in organizations was viewed and was linked to productivity improvement and increased employee commitment. However, different approaches were adopted reflected in the formulation of three models: the Harvard model; the Michigan model; and the UK model (Prowse & Prowse, 2010). These authors, in citing the research on these models, explained that the Harvard model emphasized communication, teamwork, and talent utilization which was considered a soft approach; the Michigan model introduced the concept of strategic HRM; and the UK model included considerations of strategic integration, flexibility, and commitment as vital to organizational effectiveness. Again the distinction among the models is the relative emphasis on the strategic approach to HRM.

With the development of models of HRM, the issue of HRM planning was viewed as requiring a coherent framework because such planning was increasingly becoming an integral component of the overall strategic corporate planning effort (DeCenzo & Robbins, 2007). Based on an analysis by Lepak and Gowan (2010), a framework can be formulated which recognizes the fundamentals of HRM planning as involving three areas of focus: HRM challenges; primary HRM activities; and employee contributions. HRM challenges comprise organizational demands, environmental influences, and regulatory issues. The organization demands include strategy, company characteristics, organizational culture, and employee concerns. Environmental influences include labor force trends, globalization, technology, and ethics and social responsibility. Regulatory matters cover governmental legislation that protects the rights of individuals and the company with regard to the employment process. At the level of HRM practices, Lepak and Gowan (2010) described HRM planning as involving: work design and workforce planning; managing employee competencies which cover issues such as recruitment, selection and training; and managing employee attitudes and behaviors of which the key issues are performance management and compensation and incentives.

The literature on HRM identified a wide range of issues and HR practices but a coherent framework was lacking. Based on the strategic HRM practices distilled from the literature, this study integrated the relevant practices into the PSF framework that was used to highlight the case of Project Development Consulting (PDC) a PSF based in Trinidad and Tobago (TT). The research problem seeks to identify the most critical HR issues that are relevant to the development of a young consulting firm in a developing country and the factors that impact its plans for expansion. Particular emphasis was placed on strategic HRM practices which, according to researchers and practitioners, link corporate strategy and HRM while integrating HR with business, society, and the environment (Nikoloski, 2016).

THEORETICAL APPROACH AND RESEARCH METHODOLOGY

Several theoretical models were identified as applicable to strategic HR practices including: the behavioral perspective which focused on the interrelationships among strategy, HR practices, and HR behaviors with employee behavior as the mediator between strategy and firm performance; cybernetic and agency/transaction cost models which examined the pertinent links, with the cybernetic model stressing the need for coordination across the menu of HRM practices and cost theory while considering the environmental and human factors that contribute to limiting transaction costs; resource dependence and institutional theory which studied the effects of political and institutional factors on HR practices; and the resource-based view of the firm that was mainly concerned with the relationships among strategy, HR practices, and the HR capital pool (Wight & McMahan, 1992).

These theories were extended to include: profit maximizing and competition-based theory which considers the organization's external market environment as the determinant in securing competitive advantage; survival theory which argued that organizations must adapt to its competitive environment for survival; contingency theory which stated that organizations operate in dynamic environments which require the application of unique managerial strategies; and human resource-based theory which argued that a firm's competitive advantage derives from the available skills and level of efficiency of its workforce (Cheu, 2009; Ologbo et al., 2012).

The early researchers in the field of HR argued that the literature on HRM lacked a theoretical grounding which made it difficult to distinguish between HRM and the more recent concept of strategic HRM which was derived from concern with the strategic management of organizations. Hence, the definition of strategic HRM adopted from Wight and McMahan (1992), and previously cited, was considered as most appropriate because, its applied nature facilitated greater understanding of the impacts of HR practices on the operations of organizations. Because the subject of this paper is a PSF whose main resource is the expertise of its professionals, the resource-based view provides the theoretical underpinning for the article because of its emergence from organizational economics and strategic management (Wright & McMahan, 1992), and its emphasis on implementing competitive measures and building strategic capability for the long-term sustainability of the firm (Boxall, 1996).

The research methodology adopted for this study involved: identification and collection of relevant data on HRM and strategic HRM from leading journals sourced from the main full-text aggregator databases of ABI/INFORM ProQuest and EBSCOhost, and eight major tertiary-level texts by reputable HRM authors. The relevant articles were downloaded to category files and reviewed for the main themes that impact the topic, with special reference to PSFs. The themes generated from this process were examined in greater detail and key issues applicable to a PSF operating in a small developing country were selected for the content of this study. The content and subsequent discussion was also informed by the author's significant business experience of more than 30 years as an executive in the public and private sectors with responsibility for executive recruitment with the last 12 years spent as the managing director of the PSF used as this case study.

CASE OF A DEVELOPING COUNTRY PSF

This paper presented the case of Project Development Consulting Company (PDC) a PSF started in 2001 to provide project development consulting services in the disciplines of project; urban and regional; transportation; and socioeconomic and small business planning to the private and public sectors in TT with prospects of entering the wider Caribbean region. The company is owned by three professionals whose expertise span the range of the core disciplines identified. The strategic vision of PDC was the creation of a sustainable consulting practice offering distinctive project development planning services to the local and

wider Caribbean markets. The objectives to attain this vision were to consolidate the existing firm's practice to ensure survival and to develop a strategic HRM plan as the base for the future expansion of the firm.

PDC's organization chart was relatively flat with the three principals comprising the board of directors, and also occupying the lead positions in the technical areas in which the organization's services are rendered. Kubr (2002) found that some consulting firms deliberately opted for a limited size justified by a combination of human and managerial factors including the desire to maintain a coherent top professional team where individuals can interact with each other, and a simple management structure. However, size can be a constraint for smaller firms when opportunities fully within their capabilities cannot be seized because of the size of the contract. PDC outputs are intellectual property products, and the organization's four critical value chain components which constituted its business model comprised data gathering and analysis, project scoping and planning, generation of strategic options, and preparation of a project development plan.

The organizational structure of PDC was designed initially to maintain a small permanent core with the flexibility of incorporating other persons, depending on the nature and scale of particular projects. In order to overcome the constraints of small scale, the firm established an effective network of alliances with independent architectural, engineering, environmental, geographical information systems, landscape architecture, and land surveying consultants to provide all of the professional and technical services required for executing large development planning projects. The company reached the stage where it embarked on expansion of its services and its geographical reach, which required a much larger organization.

Critical to PDCs growth is the ability to leverage its core competencies which Hitt et al. (2009) described as "the capabilities that serve as a source of competitive advantage for a firm over its rivals" (p. 81). PDCs core competencies are its intellectual, reputational, and organizational resources which, in the latter two cases, are valuable, rare, hard-to-copy, and non-substitutable but its technological resources need to be enhanced probably through greater utilization of electronic commerce.

A SWOT analysis was prepared for PDC identifying strengths and weaknesses and opportunities and threats based on an examination of these issues as detailed by Thompson et al., (2007). The HRM plan is based on the

five main opportunities identified as: serving additional customer groups and market segments; expanding into new geographic markets; entering into new alliances and joint-ventures; increasing customer demand for planning services; and developing e-commerce capability. In order to seize these opportunities, the company expanded its services, faced with the threat of competition from foreign rivals, as evidenced by the entry of Canadian and British planning firms into the TT market. PDC's competitive strategy focused on its distinctive competence, lower fee scale, and new growth strategy which involves the creation of a networked organization based on strategic alliances.

DISCUSSION OF STRATEGIC HRM PRACTICES

The strategic issues discussed in this section were based on the practices gleaned from the literature on strategic HRM and extrapolated from the author's experience managing a range of organizations in a developing country context. The discussion that follows is informed by the framework devised for understanding the characteristics and challenges faced by PSFs. The key characteristics of PSFs were identified as knowledge intensity, a professionalized workforce, and a professional partnership (Kaiser et al., 2015). PSFs rely heavily on its knowledge base that is used for generating creative, innovative, and customized client solutions, which derive from the high levels of expertise of its professionals. The main challenge faced by PSF in this context is recruiting and retaining such knowledge workers. Professionals are defined by their need for work autonomy while carrying multiple commitments, thus creating a management challenge linked to the characterization of professionals as unmanageable (Kaiser et al., 2015) (Figure 1). PSFs are normally owned by a founding team of partners who manage the organization, but increasingly other forms of organizational ownership such as companies are formed. In such an ownership structure, the main challenges relate to partner selection, career growth and development, and partner compensation (Kaiser et al., 2015) which are consistent with the challenges encountered by the PDC and the adoption of the theoretical position of the resource based view of the firm.

Based on the research undertaken for this paper, the key strategic HRM practices selected as most applicable to the case of the PDC comprise: recruitment and selection; performance management; performance appraisal; compensation and benefits; training, development, and work life balance; and team performance and

effectiveness. These strategic practices are consistent with the work of Khan et al. (2013) who identified a comprehensive list of 21 HR practices of which a selective bundle of practices are discussed in this paper. This paper adopts the argument that the successful management of human resources involves the professional development of managers through a process of training and motivation (Nikoloski, 2016) which is reflected in the PSF framework of key characteristics and challenges, and HR system and outcomes (Kaiser et al., 2015).

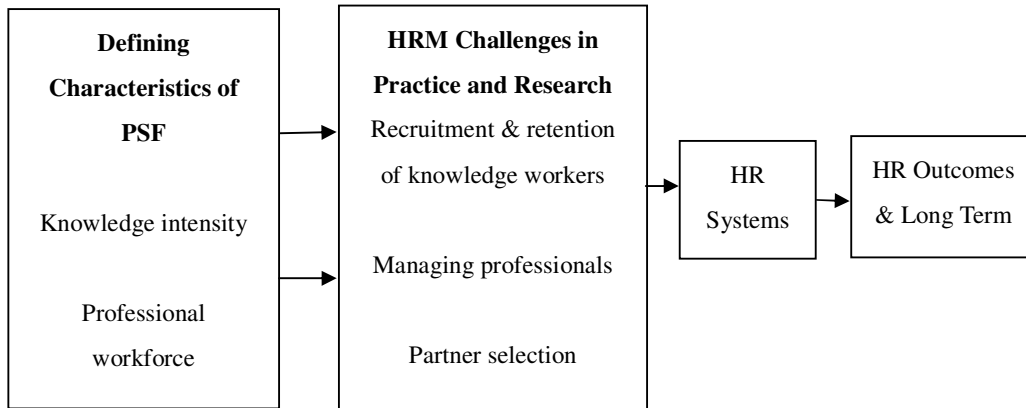


Figure 1: HRM Framework for PSF

Source: Adapted from “Human Resource Management in Professional Services Firms: Learning from a framework for research and practice”, by Kaiser et al., 2015, German Journal of Research in Human Resource Management, 29(2), 77-101, p.88.

Recruitment and Selection

Increasingly, firms adopt a formal recruitment and selection process in an attempt to choose the ‘best fit’ for the organization. The selection process comprises eight steps constituting a comprehensive approach: initial screening; completing application form; testing; interviews; background examination; conditional job offer; medical examination; and culminating with a job offer (DeCenzo & Robbins, 2007). In its expansion thrust, PDC adopted the comprehensive approach to recruitment for most staff, but particularly non-managerial staff. In so doing, the company will avoid the common pitfalls of selection which Scholfield (2006) listed as: not understanding the need; inadequate preparation; not putting candidates at ease; impressed by initial impact; talking too much; duplicating application form; asking closed questions; using gimmicks, tricks and pressure; personal prejudice; inappropriate use of tests; failure to check claims; and poor follow up. The recruitment strategy for management staff will include: a system of referrals; assessment of person-job and

person-organization fit; and a direct observation approach to candidate assessment. Regarding referrals, Yakubovich and Lup (2006) emphasized that recruitment is an inherently social process and “relying on workers’ social networks, employers economize on hiring costs and share these savings with the very same workers” (p. 710).

In terms of interview strategy, the general practice is that interviews should follow a structured process which means that each applicant is asked the same questions and scored with a consistent rating system. Smith believed that this could be achieved by asking behavioral-based (past behavior, judgment, and initiative) as well as situation-based questions (judgment, ability, knowledge) and suggested that to retain employees the work environment was the most critical factor. In terms of metrics, Carroll (2006) evaluated three kinds of assessments: self-report, 360 degree feedback; and candidate observation. Carroll found that an assessment that observed the candidate directly was the most indicative of actual performance potential and recommended an approach which permitted the identification of internal valuing systems and their influence on perceptions, decisions, and actions.

Recruitment and selection of professionals is linked to the concept of talent management that comprises the dimensions of attracting, sourcing, recruiting, and retaining; deploying and transitioning; growing and developing; managing performance; and rewarding talented professionals (van Zyl et al., 2017). This approach to talent management arose from a need “to align and integrate people management practices with those of the organization in order to achieve strategic execution and operational excellence” (van Zyl et al., 2017, p. 1). In well-established firms, selection of professional staff is based on the practice of posting or advertising a job internally, and slotting where a preferred candidate is identified and placed in the position. Organizational research showed that candidates selected through posting demonstrated good initial performance, were less likely to leave the organization, and more likely to gain promotion (Keller, 2017).

Performance Management and Organization Effectiveness

Performance management (PM) entered into the mainstream of organizational management thinking, and Loucks (2007) believed that PM involved much more than appraisals because organizations integrated related

functions such as compensation, succession planning, and goal management into the PM process. Loucks sees this as a holistic approach which enables HR professionals to focus on the important issues of managing talent and supporting strategic goals. PDC adopted a three-stage performance-based management system that involved a process of: awareness where organizations developed performance measures and promoted understanding through appreciation of the organization’s culture; development which is the data and organizational infrastructure building stage geared to supporting ongoing performance measurement; and integration where metrics drive improvement efforts, track organizations’ performance and utilize performance-based decision making models (Altmayer, 2006) (Table 1).

Table 1: Performance-based Management Stages

Awareness	Development	Integration
Organizations recognize the importance of developing performance measures, and promote understanding linked to the organizational culture.	Organizations begin to build data and organizational infrastructure to support ongoing performance measurement.	Organizations rely on metrics to drive improvement efforts and track organization’s performance. Utilize performance-based decision making models.

Source: “Moving to performance-based Management” by C. Altmayer, 2006 June, *Government Finance Review*, p.12.

The question arose, however, of what makes PM work which was attributed to: competence of managers at coaching, goal setting, development planning, and appraisal; a mindset that views PM as a tool to drive results, and support broader organization goals and strategy execution; and reinforcement through periodic formal progress reviews which is the defining characteristic of the best PM systems (Anonymous, 2009). The conclusion, therefore, is that an effective PM system is critical to achieving the strategic goals and fulfilling the needs of organizations. Performance management is directly linked to organizational effectiveness which depends on managerial competencies. Organizational effectiveness is viewed as the effectiveness of an organization in achieving its goals at an organization level, while managerial competencies include the key knowledge, skills, attitudes, motivation and personal characteristics required to successfully perform a task (Rangriz & Soltanieh, 2015).

Team Performance, Leadership, and Effectiveness

PM and organizational effectiveness was built on teamwork and leadership as indispensable features of successful PM. Three main factors are considered as essential to successful team performance including adequate knowledge and skills, sufficient motivation and effort, and coordination of activities and communication (Thompson, 2008). It was suggested that performance was dependent on the extent to which certain critical skills are displayed by team members such as: conflict resolution; collaborative problem solving; communication; goal setting and performance management; and planning and task coordination (Thompson, 2008). These are the team skills that were accepted by PDC as indispensable to effective team performance and required to be implemented.

Further, if team effectiveness was to be secured, good leaders were required to determine their natural style, learn how their style choice persuades others to behave, and consider whether adjusting their leadership style can achieve a better organization (Joyner, 2000). The leadership practices viewed as appropriate to a PSF in the field of project consulting were identified as: reinforce honesty because honesty impacts integrity; delegate challenging assignments to the team; become a mentor or coach; accept learning as a foundation for personal and organizational growth; publicize success widely throughout the industry; recognize the leaders, the contributors and supporters in the team; use continuous feedback to empower people; and build a participative process by seeking input from the people doing the work (Joyner, 2000).

The evidence suggests that effective teams cannot be formed overnight, but take months to develop the right dynamics, therefore, initially the level of cooperation can be low because members retain their individualistic and competitive styles. It was concluded that effective team performance cannot be pursued on a hit or miss basis, but must be scientifically orchestrated by applying the learnings from studies of successful teams. Effective communication is indispensable to a consulting practice, and team leaders must communicate about creativity and innovation by talking about the importance of new ideas to improving the range of services and reducing costs, explaining why ideas were accepted or rejected, and giving recognition and reward appropriately (Greenberg, 2005).

The expansion of PDC's organization is premised on the development of effective teamwork because consulting services in the project development planning field are delivered by teams comprising specialists

from different disciplines. PDC supported the position that the most important responsibility is to select creative people because they tend to be more open-minded and flexible, have the courage to be different, think for themselves and are self-motivated (Adair, 1996). Further, group creative synergy has to be encouraged by identifying the different mental skills required, making conflict of ideas legitimate, giving recognition, adopting brainstorming techniques, and creating an atmosphere of openness (Adair, 1996).

Performance Appraisal

At the heart of the PM system is the performance appraisal process which according to DeCenzo and Robbins (2007) “must convey to employees how well they have performed on established goals” (p. 256) and that, preferably, these goals should be set jointly between the employee and supervisor. A review of three approaches to appraisal based on absolute standards, relative standards, and outcomes showed that absolute standards covered the critical items of incident checklist, graphic rating scale, forced-choice, and behaviorally anchored rating scales appraisal methods. The relative standards included group order ranking, individual ranking, and paired comparison (DeCenzo & Robbins, 2007). PDC adopted these recommendations because the combination of the absolute and relative standards offered greater prospects of a more effective PM system. Regular feedback will contribute to achieving the strategic intent of the organization through employees gaining a better appreciation of performance requirements during the process. A critical issue in giving feedback is that it should be free from any stereotyping of behavior. This was a common error as indicated by Hastings (2009), citing studies by Catalyst which was recognized in PDC’s system as behavior to be avoided. It was asserted that managers tended to have negative attitudes to conducting performance appraisals because they are viewed as problematic when influenced by political and social factors (du Plessis & van Nierkerk, 2017). Based on a research study by the authors, it was found that managers are generally uncomfortable with performance appraisals and do not undertake the process readily. To address this issue PDC established a schedule of appraisal interviews based on mutually agreed performance indicators which was conducted on an ongoing basis.

Three main factors are considered as essential to successful team performance including adequate knowledge and skills, sufficient motivation and effort, and coordination of activities and communication (Thompson,

2008). This author also suggested that performance was dependent on the extent to which certain critical skills are displayed by team members such as: conflict resolution; collaborative problem solving; communication; goal setting and performance management; and planning and task coordination. These are the team skills that were accepted by PDC as indispensable to effective team performance and required to be implemented.

Further, if team effectiveness was to be secured, good leaders were required to determine their natural style, learn how their style choice persuades others to behave, and consider whether adjusting their leadership style can achieve a better organization (Joyner, 2000). In its approach to leadership, PDC adopted the following practices: reinforce honesty because honesty impacts integrity; delegate challenging assignments to the team; become a mentor or coach; accept learning as a foundation for personal and organizational growth; publicize success widely throughout the industry; recognize the leaders, the contributors and supporters in the team; use continuous feedback to empower people; and build a participative process by seeking input from the people doing the work (Joyner, 2000).

It is acknowledged in the literature, that many teams are unsuccessful and four main obstacles to success were identified: lack of cooperation, lack of support, reluctance to relinquish control, and failure to cooperate with other teams (Greenberg, 2005). The evidence suggests that effective teams cannot be formed overnight, but take months to develop the right dynamics, therefore, initially the level of cooperation can be low because members retain their individualistic and competitive styles. It was concluded that effective team performance cannot be pursued on a hit or miss basis, but must be scientifically orchestrated by applying the learnings from studies of successful teams. Effective communication is indispensable to a consulting practice, and team leaders must communicate about creativity and innovation by talking about the importance of new ideas to improving the range of services and reducing costs, explaining why ideas were accepted or rejected, and giving recognition and reward appropriately.

The expansion of PDC's organization is premised on the development of effective teamwork because consulting services in the project development planning field are delivered by teams comprising specialists from different disciplines. PDC will lean on Adair (1996) who indicated that the most important responsibility is to select creative people because they tend to be more open-minded and flexible, have the courage to be

different, think for themselves and are self-motivated. Further, group creative synergy has to be encouraged by identifying the different mental skills required, making conflict of ideas legitimate, giving recognition, adopting brainstorming, and creating an atmosphere of openness (Adair (1996).

Compensation and Benefits

It was argued that concepts of organizational rewards, workplace trust, and work engagement are critical to business survival in competitive environments. Such rewards were identified as: intrinsic, or internal to an employee; extrinsic, or external to an employee; financial and non-financial; direct compensation for work; or indirect rewards such as performance based incentives (Victor & Hoole, 2017). Monetary or cash compensation was the traditional way of rewarding employees, but increasingly non-monetary rewards gained prominence in most companies. DeCenzo and Robbins (2007) see nonfinancial rewards are gained directly increasing “the employee’s financial position, but rather add attraction to life on the job” (p. 287). Financial rewards normally include: base pay, contingent pay (pay for performance, competence or contribution), variable pay (bonuses), share ownership and other financial benefits and incentives. Non-financial rewards normally include: recognition, responsibility, meaningful work, autonomy, and opportunity to use and develop skills, career opportunities, and quality of work life and work-life balance (Hijazi, Anwar, & Mehboob, 2007). These rewards are also termed as relational rewards because they are concerned with learning, development and work experience of workers. Normally it is considered that non-financial rewards are given to boost the impact of financial rewards but they also have their importance and significance in order to keep employees motivated and improve their productivity.

In terms of the award of specific incentives, it was proposed that a committee that included representatives from key areas in the organization and senior management, be charged with the responsibility for coordinating the program of rewards (Milne, 2007). A particular responsibility of the committee was the development of the criteria for recognition and an ongoing process of evaluation of the program itself. The typical compensation model was of varying effectiveness and an alternative approach deemed more suitable included: targeting metrics to larger corporate goals and a focus on customer service; giving managers discretion in the awards provided; team incentives; and introduction of scorecards (Chang, 2007).

Training and Development, and Work Life Balance

According to Pfeffer (1998), training is a common factor in superior high-performance management practices, especially when based on commitment rather than control-oriented management systems, and noted that it takes time for the benefits of such training to be realized. However, the literature asserted that training programs are frequently poorly designed, not integrally connected to organizations' structures and practices, and proof of aiding in retention remained unconfirmed (Ranganthan, 2017). In this context, PDC embraced the results-oriented HR development cycle that emphasized a process of identifying company problems and sources of such problems, conduct of needs assessment which led to formulating training objectives, programs, training resources, program organization and implementation, evaluation of training and achievement of objectives (Kubr, 2002) (Figure 3). In the area of training and development, the main focus of PDC was on professional development and towards this end the development cycle espoused by Kubr (2002) was incorporated into its employee development program.

DeCenzo and Robbins (2007) outline three methods of performance evaluation which include: post-training performance evaluation; pre-post-training performance in which the difference before and after training is measured; and pre-post-training performance with a control group in which results are compared pre and post training. PDC utilized the pre-post-training measurement before and after training because it facilitated the development of a high performance culture which Wriston (2007) defined as a mind-set with accompanying and reinforcing habits, practices and routines, about how to optimally engage one's human resources in order to optimize long-term team and organizational performance.

The concept of work-life balance attracted greater consideration as a result of the speed of technological innovations, employer and employee increased expectations, and the impact of mobile technologies on the work-life fit (Khan & Fazili, 2016). In this regard, studies of work-life balance focused on organizational efficiency issues of productivity, organizational commitment, organizational citizenship, organizational performance, job satisfaction, and career aspirations (Khan & Fazili, 2016). The conclusion was that establishing work-life balance, which includes inputs from the families of workers, was beneficial to both

employees and organizations, and essential for professionals who tended to falter in this area.

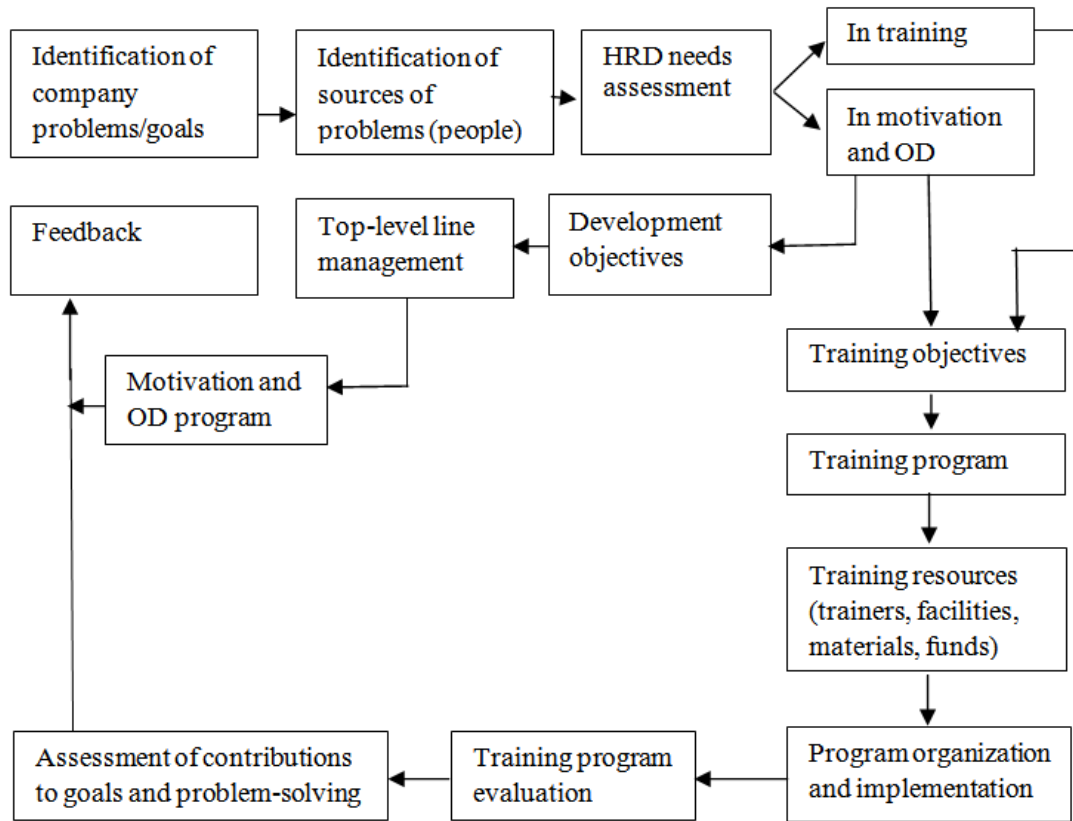


Figure 3: Results-oriented human resource development cycle

Source: Adapted from “Management Consulting: A Guide for the Profession”, by M. Kubr (ed.), 2002, Geneva: ILO, p. 442.

In summary, PDCs implementation of a successful strategic HRM plan benefited from the lessons of best practices gleaned from the research on strategic HRM practices and a review of the Indian model (Rao, 2016) which suggested that: organizations frequently operate as extensions of universities providing opportunities for learning; professional development was viewed as a collaborative process between professional employees and management; a philosophy that a culture of performance was created by a nurturing work environment; work life balance practices such as job-sharing and flex-time attracts professionals who have multiple commitments as indicated by Kaiser et al. (2015); and innovative contributions and higher retention were fostered by employee empowerment, work engagement, work autonomy, and challenging jobs. The latter two best practices are particularly relevant to PSFs where managerial level staff seek engaging opportunities including cross-training, broadened career responsibilities, and expanded roles (Pfeffer, 2005).

Further, the creation of a university-type learning environment resonated with the founding principals of PDC who served as adjunct lecturers at two local universities in their respective disciplines.

CONCLUSIONS AND IMPLICATIONS

This paper examined the concepts of HRM and the related practice of strategic HRM in relation to the development of an HR plan for a PSF operating in a developing country. The most critical strategic HRM practices were identified from the literature research, extrapolation of practical experience in the management of organizations in a developing country environment, and the application of the resource based view as the theoretical background to the study. The PDC was used as the case for applying the strategic HRM practices and assessment of the results, with the intention of providing greater understanding of such practices for the guidance of PSFs. The overall conclusion is that a PSF in a developing country situation must observe the key practices involved in: recruitment and selection of professionals; performance management and organization effectiveness; performance appraisal; compensation and benefits; and training and development, and maintaining work life balance. PDC established a track record for superior performance in its fields of operation and the strategic HRM plan was the instrument the company used to grow and develop the organization by gradually expanding into the wider Caribbean common market region. The successful application of these strategic HRM practices was highlighted as a single case study, but future research will be required for subsequent evaluation of the sustainability of the firm and comparisons with other PSFs. The special issue of team performance and leadership effectiveness was highlighted as the desired outcome of a strategic HRM plan especially in the context of a consulting PSF, because the network structure for undertaking project consulting exercises depends on building creative and innovative teamwork. The main implication of this study is that PSFs, particularly those providing consulting services, need to adopt strategic HRM practices geared towards enhancing the performance of its professional management team technical service delivery staff for improved client satisfaction.

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AN OVERVIEW TO INDUSTRY 4.0

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Abstract

In Industry 4.0 imposes decentralization along with ecosystems of smart factories with intelligent and autonomous shop-floor entities rather than applications of conventional centralized for production control. Industry 4.0 mainly consists of information and communication technology (ICT), cyber-physical systems (CPS), network communications, big data and cloud computing, modelling, virtualization and simulation, improved tools for human-computer interaction and cooperation. Industry 4.0 is the transformation of industrial manufacturing through digitalization and exploitation of potentials of new technologies. This study aims to provide understanding the basics of Industry 4.0 concepts for smart manufacturing. Benefits and drawbacks of Industry 4.0 are discussed.

Keywords: Industry 4.0; Information and communication technology (ICT), Cyber-Physical Systems (CPS).

1. Introduction

The first industrial revolution was based on the production mechanism of water and steam power. The second industrial revolution was based on electric energy assistance and the third industrial revolution on digital revolution. Now, therefore, the fourth industrial revolution (4th wave of distinct industrial advancements) has been appeared. The term first presented at the 2012 Hannover Fair in Germany was shown one of ten “Future Projects” that form Germany’s High-Tech Strategy 2020. Industry 4.0 is a combination of several novel technological advancements some of which are; information and communication technology (ICT), Cyber-Physical Systems (CPS), network communications, big data and cloud computing, modelling, virtualization and simulation ,improved tools for human-computer

interaction and cooperation (Kinzel, 2017).

Nowadays, transition to this new reality of the digitalization becomes inevitable. Today, industrial production, global competition and rapidly changing market demands are required to adapt production quickly (Rojko, 2017). These needs can only be met with radical progress in current technology. Responding to customer demands for tailored products, plants fueled by technology enablers such as 3D printing, Internet of Things, Cloud computing, Mobile Devices and Big Data, among others create a totally new environment (Almada-Lobo, 2016).

Industry 4.0 is a promising approach to business and manufacturing integration. Application of the generic concepts of CPS and industrial Internet of Things (IoT) to the industrial production systems are one of the technical aspects of these requirements. That is, the Industry 4.0 is based on the connections of CPS blocks.

This paper handles Industry 4.0 concepts for advanced manufacturing systems. Benefits and drawbacks of Industry 4.0 are discussed. The organization of the paper is as follows: First section starts with the introduction part and it includes general information of industry 4.0. In the second section, through the industrial revolutions, Origin of Industry 4.0 concept, Fourth Industrial Revolution, Industry 4.0 Production System -Smart Factories, benefits and drawbacks are all handled as literature review part. In section 3, conclusion is provided with future outcomes.

2. Literature Review

2.1 Through the industrial revolutions

The stages in which industrial manufacturing systems are developing from the manual work to the Industrial 4.0 concept can be presented as a way of four industrial revolutions. The first industrial revolution began in 1800s with mechanization and mechanical power (Liao et al,2017). Hand production methods were changed by machines and small workshops turned into factory systems. The second industrial revolution was triggered by industrialization-possible electrification and mass production. Henry Ford's automotive mass production system and the fact that factories became electrically operational also quickly developed industrialization. The third industrial revolution is characterized by the

digitalization with introduction of microelectronics and automation. Production is where various products are produced on flexible production lines with programmable machines. The fourth-generation revolution, triggered by the development of Information and Communication Technologies, has already begun. It is developed by technologically based intelligent automation control and CPS.

2.2 Origin of Industry 4.0 concept

Industry 4.0 is a strategic initiative of the German government that heavily supports development of the industrial sector. It can be seen as an action to maintain Germany's position as one of the most influential countries in machinery and automotive manufacturing. (Binzer, 2016). The basic concept was first presented at the Hannover fair in the year 2011 ((Kinzel, 2017). Availability and use of the internet and IoT, integration of technical processes and business processes in the companies, digital mapping and virtualization of the real world, 'Smart' factory including 'smart' means of industrial production and 'smart' products are all concepts that are used in the Industry 4.0. In addition to bringing in new technologies and digitalization, it finds out the profit-generating and cost-cutting opportunities. According to some sources, Industry 4.0 factory could result in decrease of production costs by 10-30%, logistic costs by 10-30% and quality management costs by 10-20% (Nienke et al,2017).

2.3 Fourth Industrial Revolution

The 4th revolution, which began in the 2000s, takes automation even further and revolves around cyber-physical production systems. It coincides largely with the technological advancements known as Smart Factories, the Industrial Internet of Things, Smart Industry, or Advanced manufacturing (Kinzel, 2017). The combination of Industry 4.0 that is information and communication technology, cyber-physical systems ,network communications, big data and cloud computing, modelling, virtualization and simulation, improved tools for human-computer interaction and cooperation are all discussed in detail within the following subsections, respectively:

2.3.1 Information and communication technologies (ICT)

Innovations in manufacturing are based on ICT (Wahlster, 2012). Digitalization and dissemination of ICT implementations ensure that all systems are integrated into supply and value chains. All information is

digitized and the corresponding systems within and across companies have been integrated into all stages of product creation phase. The manufactured smart products will take on additional roles to its primary purpose. For example, clothing items can be monitored to know how long they have been worn or how often they've been washed, and to report back to the manufacturing plant in order to produce a replacement when it is required (Kinzel, 2017). For this reason, recent developments in the ICT is the basis of Industry 4.0.

2.3.2 Cyber-physical systems (CPS)

One of the most significant advances in the development of computer science, information and communication technologies is represented by the cyber-physical systems (CPS). They are systems of collaborating computational entities which are in intensive connection with the surrounding physical world and its on-going processes, providing and using, at the same time, data-accessing and data-processing services available on the Internet. CPS improve the capability of controlling and monitoring physical processes, with the help of sensors, intelligent robots, drones, 3D printing devices. Cyber-physical production systems (CPPS), relying on the latest, and the foreseeable further developments of computer science, information and communication technologies on one hand, and of manufacturing science and technology, on the other, may lead to the 4th industrial revolution (Monostori et al, 2016). The CPS, which create a wide network of communication with the "Internet of Objects" and thus move to remove the boundary between real and virtual worlds, is one of the forces underlying Industry 4.0

2.3.3 Network communications

All these devices, both within the manufacturing plant and across suppliers and distributors, are connected through different wireless and Internet technologies. Reliable high quality communication network is an important requirement in Industry 4.0 therefore; expanding the Broadband Internet infrastructure is required (Henning, 2013).

2.3.4 Big Data and Cloud Computing

With the use of big data and cloud computing, the information retrieved through these networks can be

used to model, virtualize and simulate products and manufacturing processes.

2.3.5 Improved tools

Supporting people in their daily work is the primary purpose of CPS. Therefore, industry 4.0 uses state-of-the-art ICT tools and smart robotics. Smart buildings, homes, logistics, mobility and grid, and connectivity to business and social web are all facilities of it (Henning,2013). Its impact relates to both aspects of manufacturing and human life.

2.4 Industry 4.0 Production System -Smart Factories

New generation production facilities are expressed by the concept of intelligent factories. They can self-control all processes of production from supply, storage, production, quality-control; delivery to maintenance-repair. CPS and integrated physical systems with ICT components are also integrated to smart factories. Reconfigurable manufacturing systems, use hardware and software to keep up with the requirements of the ever-changing market (Nayak et al, 2015). The factory is informed about maintenance-repair processes, when service needs will arise and when parts need to be renewed. Customers are also prepared to do this, workflow can make forward-looking plans.

2.5. Advantages of Industry 4.0

Industry 4.0 has a positive impact on meeting individual customer requirements, production flexibility, optimization, efficiency, productivity and effectiveness, value creation opportunities through new services, and etc. There are also a number of other advantages and reasons for the adoption of this concept including a shorter time-to-market for the new products, agility, more flexible and friendlier working environment, and more efficient use of natural resources and energy. All of the benefit of this term is explained in the following subsections.

2.5.1 Mass Customization and quick reaction to customers

The growing individualization of demand and the advent of long-tail markets are obligating companies to reconsider themselves and reach new levels of flexibility. Mass customization is a fundamental component for this strategy. It allows production on extremely small scale even down to a single unique

product, and still be profitable (Henning,2013). Individualized or customized production becomes very important. By using high configurability of the automated production systems small last-minute changes to the products or prototypes becomes possible. Also, universally networked production environments represent the world's most advanced approach for implementing customized production (Mester, 1995).

2.5.2 Flexible Production

The establishment of smart factories and the use of intelligent –configurable machines reveal a more flexible production. Greater variety of products produced in a certain manufacturing facility, more agile manufacturing processes and responding to changes and temporary shortages can be achieved.

2.5.3 Increased production speed

Companies that use digital validation considerably reduce the production interruptions. By using industry 4.0 techniques, it is possible to detect change and provide the evidence to the client. Also, the speed of production is increased while the faulty design is removed.

2.5.4 Higher product quality and decreased error rates

Although higher production speed is thought to reduce quality, in the case of data-driven manufacturing, the quality of the product will increase and the error rate will decrease (Rojko, 2017). Incorrect information and faulty production reduce the company's profits and raise extra costs. Intercommunication machines will make product quality control so that production will ensure that the errors in the process are detected more quickly. Production in smart factories where all process is managed will become more effective with large data analysis.

2.5.5 Efficiency

Digital technologies and automating processes improve manufacturing operations by identifying weaknesses and obstacles in the production chain. This technology also uses pretesting methods before starting production whereas companies both save energy and money. (STĂNCIOIU, 2017). Moreover, some companies build smart factories that will be able to continue production without employees. Therefore, they will use robots in order to save time and money. Also, they will take over the more repetitive tasks, enabling human workers to focus on the more challenging ones.

2.6 Drawbacks

Industry 4.0 has drawbacks, which are listed in the following ways:

2.6.1 Workforce, costs and unemployment

Industry 4.0 brings the need for workplace change and increases the unemployment rate and costs. There is a need for skilled workforces that understand and apply Industry 4.0 concept. The actual training profile of the Industry 4.0 employee has not yet been created. (STĂNCIOIU, 2017). Also, employees are required to be more skilled for general competencies, and new system adaptations. Therefore, it will be difficult to find such a skilled workforce. Moreover, R&D, investment, appropriate labor are needed. Ensuring the correct data exchange between systems is very costly.

Large companies that adapt themselves to the Industry 4.0 will cut down the prices. However, there are many challenges for small companies to keep up with the Industry 4.0 revolution. That is to say, making small-scale companies in to Industry 4.0 involves costs, risks, loss of flexibility, and loss of strategic independence. As a matter of fact, companies should use robots and software to protect their competitive power. This can increase the unemployment rate in many countries around the world.

2.6.2 Safety and security

Industry 4.0, Digitalization, IOT, new services, data and connections also open new ways for data hijackers and industrial espionage to hackers. Therefore, risk of cyber risk will increase. Viruses can corrupt large data networks, intelligent production systems and data sharing having very bad effects on the manufacturing activities of companies. For example, data of companies can end up in the hands of a competitor. Another concern for manufacturers is cyber security; hackers can infiltrate and take over factories. Therefore, security measures must be constantly updated and audited. Namely, those who want to protect against attacks must always be a few steps ahead of hackers. Also, production facilities should not pose a threat to humans or the surrounding environment (Nienke et al, 2017).

3. Conclusion

Industry 4.0 has impacts on all levels of production and supply-chains, including business and production

managers, factory workers, CPS designers, customers, end-users. Also, it has potential to penetrate and improve many aspects of human life. Interactions between machines and using robots will accelerate the production. More effective production can be enhanced. Mass customization, higher product quality, decreased error rate, flexible production and efficiency are benefits of the Industry 4.0. On the other hand, there are many challenges ahead, such as skilled workforce, costs unemployment, safety and security. The development and deployment of these drawbacks will be incremental and part of the issues and initiatives to be handled. The manufacturing systems of the future covering manufacturing execution systems will have to be built to support this paradigm shift.

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PREDICTING BREWERY CUSTOMER SATISFACTION USING AN ARTIFICIAL NEURAL NETWORK

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Abstract

There are over 19,000 brewers in the world today, with over 94% of those being small producers of specialty craft beers. With limited resources available, it is difficult for these brewers to effectively locate and gather feedback from potential customers. Online recommender systems provide a platform to facilitate this type of communication. While past research indicates that positive online ratings help to generate demand for craft beers, less is understood concerning the brewer specific and environmental factors that lead to positive online reviews. This study develops a neural network using data from a popular online recommender system of craft beers. The most parsimonious network structure is identified by employing the Neural Network Simultaneous Optimization Algorithm (NNSOA). The result is a list of factors influential to consumer ratings of craft beer.

1. Introduction

Brewers of craft beer are often specialty microbrewers with limited resources producing a small line of unique beverages. The competition between microbrewers is fierce, with each trying to distinguish itself from others as unique and satisfying. Even with a superior product, these brewers may be unable to raise sufficient awareness of their products to attract customers. The sheer number of competitors can drown out attempts to self-promote craft beer on large scale. One challenge of the craft beer industry then is to effectively locate and communicate with the small base of customers who will find a product product satisfying, while simultaneously understanding what other customers do not like.

Online feedback or reputation systems collect and communicate consumer feedback on a global scale (Resnick, Zeckhauser, Friedman, & Kuwabara, 2000). Consumers are able to quickly provide feedback through online forms or by simply clicking on a rating button on a feedback page. The system then aggregate individual feedback into an overall metric of consumer satisfaction. In a sense, reputation systems are digitized equivalents of “word of mouth” advertising (Dellarocas, 2003). They serve as a cost effective and efficient channel of communication based on mutual interest of consumers (Mayzlin, 2006). In markets where hyperdifferentiated products are common, recommender systems help consumers be better informed and thus strengthen the connection to sellers with products they want to purchase (Clemons, Gao, & Hitt, 2006).

Past works have empirically shown the extent to which positive online reviews generate demand for craft beers (Clemons et al., 2006). However, less is understood concerning factors that lead to positive reviews. Brewer and localized environmental factors may influence an individual’s rating of a given beer product. Brewer specific information may include factors such as the number of products produced. In this case, the same information is available to all raters. Environmental factors, on the other hand, may take on distinct values for disparate groups of raters. For example, state-specific or even community-specific differences in available selling channels for beer (e.g., grocery, convenience stores) or regulatory concerns (e.g., Sunday sales, keg registration, sales tax) might positively or negatively influence product ratings.

The goal of this study is to build upon prior recommender system research by exploring the predictive influence of several brewer and environmental factors on online ratings of craft beers. We develop a neural network (NN) to predict consumer satisfaction using inputs provided by RateBeer.com, a popular craft beer recommender system. We then employ the Neural Network Simultaneous Optimization Algorithm (NNSOA) (Sexton, Dorsey, & Sikander, 2004) to identify the most parsimonious network structure, and thereby identify important brewer and environmental factors that are most influential to customer satisfaction.

2. Background

2.1 The History of Beer

Beer, by technical definition, is the “liquefied starch after fermentation with specific strains of *Saccha-romyces* yeasts” (Meusdoerffer, 2009, p. 1). Beer is brewed from cereal grans such as barley,

wheat, corn, and rice through fermentation of fermentable sugars into carbon dioxide (CO₂) and ethanol (Olaniran, Maharaj, & Pillay, 2011). Ethanol “helps release serotonin, dopamine, and endorphins in the brain, chemicals that make us happy and less anxious,” (Curry, 2017, para. 12). Moderate consumption of beer can offer nutritional benefits in the form of vitamins B₆ and B₁₂, as well as minerals such as magnesium, iron, and zinc (Sohrabvandi, Mortazavian, & Rezaei, 2012). There is evidence to associate beer consumption with protection against oxidative-related diseases including various cancers (Yoshikawa et al., 2002), lower mortality rates due to coronary heart disease (Lin et al., 2005), and immune system stimulation (Winkler, Wirleitner, Schroecksnadel, Schennach, & Fuchs, 2006). However, excessive consumption is shown to substantially increase medical risks (Lin et al., 2005).

Beer production may be traced to the 6th millennium B.C. (Rosso, 2012), although some researchers suggest brewing was critical to the Neolithic revolution (approximately 12,000 B.C.) when human cultures experienced wide-scale transition from a lifestyle of hunting and gathering to one of agriculture and settlement (Cabras & Higgins, 2016). Early cultures revered beer’s mood-altering properties, using it in religious ceremonies to help worshippers achieve spiritual ecstasy (Rosso, 2012). Early Egyptian and Greek writings document the production and consumption of beer by both the wealthy and the poor (Rosso, 2012). From the Roman conquest of Europe to the subsequent fall of the Roman Empire however, beer was considered a drink only for the lower class. Beer experienced a resurgence of popularity during the middle ages through monastic brewing throughout Europe. As explorers from Spain, England, and France searched the Americas for gold, silver, and other valuables, they documented the production of beer by many native cultures (Cabras & Higgins, 2016).

The Bavarian State Brewery Weihenstephan in Germany began producing beer in the year 1040 A.D. and is generally regarded as the world’s oldest continuously operating brewery (Valvur, 2009). The current global beer industry is dominated by a few large breweries such as Brahma, Budweiser, Coors, Heineken, and Tsingtao (Cabras & Higgins, 2016). However, there are currently over 19,000 breweries in the world, of which 94% are classified as craft beer producers (“94% of World’s 19,000+ Breweries are Craft, Says New Survey from The Brewers Journal and Alltech,” 2017). These “microbrewers” are defined as having fewer than 30 staff, producing less than 5,000 hectoliters per year, or having greater than 50% private ownership.

2.2 *Neural Network Simultaneous Optimization Algorithm (NNSOA)*

This study attempts to discover the qualities consumers’ value in breweries to enable a better customer experience. Neural networks (NN) have found to be successful prediction tool for business problems as well as many other fields, such as technology, medicine, agriculture, engineering, and education (Sexton, McMurtrey, Michalopoulos, & Smith, 2005). In this study, the NNSOA (Sexton et al., 2004) will be used to aid in a business scenario: improving the aspects related to customer satisfaction. Because it can individually isolate the inputs, the NNSOA is often superior to traditional gradient search methods, such as backpropagation algorithm (Sexton et al., 2004). To isolate the relevant inputs, the function will add hard zeros to the irrelevant inputs, theoretically removing them from the solution without ever actually

getting rid of a potential input (Sexton et al., 2005).

The NNSOA uses a Genetic Algorithm (GA) to search for the optimal neural network solution (Sexton et al., 2004). The GA searches from multiple starting positions, which enhances the ability to find global versus local solutions when compared to traditional processes, such as standard hill climbing algorithms, trial-and-error and back propagation (Sexton et al., 2005). Find the NNSOA outline below:

Neural Network Simultaneous Optimization Algorithm Outline

1. *Evaluation: Each member of the current population is evaluated by a fitness function based on the sum-of-squared error (SSE) value in order to assign each solution a probability of being redrawn in the next generation. Better solutions will have a greater chance of being drawn while poorer solutions will die out. Survival of the fittest.*
2. *Reproduction: A mating pool of 12 solutions is created by selecting solutions from the current population based on their assigned probability. This is done by selecting a random number in the range of 0 and the sum of all probabilities (or 1) and comparing it to the cumulative probability of the current string. When it is found that the random value is less than the current string's cumulative probability, the current string is drawn for the next generation. This is repeated until the entire new generation is drawn.*
3. *Crossover. The solution in the mating pool are than randomly paired constructing 6 sets of parent solutions. A point is randomly selected for each pair in which the parent solutions will switch the weights that are above that point, generating 12 new solutions or the next generation.*
4. *Mutation: For each weight in a generation, a random number is drawn, if the random value is less than 0.05, the weight will be replaced by a randomly drawn value in the entire weight space. By doing this, the entire weight space is globally searched enhancing the algorithm's ability to find the global solution.*
5. *Mutation2: For each weight in a generation, a random number is drawn, if the random value is less than 0.05, the weight will be replaced by a hard. By doing this, unneeded weights in the solution and possible inputs will be eliminated that are not contributing to accurately predicting the outputs.*
6. *Convergence: Once 70% of the maximum set of generations has been reached, the best solution*

replaces all the strings in the current population. The weights of these 12 identical solutions are then modified by adding small random value to the current weight. These random values decrease to an arbitrarily small number as the number of generations increase to its set maximum amount.

7. *Termination: The algorithm will terminate on a user-specified number of generations.*

3. Experiment

The purpose of this study is to determine specific inputs to RateBeer.com to predict the customer satisfaction, illustrated through the *Product Quality Rating* by brewery on the website.

3.1 Data collection

RateBeer.com is an online community that serves craft beer enthusiasts through “education, promotion and outreach” (Tucker, n.d.). They provide features on beer culture, beer-related editorials, and an annual competition for best beers. In addition, RateBeer.com collects consumer-supplied ratings of craft beers from members world-wide. Consumers rate their beer experience on five criteria of aroma, appearance, taste, palate, and a more general overall score. According the RateBeer.com, aroma is propelled by lively CO₂ and dampened by pillowy heads. Appearance describes a beer’s appeal in terms of color, visual texture, and head. Taste reflects senses measured by the tongue, including sweet, bitter, sour, salt, and umami. Palate describes touch sensations on the lips, tongue, gums and roof of mouth.

RateBeer.com and/or its ratings have been used in many academic studies concerning online consumer reviews (Clemons et al., 2006; Gu, Park, & Konana, 2012), monetizing internet applications (Clemons, 2009), and consumer behavior (Clemons, 2009). As described on the website, RateBeer.com employs several mechanisms to promote quality assurance of ratings. Similar to the popular Internet Movie Database (www.imdb.com), RateBeer.com uses a Bayesian average (Bulmer, 1979) weighted by the number of individual votes received. Individual users must have contributed at least ten ratings before his or her ratings affect the overall rating of a beer or a brewer. Finally, Beer.com actively pursues obviously bogus responses and ratings made by brewers or their affiliates. Accounts and ratings for these users are removed.

Data was collected over a two-week period in December of 2015 from the RateBeer.com website for all breweries in operation in all fifty U.S. states. The data was then normalized and then randomized to ensure unbiased and accurate results. In addition to the rating (i.e., the output), eleven input variables were also collected as described in Table 1.

Table 1 – Inputs

Input	Abbreviation	Description
1	NumberBreweries2012	Total Count Breweries 2012
2	StateID	State Number (alphabetical, 0-50)
3	License	0: Does not require a license 1: requires a license
4	Coupons	0: Allows beer coupons 1: Does not allow beer coupons
5	Grocery	0: Allows beer to be sold in grocery stores 1: No/Restricted beer sales in grocery stores
6	GasStation	0: Gas Stations allowed to carry/sell beer 1: Gas Stations NOT allowed to carry/sell beer
7	KegRegistration	0: No keg registration 1: Required keg registration
8	SundaySales	0: Beer Sales on Sunday 1: No/Restricted beer sales on Sunday
9	Tax2012	State tax amount on beer 2012 per 2 kegs
10	NumProducts	Number of products each brewery created
11	DisposableIncomeofState	Disposable income in each state

3.2 Training with NNSOA

A 10-fold experiment was conducted to increase validity of results. Out of the total 1,765 observations, 10 training and 10 corresponding test sets were created. The first 9 datasets had 1589 training observations and 176 testing observations. The 10th data set had 1584 training observations and 181 test observations in order to account for the remaining observations. Therefore, each observation in the total dataset had one opportunity to be in a test set. By setting up the experiment this way we are eliminating the possibility of bias in our testing results.

4. Results

Following the ten runs, the NNSOA estimates were compared to the original output. The outputs were rated on a scale from one to five. Because the small scale of measurement, even a slight difference in results is significant. Also, please note that the number of ratings was not considered into output product

quality rating. Therefore, the output is not weighted with consideration to validity and accuracy of rating by having many over one rating on RateBeer.com. The RMSE is the average(\pm) error of one observation. Table 2 below, shows the average RMSE and standard deviation for the ten runs, as well as the individual RMSE values for individual runs. As can be seen, the NNSOA was able to predict the rating consistently well.

Table 2 – RMSE Error

Run	NNSOA RMSE
1	0.27354
2	0.23842
3	0.30618
4	0.29221
5	0.27819
6	0.28536
7	0.23405
8	0.31791
9	0.26301
10	0.22692
Std. Dev.	0.03088
Average	0.27158

4.1 *Hidden Nodes and Relevant Weights*

In NNSOA, relevant input weights can be determined. One advantage to using the GA to find the NN solution over derivative based search algorithms, such as backpropagation, is the ability to weed out unnecessary weights. When the NNSOA introduces hard zeroes to the solution in the second mutation, it evaluates the solution as to the effect of replacing the previous weight. If the estimates improve, the hard zero survives. However, if replacing a weight with a hard zero produces inferior estimates, the hard zero dies out in subsequent generations. By doing this, the NNSOA is able to identify and eliminate weights that are not needed for prediction. Gradient search techniques require that all weights are nonzero regardless of whether the weight is needed for prediction or not. This means that in order for unneeded weights to exist, the combined effect of all unneeded weights in the solution need to effectively zero out when predicting during training. However, when these solutions are used on testing data, the unneeded weights will likely not continue to cancel each other out, which reduces generalizability of the solution. Table 3 and Figure 1 illustrates NNSOA’s ability to derive a more parsimonious solution.

Table 3 – Network Architecture

Run	Hidden Nodes	Zero Weights	Relevant Weights	Total Weights	Percent Reduction
1	3	31	5	36	86%
2	4	43	5	48	90%
3	3	31	5	36	86%
4	4	43	5	48	90%
5	3	32	4	36	89%
6	4	42	6	48	88%
7	3	32	4	36	89%
8	5	53	7	60	88%
9	5	54	6	60	90%
10	4	43	5	48	90%

An additional benefit of eliminating unneeded weights in the solution is the ability to identify relevant inputs. If a particular input has all of its input weights zeroed out, the NNSOA has eliminated that input’s effect on prediction.

Figure 1 – Run 3 Solution vs. Gradient Solution

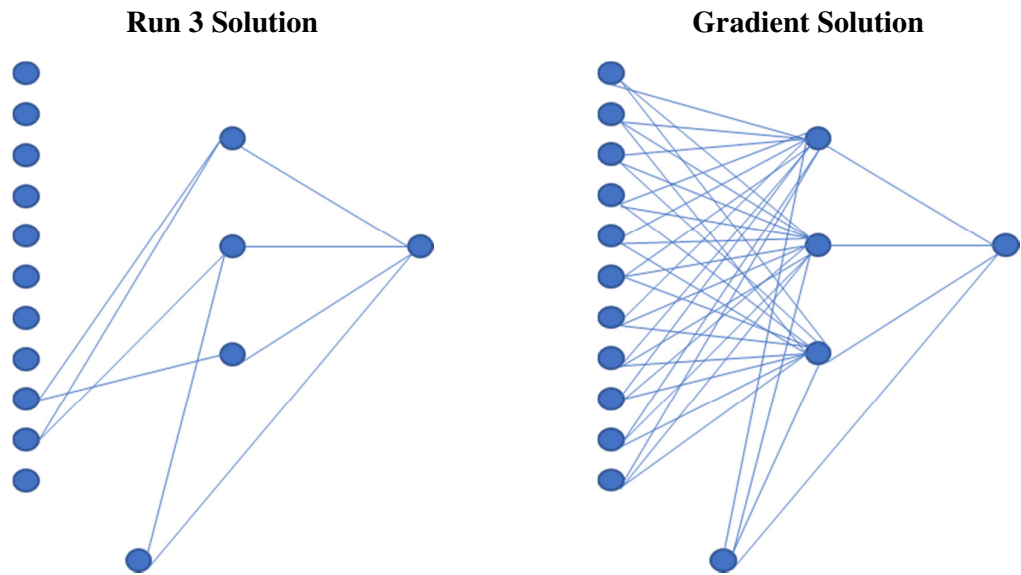


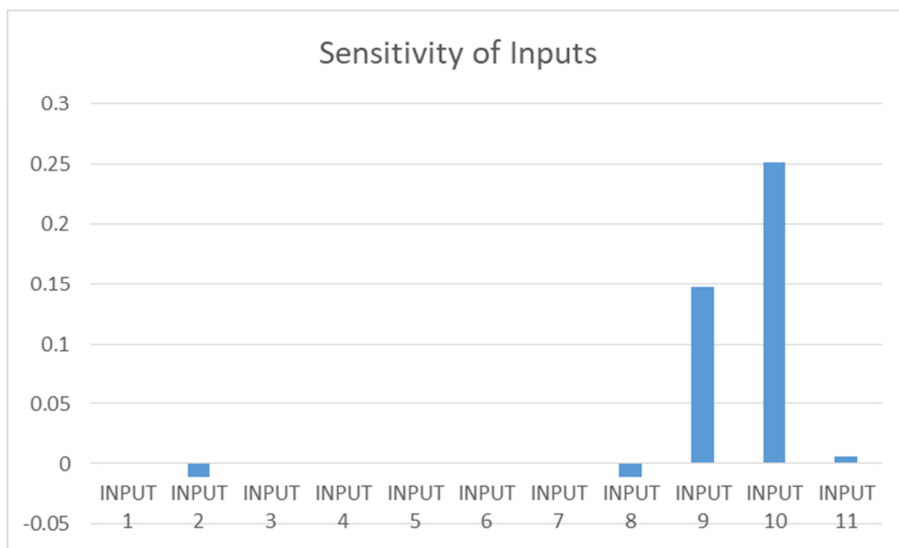
Table 4 shows how many times out of ten runs a specific input was used in the final solution. The always relevant inputs are: the tax in each state and the number of products for each brewery. Two of the inputs were relevant 20% of the time: the state and quality of Sunday sales. Disposable income was a relevant input 10% of the time. The total count of breweries, license, coupons, grocery sales, gas station sales and keg registration were never relevant to customer satisfaction at breweries.

Table 4 – Frequency of Usefulness

Input	Frequency
1 (NumBrews)	0
2 (StateID)	2
3 (License	0
4 (Coupons)	0
5 (Grocery)	0
6 (Gas Station)	0
7 (KegRegistration)	0
8 (Sunday Sales)	2
9 (Tax 2012)	10
10 (Brewery Products)	10

A sensitivity analysis was then conducted to see the effect of each input for magnitude and direction. Although Disposable Income, StateID, and Sunday Sales were included 10%, 20%, 20% respectively, it can be seen that they had little effect on the estimates. What is interesting, Tax 2012 and the number of Products for a brewery had a significant and positive impact on the solution. As Figure 2 shows, the estimates grew as the tax amount and number of products increased.

Figure 2 – Sensitivity Analysis



5. Conclusion

This study builds upon prior research on recommender systems that tie positive online reviews to demand for craft beers (e.g., Clemons et al., 2006). We developed a neural network to predict brewer ratings and then used the Network Simultaneous Optimization Algorithm (NNSOA) to identify the most

parsimonious network structure. Two inputs were identified: level of state taxes and number of individual beer products produced. This suggests that brewers should offer a wide selection of craft beers as this influences consumer opinion of individual beer products.

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THE EFFECTS OF MINDFULNESS BASED STRESS REDUCTION INTERVENTION ON DEPRESSION, STRESS, MINDFULNESS AND LIFE SATISFACTION IN SECONDARY SCHOOL STUDENTS IN SRI LANKAN

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Abstract

Stress and depression levels of school students in recent years are increasing due to many reasons such as individualism, academic competitions etc. However, school mental health counselors relatively use less strategy to assist students in reducing these mental health difficulties. Many studies in other countries have discovered that the positive effects of Mindfulness Based Stress Reduction (*MBSR*) intervention on stress reduction of students, but in Sri Lanka, it is relatively unexplored. Therefore, this study explored the impacts of *MBSR* intervention on Depression, Perceived Stress, Mindfulness Attention Awareness, and Life Satisfaction. A group of 30 students from Advance Level classes in a school was randomly selected and was given two days of *MBSR* program per week for continues eight weeks. Data were collected before and after the 8-week intervention of *MBSR*. Post-intervention levels of depression and stress were significantly lower than pre-intervention levels, whereas mindfulness attention and life satisfaction were at significantly higher levels. These results confirmed that school-based *MBSR* program could be effective in improving the level of mental health in secondary school students in Sri Lanka. The findings highlight the possibility for stress reduction, and awareness attention training in using *MBSR* intervention.

Keywords: mindfulness-based stress reduction (MBSR), stress, Sri Lanka

1.1 Introduction

Mindfulness-based stress reduction (*MBSR*) intervention, developed by Jon Kabat-Zinn in 1979, is being used widely to treat a variety of mental health issues such as stress, depression, pain etc., (Kabat-Zinn, 1998). Mindfulness can be conceptualized as a feature of self-regulation, which is defined as “an awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). The original concept of mindfulness is based on the Buddhist teaching, Vipassana meditation (*Anapasathi Bawana*). In Buddhist teaching, mindfulness is deliberated as a mental state of awareness about the present moment, with an attitude of lack of judgment. According to Tanay & Bernstein (2013) mindfulness is an important mental state that includes various qualities such as awareness, compassion, careful attention to the present moment, and familiarity to one’s subjective experience.

Mindfulness is a 2,500-year-old practice of meditation known as Vipassana, or insight meditation (Goldstein , 1976). This method of meditation has been aimed to encourage better awareness. Theravada tradition of mindfulness meditation involves sitting, walking, and movement meditation. However, mindfulness can also be performed through daily activities such as washing dishes or eating a meal (Kabat-Zinn, 1990). Studies have explored that role of mindfulness in coping with day-to-day life stressors are significantly increasing (Kabat-Zinn, 1990; Shapiro, Brown, & Biegel, 2007). According to Brown & Ryan (2003), mindfulness skills can be greatly improved by practicing mindfulness meditation. Through mindfulness practice one can aware about stressors, which helps a quicker return to a state of equilibrium (Kabat-Zinn, 1990). Many research have explored that the improvement of mindfulness is associated with a range of well-being effects such as reduced pain (Kabat-Zinn, Lipworth, Burney, & Seller, 1987; Reibel, Greeson, Brainard, & Rosenzweig , 2001) anxiety, depression, and stress (Kabat-Zinn, et al., 1992). Lower level of stress was found in a sample of cancer outpatients, who received the *MBSR* intervention compared with the control group (Specia, Carlson, Goddey, & Angen, 2000).

1.2 Stresses in Secondary School Students

Stress is may be defined as mental status such as anxiety, depression, exhaustion, tension, and emotional irritability. Depression plays a vital role in creating stress. The negative effects of stress among secondary school students are well discovered in the literature. Researches carried out with a sample of undergraduate students have explored a negative correlation between mindfulness and mental distress (Bowlin & Baer, 2012; Kiken & Shook, 2012). Literature shows a significant increase in major psychological problems such as stress, depression, anxiety, and panic disorder among collage students (Dyson & Renk, 2006). Stress, anxiety and depressive symptoms are commonly stated experiences among secondary school students (Sreernamareddy, Shankar , Binu, Mukhipadhyay, Ray, & Menezes , 2007), stressors may result in anxiety, depression and poor sleep quality (Lemma, Gelaye, Berhane, Worku, & Williams , 2012), poor academic performance (Stewart, Lam, Betson, Wong, & Wong , 1999), alcohol and substance abuse, reduced life satisfaction and quality of life (Said, Kypri, & Bowman, 2013; Adlaf, Demers, & Gliksman , 2005). Number of studies has explored the positive impact of mindfulness practices on reducing stressors of students (Astin, 1997; Shapiro et al., 1998).

Research has found a positive correlation between emotional capability and psychological health (Schonert-Reichl & Lawlor 2010) and benefits in mental and physical health conditions (Germer & Siegel, 2012). A study carried out with nursing professionals suggest that mindfulness can be an successful and low-cost way to reduce symptoms of stress and burnout and improve quality of life (Cohen-Katz, Wiley, Capuano, Baker , & Shapiro, 2005).

Mental health disorders are the most widespread source of disability for youth aged 10 to 24 years (Gibson , 2011). WHO (2001) states that mental illness will be the second leading cause of disability worldwide by 2020, after heart disease. Mental health disorders such as stress and depression of students are increasing due to many reasons such as rapid changes in modern society, economic difficulties, breaking love affairs, and performance pressures and competitions. Literature shows that these factors are

connected with stress, depression, suicidal attempts, and other mental health related problems (Bae, Park, & Yang, 2012). Youth with mental disorders are increasing and many of them do not able to receive proper care within the existing health care system (National Youth Policy Institute, 2014).

2.3 Mindfulness and Life Satisfaction

Diener and Diener (1995) define, satisfaction as a reflection of an individual's evaluation of his or her life as a whole. A positive relationship between mindfulness and life satisfaction is found in literature (Falkenstrom , 2010; Schutte & Malouff, 2011). In some countries, various meditation programs are introduced as a strategy to overcome such issues (Schonert-Reichl, et al., 2015). South Korean education system practices meditation as a potential stress intervention in schools (Ahn & Cheon, 2010). Mostly, meditation programs are effective in reducing negative feelings of youth (Kim , Yoo, Lee, & Son, 2013). In last few decades, the concept of mindfulness has become significant method of stress reduction among Western community. It shows through the development of widely recognized two programs, Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1990) and Mindfulness-Based Cognitive Therapy (MBCT; Segal et al 2002). These two concepts are widely used on published literature. Literature shows that meditation is a viable tool to reduce depression and stress levels and to improve emotional strength of youth.

Based on the above literature review, the following questions were posed: a) Is the *MBSR* intervention effective in reducing stress in secondary school students in Sri Lanka? b) Is the *MBSR* program effective in improving life satisfaction of secondary school students in Sri Lanka?

2.1 Methods

2.1.1 Participants

Sample of 30 students were selected ranging in age 16 to 18 years (mean age = 25.45 years, standard deviation = 4.25 years) from a reputed school as participants for this study. In the 30-student sample 12

males and 18 females were included.

2.1.2 Measures

In this study, it was used already developed and validated several scales with minor changes to fit into the socio-cultural situation in the country. The Mindfulness Attention Awareness Scale (MAAS), Beck Depression Inventory (BDI), Perceived Stress Scale (PSS) and Satisfaction with Life Scale (SWLS) were mainly used.

2.1.3 Mindful Attention Awareness Scale (MAAS)

Mindful Attention Awareness Scale (MAAS) is a 15-item, 6-point Likert scale (1 = *almost always* to 6 = *almost never*) developed by Brown and Ryan (2003). MAAS measures one's presence or absence of attention to, and awareness of, what is happening in the present moment. This scale can be used with non-meditators. Sample items include "I could be experiencing some emotion and not be conscious of it until some time later". A higher scores reflect higher degree of mindfulness (Brown & Ryan, 2003). Cronbach alphas range from .80 to .87 across samples. Convergent and discriminant validity of the MAAS was both positively and negatively associated with other scales of well-being constantly in the expected directions (Brown & Ryan, 2003).

2.1.4 Beck Depression Inventory (BDI)

The BDI is a widely used 21-item self-reported questionnaire measuring depressive symptoms (Beck, Ward, Mendelson, Mock, & Erbaug, 1961). This scale measures the level of emotional, cognitive, behavioral, and somatic symptoms of depression. Each item is assessed based on a 4-point Likert scale ranging from 0 to 3. The total score of all items is ranging from 0 to 63 and value 0 indicates the no depression whereas value 63 indicates the highest severity of depression.

2.1.5 Perceived Stress Scale (PSS)

Individual differences in insights of stress were measured using 10-item version of PSS developed by Cohen, Kamarack, & Mermelstein (1983). PSS measures participants' current level of stress and the extent to which they find their lives uncontrollable. Students mentioned that how often they felt or thought a particular way in the last month on a Likert scale, 0 = *never*, 1 = *almost never*, 2 = *sometimes*, 3 = *fairly often*, 4 = *very often*. Sample items include "In the last month, how often have you been upset because of something that happened unexpectedly?" and "In the last month, how often have you felt nervous and "stressed"? A high score indicates a high level of perceived control, which means a lower level of stress, whereas low level of score indicates a low level of perceived control and a higher level of perceived stress. Studies of the PSS show the scale has verified good internal consistency and validity (Cohen et al., 1983; Koopman et al., 2000).

2.1.6 Satisfaction With Life Scale (SWLS)

Satisfaction with Life Scale (SWLS) developed by Diener et al. (1985) was administrated to measures the life satisfaction of students. (Diener, Emmons, Larsen, & Griffin, 1985). SWLS measures participants' current level life satisfaction. The scale is consisting with five items. Students were asked to indicate on a 7-point Likert scale in what degree they agree or not agree for each statement. The higher score indicates higher level of life satisfaction whereas lower sore indicates the lower level of life satisfaction. Sample items include "In most ways my life is close to my ideal" and "So far I have gotten the important things I want in life". Demographic information such as age, gender, and level of education also is collected.

3.1 Intervention and Procedure

Participants were briefed about the *MBSR* program and obtained their consent for participation in the *MBSR* intervention and the research. After obtaining their consent to participate, they were asked to complete the questionnaire, which included *BDI*, *PSS*, *MAAS* and *SWLS* scales before starting *MBSR* program (pre-intervention). Soon after completing the *MBSR* intervention, they were asked again to

complete the same questionnaire (post-intervention) that they filled out before starting the *MBSR* intervention.

A trained Buddhist monk carried out the *MBSR* program. The participants attended the program in two days for eight continuous weeks from 3.00 p.m. to 5.00 p.m. Students were well informed about the study as well as *MBSR* intervention. Each session comprised with 30 minutes of meditation practice, 30 minutes of mindful movement exercises, and 45 to 1 hour discussion. Mindfulness training was done using the materials used in other studies (Zeidan, Gordon, Merchant, & Goolkasian, 2010). In the first session it was mainly focused on breathing awareness, inhales and exhales. It was started with body awareness meditation with sitting meditation focusing on sensual objects of awareness, breathing awareness, sounds, body sensations, and thoughts. They were asked to focus on the breath by closing their eyes and nonjudgmentally to become aware about their beliefs, senses, and feelings. It was not focused the sensations and full breath. In the second part of the training breath awareness was reviewed and continued to sensations and full body awareness, guiding them through a body examination. In the final part of the training, students were asked to focus breath and body awareness, and finished with open awareness in combination with breath and body awareness.

4.1 Statistical Analysis

Statistical analyses were conducted using statistical package, SPSS, version 20.0. Initially, one-way ANOVA was conducted to test the differences of means between groups in the pre-test measures and post-test measures of each study variable. A $p \leq 0.05$ was considered as significant. Finally, the correlations between the study variables, represented by the Pearson correlation coefficient were calculated. This analysis was conducted to explore the changes in the pre-test scores and post-test scores of the study variables. Pre-test intervention analysis included 30 participants while post-test intervention analysis included 28 participants. Two participants dropped the program due to personal reasons. Cronbach's Alpha Coefficient of the pre-test measures was conducted to measure the internal consistency of

measurements. Cronbach’s Alpha Coefficient of a scale should be above .7 (De Vellis 2003). All of the scales had acceptable Cronbach’s alpha Coefficient of 0.78 or higher. Cronbach’s alpha coefficient for the *MAAS*, *PSS*, *BDI* and *SWLS* was respectively 0.78, 0.81, 0.92, and 0.82. The values of the coefficient of all the scales were above the optimal level of the reliability, which indicate that each variable has internal consistency.

5.1 Results

The study was aimed to answer two research questions: a) to what extent *MBSR* intervention effects on stress reduction in secondary school students?, b) to what extent *MBSR* intervention effects on improving life satisfaction in secondary school students?. To answer these two research questions, data were collected before and after the *MBSR* intervention.

5.1.1 Correlations

Pearson’s product-moment correlation was conducted to measure the relationships among study variables Perceived Stress, Depression, Mindfulness Attention Awareness, and Life Satisfaction. Correlations of study variables are given in Table 1.

Table 1: Correlation for Study Variables

	MAAS	SWLS	BID	PSS
MAAS	1	.312*	-.212*	-.231*
SWLS		1	-.231**	-.312**
BID			1	.421*
PSS				1

*p < 0.05; **p < 0.01

Findings indicated a significant negative correlation between mindfulness attention awareness (*MAAS*) and perceived stress (*PSS*) and Depression. As hypothesized, students who have more mindfulness attention awareness have less perceived stress and Depression. Conversely, statistically significant positive

correlations were found between mindfulness attention awareness and life satisfaction (*SWLS*) and between Depression (*BDI*) and presided stress (*PSS*).

There was a significant decrease in *PSS* and *BDI* scores whereas significant increases indicated in *MAAS* and *SWLS* scores in post-intervention scores. *PSS* scores [$F(1, 38) = 7.37, p = 0.013$], *BDI* score [$F(1, 38) = 7.21, p = 0.001$] and significant increases in *SWLS* scores [$F(1, 38) = 13.22, p = 0.001$], *MAAS* [$F(1, 38) = 16.88, p = 0.001$] (see Table 2).

Table 2: Pre- and post-intervention scores on measures of *PSS*, *BDI*, *SWLS*, and *MAAS*

	N	Pre- intervention Mean (SD)	Post-intervention Mean (SD)	T -value
<i>PSS</i>	38	22.44 (1.49)	17.36 (1.17)	7.37*
<i>BDI</i>	38	12.53 (2.31)	8.21 (2.11)	7.21**
<i>SWLS</i>	38	20.82 (2.08)	22.15 (1.84)	13.22**
<i>MAAS</i>	38	23.01 (2.03)	32.13 (1.92)	16.88**

* $p < 0.05$; ** $p < 0.01$

There was no significant difference in stress and life satisfaction between males and females.

6.1 Discussion & Conclusion

The main objective of this study is to evaluate the effect of *MBSR* on Stress and depression reduction and effect on life satisfaction in secondary school students in Sri Lanka. Results indicated that after the intervention of *MBSR* program, there was a significant reduction in stress and depression scores and increase in life satisfaction scores in a secondary school student group. These result consistent with the excising literature. A quantitative research study indicates that mindfulness techniques have positive impact on nursing professionals (Cohen-Katz, Wiley, Capuano, Baker , & Shapiro, 2005). Thus, the hypothesis that mindfulness attention may reduce the level of depression and stress is supported. Findings

indicated a positive significant correlation between mindfulness attention and perceived stress & depression. These findings consist with literature that has been disclosed a positive relationship between mindfulness and stress reduction (Chang, et al., 2004; Shapiro et al., 2007; Brown and Ryan., 2003).

Findings of this study may consider within the operational limitations. First, there was no control group. Therefore, it may be difficult to conclude whether the findings are due to the intervention of *MBSR* or other factors. Second, the sample is 28 subjects, which is small sample size. Third, they were informed about the purpose of the *MBSR* intervention and it might change their mind according to the purpose of the research. Although there were limitations of this study, the existing data are significant. Involvement in the mindfulness meditation and awareness applied in this study was correlated with a significant reduction in depression & stress and improvements in life satisfaction. Therefore, the findings of this study suggest that mindfulness awareness attention and mindfulness meditation intervention may promote better mental health and life satisfaction. Practicing mindfulness awareness attention and mindfulness meditation seems to be a potential mediator for reducing depression and stress while improving life satisfaction in secondary school students. The results suggest that *MBSR* intervention may be a realistic and effective approach to support people reducing stress, depression, and improving the life satisfaction in secondary school students in Sri Lanka.

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MEXICAN CURRENCY CRISIS: OVERVIEW AND LESSONS

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Abstract

Economic theory did not encounter specific definition about currency crisis that is acceptable as universal. However, when we think about currency crisis the first thing we recall is a massive escape of investors from the currency for which they fear will depreciate thus affecting that this devaluation to really happen at a more financial repressive dimension than usual. In such a situation currency loses its stability and confidence, and if there are no sufficient international reserves then this can result in serious financial crisis. The aim of the paper is underling the utilization of theoretical knowledge about currency crises and focusing on the evaluation of existing theoretical models, over the last fifteen years, which were developed different theoretical models of currency crises in order to explain disruptions in the financial system or collapse of the exchange rate. Also, here we determinate the reasons and implications of a currency crisis, as the crucial role of the foreign exchange reserve for a country and behavior of investor in such a circumstances.

Key words: currency crisis, models, generations, Mexico.

1. Introduction

Economic losses caused by the currency crisis are spending the fiscal costs of restructuring the financial sector, a fall in economic activity, a distortion in distributable income, a decline in credibility (IMF, 1998) emphasize the importance of crisis prevention and the use of all available tools that can help in early identification of the financial weaknesses of the crisis crises system. For this reason, some kind of

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systems could identify the vulnerability indicators or predict a currency crisis in order to take on time true measures to avoid the crisis.

Utilizing theoretical knowledge about currency crises and focusing on the evaluation of existing theoretical models, over the last fifteen years, simultaneously were developed different theoretical models of currency crises in order to explain disruptions in the financial system or collapse of the exchange rate. Because different models (different "generations" of models) identify different factors as the cause of the crisis, and in practice some countries have significant deviations from the "generational" variants of the currency model, the advantage of empirical studies from the point of view of each country is obvious.

2. Literature review

2.1. Theoretical models of currency crisis

The theory for currency crisis distinguishes several types of crises. In the literature on the currency crisis, three generations can be distinguished for explanation of currency reasons. The first generation ("speculative attack models") appeared as an attempt to explain the currency crises in Mexico (1973-1982) and Argentina (1978-1981) (Agenor et al.,1991; Garber,1994).

The models of this generation point out to an inadequate macroeconomic policy as the main reason for a currency crisis. Second generation models ("exit clause models") are designed to include the significance of speculative attacks in Europe and Mexico in the 1990s, emphasizing the self-fulfilling features of the currency crisis and the emergence of multiple balances. The third generation highlights the consequences of the moral hazard in the banking system and the effect of infection as a key determinant of the currency crisis and explains the currency crisis in South Asia. There are also several models related to individual needs in crisis situations that are an alternative explanation for the causes of the currency crisis outside conventional "generation directions".

2.1.1. First generation of currency crisis

The first formal model of the currency crisis is presented by Krugman (1979) which gives a basic intuitive insight into the first-generation currency crisis model. Krugman argues that the currency crisis is

caused by a large budget deficit financed by credit expansion. Such a situation results in a gradual loss of foreign exchange reserves. Namely, assuming the money market balance and the satisfactory interest rate at a fixed exchange rate (the domestic interest rate is the same as that of the overseas), the extension of the money supply offers will resolve the demand for the domestic currency. Due to the higher liquidity on the market, in the money market will increase demand for foreign currency. To be in that situation, the monetary authority brought the money market in balance, the central bank must sell foreign currency reserves for domestic currency. Also, international reserves will decrease at a rate equal to the growth of domestic credit. When international foreign exchange reserves are fully exhausted, the regime of foreign exchange must change, as the central bank no longer has foreign reserves for maintaining a fixed exchange rate regime.

Because of the simplicity of Krugman's model, his model include additional assumptions and characteristics of currency crises - low level of credibility of the exchange rate regime, slow price adjustment, the uncertainty of the speculative attack, uncertainty over credit expansion, various foreign exchange rates, sterilization policies, alternative exchange regimes after the collapse of the existing regime, borrowing on the foreign capital market and capital controls, the salary agreements and are influenced by future expectations, endogenous economic policy as would have approached the model to the real situation (Garber and Svensson, 1994; Esquivel and Larrain, 1998; Jeanne, 1999; Dahel, 2000; Peltonen, 2002). For these modifications, it is important to highlight some different factors of foreign exchange crisis which are important for the empirical research of currency crises.

The models of the first generation of a currency crisis also have some disadvantages. The assumption is that the country's passive behavior - although the government knows that the central bank is losing international reserves and that it will have to change the current regime, it will not take anything that is contrary to reality. The theory that the currency crisis causes a change in the fundamental macroeconomic variables would simply be avoided. It is necessary to implement measures in which these variables are maintained in equilibrium; measures that are acceptable for the maintenance of the fixed exchange rate.

2.1.2 Models of the second generation of currency crises

Understanding of the currency crisis based on first-generation models is questioned after 1992, due to their inability to explain the crisis of the European Monetary System (EMC) in the same year. In order to explain the EMC crisis, models of new currency crises were developed, which were later introduced as the second generation of a currency crisis model or model of the "exit clause". This generation of models approach exchange rate as a conditional obligation - the country that has opted for a fixed exchange rate regime, is obliged to maintain the fixed exchange rate as long as it considers it favorable. The obligation to maintain the fixed exchange rate is limited by the existence of an exit clause; the possibility of abandoning the fixed exchange rate, if the economic policy for its maintenance has negative and negligible effects on other macroeconomic variables.

This was the collapse with the Exchange Rate Mechanism (ERM), which was associated with inadequate consequences of raising the interest rates needed to avoid a successful speculative attack in a situation of high unemployment. In other words, the decision to abandon the current regime is related to the comparison of benefits (for example, the benefit derived from the theory of the optimal currency area) and costs (for example, due to a reduction in the reputation of economic policy) for maintaining a fixed exchange rate, together with a certain economic situation - unemployment, problems in the banking sector or high public debt.

These circumstances are much closer with the real situation than the first generation models, which suppose the mechanical behavior of power vs. the rational preferences of market participants (Saqib, 2002). It is obvious that economic policy options in the fiscal deficit situation go beyond simple monetization of the deficit. Moreover, since they are targets of economic policy, all alternative policies generally include some form of exchange that the economic policy is endogenous (Azis, Caramazza, Salgado, 2000). Such a macroeconomic policy, along with factors to change the expectations of market participants in terms of the future current course, can lead to a more multiple balance that will cause the speculative attack of the currency to be fulfilled by itself (Saxena, 2001).

In the second generation of models, economic policy is not predetermined, but responds to changes in the economic system, and private investors base their expectations on such behavior by economic policy makers. The expected change in the exchange rate regime will affect those variables (for example, higher wages, lower employment, higher interest rates) which change increases the costs of maintaining the liquidity regime. When these costs become too high, economic policy holders can decide to devalue the currency and so will verify the currency crisis of market participants.

Therefore, the currency crisis in terms of the model of the exit clause appears in a situation in which speculators, together with the given conditions in the economic system, consider that they are economic bearers of the policy on the margin of exploitation of the exit clause (Krueger, Osakve, Strana, 1998).

2.1.3. The model of the third generation currency crisis

The model of third generation relies on interpretation of the causes of the currency crisis and the effect of infection. There are various explanations for transferring crises from one country to another. One of the interpretations relies on the negative impact of the same exogenous shock in several countries. The crisis can also be transmitted through trade links when the currency depreciation of a country means reduced competitiveness of another country. Financial interdependence can contribute to the expansion of the crisis when problems in servicing external debt in some countries force external creditors to repay loans to some other countries. Currency crisis in a particular country can worsen the perception of the state of the economic situation in the country with similar characteristics of the system. Explanations of the effect of infection contain elements of the first and second generation of the currency crisis model (Peacenti and Till, 2000).

3. Overview of Mexican peso crisis

The Mexican economy has been visibly improving since 1982 when it experienced the latest turnaround and when the interest rates on Mexican securities were at a positive level. But on 20.12.1994, the Mexican peso devalued. Several factors contributed to the subsequent crisis:

1. The economic reforms of the late 1980s, designed to limit the often uncontrolled inflation in the country, began to crack as the economy weakened.
2. The credentials of Mexico's presidential candidate in March 1994 prompted the sale of the currency.
3. The Central bank had about \$28 billion in foreign exchange reserves, which were expected to keep the peso stable. In less than a year, the reserves are gone.
4. The Central bank began to convert the short-term debt, denominated in pesos, into dollar-denominated bonds. This conversion resulted in a decrease in foreign exchange reserves and an increase in debt.
5. The self-fulfillment of the crisis resulted when investors fear default debt on the part of the government.

When the government finally decided to devalue the currency in December 1994, the biggest mistakes were made. It does not devalue the currency in a sufficiently large amount, which showed that while pegging policy was still followed, it showed a lack of interest in taking the necessary painful steps. This led foreign investors to undermine the exchange rate of the peso dramatically lower, which ultimately forced the government to increase the domestic interest rate close to 80%. This was a huge "toll" for Mexico's GDP, which also declined. The crisis was finally mitigated by an urgent loan emergency loan from the USA.

According this - lesson ... when there is a possibility of facing a currency crisis, the Central Bank in economies with a fixed exchange rate may try to keep the fixed exchange rate by "eating" the foreign exchange reserves of the country, or to allow foreign exchange course to fluctuate.

4. Crucial role of foreign exchange reserves

When a devaluation is expected on the market, downward pressure on the currency can only be settled (neutralized) by increasing the interest rate.

In order to increase the rate, the Central Bank must reduce the money supply, which in turn will cause an increase in demand for the currency. The bank can do this by selling foreign reserves to create an outflow of capital. When a bank sells part of its foreign exchange reserves, it receives a payment in the form of a domestic currency, which keeps it outside the turnover as a means. Also, the reliance on the exchange rate can not last forever, both in terms of the reduction of foreign reserves, as well as economic and political factors, such as the increase in unemployment. Devaluing the currency through an increase in the fixed exchange rate results in domestic goods being cheaper than foreign, which increases demand for workers and increases the output. In the short run, devaluation also raises interest rates, which must be settled by the Central Bank by increasing the money supply and increasing foreign reserves.

As it is mentioned above, earlier the suspension of the fixed exchange rate can "eat" through the foreign exchange reserves of the country quickly, and devaluing the currency can bring back the reserves.

5. Behavior of investors

If the market expects the Central Bank to devalue the currency - which will increase the exchange rate, the possibility of stimulating foreign exchange reserves by increasing the aggregate offer was not realized.

Instead, the Central Bank must use its reserves to reduce the money supply, which in turn increases the domestic interest rate.

If the confidence in the stability of the economy with the investors is diluted, then they will try to bring their money out of the country. This is still called an outflow of capital. When investors sell their domestic currency-denominated investments, they convert these investments into foreign currency. This causes a worsening of the exchange rate, resulting in the escape of the currency, which may even be impossible for the country to finance its capital expenditures.

6. Concluding remarks: Reasons and implications

The prediction when a country enters a currency crisis involves an analysis of various i.e. complex ranges of variables. There are several common factors that relate to recent crises:

1. The countries borrowed a lot (current account deficits)
2. the value of the currency is rapidly increasing
3. the insecurity associated with the Government's activities makes the investors nervous.

The high level of public debt increases the cost of defending the exchange rate, but increases the dangers of speculative attacks. A high unemployment rate leads to difficulty in defending the exchange rate with a higher interest rate. The fact that the government will not tolerate a high unemployment rate may lead to currency depreciation (Lestano and Jacobs, 2007).

When the expectations for the devaluation embedded in the nominal interest rate, the greater the interest cost of the debt will lead to an increase in the cost of maintaining the exchange rate. Speculative attacks can occur even when the currency is overvalued.

The overvalued currency causes current account deficits, and in some cases deflationary pressure that leads the monetary authority to assess that the cost of defending the exchange rate is greater than the benefits.

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CHARISMATIC LEADERSHIP COMMUNICATION AND ORGANIZATIONAL REPUTATION: EMPIRICAL ANALYSIS OF BANGLADESHI PUBLIC SECTOR

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Abstract

The purpose of this study is to analyze the effect of Charismatic Leadership Communication on Organizational Reputation. Data were collected from the government employees of Bangladesh working in information technology ministry. SmartPLS software was used to analyze the data. Findings of the analysis showed that there is a significant and positive effect of Charismatic Leadership Communication on Organizational Reputation.

Key words :

Charismatic Leadership Communication, Organizational Reputation, Bangladesh. SEM PLS.

Introduction

There have been a plethora of reports which had the singular purpose of disrupting government bodies. (Waeraas & Moar, 2015; Carpenter & Krause, 2012). This has been the trend for a lot of years, running into decades. Government bodies have been incompetent, wasteful, and with unnecessarily bureaucratic. People see the government in a bad light owing to various reports that the government is unreliable and has low customer service. Since the people have a low opinion of the government and its service rendering capabilities, they no longer give their support to government agencies (Kennedy, 2009).

It gets worse when an organization lacks trust from its stakeholders and good reputation; it is evidence of an absence of legitimacy in that organization. This is what is happening with the public sector organizations (Luoma-aho & Makikangas, 2014).

However, a new leaf is about being turned by the government and its entities. They are now more aware of the importance of having a good reputation and are making moves to protect that reputation.

Due to this, the government is investing a lot of resources into research on how public organizations can maintain their reputation. Academic research has been conducted severally in this area. The major focus of such research work is on the problems and concerns on how the government manages its reputation.

One of such issues is related to the public safety of life and property. Others include situations that have some sort of effects on the wellbeing of citizens such as general elections and government policies. These issues need the cooperation of the populace for them to be effective (Liu, Horsley, & Yang, 2012). A further understanding of these issues, especially with the complex nature of public bodies, has required that scholars focus on issues bordering on political legitimacy (Houston & Harding, 2013; Vigoda-Gadot, Zalmanovitch, & Belonogov, 2012), corporate governance and management of offices (Waeraas & Byrkjeflot, 2012), organizational performance (O'Toole & Meier, 2009), ethics and compliance (Lager, 2010), crises involved with the public (Grunwald & Hempelmann, 2010) and how the government disburses information (Liu et al., 2012).

It was discovered from an analysis of literary texts on corporate communication that there is very limited knowledge on the idea of good government reputation when compared with companies in the private sector. However, this body of knowledge is growing slowly and surely. As more crises arise in the agencies in the public sector, there is an increased focus on how to maintain a good reputation for agencies in the public sector (Wæraas & Maor, 2015). This is irrespective of the general reputation of the whole public sector.

Research in this area is in its infancy but it is growing and promising. The growing number of crises in complex public organizations led to the emergence of a more systematic, theoretical, and empirical focus on reputation (Wæraas & Maor, 2015) that is not concerned with the general standing of political bodies or the public sector as a whole. Instead, the field draws attention to the reputation of individual administrative entities that behave, more or less, as autonomous actors within the political-administrative system.

Several organizations owned by private individuals use financial performance as the significant indicator of success. These private businesses also recognize their competition level between other similar companies. However, unlike these private entities, the public owned organizations would cultivate and build their reputation instead of using any financial index as a success marker.

In the guise to achieve this, these public organizations, such as government agencies work together for them to achieve a high favorable condition that will build their reputation better. A good reputation is seen as a great asset; this asset is of great benefit that public organizations cannot afford to ignore. It provides power and access to rare resources (Waaeras&Moar, 2015).

It is very much crucial for a reputation to be protected with all the resources an organization has. However, the pain is that not many public companies know how vital their reputation can be; but with an increase in the awareness of its importance, more and more public companies are beginning to pay attention to it. Reputations are very well crucial to sustaining an organization; private or public. And due to the increased crises that occurred as regards the inadequate attention paid to reputation, everyone is now beware of the error to fall into ignoring the reputation of their organization (Carpenter & Krause, 2012; Kennedy, 2009).

These recent findings led to several types of research on the management of reputation expansion. Hence these researchers gave reports on the best ways to deal with the more difficult complexities in public organizations. But particularly, the role of leadership cannot be downplayed when dealing with

reputation. There is a need to increase the details of the theory because some of these research already conducted were not properly represented.

Some factors can affect the communication perspective. Among these are the factors that arise from the company's organization pattern itself. A good example is the recent research has assured that leadership communication (De Vries, Bakker-Pieper, & Oostenveld, 2010) have a link with the reputation of the organization. Hence the current research is aimed to expand the SCCT by implementing leadership communication in a theoretical pattern just in an attempt to analyze its public reputation.

Literature and Hypothesis

Overview of Public Sector Organizations

In many areas of matters concerning the organization, studies done on the public sector organization has stayed unexplored for a long time (Wæraas&Byrkjeflot, 2012; Luoma-aho, 2006) and with a large part of its core being underutilized. This resulted in an insufficient flow of understanding in this vital segment (Waeraas&Moar, 2015; Luoma-aho, 2008, 2007). When the study of public organizations began, researchers encountered several difficulties in getting to identify the best criteria that can separate public and private organizations. They also found out that several high ranking figures in the public spheres have missed the differences between the private and public organizations (Luoma-aho, 2008; Rainey, 1991).

But then, as the field develops, researchers have been able to separate private organizations from public ones; this is done by seeing the latter as a nonprofit and profitable enterprise. Then the public sector organizations were referred to as government agencies. In this study, the public organization will be termed both as a public sector and government agency intermittently.

The reputation of the Public sector organizations

A lot has been said about the reputation of the organization; and it has been a significant content in the literature published in this area; but then, research made in this field is still debatable. The range of the research has been to focus mainly on the private sector than the public sector. As a result, the reputation in the public sector and national legislation is still an underutilized resource (Luoma-aho, Olkkonen&Lähteenmäki, 2013; Sisco, 2012a). Some important factors such as the concept of reputation, the benefits, restrictions, and challenges have not been adequately recognized.

A complete analysis of public organization discovered that several kinds of research that are made on the public organization is not done from a reputational perspective. Instead, these analyses are aimed at some issues that relate to the public organization and thus indirectly affect the reputation. The purpose is straight forward, the issues that surround public organization will have to show in the reputation as seen by the public. Example; some studies have majored on public perceptions of administration performance (Hvidman& Andersen, 2014), the public trust in government (Citrin&Muste, 1999; Coulson, 1998; Hardin, 1998; Nyhan, 2000), and the quality of public services (Sharifah Latifah, Mokhtar, and Arawati, 2000), management of public sector and the democratic ethos (Vigoda-Gadot & Mizrahi, 2008), and method of perceptions of politics and perceived performance (Poon, 2003; Vigoda-Gadot & Kapun, 2005). Even if these are not stated in an explicit form, yet they are significant indicators, having their implication

when it comes to organization reputation.

Charismatic Leadership Communication

Research that is carried out here are just still very new, especially in the field of communication (Levine, 2008) and even if it had gotten wide attention in the area of organizational behavior for a long time, as far as the 1980s (Conger, Kanungo, Menon, & Mathur, 1997). A rising number of literature in the leadership and communication has explained this topic, and this has led to the avalanche of researches springing up in this area (Levine, 2008). The beginning stage of charismatic leadership was focused majorly on speculative and formative theories (Katz & Kahn, 1978). However, the interest increased to a much more wider perspective of some charismatic leaders such as the behavior dimension of their followers (Conger & Kanungo, 1998).

Shamir, House, and Arthur (1993) extended their empirical study to include transformational leadership and its effect it will have on the performance of followers and their satisfaction too. But in-depth research has been analyzed for the impact of leadership styles as it relates to the delight of a group (Anderson, Madlock, & Hoffman, 2006), their practical communication skills (Fairhurst, 1993), interpersonal communication (Quick & Macik-Frey, 2004) and communication competence (Madlock, 2008; Wooten & James, 2008).

What is however missing in the literature on leadership is the relationship that exists between charismatic leadership communication and the rate of the crisis in communication. And before this lacuna can be properly addressed, a short introduction to the details of charismatic leadership is done to understand how it has improved and to better flow in the communicative aspect of leadership.



Charismatic Leadership Communication and Perceived Organizational Reputation

Jin and Yeo (2011) argue that there exists a relationship between leadership communication and reputation, which provides the leaders with benefits to control the favorable results responsibly. By exemplifying Charismatic Leadership Communication, the leaders gain workers trust and support and

positively impact the way workers perceive the organizational reputation (Men and Stacks, 2013). Meng and Berger (2013) proposed that the leaders who are charismatic and also engaged in The Transformational Leadership Communication conduct, particularly regarding internal communication problems were able to unite and sustain organizational reputation.

A contemporary research in relations has exhibited solid support for a higher-level measurement model, comprising of six key aspects of charismatic leadership communication, for example, group coordinated effort, self-dynamics, moral orientation, strategic ability of make decisions, relationship building and communication knowledge management capacity.

Moreover the relationships of the six aspects with leaders help to create favorable communication results (Meng and Berger, 2013). They contended that leaders who desired to take part in Transformational-Leadership must adopt these six aspects of charismatic-leadership-communication so the stakeholders' view of organizational reputation is dealt with. Research has been steady in-relating-performance-management-to-leadership commitment in organizations (Dooren, Bouckaert, and Halligans, 2010; Fryer, Antony and Ogden, 2009).

Moreover, to manage reputation is an imperative part of leadership responsibility (Van der Jagt, 2005), which decides organizational-reputation (Babarinsa, 2013). Lack of communication and the capacity to instantly respond to change are key elements influencing authoritative change initiatives (Babarinsa, 2013). This research contends that a leader's impotence to use charismatic leadership communication will ultimately compromise a leaders attempts to change crisis results and re-construct reputations that have been tarnished. Therefore, the following-hypothesis-is-advanced:

Hypothesis 1: The leader's demonstration of charismatic leadership communication is related to perceived organizational reputation

Measure and Methods

Target Population

The target population in this study consists of public employees in the the ministry of Bangladesh. Specifically, this study measures the perceptions of public servants and those above them, who possess at least a Bachelor degree as a minimum requirement for employment. These employees are also considered to be internal stakeholders, who are the most valuable asset of an organization, and thus they play an important role in building and strengthening their organizational reputation

Data collection

Data collection procedures in a quantitative survey involve essential yet systematic steps in collecting information needed for analysis. A common instrument used in a quantitative approach is the questionnaire survey as a primary tool of data collection. A questionnaire permits collection of data to be completed in a relatively short period of time, especially when delivered and collected personally by the researcher. Apart from minimizing bias in responses, the advantages of personal distribution of questionnaire are, it is inexpensive, faster and has a better chance for obtaining a high response rate of up to 85% (Sekaran & Bougie, 2010; Webster, 1998).

Measures

Organizational reputation. Participants’ perceived organizational reputation was measured with a 20-item Likert-type scale developed by Fombrun and Van Riel (2004) with adjustment made to suit a public organization. In the present study the revised 16-item Likert-type scale generated a Cronbach’s alpha of .95.

Charismatic leadership communication. The charismatic leadership communication was measured with a scale developed by Levine et al. (2010).

Data Analysis

In order to analyze the data, we used structural equation modeling technique with the help of SMARTPLS3. The Partial Least Squares technique is a powerful component-based method widely used in prior studies (Farrukh, Khan, et al., 2017; Farrukh, Chong, Mansori, & Ravan Ramzani, 2017; Farrukh, Wei Ying, & Abdallah Ahmed, 2016; Farrukh, Ying, & Mansori, 2016, 2017; Riaz, Farrukh, Rehman, & Ishaque, 2016; Shahzad, Farrukh, Kanwal, & Sakib, 2018).

In terms of analysis SEM PLS is a two-step process, in first step measurement model is assessed by checking the validity and reliability of the outer model. In this process Composite reliability, average variance extracted, and Discriminant validity is checked.

The threshold value for Composite reliability is 0.70 for AVE is 0.50. While for checking discriminant validity Fornel lareker criteria was used, it compares the square root of AVE with the other latent variables of the model.

Following tables shows the results of measurement model evaluation. From the results we can see that all the threshold values were achieved.

Table 1: Validity and Reliability of Measurement Model

1st order	Items	Loadings	AVE	CR	Cronbach’s α
Organizational reputation			0.5046	0.7532	0.871
	POR1	0.7583			
	POR2	0.7662			
	POR3	0.7424			
	POR4	0.6995			
	POR5	0.405			
	POR6	0.8196			
	POR7	0.7858			
	POR8	0.7735			
	POR9	0.7229			
	POR10	0.7399			
POR11	0.6896				

	POR12	0.7679			
	POR13	0.644			
	POR14	0.7662			
	POR15	0.83			
	POR16	0.8284			
	POR17	0.4195			
	POR18	0.8044			
	POR19	0.7922			
	POR20	0.8419			
Charismatic leadership communication			0.5564	0.8316	0.7349
	CLC1	0.7128			
	CLC2	0.7781			
	CLC3	0.8632			
	CLC4	0.6057			
	CLC5	0.9314			
	CLC6	0.9143			
	CLC7	0.9001			
	CLC8	0.9132			
	CLC9	0.6842			
	CLC10	0.8782			
	CLC11	0.8686			
	CLC12	0.8135			
	CLC13	0.7204			
	CLC14	0.7797			
	CLC15	0.7775			

Table 2: Fornell-Larcker Criterion for Discriminant Validity

	POR	CLC
POR	0.77	
CLC	0.39	0.781

After achieving the reliability and validity, next step is to evaluate the structural model and for this we run PLS bootstrapping. The results if hypothesis testing are given in the following table.

Table 3: Hypothesis Testing

	Path	T Statistics	P Values	Results
Charismatic leadership -> POR	0.237	2.402	0.001	Supported

Results

The demonstration of the leader's charismatic leadership communication was found to be positively and significantly related to perceived organizational reputation ($\beta = .237$, $t = 2.402$, $p < .01$). This finding could mean that the stronger the demonstration of charismatic leadership communication shown by the leaders, the better the perception of a public organization's reputation. Therefore hypothesis 1 was supported.

Discussion

Hypothesis 1 (H1) Tested the relationship that exists between charismatic-leadership-communication and POR. The outcome demonstrates a solid, noteworthy relationship between these two constructs. As anticipated, workers' view of their leaders' display of charismatic leadership communication heightens, aligned- with their favorable insight with regards to the organizational-reputation. In both situations, charismatic-leadership-communication seems, to be an imperative construct in diminishing the negative effect of the crisis and securing organizational reputation. This outcome concurs with Davis' (2012) recent discovery that a leader's use and display of charismatic rhetoric is positively, dynamically identified with a leader's adequacy in crisis administration. Davis' (2012) discoveries regarding the relationship between a leader's charismatic-rhetoric and impression of that individual's viability in dealing with a crisis are affected by using the charismatic communication. The findings additionally support Babarinsa (2013), Men and Stack (2013) and Van der Jagt (2005), who argue that charismatic-leadership impacts workers' impression of organizational-reputation through communication styles and conducts. Hence, the idea that the part of charismatic leadership communication is one powerful element of charismatic-199-leadership (Berger, Meng, Heyman and Gower 2012) is apparent here. Demonstrating charismatic leadership communication conduct as a key tool in dealing with crisis has positively influenced the internal stakeholder's way of perceiving their working environment. When leaders show up in public with clear feelings, inspiration to take care of the issue and compassion, they fabricate certainty among internal

stakeholders that their association isn't to blame and that they are completely committed to settling the crisis (Littlefield and Quennette, 2007; Lucero et al., 2009). This is particularly true since leaders are held accountable for the crisis solution, through his or her -charismatic-leadership-communication-actions-and-style. Crisis leaders communicate the crisis news as well as deal with the situation by demonstrating emotional appeal charismatically. The outcomes are also in accordance with Stephens et al. (2005) where charismatic leadership communication decreases risk by crafting the crisis messages, furnishing data and conveying the prompt risks and additionally methods to make threats less severe to the reputation.

Most charismatic leadership models were examined from administrative point of view of leadership that encircles the non-interpersonal-activities, for example, planning, sorting out, basic-leadership, critical thinking, and controlling (De Vries et al., 2010; Levine, 2008; McCartney and Campbell, 2006). Utilizing an expanded SCCT system, charismatic leadership communication was represented by estimating communication perspectives regarding a leader's task-oriented-communication, empathy and enthusiasm. The three measurements of charismatic leadership communication are specifically impacted by the relationship between organizational reputation and crisis responsibility.

Implication

The research also recommends that a leader who exhibits communication conducts, for example, being positive, understanding the victims emotions and showing authentic concerns, and having the capacity to empathize with the victims during crisis impacts perceptions of organizational-reputation. Charismatic-leadership-communication is both innate and earned. While a few people are naturally gifted and talented, there are characteristics that can be procured through learning and practices to supplement the skills. Companies usually provide training for soft skills including communication abilities. The current research then recommended that leadership-training can consider improving charismatic-leadership-communication by giving certain training-for-leaders. The focal point of training must be to improve the three features of charismatic-leadership-communication, to be specific, empathy, enthusiasm and task-orientation

Limitation

Firstly, the motivation behind the present research is restricted to examining the relationship between charismatic leadership communication and organizational reputation. In this manner, different factors that can possibly impact the relationships between these factors are not analyzed. For instance, this research does not measure environmental aspects, for example, the culture of organization and atmosphere that may influence the manner in which Bangladeshi see organizational reputation as compared to Westerners. Secondly, this research utilizes just a quantitative approach. While it is suitable to fulfill the research requirements, more profound comprehension on the findings through more extensive interviews isn't covered. Lastly, the nature of cross-sectional data exhibited here does not eradicate the probability that

causal relationships portrayed in the model can be reversed. In spite of the fact that our extra tests assisted us in ruling out the reversal-causation-statistically, longitudinal and experimental research may be important to build up evident causation.

The extent of the examination has been narrowed-down-to a public division association, particularly one in the given situational setting. Consequently, the discoveries may not be relevant to private division associations or those encountering a crisis of different kind. Similarly, the sample was confined to just Bangladeshi-respondents. Therefore, the discoveries of the present research are constrained to workers in the public-associations-in-Malaysia. The discoveries from different parts of the economy may also differ. Additionally, public division associations in 220 different nations which hold various other values may deliver different outcomes, which will lead to invalid results. Thus, the empirical-evidence from this examination may not be applicable to another division or nation. In any case, associations across divisions and nations having similar culture and values may profit from the discoveries, particularly in the Asian district where numerous similarities to those public area associations in Bangladesh-are-evident.

The leaders of organization can affect the dynamics of the-organizational-reputation in-a-crisis-through-their charisma, which will improve the reliability of their separate association as the source of data (Coombs, 2012). This is especially critical in light of the fact that during crisis, associations are encouraged to limit the effect on-their-reputation, which drive the associations to depend on their leaders. Leadership literature demonstrates that there are numerous components that are responsible for the leaders' success in dealing with crisis, among others: charismatic leadership (Antonakis, Fenley, and Liechti, 2011; Halverson, Holladay, Kazama, and Quinones, 2004; Hunt, Boal, and Dodge, 1999; Pillai and Meindl, 1998); leadership style (Ivanescu, 2011); effective communication style (De Vries, et. al, 2010); leadership trustworthiness (Kouzes and Posner, 2012); effective communication (Babarinsa, 2013); logic (Barge, 1996); non-verbal communication (Holladay and Coombs, 1994); and skill (James and Wooten, 2005). A study has even researched the rise of leadership during-the-crisis (Kakavogianni, 2009) and uncertainty of environment (Waldman, Ramirez, House, and Puranam, 2001). What is absent in the study is the significance of the issue leaders charismatic communication in deciding the company's success in solving the problem.

Organization reputation and crisis communication study shows that leadership conduct that indirectly and directly drives and fortifies perceptions of crisis reactions (Ramirez, 2010; Seeger, Sellnow and Ulmer, 2003) and views organizational reputation (Davies and Mian, 2010). The part of the leaders (or CEOs) amid the crisis reaction stage is of supreme importance in keeping up organizational identity and reputation (Flatt, Harris-Boundy, and Wagner, 2013; Coombs, 2012; Modzelewski, 1990). The practices of the leader himself are deciding elements in the failure or success of crisis administration. In any case, to date, the crisis-communication study has yet to incorporate charismatic leadership communication as an important variable that can impact the connection between reputation and crisis communication, regardless of whether indirectly or directly (Davis, 2012; De Vries et al., 2010; Levine, 2008; Levine, Muenchen and Brooks, 2010). Thus, lack of charismatic leadership communication utilized by the association in the middle of a crisis can be risky in light of the fact that the general population can be sensitive to the manner in which information is received from the association, consequently influencing

their view of it. This may directly or indirectly influence people's mentality to the association or institution. In spite of the fact that there are implications-of charismatic leadership communication during the crisis for business and administration practices, they have not been empirically and hypothetically tested in a systematic way (Levine, 2008).

It must also be taken into consideration that charismatic leadership, as the core component in the leadership theory, has been widely investigated, yet there's no analysis of communication-aspect-of it in an association setting (Levine, 2008). Whereas, when we consider the field of crisis communication, researches on leadership shows that the importance of critical leadership has risen as the cardinal run in crisis communication (Lucero et al., 2009). Recently, the study has featured that communication has a noteworthy role to play in developing and securing government bodies' reputations (Liu et al., 2012) and also in forming numerous perceptions of the stakeholders of their reputation particularly in crisis (Maor, Gilad and Ben-Nun Bloom, 2013). While the writing indicates enlightenment, this imperative aspect of leadership communication has managed consideration by the researchers on a small-scale, bringing about a knowledge insufficiency in crisis communication, and its effect on organizational reputation from the internal stakeholders viewpoint, particularly workers at the official and administrative levels. In addition, the different statistic elements of leaders in dealing with crisis seem to be largely undiscovered, and understanding these variables constitutes a chance to cover the gap in crisis-literature.

However, a review on past research on charismatic leadership has suggested a few areas to be explored with a specific goal to overcome any gap in the charismatic leadership communication writing. Firstly, there is a requirement for more validation-studies, given the constrained research attention that the subject has received up till now (Johansson et al., 2014; Levine et al., 2010; Shamir, Zakay, Breinin and Popper, 1998). Secondly, there is a need to find the causal connection between reputation in times of crises and leadership communication (Coombs, 2014; Lucero, Tan and Pang, 2009). A comprehension on the part of charismatic communication when a crisis occurs can assist in producing instructions for leaders to utilize a more of the charismatic leadership communication in order to master risks. Lastly, past research on charismatic leadership and crisis was for the mostly for experiments as well as lab studies that are conducted on sample of students (Coombs, 2014; Kirkpatrick and Locke, 1996; Levine et al., 2010; Shea and Howell, 1999). Similarly, this research is intended to investigate administrative samples to mirror the administration's point of view on their POR (perceived organizational reputation) and leadership communication.

Past research on charismatic leadership recommends five basic tasks that should be performed by the leaders during crisis: comprehending the crisis, settling on choices to manage the crisis, framing and making sense of the crisis to the stakeholders, ending the crisis to reestablish normalcy of the association, and guiding the association to learn from what happened (Boin, Hart, Stern, and Sundelius, 2005). The list however excludes, that what is being believed to be equally significant – the part of the leader as the association's representative, where the stream of information starts from within and goes to the outside world. Other than setting the direction for the association, a leader helps reestablishing the confidence among partners through charismatic-leadership-communication. To put it simply, the CEO's part isn't just planning and dealing with the procedures in order to overcome the crisis, yet additionally conveying the

methodology that is being implemented to the public.

Selecting an obvious, charismatic leader to deal with crisis demonstrates that associations pay great attention to dealing with the crisis (Lucero et al., 2009). -As such, advance examination on numerous aspects of charismatic leadership communication is important to decide the correct nature, impacts and results of the charismatic leadership communication in associations. As Levine (2008) contends, aside from the principle components, for example, influence and inspiration and key attributes of charismatic-leadership, communication factors should also be given equivalent consideration, as these components are communication-based messages and practices. In a similar vein, Osborn, Hunt and Jauch (2002) focused on, exploring charismatic-leadership in an authoritative point of view is vital, and aspect of leader communication in times of crisis must be considered since it will be noteworthy in extending the extent of this field of study. Additionally, further study on charismatic leadership by Frese, Beimeel, and Schoenborn (2003) and leadership communication by Levine et al. (2010) and Levine (2008), has provided intriguing outcomes that fill in as the platform to set out on exploring the role of charismatic leadership communication in this study.

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ANALYZE DATA WITH EXCEL POWER PIVOT: A TUTORIAL

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Abstract

Excel is one of the most widely used application in businesses. It is often used as a repository of data for creating budgets, accounting, financial statements, stock analysis, forecasting, trend analysis and so on. However, educators and students often struggle to perform data analysis in a simple and efficient manner. This paper presents an extremely straightforward approach in the form of a tutorial to create related database tables and then illustrate data analysis in the form of queries that retrieve data from multiple tables even if tables don't have a direct database relationship. The tutorial utilizes Data Model and Power Pivot features for data analysis. Upon completion of this tutorial the student will understand how to use these advanced features and apply them successfully for data analytics.

Keywords: Data Model, Database, Excel, Power Pivot, Tutorial

Introduction

Excel is a powerful spreadsheet application that is widely used among business and academics (Rosenberg, 2015). Even though many organizations utilize Excel workbooks as a repository for data, due to the lack of proper database features it was often overlooked for qualitative data analysis. One basic problem was that Excel tables could not have database type relationships (Cram et.al, 2012). However, since Office 2013 Excel has included more database features in the form of Power Pivot and Data Model that have enhanced its data analytic capabilities to support decision-making (Meyer and Leanne, 2008; Ferrari & Russo, 2010; Palocsay et.al, 2010). These features besides facilitating interactive handling of large data sets (Zhimin et.al, 2014) also provide the ability to manipulate, filter, and sort millions of data without SQL skills (Barry, 2011).

As organizations increasingly emphasize business intelligence and data analytics (Chen et.al, 2012), understanding Excel's data analytics features are essential for students and professionals. Despite the widespread utilization of office software, Excel text books (Monk et.al, 2017; Cram et.al, 2012; Parsons et.al, 2010; Gaskin and Vargas, 2017; Reading & Wermers, 2017; Smart, 2017; Frye, 2017; Monk et.al, 2017) essentially focus on a fixed set of features like formatting spreadsheet, range names, budgeting, time value of money functions, what-if analysis, breakeven analysis, weighted criteria analysis, and charts. Some of the advanced features like Power Pivot, Solver, Regression, Linear programming, and Scenario analysis are covered briefly. Since data analytics in Excel is associated with the Power Pivot feature, its coverage is often very brief and limited to just one table or tables that have direct relationship with each other. But, if the tables don't have direct relationship then Excel has a limitation with respect to querying data from such tables.

The objective of this paper is to (i) provide a simple tutorial on how to create database lists of related tables through the Data Model feature in Power Pivot, and then (ii) illustrate data retrieval for analytical purposes in the form of queries that involve tables that don't have direct relationship. Due to the limitation of Excel to facilitate retrieval of data from tables that don't have direct relationship, the paper utilizes the Joiner concept (Jelen & Alexander, 2013; Jelen, 2017) to facilitate such querying.

The tutorial uses a fictitious real estate company to provide a business perspective. As Excel is learned by professionals and students of all majors, this tutorial will broaden their understanding. No prior knowledge of database is required for this tutorial. The tutorial outline will be as follows: (a) install Power Pivot plug-in, (b) create database tables with relationships, and (c) data retrieval for analytics.

Install Power Pivot

Power Pivot is an Excel add-in tool that allows addition or import of data from multiple sources into one workbook. To install Power Pivot open the File menu and select Options. In the Options window click the Add-Ins label from the list in the left navigation pane. Now the options for Add-Ins appear in the right pane of the window. Go to the Manage label at the bottom and select COM Add-Ins from the drop-down box (as shown in Figure 1) and press the Go button beside it.

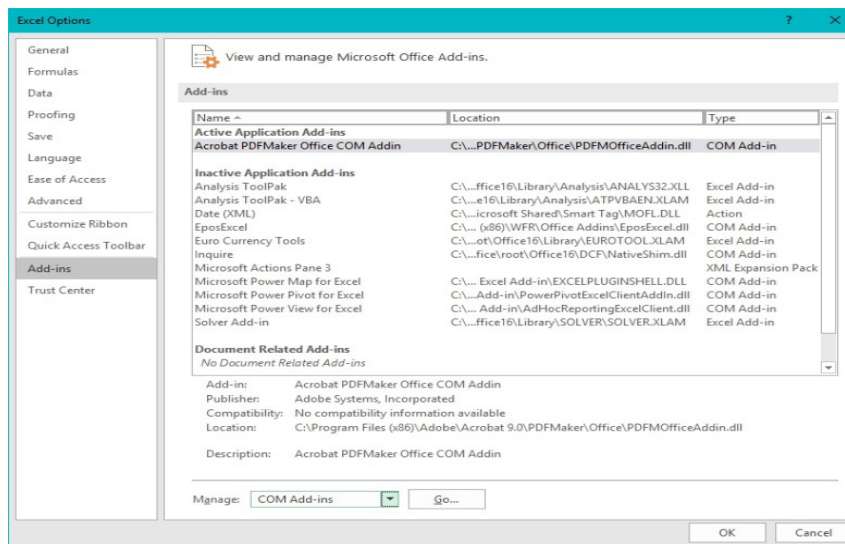


Figure 1 Select Excel Add-Ins Tools

In the ensuing COM Add-Ins window select the check box beside Microsoft Power Pivot for Excel and press the OK button (as shown in Figure 2). POWERPIVOT tab will now appear on the ribbon. You may have to restart your computer to get it installed.

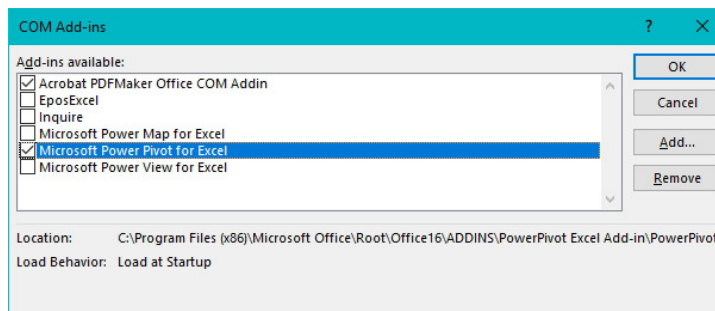


Figure 2: Select Power Pivot Add-In for Install

Create Database Tables with Relationships

A database is a collection of tables consisting of rows and columns on any information a business wishes to store (Kinser et.al, 2017). As the tutorial is based on the database requirements of a real estate company, for simplicity purposes the tutorial will have three database tables in the form of agents, listings, and customers.

Agents table will have information on real estate agents. Listings table will store information on properties that are listed with the real estate company. Customers table will store information about customers who have shown interest in buying properties available with the company. The Agents table will have database relationship with Listings and Customers tables. The steps to create the three tables are described now.

Create Agents table:

1. Open a blank workbook. Type the name of the company “Real Estate Company” in cell A1.
2. From A2:E2, enter the following names in each cell: First Name, Last Name, Email, Phone, and Agent ID.
3. Enter information in cells A3:E5 as shown in Figure 3.

	A	B	C	D	E
1	Real Estate Company				
2	First Name	Last Name	Email	Phone	Agent ID
3	John	Davis	jd123@gmail.com	417-123-4567	JD12
4	Mary	Jones	mj234@gmail.com	417-555-6565	MJ23
5	Katherine	David	kd587@gmail.com	417-622-2929	KD58

Figure 3: Agents Table Contents

4. Now we will transform the entered data into a database table. Select cells A2:E5 and go to Insert tab and click Table in the Tables group. Create Table dialog box will open as shown in Figure 4. In the Create Table dialog box, it is important to check “My table has headers” box. This will allow the column names entered in row 2 to be used as table headers.



Figure 4 Reference Agents Table contents as Table

5. In Excel table a header is referred as a field. Each field should have a unique and meaningful name. Further, a table name must not have any space in between the words. If two or more words need to be joined, an underscore should be used to conjoin the words, eg. Agents_Info.
6. As a database table is a collection of records, the information entered in rows 3 to 5 represent records.
7. A database table will have one primary key field. A primary key will have a unique value in each row. Primary keys provide unique identification to each record in the table. For the Agents table, Agent ID field will serve as the primary key field.
8. Once the table is created, it should be saved with a specific name. So, while the table is selected, in the Design tab of the Table Tools, enter “Agents” as a table name in the Properties group as shown by arrow in Figure 5.

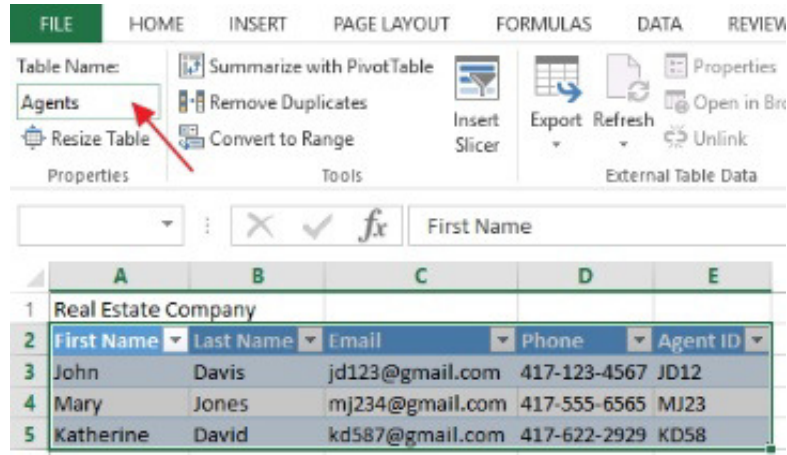


Figure 5 Create Agents Table

9. The Agents table will now be added to the Power Pivot Data Model. So, click anywhere in the table and go to the Power Pivot tab and click “Add to Data Model” in Tables group. Agents table is now added to the Data Model as shown in Figure 6.

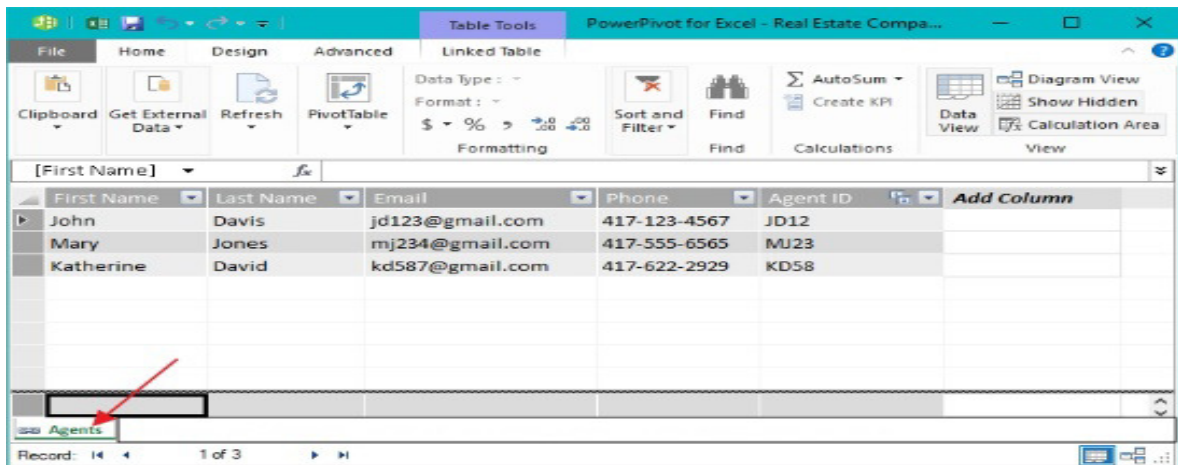
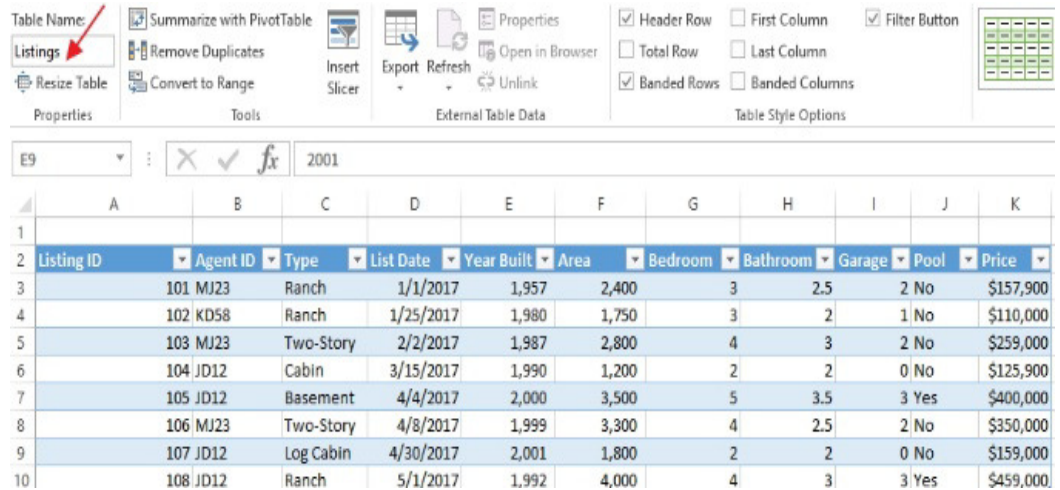


Figure 6 Add Agents Table to Power Pivot Data Model

Create Listings Table

1. Create another sheet and enter the cell entries A2:K10 as shown in Figure 7 to create the Listings table similar to the way the Agents table was created. The Listings table will have the following fields: Listing ID, Agent ID, Type, List Date, Year Built, Area, Bedroom, Bathroom, Garage, Pool, and Price. The table will be populated with eight rows as reflected in range A3:K10. “Listing ID” will be the primary key of the Listings table.
2. Save the table as “Listings” and then add to the Power Pivot Data Model.

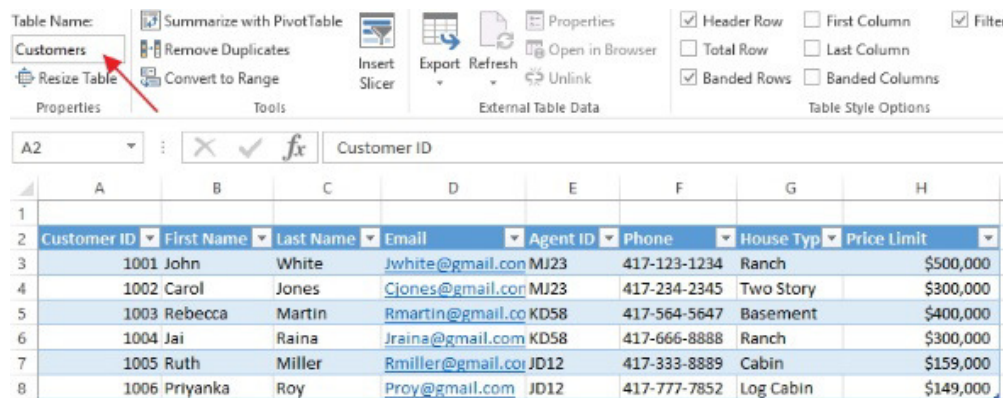


Listing ID	Agent ID	Type	List Date	Year Built	Area	Bedroom	Bathroom	Garage	Pool	Price
101	MJ23	Ranch	1/1/2017	1,957	2,400	3	2.5	2	No	\$157,900
102	KD58	Ranch	1/25/2017	1,980	1,750	3	2	1	No	\$110,000
103	MJ23	Two-Story	2/2/2017	1,987	2,800	4	3	2	No	\$259,000
104	JD12	Cabin	3/15/2017	1,990	1,200	2	2	0	No	\$125,900
105	JD12	Basement	4/4/2017	2,000	3,500	5	3.5	3	Yes	\$400,000
106	MJ23	Two-Story	4/8/2017	1,999	3,300	4	2.5	2	No	\$350,000
107	JD12	Log Cabin	4/30/2017	2,001	1,800	2	2	0	No	\$159,000
108	JD12	Ranch	5/1/2017	1,992	4,000	4	3	3	Yes	\$459,000

Figure 7 Listings Table

Create Customers table:

3. Create another sheet and enter the cell entries A2:H8 as shown in Figure 8 to create Customers table similar to how Agents and Listings tables were created. The Customers table will have the following fields: Customer ID, First Name, Last Name, Email, Agent ID, Phone, House Type, and Price Limit. The table will be populated with six rows as reflected in range A3:H8. “Customer ID” will be the primary key of the table.
4. Save the table as “Customers” and then add to the Power Pivot Data Model.



Customer ID	First Name	Last Name	Email	Agent ID	Phone	House Type	Price Limit
1001	John	White	Jwhite@gmail.com	MJ23	417-123-1234	Ranch	\$500,000
1002	Carol	Jones	Cjones@gmail.com	MJ23	417-234-2345	Two Story	\$300,000
1003	Rebecca	Martin	Rmartin@gmail.com	KD58	417-564-5647	Basement	\$400,000
1004	Jai	Raina	Jraina@gmail.com	KD58	417-666-8888	Ranch	\$300,000
1005	Ruth	Miller	Rmiller@gmail.com	JD12	417-333-8889	Cabin	\$159,000
1006	Priyanka	Roy	Proy@gmail.com	JD12	417-777-7852	Log Cabin	\$149,000

Figure 8 Customers Table

Create Database Relationships

To access information from multiple tables, database relationships are necessary between the tables. A database relationship is the linking of one row of one table with one or more row of another table. This linking is done through a field called foreign key. A foreign key field in one table will have values that must match the primary key field values of another table. There are three types of database relationship:

one to one, one to many, and many to many. Of the three database relationships, one to many is the most common type of relationship. In this relationship the foreign key field will be in the table that has many rows linked to one row of another table's primary key field value.

In this tutorial, since an agent may have one or more customers, Agents table has one to many relationship with Customers table. As Customers table may have many rows or records associated with one record of Agents table, the foreign key field will be in Customers table. The "Agents ID" field created earlier in the Customers table will now be the foreign key field.

Similarly, an agent may have one or more listings. Agents table now has one to many relationship with Listings table. As Listings table may have many rows or records associated with one record of Agent table, the foreign key field will be in Listings table. The "Agent ID" field created earlier in the Listings table will now be the foreign key field.

Database relationships are also created through the Data Model feature in the Power Pivot tool in the form of joined tables. This feature is essential in retrieval of the data from two or more tables.

Steps to set up Database Relationship between Agents and Listings table

The following steps will create database relationships. First the relationship between Agents and Listings tables will be setup followed by relationship between Agents and Customers tables.

1. In the Power Pivot tab, click Manage under Data Model group. In the Design tab, click Create Relationship under Relationships group as shown by red arrow in Figure 9.



Figure 9 Invoke Create Relationship in Power Pivot Data Model

2. Create Relationships dialog box will open. Select Listings table first from the Table drop down menu and Agent ID field under Column drop down menu. Then select Agents table and Agent ID field. And click create button as shown in Figure 10. The table that has a primary key should be selected as the second table.

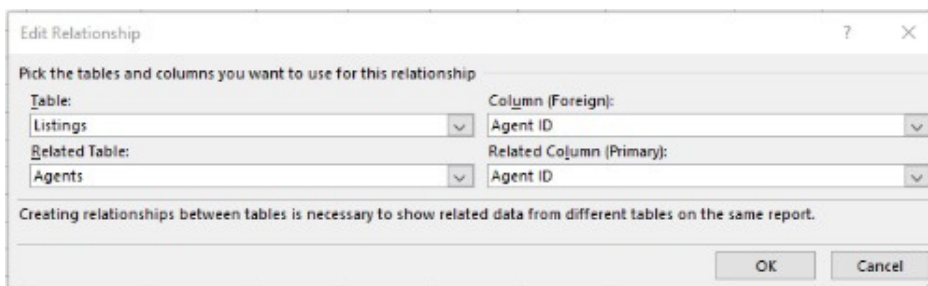


Figure 10 Create Relationship between Listings and Agent tables

- Next to set up relationship between Customers and Agents table, click Manage Relationships under the Relationships group and click Create button as shown in Figure 11. Previous relationship between Agents and Listings table is shown as active. Keep in mind that once a relationship is set up, it can be deleted or made inactive if it is no longer needed.

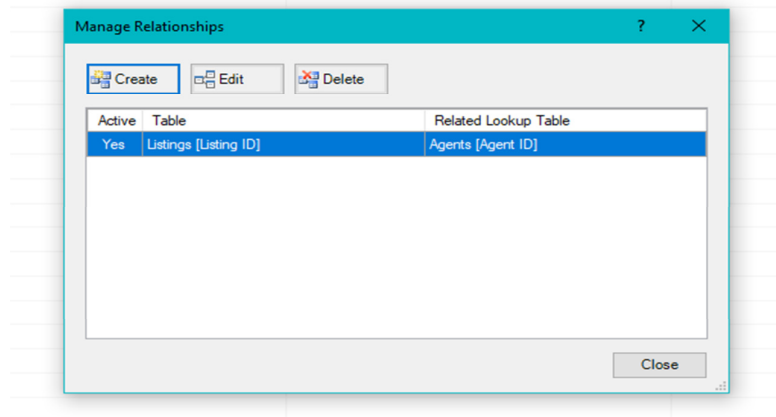


Figure 11 Manage Relationship to View, Create, and Maintain Relationships

- Like the setting of relationship between Agents and Listings table, select Customers table from the table drop down menu and pick Agent ID field first as the foreign key, and then select the Agents table and pick Agent ID field as the primary key. Now click the Create button. All three tables are now connected.

From a database perspective now individual rows can be inserted or deleted, and row values can be updated directly in their respective tables. Thereafter to ensure consistency in database relationships the “update all” feature in Power Pivot can be invoked to update the overall data model as shown in Figure 12.

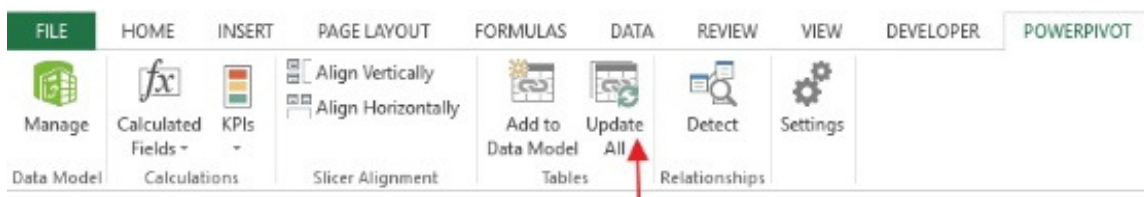


Figure 12 Update overall Data Model

Data Retrieval for Analytics

Retrieval of information for analysis from the tables is explained in two steps: (a) retrieval and analysis from one or two tables to understand the basics of querying, and then (b) retrieval and analysis from multiple tables with Joiner. To facilitate data retrieval and analysis Pivot Table feature is utilized. Pivot Table summarizes information from Excel data sets. It can provide summary of information in two dimensions by using two fields to group the records and then use a third field to summarize the

information. Since data visualization is a common way to express analytics, Pivot Charts are utilized to illustrate the results.

Retrieval from One or Two Tables

Information from Listings table can be retrieved through Pivot Table as follows:

1. In the Power Pivot tab, click Manage under Data Model group. Go to the Listings tab and click Pivot table. Create PivotTable dialog box will open as in Figure 13.

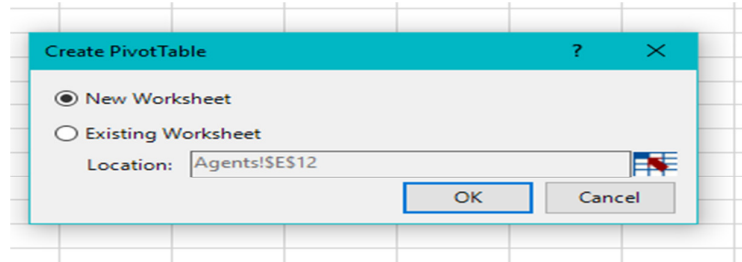


Figure 13 Create Power Pivot Table

Click New Worksheet radio button to move the table to a new worksheet and press the OK button. Placeholders for Pivot Table will be created on the left side of the worksheet and Pivot Table Fields task pane will open on the right side as shown in Figure 14.

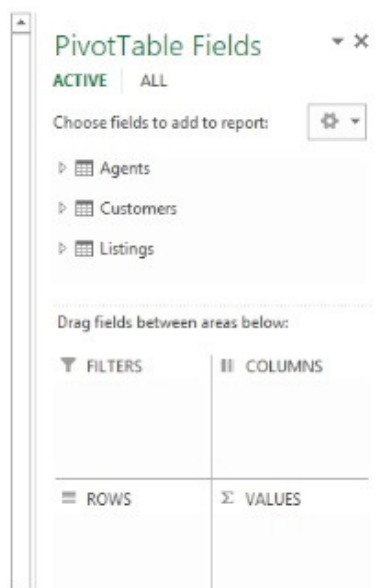


Figure 14 Pivot Table Task pane

As shown in Figure 14, all three tables in the Data Model like Agents, Customers, and Listings appear on the top. Arrow symbol next to each table can be clicked to display all the available fields of that table. Bottom

part of the task pane shows four zones: Filters, Legends, Axis, and Values. A field can be checked or dragged and dropped to a proper zone within the task pane. Fields can also be dragged and dropped within each zone of the task pane. The Columns zone is also sometimes displayed as Legend Fields, while the Rows zone appears as Axis Fields. Fields in the Values zone show summarized information using subtotals. A field in the Filters zone filters the display records.

- For illustration purposes we will show type of the houses that were listed in April 2017 with the Listing ID and the Listing Price. To accomplish this retrieval, we place Type in the Rows zone, Listing ID in the Columns zone, List Date in Filters zone, Sum of Price for subtotals in Values zone as shown in Figure 15.

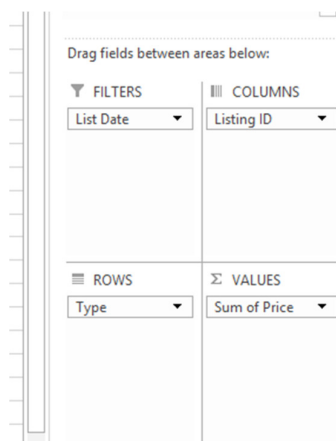


Figure 15 Tutorial Query Task Pane

Visualization with Pivot Charts:

- Go to Analyze tab and click Pivot Chart in the Tools group. Select clustered column as type of the chart. Pivot chart now illustrates the visualization of summarized information of the Pivot Table as shown in Figure 16. The chart will automatically update as Pivot Table is modified.

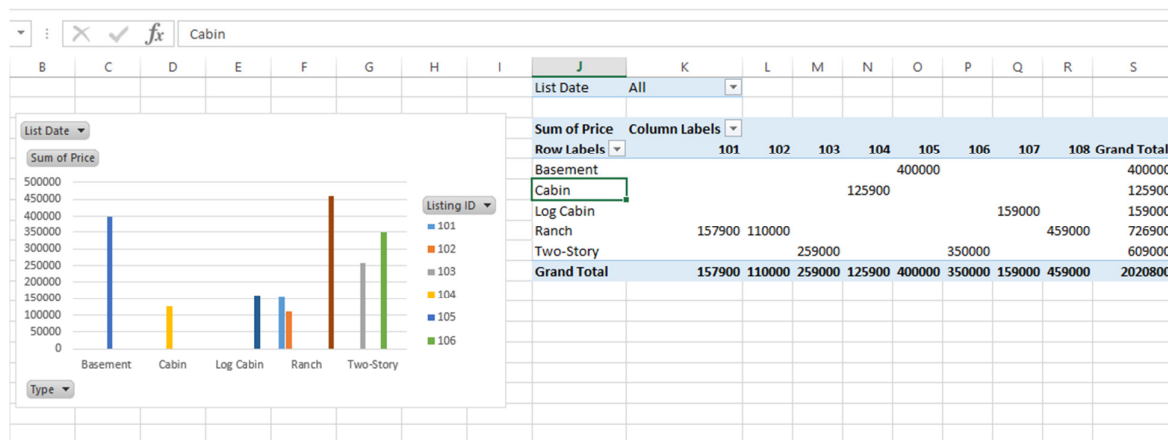


Figure 16 Tutorial Query Pivot Table and Pivot Chart Analytic display

To filter the records that were listed in April 2017 only, click the drop down arrow beside All of List Date display at the top of the Pivot Table. Once you click the All drop down arrow, check the box at the bottom to select multiple items. Now only check the dates of April month. Filter is now applied to both the table and the chart simultaneously. It will display only the listings of the month April as shown in Figure 17.

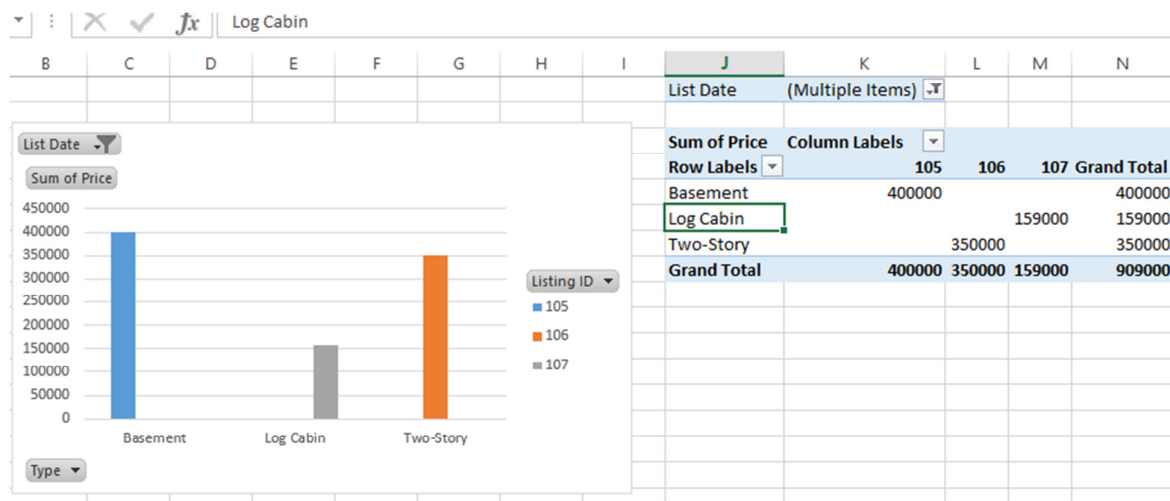


Figure 17 Tutorial Simulated Analytic Display

Both the Pivot chart and the Pivot table show that there were 3 houses that were listed in April 2017 with Listing Id 105, 106, and 107. It shows the individual price of each listing as well as the total price of all three listings which is \$909,000. Rows provide information about what type of houses are listed and at what price. For example, Basement home is listed at \$400,000 and has Listing Id 105.

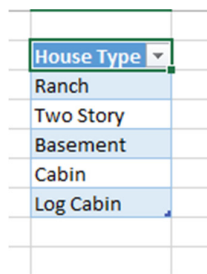
If we want to add fields from another table that is directly related like Agents and Listings table, then we first select specific fields from the other table like Agents. The selected fields can be drag and dropped in appropriate zones as per the query just like a querying from a single table.

Retrieval from Multiple Tables with Joiner

Joiner concept facilitates querying from tables that don't have direct relationship with each other. For example, suppose we want to show Agent Id from Agents table and their listings with Listing Id, Type, Sum of Price from Listings table, and to filter records using House Type field from Customers table. This query involves not only getting data from Agents and Listings tables but also Customers table. Since Customers and Listings tables do not have a direct relationship with each other, the Joiner concept can provide the bridge between the two tables. The Joiner concept involves creating a new table with only one field that is common to the tables that have to be linked. This field in the Joiner type table is also its primary key. So, in the Tutorial we create a "Joiner_House_Type" table as a Joiner table. The Joiner_House_Type table will have relationship with Listings and Customers table, Once the

Joiner is created, one can query all the three tables to retrieve related information. The following steps show how to create a Joiner table and then retrieve information from all three tables.

1. Create a new table “Joiner_House_Type” on the same worksheet where Customers table was created similar to how tables were created earlier. The field name should be House Type and five rows should be populated with the information as shown in Figure 18.



House Type
Ranch
Two Story
Basement
Cabin
Log Cabin

Figure 18 Joiner_House_Type Joiner Table

2. Add Joiner_House_Type table to the Data Model. Click Manage Data Model and select Pivot Table to create a new Pivot table. Go to the Data tab and in the Data Tools group select Relationships. Manage Relationships window will open with all the previous list of relationships. Now set up two relationships: Joiner_House_Type with Customers table and then Joiner_House_Type with Listings table. In the first relationship, the first table should be Customers and the foreign key should be House Type. Second table should be Joiner_House_Type and the primary key should be House Type. In the second relationship, the first table should be Listings table with Type as a foreign key and the second table should be Joiner_House_Type with House Type as a primary key. Now Joiner_House_Type is an intermediary between Customers and Listings table. This will allow us to see any listing with Listing Id, Agent Id, and the correct Price all at once. Once the Joiner is created in the Pivot Table fields that are part of Joiner table should be added from the Joiner table only.
3. We will now display Listings with Listing Id, Type of houses, and Sum of Price, Agents with Agent ID, and for Filter we will utilize House Type that customers are interested in for analyzing.
4. From the Agents table add Agent ID field to the Rows zone. From the Listings table, Listing Id to the Columns zone, Type to the Rows zone, and Price in the Value zone. In the Filter zone select House Type by adding “House Type” field from the Joiner_House_Type table as shown in Figure 19.

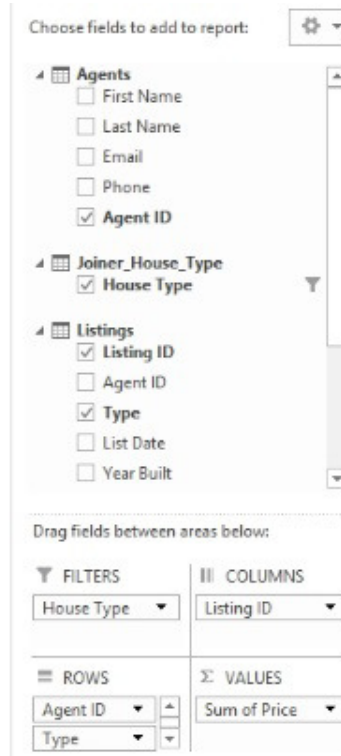


Figure 19 Tutorial Query Task Pane with Joiner Table

- From the Analyze tab of the Pivot Table, click Pivot Chart from the tools group and select Clustered column as a chart type. Figure 20 shows the Pivot Table and the Pivot Chart displaying all the listings with Listing ID, Agent ID, Price and the Type of the houses.



Figure 20 Tutorial Query Pivot Table and Pivot Chart Analytic display with Joiner Table

- If we want to display just the Ranch then from the House Type that is used as a filter, we can uncheck all the other types and display just the Ranch as shown in Figure 21.

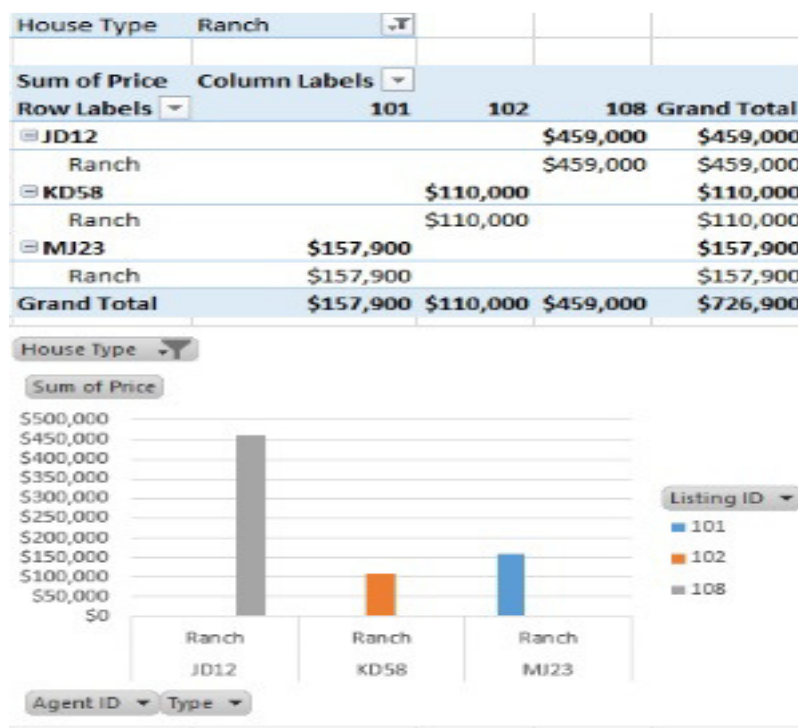


Figure 21 Tutorial Simulated Analytic Display with Joiner Table

Our results show three agents, JD12, KD58, and MJ23 who have listed Ranch with their respective Listing Id, their prices and the grand totals. This makes analyzing data from multiple tables very quick and easy.

Conclusions

Excel is an essential software for business. Many aspects of business can benefit from strong Excel knowledge. This paper outlines a tutorial based on a simple business example to demonstrate how to create a database in Excel and then query the database for analysis. The tutorial illustrates the use of Data Model, Pivot Table, and Pivot Chart features. It also outlines an approach to overcome the limitation of Excel in analyzing data from tables that don't have direct relationship through the Joiner concept.

The tutorial in the paper will allow students and professionals to grasp essential database operations with Excel in a business context. This simpler approach helps technical as well as non-technical students in understanding data modeling and database concepts in a faster way. Further, an understanding of how Power Pivot and Power Chart work with Joiner concept will enable any Excel professional to deliver data analytics and Business Intelligence solutions without prior expertise in data analytics.

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VENEZUELA CURRENCY CRISIS: ANALYSIS OF THE CAUSES

Tatjana Boshkov, PhD¹

Abstract

Economic losses caused by currency crisis are spending the fiscal costs of restructuring the financial sector, a fall in economic activity, a distortion in distributable income, a decline in credibility emphasize the importance of crisis prevention and the use of all available tools that can help in early identification of the financial weaknesses of the crises system. For this reason, some kind of systems could identify the vulnerability indicators or predict a currency crisis in order to take on time true measures to avoid the crisis.

The aim of the paper is underling the utilization of theoretical knowledge about currency crises and focusing on analyzing the causes for Venezuela currency crisis. the Evaluation of existing crises can explain the disruptions in the financial system or collapse of the exchange rate. Also, here we determinate the reasons and implications of Venezuela currency crisis, as the crucial role of the foreign exchange reserve for a country in such a circumstances.

Key words: currency crisis, factors, exchange rates, Venezuela.

1. Introduction

Currency crisis is a currency market disturbance where speculative foreign exchange strike leads to a devaluation or comes to a point when the authorities sell their foreign exchange reserves or raise interest rates to defend their exchange rate. Currency crises are usually defined in the context of the financial crisis, including a ban and debt crisis (Claessens and Kose, 2013). For the further analysis of currency crises, the definition of a banking and debt crisis is also important, which is mainly for two reasons. First, there are completely isolated cases of crises, since the characteristics of the currency crisis are often associated with other financial problems in the economy. For this reason, it is very difficult to isolate "same" currency crisis. Second, in many cases, some kind of crisis is developing into another type of crisis..

Utilizing theoretical knowledge about currency crises and focusing on the evaluation of existing theoretical models, over the last fifteen years, simultaneously were developed different theoretical models of currency crises in order to explain disruptions in the financial system or collapse of the exchange rate.

2. Literature review

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In order to cover the whole process of creating a currency crisis, some assumptions of "Generation" models have been omitted, and introduced some new assumptions in order to get closer to the actual situation or events in a particular country, part of theoretical literature is aimed at explaining the currency crisis of unconventional and non-economic factors. Among the most important interpretations of the currency crisis outside the "generational" direction is the Kindleberger-Minsky model describing three phases of the currency crisis: mania, panic and collapse.

In parallel to the model that distinguishes the three stages of the currency crisis, a similar model with five different phases may appear (Saqib, 2002). The crisis starts with an exogenous reason (war, elections, discoveries, etc.) that have a strong impact on the economic system by changing the profitability of at least one sector. If new opportunities for profit are greater than the old ones, the growth in investment and production is starting to accelerate. It is assumed that there are speculations that cause the growth of the "object" price to which the peculiarity is directed (for example, foreign currency, domestic or foreign bonds, land, buildings, etc.).

The price increase attraction of further investments and further revenue growth. The third stage describes the over-arching process involving: speculation (buying to sell at a higher price) and too much anticipation (euphoric perception of the price of a particular object over the underlying value). As productive expansion continues, interest rates, prices, and profits continue to rise. In the high profit period, some investors decide to sell the "item" they bought. In the early phase, speculation continues, and the outputs are balanced. Prices stop growing. This is the period when speculators are beginning to perceive that it is possible to get out of the "speculators' community" which ultimately causes panic (because of the lack of liquidity that would allow everyone to sell with profit). As speculators sell, prices begin to fall, the number of banknotes increases, and the business situation deteriorates. The panic ends when the price falls enough to attract speculators after the trade stops because of the lower price limit of the "facility" or when the monetary authorities will convince the market and provide sufficient liquidity in order to calm the panic. The most common criticism for this model is its flaws that do not give rigorous theoretical explanations for the currency crisis.

Other explanations for currency crises include structural and political factors (Drazen, 1998). Market euphoria as structural factor, which is characterized by large foreign capital inflows, high rates of economic growth, low unemployment, hides the negative tendencies of traditional factors or neglects them. Political factors can also lead to controversial decisions. One of them concerns choosing the moment of devaluation related to holding elections. Namely, an unpopular measure of devaluation is usually postponed after the elections, because the currency that generally generates cheaper import products, and therefore more real wages, is overestimated (Budsayaplakorn, S. et al., 2010).

The next political factor in the currency crisis concerns political instability and propensity for the deficit. In general, the tendency for a deficit is greater if there are more frequent changes to the authorities (Alesina and Tabetini, 1990). Continued political instability leads to a budget deficit, a large external debt, an inefficient tax system and low growth rates (Drazen, 1998). Thus, political actors act indirectly on

expectations and on a speculative attack on the basis of economic grounds. Therefore, the need to analyze political processes that lead to inconsistent policies and the currency crisis is crucial. Although these factors are often mentioned in the literature and are supported by empirical evidence (Eichengreen, Rose and Wyplosz, 1996; Bussiere and Mulder, 1999), the construction of the theoretical model is not yet satisfactory (Drazen, 1998).

3. Snapshot in the time of crisis

Foreign exchange reserves of the country have been reduced to \$ 10 billion. The data from the Central Bank of Venezuela show that they have remained only \$ 10.5 billion in their reserves. Combined with the fact that the country has a debt of \$ 7.2 billion by the end of 2017. The oil-rich nation faces with enormous economic insecurity over the past 3 years in its currency- Venezuelan bolívar, went into a free fall as a result of hyperinflation caused by widespread corruption in government and the fall in the world oil price. In the fight against inflation, the Venezuelan government releases more bolivars into circulation, forcing civilians into money-laundered baskets to pay for basic goods. The country couldn't import food, drugs and other basic necessities.

In 2011, CNN announces that Venezuela's foreign exchange reserves are estimated at around \$ 30 billion. In 2015, they are reduced to \$ 20 billion. Recent reports show that about 3/4 of Venezuelan residents lose on average £ 19 as a result of a country's food shortage , and it seems likely everywhere no matter what economic future it is, citizens are prepared to suffer the most.

3.1. Reasons for facing Venezuela with currency crisis

Venezuela is home of the largest oil reserves in the world, even more than Saudi Arabia, but still faces with the largest social and political crisis in the world today. Around the 10th Century in ancient Venezuela, indigenous tribes discovered oil seeping through the land. Actual extraction began much later. A huge oil well was discovered in 1922. When they drilled inside, oil came gushing out in a jet, rising more than 40 meters high, and it took them more than 9 days to contain it. Foreign oil companies rushed to the country to be part of all the action. The oil industry developed massively since then and soon began to overshadow the other sector in the country. By 1928, Venezuela became the largest oil exporter in the world.

The value of the Venezuelan currency increased rapidly, riding of the back on the single product, oil. But other industries i.e. their export suffered so much as countries found it very expensive to import from Venezuela. So, in this time global demand for oil was increasing, and during the Second World War, Venezuelans were producing close to 1 million barrels per day. Middle East began exporting large amounts of oil as well by 1950. Further, supply overshoot demand and the prices began to fall. As a reaction, the oil producing nations of Venezuela, Iran, S. Arabia, Iraq and Kuwait met to decide what will be their strategy in future. So, these countries formed OPEC in 1960. The main aim of OPEC was to bring oil prices back up to reasonable levels by regulating the supplies. Export Quotas was placed on member actions to keep a check on overproduction. Oil prices continued to fall and in 1970 had reached the price of \$3.4 per barrel.

Next, war and international turmoil the following decade changed this. In 1973 Arab Israeli war led to the Arab OPEC countries stopped trade with the US and other nations in response to their support for Israel. Then, global oil prices shot up to \$34 per barrel by 1980 and the Venezuelans quadrupled their revenues. The oil industry was nationalized and people rejoiced, but for a short time. The OPEC members began breaking their production quota promises and produced more oil to take advantage of the high prices, but demand was decreasing as the world economy was slowing down. The effect from this was: led to an immense oversupply, or an oil glut and prices crashed again. By 1986, oil prices had reached a low of \$14 per barrel and didn't see a significant recovery until 1999.

Huge demand from developing countries such as India and China boosted global oil prices and gave the funds needed to pursue his economic strategy. However, these strategies proved to be very unproductive in the long run. This time of Hugo Chavez began funding social programs with oil money which led to huge overspending. When he fell short he borrowed heavily. This was followed by Nicolas Maduro. Government regulations, takeovers, corruptions and restrictions on imports led to a hostile business environment and the death of private companies here. Oil prices have been falling since 2014 and Venezuela is facing one of the largest social crisis in the world today. The inflation rate here is the highest in the world and the country is heavily debt ridden. People have money, stores remain empty. There is a huge shortage of food, medicine and other daily supplies. Crime rates have gone up. The boon of the 20's has turned in to a bane today.

4. Venezuela Crisis circumstances in 2017

In March 2017, Venezuela announces a new exchange rate due to resolving the crisis. Maduro reports that a living oil-rich country announce a new course which will increase the DICOM exchange rate, one from the two official Venezuelan courses. Residents buy most of the necessary goods on the black market. Venezuela is an example where she has had numerous foreign exchange rates over the years and none of them is in line with the black market.

After the DICOM exchange rate, the Venezuelan Bolivar trades around 710 US dollars, and 10 under the Dipro course that is the official exchange rate of Venezuela. Incredibly low foreign exchange reserves, high inflation, oil owed to China, 4- digit inflation and humanitarian crisis, are enough reasons to conclude that the problem hard to resolve soon. Venezuela has taken loans from Beijing in exchange for the belief in profoundly-directed exports of the oil. In 2016 Venezuela has reached inflation on unbelievable 800%. IMF predicts inflation of 1600% in 2017.

In Venezuela there are four types of exchange rates:

1. CENOEX (for basic food and medicine)

2/3. **SICAD I** | **SICAD II** provide dollars to companies which import all other goods.

Due to the fact that US Dollars are limited, coupons are auctioned temporarily ie weekly in the case of SICAD I and daily for SICAD 2.

Due to the poor crisis these two courses are not in use since 18 August 2015.

4. The latest and newest is SIMADI (200 bolivars per dollar).

This exchange rate is intended for buying and selling goods for individuals and businesses.

Corruption arises from the complete monetary system. Because of this completeness and the bureaucratic process to access the courses, residents are forced to rely on the black market, where the rate is least favorable, to get the necessary foreign currency. With the sharp decline in oil prices, the Venezuelan economy is crippled, and Maduro's government is blamed for it, finding itself at the very edge. Venezuela was in unprecedented economic crisis and political crisis characterized by an acute shortage of food and medicine. Another reality were the crime rate increasing as more authoritarian executive power.

Critics against Maduro and Chavez said that the economy's problems have been result of economic mismanagement for many years. Also Maduro supporters blame him for the fall in oil prices and corrupt business elites in the country. So, Venezuela is sensitive to external flows due to heavy dependence on oil revenues. The reports show that the oil bills are about 95% of the Venezuelan export earnings and 25% of its GDP, according to ORES. As the world oil price dropped on \$ 111 a barrel in 2014 at low level of \$ 27 in 2016, the already insecure economy began to fall freely. Thus, in 2016, GDP drops by 12% and inflation rises to 800%. By the beginning of 2017 Venezuela owes \$ 140 billion to foreign lenders, holding only \$ 10 billion of foreign reserves. Chavez's creditors accuse him of not putting aside money from the period of 2004/2013 to use the massive boom in oil prices for having safe future. Chavez used this boom to expropriate large sections of the economy, introduce dragon currencies and price control, as well as subsidize imports. All of this has weakened the economy and made the country increasingly dependent on import, and Venezuelans can no longer afford it. Politics that contributed to the creation of economic problems is the control of the currency, first introduced in 2003 to reduce the capital outflow. With the sale of US dollars at different rates, the government effectively created a black market and increased opportunities for corruption. For example, a business that is authorized to buy dollars at preferential rates in order to buy priority goods like food and medicine, can instead sell these dollars for substantial third-party profits. The import dropped \$ 18 billion in 2016, down from \$ 66 billion in 2012, as foreign goods are becoming more expensive. Many customers are faced with a choice of waiting for hours in a row for basic products. Experts detect other reasons for crisis: expropriation and corruption. They say that the widespread expropriation further reduced productivity. Transparency International ranks Venezuela to 166 of 176 places according to the corruption index, stating that the government controls more than 500 companies, most of which work with the country. For comparison, Brazil, which is 6 times more populous than Venezuela, has 130 state enterprises. Venezuela's largest creditor is China, which in 2001, it credits it with \$ 60 billion. Russia is showing interest in helping Venezuela precisely because Venezuela in 2014 became the largest importer of Russian military equipment until 2025, due to the fall of oil.

5. Crucial role of foreign exchange reserves

When a devaluation is expected on the market, downward pressure on the currency can only be settled (neutralized) by increasing the interest rate. In order to increase the rate, the Central Bank must reduce the money supply, which in turn will cause an increase in demand for the currency. The bank can do this by selling foreign reserves to create an outflow of capital. When a bank sells part of its foreign exchange

reserves, it receives a payment in the form of a domestic currency, which keeps it outside the turnover as a means. Also, the reliance on the exchange rate can not last forever, both in terms of the reduction of foreign reserves, as well as economic and political factors, such as the increase in unemployment. Devaluing the currency through an increase in the fixed exchange rate results in domestic goods being cheaper than foreign, which increases demand for workers and increases the output. In the short run, devaluation also raises interest rates, which must be settled by the Central Bank by increasing the money supply and increasing foreign reserves. As it is mentioned above, earlier the suspension of the fixed exchange rate can "eat" through the foreign exchange reserves of the country quickly, and devaluing the currency can bring back the reserves.

6. Conclusion

A currency crisis is brought on by a decline in the value of a country's currency. This decline in value negatively affects an economy by creating instabilities in exchange rates, meaning that one unit of the currency no longer buys as much as it used to in another. To simplify the matter, we can say that crises develop as an interaction between investor expectations and what those expectations cause to happen.

The economic theory did not encounter any specific definition of the currency crisis that is acceptable as universal definition. However, when we think about currency crisis the first thing we recall is a massive escape of investors from the currency for which they fear will depreciate thus affecting that this devaluation to really happen at a more financial repressive dimension than usual. In such a situation currency loses its stability and confidence, and if there are no sufficient international reserves then this can result in serious financial crisis.

The prediction when a country enters a currency crisis involves an analysis of various i.e. complex ranges of variables. There are several common factors that relate to recent crises: the countries borrowed a lot (current account deficits); the value of the currency is rapidly increasing; the insecurity associated with the Government's activities makes the investors nervous. The high level of public debt increases the cost of defending the exchange rate, but increases the dangers of speculative attacks. A high unemployment rate leads to difficulty in defending the exchange rate with a higher interest rate. The fact that the government will not tolerate a high unemployment rate may lead to currency depreciation (Lestano and Jacobs, 2007). When the expectations for the devaluation embedded in the nominal interest rate, the greater the interest cost of the debt will lead to an increase in the cost of maintaining the exchange rate. Speculative attacks can occur even when the currency is overvalued. The overvalued currency causes current account deficits, and in some cases deflationary pressure that leads the monetary authority to assess that the cost of defending the exchange rate is greater than the benefits.

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LIQUIDITY MANAGEMENT: COMPARISON AMONG MANUFACTURING AND MERCHANDISING FIRMS OF PAKISTAN

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Abstract

The aim of the paper is to investigate whether there is significant difference among manufacturing and merchandising industries with respect to liquidity and its relationship with profitability. The sample consists of 50 companies listed at Karachi Stock Exchange, comprises 30 manufacturing firms and 20 merchandising firms. The analysis is based on information from annual reports over the period of five years from 2010 to 2014. Net operating income and return on assets are used as measure of firm's profitability. Liquidity of the firm is measured by using cash gap in days and current ratio. Firm size is measured by net sales, total assets and market capitalization. The findings depicted that merchandising firms are more likely to have negative cash gap than manufacturing firms, since firms in these sectors carry small and fast selling inventories and often sell for cash.

Key words: Merchandising firms, manufacturing firms, liquidity, Profitability, Karachi stock Exchange

1. Introduction

Liquidity management focuses on the planning of current assets and current liabilities. Liquidity management has two important variables; current assets and current liabilities which play a crucial role in success of a firm as they directly affect the wealth of shareholders. Firms try to maximize its value by optimal level of investment in current assets (Howorth & Westhead, 2003; Deloof, 2003; Afza & Nazir, 2007; Afza & Nazir, 2008 and Nazir & Afza, 2009). For firms involved in the production of goods (manufacturing companies), the current assets usually in the form of the cash, cash equivalents,

marketable securities, and the inventories make up almost half of the sum of the asset side of the balance sheet. Whereas this proportion may be higher in the case of firms involved in the business of trading (merchandising companies). The excessive amount of investment in these assets may result in the barrier of the company's precious cash resources and eventually profit of firms may decline.

Efficient liquidity management is vital especially for manufacturing firms, where a major part of assets is composed of current assets (Van Horne & Wachowitz, 2004). It affects the profitability and liquidity of firms (Rehman & Nasr, 2007). The liquidity profitability tradeoff is important because if liquidity management is not given due considerations then the firms are likely to fail and face bankruptcy (Kargar & Bluementhal, 1994). The significance of liquidity efficiency is indisputable (Filbeck & Krueger, 2005). Liquidity is known as life giving force for any economic unit and its management is considered among the most important functions of firm's management. Every organization whether it is profit oriented or not, regardless of size and nature of business requires necessary amount of liquidity. Working capital management is one of the most important areas while making the liquidity and profitability comparisons among firms.

There are two basic concepts regarding the liquidity, one is balance sheet concept studying current assets and current liabilities also known as static approach. Second is dynamic approach or cash conversion cycle which is time length between actual cash expenditure on purchase of raw material and actual cash receipt from the sale of these products.

The static approach of balance sheet measures liquidity as current ratio and quick ratio, is useful to analyze liquidity but cash gap is a dynamic measure of ongoing liquidity management that uses both balance sheet as well as income statement data combined with time dimension (Jose *et al.*, 1996). The length of cash gap differs from one firm to another and from one industry to another industry. To measure the performance of cash gap and to assess improvement opportunities, firms not only analyze its own cash gap but also consider the industry benchmarks (Hutchison *et al.*, 2007).

The primary objective of this research is to investigate whether there is significant difference among manufacturing and merchandising industries with respect to liquidity and its relationship with profitability.

The rest of the paper is organized as follows. Section 2 presents the empirical literature review related with liquidity management. Section 3 puts forward empirical methodology and section 4 presents empirical modeling of this paper. Empirical results are given in Section 5, and section 6 concludes the paper.

2. Literature Review

Bhunja & Das (2015) investigated the relationship between working capital management and profitability of pharmaceutical companies listed in India. Data collected from Center for Monitoring Indian Economy Data Base covering a period of 2003 to 2013. They found that solvency and liquidity position was very attractive and sensibly competent with working capital management while liquidity position has no

significant relationship with profitability.

Malik & Bukhari (2014) investigated the impact of working capital management on the profitability of cement industry and advocated that there was positive and insignificant association between profitability and receivables management. Simultaneously, he stated that there was negative and irrelevant relationship between profitability and inventory turnover. He concluded that payable management was negatively correlated with profitability. Moreover, Cash Conversion Cycle has positively and insignificantly correlated with profitability of companies. Butt (2014) studied the association between working capital management and profitability of chemical sector in Pakistan for the periods of 2006 to 2010. He demonstrated that aggressive investment in current assets leads to decrease in the profitability of firms. Iqbal et al (2014) examined linkage between working capital management and profitability of firms listed at Karachi Stock Exchange in Pakistan. Their findings demonstrate negative association between net operating income and average account receivables inventory turnover in days, payable period and operating cycle.

Enqvist *et al.*, (2014) examined the role of business cycles on the working capital–profitability relationship using a sample of Finnish listed companies over an 18-year period. They find that the impact of business cycle on the working capital–profitability relationship is more pronounced in economic downturns relative to economic booms. They further show that the significance of efficient inventory management and accounts receivables conversion periods increase during periods of economic downturns. Their results demonstrate that active working capital management matters and, thus, should be included in firms' financial planning. Ukaegbu (2014) examined the relationship between working capital efficiency and corporate profitability and in particular, to determine their significance across countries with differential industrial levels. The study reveals that there is a strong negative relationship between profitability, measured through net operating profit, and cash conversion cycles across different industrialization typologies. The negative association implies that, when the cash conversion cycle increases, the profitability of the firm declines.

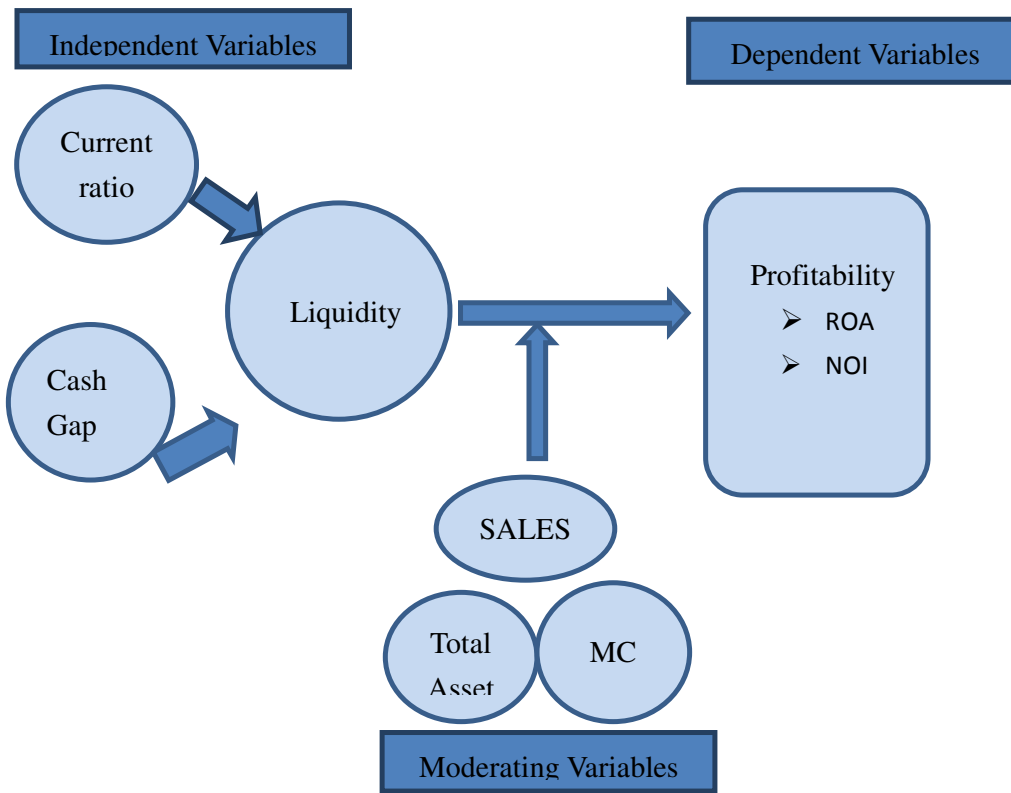
Arshad & Gondal (2013) examined the association between working capital management and profitability of 21 listed Pakistani cement companies for the period of 2004-2010. They established a momentous negative association between working capital management and profitability. Ben-Caleb *et al.*, (2013) explored the association between liquidity and profitability based on a sample of 30 manufacturing companies listed on the Nigeria Stock Exchange for the period of 2006-2010. The empirical results suggested that current ratio and liquidity ratio are positively linked with profitability at the same time as cash conversion period is negatively associated with profitability of manufacturing companies in Nigeria. The relationship in the entire case was though statistically irrelevant, signified low degree of persuade of liquidity on the profitability of manufacturing companies in Nigeria. They recommended that more sensible credit policy and shorter cash conversion period may have a positive shock on the profitability. Biswajit (2013) also observed the association between working capital management and profitability and indicated that simply cash position ratio was positively persuade on return on total assets and the residual six ratios were negatively correlated with return on total assets. He furthermore established that return on total assets is negatively connected with days of working capital. Mogaka & Jagongo (2013) investigated

the association between working capital management and firms profitability and established that the negative relationship exist between return on assets, accounts receivables and operating cycle at the same time as positive relationship exist with stock turnover, accounts payables. He wrapped up that working capital management has a noteworthy shock on firms' profitability and act as an input responsibility in value creation for shareholders because large operating cycle was negative shock on firms' profitability. Babu & Chalam (2014) examined the association between working capital components and firms profitability of Indian Leather Industry for 14 years period and showed that profitability had inconsequential positive association with inventory management and significant positive association with receivables. Although payable management and working cycle were noteworthy negatively associated with profitability and concluded that working capital management has significant impact on profitability of overall leather firms.

3. Data and Methodology

The sample in this study includes 50 companies listed at Karachi stock exchange, in which sample consist 30 Manufacturing firms from different sectors like food, cement, automobile, engineering chemicals, textile, electricity and 20 from merchandising firms like fixed line telecommunication health, travel and oil and gas. Data in this study collected through the secondary sources. The analysis is based on information from annual reports over the five year from 2010 to 2014.

Data is collected from the websites of Karachi Stock Exchange and annual reports of firms. The effect of liquidity on profitability is tested using the panel data methodology. Previous researches analyze liquidity and its impact on profitability by using panel data to investigate the relationship. Uyar (2009) analyzed 166 Turkish firms registered with Istanbul Stock Exchange to find the relationship of cash conversion cycle with profitability and size for the year 2007 using panel data. Eljelly (2004) examined the relation between profitability and liquidity measured by current ratio and cash gap (cash conversion cycle) for a sample of 29 joint stock firms in Saudi Arabia using panel data. Similarly Afza & Nazir (2008), Rehman & Nasr (2007), Lazaridis & Tryfonidis (2006) and many other did similar panel data studies on profitability of companies.



Source: Based on Eljelly (2004)

Figure 1: Conceptual Framework

Figure 1 shows conceptual frame work of the study which explains the determinants of liquidity which are current ratio and cash gap. Sales, total assets and market capitalization are used as proxy measure of firm size. Return on assets and net operating income are dependent variables of the model.

Liquidity and cash gaps may differ among countries and among industries and also depend on the prevailing economic conditions. Sometimes nature of the business and traditions set the typical liquidity requirements and the cash gap in a given industry. Some industries have high levels of liquidity requirements and large cash gaps than others, while some may require low levels of liquidity and shorter or even negative cash gaps, which indicate their ability to obtain cost-free capital from their customers.

4. Empirical Modeling

$$NOI = \beta_0 + \beta_1 (CR) + \beta_2 (CGS) + \beta_3 (MC) + \beta_4 (LOGS) + \beta_5 (LOGTA) + \epsilon \quad \longrightarrow (1)$$

$$ROA = \beta_0 + \beta_1 (CR) + \beta_2 (CGS) + \beta_3 (MC) + \beta_4 (LOGS) + \beta_5 (LOGTA) + \epsilon \quad \longrightarrow (2)$$

The relationship is different between liquidity and profitability for industry in which the firm operates.

H₁: There is a positive relationship between liquidity and profitability for manufacturing firms.

H₂: There is a negative relationship between liquidity and profitability for merchandising firms.

H₃: There is a positive relationship between the firm’s size and its profitability.

5. Results and discussion

5.1. Descriptive Analysis

5.1.1. Descriptive Analysis for manufacturing firms

Table 1 shows descriptive statistics of 30 manufacturing firms from different sectors of Karachi Stock Exchange. Manufacturing firms have less liquid asset and less non-cash components such as inventory, accounts receivables and account payable than trading firms, particularly the cash conversion cycle is shorter, manufacturing industries on average have 57 days of cash conversion cycle with standard deviation of 78 days. Mean of CR is 1.42 which means firm hold an average of 1.42 assets to meet its current liabilities. The performance measure used in the analysis is net operating income and ROA of the firms, which is on average 0.012, 8.59, and with a standard deviation of 0.095 and 11.53 respectively. Sales growths of manufacturing industries are average of 8.89 annually. Mean of total assets is 0.188 having standard deviation 0.676.

	NOI(billion)	ROA	CGS(days)	CR	MC(billion)	SALES(billion)	TA(billion)
Mean	0.012	8.59	56.854	1.42	1.48	0.088	0.188
Median	.0001	5.786	48.809	1.14	0.571	0.001	.001
Maximum	1.11	51.576	616.493	5.84	163	1.52	3.92
Minimum	-0.154	-15.05	-103.934	0.10	.004	.0001	0.000
Std. Dev.	0.095	11.538	78.510	0.90	2.44	0.253	0.676

Table 1: Descriptive Statistics for manufacturing firms

5.1.2. Descriptive Analysis for merchandising firms

Table 2 shows descriptive statistics of 20 merchandising firms from different sectors of Karachi Stock Exchange. Net operating profit mean shows that average earnings before interest and income is low in merchandising firms mean value of NOI is Rs. 0 .002 billion with standard deviation 0.008, value of ROA is 3.729 which is low as compare to manufacturing firms and standard deviation is 10.766.

	NOI(billion)	ROA	CGS(days)	CR	MC(billion)	SALES(billion)	TA(billion)
Mean	.002	3.729	-65.780	1.465	3.02	0.024	0.027
Median	.00017	3.400	-70.252	1.036	1.34	.008	0.007
Maximum	0.036	33.410	312.463	6.870	2.47	0.314	0.345

Minimum	-0.0393	-36.499	-399.822	0.194	1.79	0.0001	0.0004
Std. Dev.	0.0087	10.766	105.400	1.263	4.82	0.0519	0.062

Table 2: Descriptive Statistics for merchandising firms

Information from descriptive statistics also indicates that cash conversion cycle which is used as a proxy to check the efficiency in managing liquidity is lowest in merchandising industries with an average of 65 days and standard deviation of 105 days. The merchandising industries has lower mean value of the cash gap compared to manufacturing firms which shows that merchandising industries are efficient in collecting their receivables from customers before paying to suppliers. Other studies also show that merchandising firms have shorter CCC than manufacturing industries (Jose, 1996; Garcia-Teruel & Martinez- Solano, 2007). Sales that measure the size of the firm is used as a control variable. Table 2 demonstrates that mean of sales is Rs. 0.024 billion and standard deviation is 0.051. The maximum value of sales for a firm in a year is 0.314 billion while the minimum value is .0001.

5.2. Correlation Analysis

5.2.1. Correlation Analysis of manufacturing firms

Table 3 shows results of correlation of 30 manufacturing firms of KSE. Return on assets has positive significant correlation with current ratio which indicates that as firm short term debt paying efficiency increases firms get more return on assets.

	CR	Log Sales	CGS	MC	Log of TA	NOI	ROA
CR	1	-.028 (.734)	.061 (.460)	.013 (.870)	-.064 (.438)	.149* (.068)	.288** (.000)
Log of Sales		1	-.011 (.896)	.098 (.233)	.954** (.000)	.269** (.001)	.038 (.642)
CGS			1	-.236** (.004)	-.021 (.802)	-.051 (.539)	-.146* (.075)
MC				1	.072 (.383)	.041 (.618)	.353** (.000)
Log of TA					1	.307** (.000)	-.095 (.248)
NOI						1	.211** (.010)
ROA							1

Table 3: Correlation for manufacturing firms

** Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

Log of sales has positive insignificant association with return on assets while negatively correlated with cash gap in days. Return on assets has positive significant association with market capitalization which shows that volume of shares increase the income of shareholder which leads increase in return on assets while negative relationship found with total assets.

Net operating income is positively correlated with current ratio and with market capitalization while log of sales and log of total assets have strong positive significant relationship. Cash gap in days has negative correlation with net operating income.

5.2.2. Correlation Analysis of merchandising firms

Table 4 represents the result of correlation of 20 merchandising firms of KSE. Return on assets has positive significant correlation with current ratio which indicates that firm's efficiency in managing liquidity has positive impact on the profit earn through utilizing assets. Cash gap in days shows negative significant relationship with profitability, means that wider the cash gap the firm will have to arrange finance for more number of days hence pay interest which becomes the source of reduction in profit. Log of sales has positive significant association with return on assets. Return on assets has positive significant association with market capitalization which shows that size of firms in term of market capitalization tends to increase in profit while negative relationship is found with total assets. Net operating income is

positively correlated with current ratio and market capitalization while log of sales and log of total assets have strong positive significant relationship. Cash gap in days has negative correlation with net operating income.

Variables	CR	Log Sales	CGS	MC	Log of TA	NOI	ROA
CR	1	-.004 (.965)	-.206* (.040)	-.077 (.448)	-.073 (.468)	.045 (.658)	.236* (.018)
Log of Sales		1	-.068 (.501)	.087 (.387)	.881** (.000)	.478** (.000)	.226* (.024)
CGS			1	-.317** (.001)	-.112 (.268)	-.045 (.654)	-.258** (.010)
MC				1	.105 (.299)	-.079 (.436)	.406** (.000)
Log of TA					1	.544** (.000)	.140 (.164)
NOI						1	.314** (.001)
ROA							1

Table 4: Correlation for merchandising firms

** Correlation is significant at the .01 level (2-tailed)

* Correlation is significant at the .05 level (2-tailed)

5.3. Regression analysis

5.3.1. Regression analysis for manufacturing firms

The main objective of regression analysis for manufacturing firms is to investigate the role and requirement of liquidity in manufacturing sector. This section details the regression analysis for the different models based on the dependent, independent and control variables for 30 manufacturing firms.

5.3.1.1. Multiple regression analysis - Net Operating Income

The results for multiple regression analysis of manufacturing firms with dependent variable net operating income have shown in Table 5. The coefficient of cash gap in days is negative but the coefficients of other variables included in the model are insignificant except for current ratio and total assets. Current ratio has significant positive impact on net operating income which implies 1 unit change in current ratio leads 1.93 unit increases in profitability of firms. As firms ability increases in managing its current assets and current liabilities, firm's performance also increase. Total assets have also significant positive association with profitability of firms it implies that size of firms has positive impact on its performance which enhance its profitability.

Variable	NOI			
	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.88E+09	5.70E+08	-3.294229	0.0012
CGS	-59649386	97581094	-0.611280	0.5420
CR	1.93E+08	82475658	2.340092	0.0207
MC	0.000555	0.003154	0.175963	0.8606
LOG(SALES)	-1.35E+08	1.07E+08	-1.263308	0.2085
LOG(TA)	2.38E+08	98556238	2.411810	0.0171
R-squared	0.135288			
Adjusted R ²	0.105264			
Durbin-Watson	1.846718			
F-statistic	4.505900			
Prob(F-statistic)	0.000760			

Table 5: Multiple regression analysis for manufacturing firms (NOI)

5.3.1.2. Multiple regression analysis - Return on Assets

The results in the Table 6 show that R square of model is .36 for return on assets which endorse that only 36% variation are explained by the explanatory variables of models. The 64% variations remain unexplained by explanatory variables. Value of R square is high as compare to net operating model, reason is that net operating income is component of income statement while return on assets is combination of balance sheet and income statement. The value of F statistics is 16.34 which are highly significant.

The coefficients of independent variables are highly significant except cash gap in days it implies that role of cash gap in determining liquidity has less importance as compare to current ratio. Market capitalization has highly significant positive relationship with return on assets, which shows that equity financing increases the profit of the firms.

The natural logarithm of sales and logarithm of total assets are used for size in the regression model as this transformation reduces the heteroskedasticity and influences of outliers in the regression model. Size is positively related to profitability and is significant which implies that larger size seems to favor the generation of profitability therefore larger firms are more profitable.

Variable	ROA			
	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.431911	5.900772	-0.412134	0.6809
CGS	-1.533252	1.009942	-1.518159	0.1312
CR	3.072256	0.853604	3.599158	0.0004

MC	1.39E-10	3.26E-11	4.267924	0.0000
LOG(SALES)	6.240899	1.109978	5.622542	0.0000
LOG(TA)	-5.941948	1.020034	-5.825243	0.0000
R-squared	0.362076			
Adjusted R ²	0.339926			
Durbin-Watson	0.922632			
F-statistic	16.34643			
Prob(F-statistic)	0.000000			

Table 6: Multiple regression analysis for manufacturing firms (ROA)

5.3.2. Regression analysis for merchandising firms

Liquidity and cash gaps may differ among industries and may depend on the prevailing economic conditions of countries. Sometimes traditions and the nature of business set the typical liquidity requirements and the cash gap in a given industry. Some industries have high levels of liquidity requirements and large cash gaps than others, while some may require low levels of liquidity and shorter or even negative cash gaps, which indicate their ability to obtain cost-free capital from their customers.

5.3.2.1. Multiple regression analysis – Net Operating Income

Table 7 shows multiple regression analysis of independent variables with dependent variable net operating income. The results show that R square of model is .32 for net operating income which endorse that only 32% variation are explained by the explanatory variables of model The 68% variations remains unexplained by independent variables. The value of F statistics is 8.87 which are significant.

Variable	NOI			
	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.29E+08	85463094	-6.191571	0.0000
CGS	-737753.7	7732341.	-0.095411	0.9242
CR	5218817.	6167419.	0.846191	0.3996
MC	-0.000244	0.000165	-1.485097	0.1409
LOG(SALES)	-1324915.	8604083.	-0.153987	0.8780
LOG(TA)	31895692	9952139.	3.204908	0.0018
R-squared	0.320593			
Adjusted R ²	0.284454			
Durbin-Watson	1.024573			
F-statistic	8.871178			
Prob(F-statistic)	0.000001			

Table 7: Multiple regression analysis for merchandising firms (NOI)

5.3.2.2. Multiple regression analysis - Return on Assets

Multiple regression analysis for merchandising industries with return on assets is shown in table 8. The

model results indicates the value of R square is 0.29 for return on assets which implies that only 29% variations in the dependent variable return on assets is explained by the independent variables of model .The value of F statistics is 7.72 which is significant at level of 1% .

Cash gap has negative insignificant relationship with return on assets in merchandising industries. The results show that with decrease in time length between cash paid and received the profitability of firm's increases. According to Gitman (2005), the chances of negative CCC are rare but non-manufacturing firms are more likely to have negative CCC than manufacturing firms since firms in these sectors carry small and fast selling inventories and often sell for cash. A study by Moss and Stine (1993) on retail firms revealed that firm's size is a factor in the length of its cash gap and a significant positive relationship exists between the cycle and the quick and current ratios. Other studies that empirically examined the relationship between profitability and liquidity showed that there exists a significant and negative relation between profitability and cash conversion cycles (Jose *et al.*, 1996 and Eljelly, 2004). Hutchison *et al.* (2007) studied 22,000 public limited firms and concluded there is direct correlation between shorter conversion cycle and higher profitability for 75% of industries.

All the variables except cash gap have positive and significant relationship with return on assets. Current ratio is a traditional measure used in model which has positive significant relationship with profitability. This shows that if firm has sufficient amount of liquid assets to meet its short term obligations its profitability increases and vice versa. All control variables have positive significant relationship with profitability except natural logarithm of total assets.

Variable	ROA			
	Coefficient	Std. Error	t-Statistic	Prob.
C	-14.55881	10.76617	-1.352273	0.1795
CGS	-0.900611	0.974078	-0.924578	0.3576
CR	1.962447	0.776938	2.525874	0.0132
MC	8.64E-11	2.07E-11	4.167450	0.0001
LOG(SALES)	2.410637	1.083895	2.224050	0.0285
LOG(TA)	-1.719906	1.253716	-1.371847	0.1734
R-squared	0.291283			
Adjusted R ²	0.253585			
Durbin-Watson	1.207441			
F-statistic	7.726800			
Prob(F-statistic)	0.000004			

Table 8: Multiple regression analysis for merchandising firms with return on assets

6. Conclusion

The primary objective of the current study is to investigate whether there is significant difference among manufacturing and merchandising industries with respect to liquidity and its relationship with Profitability. The findings depicted that merchandising firms are more likely to have negative CCC than manufacturing firms since firms in these sectors carry small and fast selling inventories and often sell for cash. The

results of the study suggest that manufacturing firms can decrease their cash gap by efficient inventory management, decrease inventory conversion cycle by quick sale, decrease average collection period by speeding receivables reception.

The limitations of the current research suggest that future studies by considering large sample size and relative analysis of Pakistan with develop markets would offer more insight regarding the liquidity management of firms and would be helpful to generalize the results.

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THE RELATIONSHIPS AMONG SELF-CONGRUITY, CELEBRITY ENDORSER'S CREDIBILITY AND PURCHASE INTENTION IN E-COMMERCE INDUSTRY

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Abstract

The purpose of this study is to investigate the relationship between celebrity endorsers' source credibility, self-congruity concept and consumer purchase intention in the Vietnam electronic commerce context by using data surveyed 223 Ho Chi Minh citizens who once saw an advertisement featuring celebrity endorsers of an electronic commerce company. Testing the proposed structural model by Structural Equation Modeling (SEM), the results confirm that there are other indicators that encourage a consumer to purchase products beside the major elements of source credibility model (attractiveness, expertise and trustworthiness). Self-congruity and its relationship with source credibility have considerable contribution to consumer purchase intention that were relatively overlooked in prior studies. Practically speaking, the results suggest the companies related to electronic commerce that apply endorser strategies to their marketing campaigns, importantly, should employ celebrities who have ability to embody and effectively transfer company brand image to their target customers.

Keywords: Advertising, Celebrity Endorsement, Consumer Attitude, Electronic Commerce, Key Opinion Leaders, Purchase Intention, Self-congruity, SEM, Source Credibility, Vietnam

1 Introduction

In the age of technology, the Internet has encompassed the entire trading process through electronic commerce platform. Electronic commerce (e-commerce), or online shopping, provides the consumers with the Internet-based shopping platforms, where they can search for information upon their needs and purchase products or services through online interaction with e-retailers. E-commerce has been

experiencing impressive growth and generating a lot of revenue for e-retailers. This has changed business patterns and drawn lots of attention from the marketers all over the world. According to eMarketer, in 2016, the number of worldwide online buyers was 1.52 billion and are forecast to grow up to 2.14 billion by 2021 (eMarketer, 2017). In addition, the global retail e-commerce sales in 2016 was 1.86 trillion US dollars and are expected to be more than doubled by 2021 (eMarketer, 2017).

According to digital market reports of eShopWorld (2017); We Are Social (2017) and Statista (2017), Vietnam B2C e-commerce market has been experiencing phenomenal growth in recent years. In particular, Vietnam e-commerce market value increased from 1.8 billion to 2.6 billion USD revenues between 2016 and January 2018, and this is expected to significantly increase to 4.3 billion dollars in 2022 with the annual growth rate 13.7% from 2018 to 2022. Regarding the number of digital buyers in Vietnam, there was 30.9 million online shoppers in 2015 while this figure is forecast to increase rapidly to 37.3 million by the end of 2018, and to 42 million by 2021. In addition, the proportion of Vietnamese online purchasers to total population is expected to reach 39% in 2018, up from 35% in 2017, and considerably increase to nearly 45% by 2022. Moreover, an average spending per e-commerce user is currently around 70 USD and expected to rise to 96 USD by 2021 (eShopWorld, 2017); (We Are Social, 2017); (Statista, 2017).

In 2017, the online shopping improvement in terms of the ease to find, delivery speed, price and payment method has encouraged many Vietnamese traditional buyers to purchase goods and services on-line compared to a year ago (Asia Plus Inc., 2017). In addition, it is reported that Vietnam online shopping market is currently dominated by Lazada, Tiki and Shopee (ibid). With the remarkable and impressive growth of e-commerce market in Vietnam, this is a profitable but competitive market for every e-retailers. In today's intense e-commerce marketplace, sponsoring celebrities as endorsers plays an important role on Vietnam e-commerce companies' marketing campaign. In various ways to promote company's brand and products, the use of celebrities as endorsers is one of the most effective and common tools in advertising strategy (Shrimp, 2000). Consumer purchase intention is strongly affected by endorsers with strong major credibility source (including attractiveness, trustworthiness, and expertise) (Ohanian, The impact of celebrity spokespersons perceived image on consumer intention to purchase, 1991).

As to celebrity endorsement, we acknowledge the needs of scientific evidence to Vietnam e-commerce marketplace to apply the most crucial indicators for celebrity endorser effectiveness due to the following reasons. First, there are risks of inappropriate celebrity endorser selection along with the huge amount of financials invested to celebrities. Second, big e-commerce companies in Vietnam currently employ the celebrity representatives just based on their popularity regardless other important factors for an effective endorsement, such as user-brand-endorser match. Third, prior research has confirmed the major effect of the credibility source, especially the attractiveness, on consumer purchase intention yet overlooked the relationship of source credibility and the consumer– product match. The match-up or congruity can influence consumer credibility perceptions towards ad elements, such as the featured spokesperson (Amos, Holmes, & Stratton, 2008).

The main purpose of this research is to expand the existing literature by integrating the product-consumer match into the source credibility model for explaining the celebrity endorsement effectiveness. Thus, this

study is aimed to investigate the integrated effect of celebrity endorsers' source credibility and self-congruity on consumer purchase intention in the Vietnam e-commerce context. Theoretically, the result of this paper should guide the practitioners to an appropriate celebrity endorser selection for e-commerce advertising campaigns in Vietnam marketplace. The findings of this research should also provide Vietnamese marketers and managers the insight of consumer attitudes and behaviours toward advertisements featuring celebrities in digital commerce environment.

2 Literature review

Celebrity endorsement is one of the most effective and common tools in advertising strategy (Shrimp, 2000). The celebrity endorsement's positive influences have been well discussed in prior studies. An advertisement can be easily recognized and attract attention of the consumers when featuring the celebrities (Choi & Rifon, 2012). Moreover, celebrities can generate consumers' favourable responses towards the advertisements, brand and products that they endorse for (Amos, Holmes, & Strutton, 2008); (Choi & Rifon, 2012). In addition, the popularity of celebrities can help companies to achieve brand recognition, brand recall (Friedman & Friedman, 1979), brand attitude and purchase intention, and even increase profits/sales and brand preference (Erdogan, Baker, & Tagg, Selecting celebrity endorsers: The practitioner's perspective, 2001), (Bower & Landreth, 2001), (Lafferty, Goldsmith, & Newell, 2002).

There have been many models developed for the appropriate celebrity endorser selection. Among these, source credibility is one of the most popular models.

2.1 Source credibility model

Celebrity serves as credible source to the consumer about the information of the products and brands being endorsed (Goldsmith, Lafferty, & Newell, 2000); (Magnini, Honeycutt, & Cross, 2008); (Yoon & Kim, 2015). In recent studies, the credibility perceptions of the celebrity from the consumer is labelled as "source credibility" including three key dimensions: attractiveness, trustworthiness, and expertise (Magnini, Honeycutt, & Cross, 2008); (Kim, Wang, & Ahn, 2013); (Kim, Lee, & Prideaux, 2014); (Amos, Holmes, & Strutton, 2008); (Han & Ki, 2010); (Ketchen, Adams, & Shook, 2008); (Till & Busler, 2000).

Source credibility initiated by the study of Hovland and Weiss (1951) (cited in Yoon & Kim, 2015) refers to a set of positive characteristics of a spokesperson that influence the consumer's perception of an expression (Ohanian, 1990). This initial model suggests two components that attribute to the consumer's credibility perceptions of the celebrity, including: expertise and trustworthiness (Amos, Holmes, & Strutton, 2008); (Yoon & Kim, 2015).

Expertise refers to which the celebrity's assertions are perceived to be valid that comes from the training, knowledge and experience they have in their field (Erdogan, 1999); (Amos, Holmes, & Strutton, 2008); (Lord & Putrevu, 2009); (Magnini, Honeycutt, & Cross, 2008). Previous study supported the expertise to be an indicator for source effectiveness (Ohanian, 1990). However, the consumer responses to the endorser's assertions vary in associated with the perceived level of expertise and consumers' agreement level to those assertions (Amos, Holmes, & Strutton, 2008). An endorser, who is believed to have expert knowledge, can enhance a consumer's agreement to his or her assertions (Ohanian, 1990). As a result, the

endorser's expertise is assessed to be more important than the attractiveness (Till & Busler, 1998). Another study also found that the expertise of the endorsers is less important when the endorsed product is non-technical (Erdogan, Baker, & Tagg, 2001). In our study, expertise characteristics will be referred to the level of expertise, experience, knowledge, qualification, and skill (Ohanian, 1990).

Trustworthiness is the extent to which the consumers are confidence about the source of information provided by a celebrity (Erdogan, 1999) in terms of integrity, honesty, and believability through advertising (Tripp, Jensen, & Carlson, 1994). A study confirmed when consumers perceive the celebrity endorser of a brand as trustworthy, they tend to have positive attitude to the brand image and be loyal to the brand (Kim, Lee, & Prideaux, 2014). In another study, an endorser who is perceived to be trustworthy can highly affect consumers to change attitude than perceived expertise (McGinnies & Ward, 1980). In addition, trustworthiness is also stated to highly contribute to the endorsement effectiveness (Chao, Wuhner, & Werani, 2005). In this study, trustworthiness will be referred as honesty, dependability, reliability, trustworthiness, and sincerity (Ohanian, 1990).

The extension of the source credibility is the source attractiveness, including a communicator's similarity, familiarity and likability to a recipient (Amos, Holmes, & Strutton, 2008). Attractiveness is the extent to which the celebrity is likeable and physically attractive to the consumer (Ohanian, 1990), such as appearance, beauty, outfits, and manners (Han & Ki, 2010); (Amos, Holmes, & Strutton, 2008); (Lord & Putrevu, 2009); (Gakhal & Senior, 2008). Attractiveness is confirmed to be one of the most crucial indicator of the endorser effectiveness (Chao, Wuhner, & Werani, 2005). A celebrity endorser who is perceived as physically attractive has a great influence on brand recall and purchase intention (Kahle & Homer, 1985). Prior study claimed that these physical images from the celebrities can be transferred to the products or brands being endorsed that affects consumer perceptions towards brand image or corporate credibility (Kim, Lee, & Prideaux, 2014). Attractiveness, in this study, will be referred to some main characteristics including attractiveness, elegance, beauty, classiness, and sexiness (Ohanian, 1990).

Essentially, many prior literatures claim that the credibility of the celebrity measured by expertise – trustworthiness – attractiveness makes the endorsement work (Amos, Holmes, & Strutton, 2008); (Lord & Putrevu, 2009); (Magnini, Honeycutt, & Cross, 2008); (Till & Busler, 2000); (Ohanian, 1990). Furthermore, source credibility model is recommended to be the best foundation to create an effective endorser (Stafford, Stafford, & Day, 2002). Studies on celebrity endorser effectiveness applied the source credibility model confirms that the celebrity's established credibility through their reputation and recognition has great impacts on consumer attitudes, behaviors and purchase intention (Choi & Rifon, 2012).

2.2 Self-congruity and celebrity credibility

How consumers view themselves influences their attitudes and behaviors. Self-concept or self-identity refers to the system of one's beliefs and perceptions of herself or himself, and of others' responses (Onkvisit & Shaw, 1987); (Bjerke & Polegato, 2006); (Choi & Rifon, 2012). Today's marketers are trying to gain an intuitive understanding about consumer behaviors and responses to advertising through consumer psychology. Studies reveal that consumers tend to purchase products that fit to how they

perceive themselves (Choi & Rifon, 2012); (Escalas & Bettman, 2003); (Yoon & Kim, 2015). Meanwhile, the idea of “congruity” is an individual’s perceived match or mismatch between two objects (Lin & Mattila, 2010); (Sirgy & Su, 2000). Self-congruity is a term that defines the match between the self-image of a consumer and the established image of a product or brand (Sirgy, Grewal, & T. Mangleburg, 2000); (Wilkins, Merrilees, & Herington, 2006); (Han & Back, 2008); (Wang, Yang, & Liu, 2009); (Mazodier & Merunka, 2012). For example, a study revealed that the congruence between consumer self-image and an online store image generates consumer trust and positive attitudes toward the online store, eventually the online purchase intention (Badrinarayanana, Becerraa, & Madhavaramb, 2014).

H1: Self-congruity will positively affect consumer purchase intention.

Congruity is an important factor that can affect a consumer evaluation towards an advertisement featuring celebrity because it is their early-phase perception when they first see the ad. This can influence consumer credibility perceptions towards ad elements, such as the featured spokesperson (Amos, Holmes, & Strutton, 2008). Similarly, the marketing effectiveness generated by consumer-brand congruity can be enhanced by the participation of a credible endorser (Malewicki, 2005).

According to meaning transfer model, brand personality can be carried by the endorsers and transferred to the consumers (McCracken, 1989), the idea of McCracken (1989) extends the determinant of the credibility for endorser effectiveness. He claimed which meanings the celebrities can make to the endorsement and how well these meanings are transferred to the products will determine the celebrity endorser effectiveness. That is, “a celebrity can be extremely credible to some people for certain meanings, but not at all credible to the others” (McCracken, 1989). It implies that the celebrity credibility can be established through the symbolic meanings successfully transferred, which can be explained by the congruity among celebrities, brand and consumers. Therefore, self-congruity is likely to serve as a determinant for 3 key elements that attribute to source credibility (expertise, trustworthiness, and attractiveness).

H2: Self-congruity will positively affect endorser’s source credibility.

H2a: Self-congruity will positively affect how consumers perceive an endorser’s attractiveness.

H2b: Self-congruity will positively affect how consumers perceive an endorser’s trustworthiness.

H2c: Self-congruity will positively affect how consumers perceive an endorser’s expertise.

2.3 Advertising response

Purchase intention indicates the consumers’ tendency to try a brand’s products (Spears & Singh, 2004) in the future or possibility to buy goods (Burton, Lichtenstein, Netemeyer, & Judith, 1998) . Moreover, purchase intention is also one of the significant behavioural elements, which contribute to consumer decision making process to actually buy a brand’s products and services (Notani, 1997). In addition, a prior research informed that a consumer’s purchase intention could be affected by their involvement,

favor or perception towards the advertised products, brands or ad’s elements (such as spokespersons) (Laroche, Kim, & Zhou, 1996).

A research has proved that the consumers would more engage positively to a highly credible endorser than to a low credible one (Gotlieb & Sarel, 1991). Therefore, it is likely that consumers’ purchase intention would be significantly influenced by the celebrity endorsers’ characteristics through source credibility’s elements (attractiveness, expertise, and trustworthiness), which then affects consumers’ credibility perceptions to the endorsers (Tripp, Jensen, & Carlson, 1994); (Wansink & Ray, 2000).

H3: Source credibility will positively affect consumers’ purchase intention.

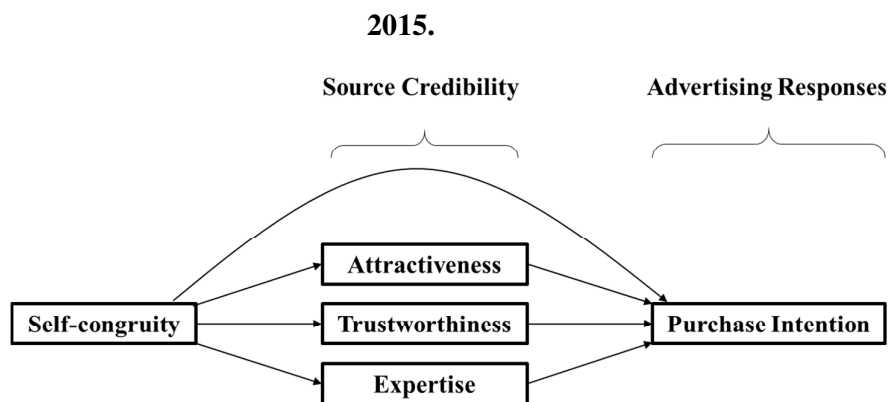
H3a: A celebrity endorser’s attractiveness will positively affect consumers’ purchase intention.

H3b: A celebrity endorser’s trustworthiness will positively affect consumers’ purchase intention.

H3c: A celebrity endorser’s expertise will positively affect consumers’ purchase intention.

Figure 1 shows the proposed structural model adapted from the research of Yoon & Kim (2015).

Figure 22: Proposed structural model adapted from Yoon & Kim,



3 Methodology

3.1 Research Method

This research used the quantitative research method, which applied the statistical, mathematical, and computational techniques. As a result, the study results would be more scientific and objective that provides the researchers powerful and reliable evidences for the completion of research objectives (Cooper & Schindler, 2006).

Questionnaire was mainly used to collect primary data. We communicated with respondents through self-managed survey.

3.2 Questionnaire Design

The research questionnaire was designed based on the items of factors measured self-congruity, source credibility, consumer attitudes towards the ad, and purchase intention as mentioned in the literature reviews. Each item was rated on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree).

Self-congruity's measurement items were adopted from (Sirgy, et al., 1997). Source credibility's three elements: expertise (five items), trustworthiness (five items) and attractiveness (five items) were referred from (Ohanian, 1990). Lastly, the purchase intention's four measurement items were adopted from (Kumar, Lee, & Kim, 2009).

In addition, to enrich the data quality, some further information regarding demographics (age, gender, education level and annual incomes), average spending, and e-commerce sites being frequently visited were also included in the questionnaire.

3.3 Sampling Method and Sample Size

Convenience sampling method has been used in this study. Because of time and man power limitation, this method was the most applicable type. It based on the ease to approach the respondents at places or by means of survey distribution. Moreover, the population in this study was relatively in a wide range, so convenience sampling was the most appropriate and accessible technique to catch the target respondents. Sample of this research was chosen from the population of Ho Chi Minh City, who once saw an e-commerce advertisement featuring the celebrities. The sample size was 223. Conventionally, the acceptable number of sample size follows the scale: 50 as very poor; 100 as poor; 200 as fair; 300 as good (Comery & Lee, 1992). Therefore, it is supposed to be the adequate number of respondents for this study for generating a good and reliable results.

3.4 Data Collection

In this research, survey was the instrument to collect data. There were two main way to distribute the surveys: via online survey and paper survey. Firstly, all of the Ho Chi Minh City citizens who, at least once, have watched an e-commerce advertisement featuring the celebrities were our target population. The data were collected from several public areas located in Ho Chi Minh City using structured survey form. Secondly, in e-commerce environment, the digital buyers are also the Internet users. Therefore, the questionnaire were also distributed on social media, where the respondents filled in and submitted online.

4 Results

4.1 Reliability Test and Exploratory Factor Analysis

In this study, the reliability test was initially conducted to test the measurement items for each factor in the model. In table 1, the Cronbach's alpha of all scales are relatively high (>0.7) and all item-total correlations of items are also fairly high (>0.6). Therefore, these scales are all acceptable.

Table 1 shows the results for the Exploratory Factor Analysis (EFA) that explored the dimensionality of factors. After running EFA four times for the independent variables, in this final round, KMO index is 0.912 (> 0.8) with Bartlett's test of sphericity Sig is .000, which satisfied EFA's condition. In addition, the components retained accounted for around 71% ($> 50\%$) of the total variance. For the dependent variable, KMO index is 0.757 with Bartlett's test of sphericity Sig is .000 and the total variance explained is 87%. Therefore, this factor analysis is absolutely appropriate.

Table 1: Summary of Independent and Dependent Variables with the Results of Reliability Test and EFA

Given Names	Number of Items		Cronbach's Alpha
	Before	After	
Self-Congruity (SELF)	4	4	0.878
Attractiveness (ATT)	5	5	0.863
Trustworthiness (TRU)*	5	5	0.947
Expertise (EXP)*	5	2	0.899
Purchase Intention (INT)	3	3	0.925

* *The retained measurement items after EFA of these two constructs joined together as a new construct named Trustworthiness (TRU).*

4.2 Confirmatory Factor Analysis

The results of Confirmatory Factor Analysis (CFA) confirm that the model fits well to the collected data, which was determined by Chi-square = 194.726, df = 113, Chi-square/df = 1.723 (<3), CFI = 0.972 (>0.9), GFI = 0.908 (>0.8), TLI = 0.966 (>0.9), and RMSEA = 0.057 (<0.06) and PCLOSE = 0.189 (>0.05) (Hair J. , Black, Babin, & Anderson, 2010); (Hair A. , 1998)

Then, we tested the composite reliability and average variance extracted (AVE) for each retained constructs, which also generated appropriate results with all composite reliability coefficients greater than 0.7 and AVEs, and AVE themselves greater than 0.5 shown in table 2.

Table 2: Results of Average Variance Extracted (AVE) and Composite Reliability Coefficients

<i>Latent constructs</i>	<i>N</i>	<i>Composite reliability</i>	<i>Average variance extracted</i>
SELF	223	0.879	0.645
ATT	223	0.853	0.592
TRU	223	0.935	0.711
INT	223	0.927	0.808

4.3 Testing the research model via Structural Equation Modelling (SEM)

Figure 2 shows results of SEM with Chi-square = 194.726, df = 113, Chisquare/df = 1.723 (<3), GFI = 0.908 (>0.8); TLI = 0.966 (>0.9), CFI = 0.972 (>0.95), RMSEA = 0.057 (<0.06), PCLOSE = 0.189 (>0.05) (Hair J. , Black, Babin, & Anderson, 2010); (Hair A., 1998).

In addition, the squared multiple correlation coefficient (R²) for the dependent variable, Purchase Intention (INT), is 0.634. It is estimated that this model can explain 63.4% of its variance.

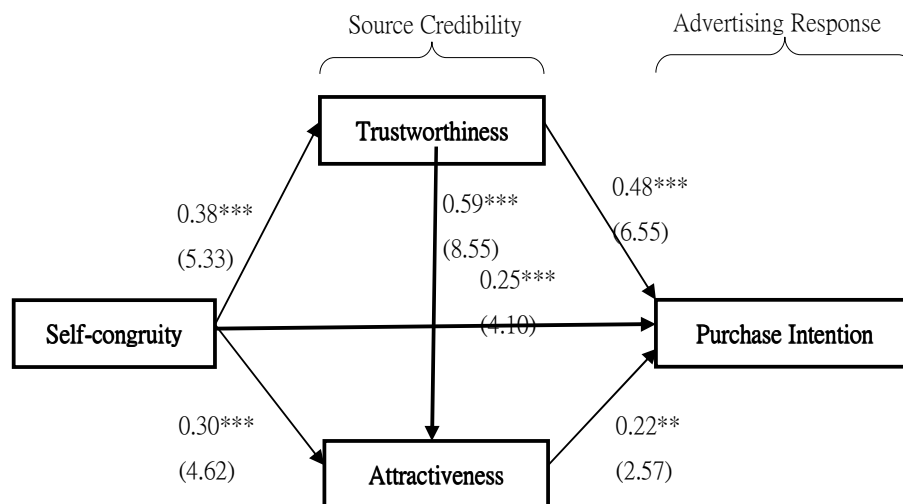


Figure 23: Results of Structural Model (standardized estimates)

Note: Values in parentheses indicate Critical Ratio values (unstandardized),

***** p-value < 0.001, ** p-value < 0.05**

5 Discussion and implications

The study's goal is to investigate the relationship between self-congruity, celebrity endorsers' source credibility and consumer purchase intention in the context of Vietnam e-commerce market. Some interesting findings have been generated as a strategic suggestion for the celebrity endorser effectiveness of Vietnam e-commerce companies.

First, we confirm that self-congruity directly contributes to enhance consumers' purchase intention (H1: $\beta = 0.25$, $p < 0.001$). Therefore, the Hypothesis 1 is supported. This finding also supports the prior research outcomes by (Choi & Rifon, 2012), (Escalas & Bettman, 2003). Practically speaking, if an e-commerce brand image or e-shopping fit their self-image, they will have tendency to purchase products on that e-commerce website.

Second, self-congruity is confirmed to significantly impact two out of three components of source credibility, the attractiveness (H2a: $\beta = 0.30$, $p < 0.001$) and trustworthiness (H2b: $\beta = 0.38$, $p < 0.001$), which highly affects consumer purchase intention (H3a: $\beta = 0.22$, $p < 0.05$; and H3b: $\beta = 0.48$, $p < 0.001$; respectively). Specifically, when consumers find an e-retail brand image or that shopping on e-commerce platforms fits their self-image, then they will find the celebrity endorser physically attractive and trustworthy that will lead to their intention to purchase products on this e-commerce websites. This finding is also confirmed by the previous studies. Accordingly, the attractiveness is one of the most crucial indicator of the endorser effectiveness (Chao, Wuhrer, & Werani, 2005), and a celebrity endorser who is perceived as physically attractive has a great influence on brand recall and purchase intention (Kahle & Homer, 1985). In addition, Therefore, this result support evidence that self-congruity does influence a consumer's perception of the spokesperson's credibility, which then can lead to the purchase intention.

Third, we find out the correlating effect within the source credibility. In particular, the trustworthiness can

significantly impact the attractiveness ($\beta = 0.59$, $p < 0.001$). Practically speaking, given that consumers perceives e-shopping on an e-commerce platform fits well with them, if consumers find the celebrity endorser trustworthy, it is much more likely that they will find that e-commerce site's celebrity endorser physically attractive. Eventually, this will highly encourage them to purchase products on that site.

According to these results, there is no doubt that this study can point out some interesting findings yet being overlooked in prior research. These results confirm that there is an initiator, the self-congruity, which contributes to the consumer decision making process to purchase products; beside the major role of the source credibility including attractiveness, trustworthiness and expertise, which was highly rated in some previous studies. Self-congruity and its relationship with source credibility do have considerable encouragement to consumer purchase intention, which were relatively overlooked.

By filling this gap, our study provides contribution to the marketing literature on the self-congruity effects. In particular, these research findings can contribute to Vietnam e-commerce market in terms of how to select an appropriate celebrity endorser and how Vietnamese e-shoppers respond to the advertising with celebrity endorsement.

From a strategic aspect, if e-commerce marketers plan to conduct a marketing campaign using endorser strategies, importantly, they should employ celebrities who have ability to embody and effectively transfer e-commerce company brand image to the company's target customers. In addition, the featured celebrity endorser in an ad should be the one who are highly trusted and perceived to be attracted by the target consumers. Following this, the ad will catch more attention from the target audiences and enhance the tendency of generating positive behavioural attitudes, which will lead to the purchase intention. Since the advertising is aimed to convince more customers to purchase more products advertised (Kim, Lee, & Park, 2014), the more purchase intention the consumers have, the higher tendency the consumers make an actual purchase to those products according to Kalwani and Silk (1982) and Notani (1997) (cited in Yoon & Kim, 2015).

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TRADITIONAL MARKET MANAGEMENT MODEL-BASED PUBLIC PARTICIPATION: AN EMPIRICAL STUDIES IN INDONESIA

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Abstract

The study of traditional market-based market management model is aimed at knowing and analyzing the traditional market-based management of participation and public input in policy making. This research in various traditional market in Indonesia. In this research model, findings (1) problems that occur in the management of the market caused by technical problems and non technical. These problems will be anticipated by good market management models such as management autonomy, integrated management systems and maximizing market revenues, (2) market management models based on community participation, policy making in the management of traditional markets derived from governments, academics and traders through inputs and participation are permissible under existing regulations and important role for government policy to accepted and applied, and (3) the management of a good traditional market in the digital age requires a sustainable technology role and in accordance with existing information technology developments.

Keywords: management model, traditional market, community participation

INTRODUCTION

The globalization era in economic sector in particular trade marked the emergence of the modern world at variety of stores. The modern shop is managed with a more modern concept of reducing the presence of traditional markets (Suryadharma, 2011; Setyowati & Gunawan, 2013). The presence of modern markets, especially supermarkets and hypermarkets, is considered to have been cornering the existence of traditional markets in urban areas. In Indonesia, there are 13,450 traditional markets with about 12.6 million small traders (Kompas, 2006). The results of a study by A.C. Nielsen, the market in Indonesia grew 31.4% a year, whereas traditional markets shrink 8% per year. If this condition remains left, thousands even millions of traders will lose their livelihood. Traditional markets would probably sinking along with the development of the retail world is currently dominated by modern market (R&D, 2012).

The presence of modern retailers on consumers from the middle onwards, when it became an alternative to the more traditional markets are identical to seedy market conditions, with the look and quality of bad, as well as lower selling prices and system of bargaining conventional (Sandra, 2012;

Setyowati & Gunawan, 2013). The effort to balance the market position of traditional with modern markets has not concretely done as there is no policy that supports traditional markets, for example in terms of purchasing agricultural products there is no subsidy from the government so that the products that go into traditional markets compete in terms of quality to products that go into modern market (Sunanto, 2012).

The current traditional traders competitive by modern market in terms of revenue modern market such as supermarkets, stores, department stores, etc. (Sunanto, 2010), Besides being able to sell goods with cheaper price, place more comfortable because of its social and public facilities are met, so that more attractive buyer (Suryadarma, 2011). Due to the high market prices result revitalization, many traders who used to have several stalls to sell, forced the remaining one, to close down the stalls, purchasing the adjustment is at least 30% of total selling price (Paskarina et. al., 2007). Based on the above, then the government needs to develop and implement government policy with regard to proposals, community participation to improve the management of traditional markets. One of them through the legal, policy and community participation. The problems that emerged is how the laws of country with system of those policies that had a common, abstract and comes to excise can be received directed to community, especially order of local community of a country or area (Tanya, 2010). Therefore it is necessary to community participation in the development management model traditional markets in Indonesia.

METHOD

The methodology was used this research and development who all levels different research methods. For a population is traditional markets in Indonesia. To the sample is traditional markets that maintained by the government regions in Surakarta, Balikpapan and Mataram. Thus has the decree in the regulation of Indonesia with the norm, criteria traditional market management and procedures.

This was done in the sample collection technique survey the sampling method of collecting samples was in proportion, in accordance with procedures research will be done. The collection of data by questionnaire and an interview or a question as well as answer session.

RESULTS AND DISCUSSION

Findings Problems in Traditional Markets

The research be done about model traditional market management at market in Indonesia. The development of marketplace is basically to meet basic needs the community as consumers or object the development of marketplace. The implementation of markets themselves of needed a management good governance which for the sustainability of markets themselves. Professional management is expected to keep sustainability market with an increase in competitiveness of traditional markets with modern markets that is getting expanded broad to region so will give satisfaction good service on community.

Many of the other problems that occurs at traditional markets in Indonesia is: (1) going on of changes in regulations both vertically and horizontally that deals with the management of traditional markets, (2) the realization physical (acquisition of land, utilization and expansion of land) as well as non physical (recipe for disaster, the financial situation and trading of activities, psychological traders and

continuation of activity trading) , (3) arrangement of the zoning of market, (4) obstacles in publicly listed financial services company and income from market services fees retribution are who do not as targeted therefore the budget, (5) changes in the market class, (6) problems that had occurred a means of market in a working meeting with a principal vehicle and the supporting for infrastructure, (7) deployment of traders , (8) the forest law enforcement governance found guilty of violation in an orderly manner to market, (9) waste disposal and market cleanliness, (10) connection with management under this category consist of market to build character and psychological traders, trade on line , (11) the financing of capital and (12) to technical problem the three and contacting other. To overcome cases , there should have been the role of government to realize management of good market , then required the principles in a market management of them (Arisan Barwani, 2016):

Autonomy Management

Their authority under regional autonomy the local government to can directs the command who are mandatory the government. Under regional autonomy owned, market managers having greater autonomy in managing its market. Through autonomy, market managers more defenseless of implementing and activities in accordance with market needs, traders, community and various potentials.

Management in autonomy means that its unit market being able to decide own problems arise in market with the best solution, and they know the most what is best for its market. The restructuring the management in market management support by Kim, Lee and Ahn (2004) and Murshid (2011) that in traditional markets need to improvement management, facilities and infrastructure to do revitalization toward modern.

Integrated Management Systems

Governance is one of the most important element in a market for good. The market must be managed with integrated management in which all management aspects of integrated market in one system. All market management system it is requisite professional management. Murshid (2011) and Kim et al. (2004) that in a market management need management systems integration , technology, good market infrastructure and other in challenges. It can not be managed in a separate one part with another part.

The market manager should integrated with financial management market, especially in terms of management of parking , planning , finance operational and care. In terms of management parking lot own resources must be integrated to needs of workers on every part and integrated with financial management market in payroll and needs the cost to development of employees , management cleanliness in order embodiment market clean will not succeed in absence of cooperation between part cleanliness with human resources and finance division, especially in providing labor required in finance the operational cleanliness. Market management integrated are key to creation of professional management market.

Income Maximize

The sustainability of income to market determined by income from operational of market. The

income market operational to fund market can be obtained from number of sources. Maximize income market is a the requirement for market managers to keep the persistence of the markets themselves. In addition to seek out new sources of income market , the management also must be able to minimize leakage income that often occurs in the market operational. The increase in income in the traditional market through the implementation of payment, system and procedures for payment of good commercial and the system of market (Murshid, 2011; Kim et al., 2004).

Management Model Based Public Participation

In the above model, the role of government, market and traders. These three components form a model form. In more details, that the shape of model has yet to implement relationships or helix synergy of governments, universities, and industry will further give the certainty of availability of innovation, good product or business processes (Malik, 2015), then the role of three elements, namely triple helix.

The role of academics who were a part of elaborated in scholar the form of role of promised to supply: the role of education should be aimed at encourage the creative ways to cope with generation been attained by Indonesia in patterns of thought that supports the other financial markets grow and his work in the management of market. The role of research was being conducted to give or suggestions about a model policy for developing the pattern of traditional and absence of mount of money needed, as well as produce a policy of supporting how it works and use of resources being efficient as well as make the most powerful industry creative ways to cope with national average which competitive since it creates substantial.

The role of business, a business actor represents businessmen, investors and creators of new technologies, and consumer: (a) creator, as a centre of excellence of creator of products and services, new markets which could absorb the resulting products and services, as well as the creator of ground work for creative individuals or other supporting individuals. (b) Forming communities and creative entrepreneur, i.e. as a public space that forms the motorcycle scene of sharing thoughts, mentoring can hone creativity in doing business, business coaching or management training the management of market.

The role of governments, the role of key government in development of trade is (a) catalyst and facilitators as well as advocacy gives support, challenges and encouragement, that ideas a business engaged a level of competence higher. The support can be commitment of government to use force his political with well-proportioned and providing services administration public with good besides support financial assistance, incentives or protection, (b) regulator, that produces policies related to people, industry, institutions, intermediation and resources and technology. The government to speed up the market traditional if government able to make a policy that creating a business climate that conducive to trade, (c) consumer , investors even the government as investors should can empower asset as productive in scope trading and traditional market management and responsible for investment in infrastructure industry , (d) urban planner. The creativity going to grow fertile with cities having climate and business potential. That economic development run well we need to created potential and competitiveness areas that could make a magnet that appealing to individual to open a business in traditional markets in Indonesia.

Mubyarto (1997) that defines participation as a willingness to help the success of any program according to ability of every person without means their self interest. Participation in the study is done by way of :

1. People can form opinions through the mass media that people really need the welfare traders and public involving.
2. The advice problems faced by sending information to local governments by phone or SMS by showing really in the field, that brings media technology.
3. The critics of public policy issued local governments impartial public interest.
4. The participation of could also happen due to act of courtesy and provide moral support to framers of the form of clear policies. This stage the removal the community had to play a more active role control the creation of whether the input of factors can mean that community accommodated or not.

In addition to funding community participation in public policy, the community need play their part in carrying out public policy that has been determined by government. The form of the participation was its industrial activity among others: the form of clear policies levies was put into effect and management of the prices of other commodities in the form of levies or financing that was other.

Findings of utilization of technology the digital era

The process of growth in middle of bankruptcy moslem in economic trade traditional markets influenced by factors of economy and non economy classes. Economic factors that influence the development and economic growth is the source of natural resources , human resources which are needed, a larger resident accumulation of capital as well as quality of human capital are managerial who organize and regulate production factor . Other economic factors other than a fuel that supports of factors the production of is the progression of technology. For the majority of economists , the progression of technology regarded as the source of most important and determine in process of development and economic growth. Technology are how of factors the production of combined to bring about a objectives the production.

In the development of this market management , the role of technology is needed to improve the promotion , market development, regulations and means of participation on the government and regional governments. This finding supports by Guo and Sun (2004) electronic technology that rules will reduce production costs, distribution and need collaboration to challenge of global market especially traditional markets, to make use of the opportunities or fissure . Market traders now need to understand about the technology, due to the influence of global trade.

Conclusions

1. That the problem occurring in market management caused by technical issues and non technical. These problems would can be anticipated with a model market management in the form of both autonomy management, integrated management systems and maximize income market.

2. That management model of those markets based on public participation, is the policy in traditional market management come from the government, academics and traders through inputs and participation allowed according to the rules. The contribution of public participation provide a leadership role important to do so that government policy acceptable and applied.
3. That of traditional market management both in the digital era need the sustainable the role of technology and according to the development of information technology.

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IMPACT OF CAPITAL STRUCTURE ON FIRMS PERFORMANCE: A STUDY ON KARACHI STOCK EXCHANGE (KSE) LISTED FIRMS IN PAKISTAN

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ABSTRACT

The purpose of this study is to investigate Debt to Equity ratio to determine firm performance of Pakistani companies listed in Chemical, Food and Care products, Cement, Pharmaceutical, Auto assembler and Textile sector. The research done on 50 companies listed under Karachi Stock exchange covered the period of 2010-2014, total observations of 250 firms-years. The independent variable is Debt to Equity and dependent variables are Size, Earnings per Share, Return on Assets, Return on Equity and Marketing. The research employed Descriptive Statistics, Pearson correlation coefficient and multiple linear regressions and the findings shows Earnings per share, Return on Equity and Return on Assets are significantly correlated to Debt to Equity ratio. While Debt to equity ratio founds a significant impact on Size and Return on Assets. Furthermore, it is recommended that other firm specific factors can also be used with a more wider time span like Dividends, Taxes etc to gauge the impact and end with a more accurate outcome. This Study will eventually benefit the finance managers to define an optimal capital structure and also the research community by providing new knowledge regarding the impacts of capital structure. Though, other major economies can also be examined with different other industries to check the deviation of capital structure formation.

Key words: Capital Structure, Firm Performance, ROA, ROE, EPS, Firm Size, Marketing, KSE,

1. INTRODUCTION

This study is conducted to identify and explore the firm-specific factors of capital structure which impacts on performance in Pakistan and the research is carried out on five major contributing sectors registered in Karachi stock exchange (KSE). Pharmaceutical, Cement, Textile, Consumer goods, Automobile Industry and Chemicals are considered to be most prominent contributors to the Pakistan economy.

Capital Structure has been always a difficult topic to examine after the research conducted by Modigliani

and Miller (Tailab, 2014). A significant number of studies have been conducted to address the impact of Capital Structure on Firm's performance in developed as well as developing countries (Ahmad, Abdullah and Roslan, 2012; Nirajini and Priya, 2013; Ebrati, Emadi, Balasang and Safari, 2013; Chieh, 2013; Tailab, 2014; David and Olorunfemi, 2010; Abbadi and Rub, 2012; Ananiadis and Varsakelis, 2008; Goyal, 2013; Alsawalhah, 2012; Chowdhury and Chowdhury, 2010; Pouraghajan and Malekian, 2012 and Salim and Yadav, 2012). As seeing the past studies the mainly focused sectors by researchers are Power, Pharmaceutical, food and industrial sectors (Chowdhury and Chowdhury, 2010); Alsawalhah, 2012; Pouraghajan and Malekian, 2012; Tailab, 2014; Ebrati, Emadi, Balasang and Safari, 2013 and Ahmad, Abdullah and Roslan, (2012).

The researches carried out in Pakistan only enlighten some sectors which are not sufficient to make financial decision because of insufficient research proves to support the variables used in Pakistan and those findings cannot represents the entire sectors of the country because of distinctiveness of industry (Mujahid and Akhtar, 2014; Amara and Aziz, 2014; Bokhari and Khan, 2013; Hasan and Din, 2012; Mumtaz, Rauf, Ahmed and Noreen, 2013 and Javed, Younas and Imran, 2014).

Decisions regarding capital structure are always vital in Business corporations as they hold definite impacts on firm's value (Tongkong, 2012). Inefficient financial decisions to finance its operations may lead to liquidation, financial distress and bankruptcy, although companies with high leverage should decide an optimal capital structure to cut off its cost (Suhaila and Mahmood, 2008). Further, heavily relying on equity finance may lead in the loss of growth opportunities and liquidity issues within the company (Javed, Younas and Imran, 2014).

1.1 Research Objectives:

- To identify and examine the impact of capital structure on ROE
- To identify and examine the impact of capital structure on ROA
- To identify and examine the impact of capital structure on EPS
- To identify and examine the impact of capital structure on Marketing
- To identify and examine the impact of capital structure on firm Size

2.0 LITERATURE REVIEW

The term Capital Structure according to Weston and Brigham (1979) is referred as the financing of a company represented by Long term debt, net worth and preferred stock. Furthermore, Van Horne and Wachowicz (1995) define capital structure as a mixture of company's permanent long term financing represented by preferred stock, debt and common stock equity. According to(Suhaila and Mahmood, 2008), the capital structure of a company is a mixture of debt and finance which includes preference stocks and Equity as well as the reference as the firm's long term financing blends (Goyal, 2013).

Capital Structure has been widely discuss theoretically in past. Most renounce amongst them is the

Modigliani and Miller theorem which is based on certain assumptions like frictionless and perfect markets, absence of transaction cost, no default risk or taxation and both investors and customers can borrow at the similar interest rate (Afrasiabishani, Ahmadinia and Hesami, 2012). Trade-Off Theory is another crucial theory for modeling capital structure. The company decides to find the set of investments which will be more worthy than others. Generally, conventionally sometimes marginal cost and marginal benefits are compared with each solutions based on the preference of the stakeholders (Afrasiabishani, Ahmadinia and Hesami, 2012). Furthermore, the Pecking Order Theory suggests that the internal sources of funds will come out with less care of finance and the share price. Hence, it was investigated in numerous literatures and was concluded that Pecking Order Theory receives overwhelming support by companies that generally faces serious adverse adopting issues (Frank and Goyal, 2009). In context of capital structure decision lastly agency cost is one of the crucial areas, which is important for management, shareholders, creditors and employees (Xhaferi and Xhaferi, 2015). Generally, the agency cost problem arises because of conflict of interest of stakeholders like managers, creditors and employees with shareholders (Afrasiabishani, Ahmadinia and Hesami, 2012).

Hence numerous scholars have addressed capital structure recently seeing to the significance of the issue to the present world. Salim and Yadav (2012) make a research to investigate the affiliation between Capital Structure and Firm's performance using a sample of 237 Malaysian Companies listed in Bursa Malaysia within a time span of 1995-2011. The findings show that firm's performance, which is measured through return on equity, return on Asset and earnings per share, and has significantly negative relationship with short term debt, total debt and long term debt as independent variables. In addition, a positive relationship is found between performance and growth for all the sectors. Moreover, Tobin's Q states that a significantly positive relationship is found between short term and long term debt and it also indicates that the total debt has significant negative relationship with the performance of the firm (Salim and Yadav, 2012).

Manawaduge, Zoysa, Chowdhury and Chandarakumara (2011) makes a study which represents an empirical analysis on how a capital structure impact on firm performance under the context of an emerging market - Sri Lanka.. The finding shows that most of the Sri Lankan companies finance their operations through short term debt capital as unlike long term debt capital and presents healthy argument that the firm's performance has negatively affected through the use of debt capital (Manawaduge, Zoysa, Chowdhury and Chandarakumara, 2011).

Paper prepared by Tailab (2014) empirically intends to examine the impact of capital Structure on financial performance of a firm in 30 energy American companies were taken for a period of nine years from 2005-2013 was taken into consideration and was been tested through Smart PLS (Partial Least Square) version 3 and Multiple regression Models. The findings of the study show that the total debt has a significant negative impact on ROA and ROE. Although even size in terms of sales puts significant negative impact on Return on Equity in American Companies. Though, a short term debt places a positive impact on ROE. An insignificant impact was been seen between debt to equity, long term debt, and size in

context of profitability and total assets (Tailab, 2014).

Goyal (2013) conducts a research to mainly examine the impact of Capital Structure on the profitability of the public sector banks in India listed in the national stock exchange within a time period of 2008 to 2012. The sample for this study was been tested through regression analysis which has been used for testing the relationship between Return on Equity, Return on Assets and Earnings per Share with Capital Structure. Although the findings of the study shows that there is a significant positive relationship between profitability and short term debt as measured with the accounting gauges like Return on Equity, Return on Assets and Earnings Per Share. Furthermore, the researcher suggest that with addressing a wider range of period and using more accounting gauges, it will help out to be a more perfect outcome (Goyal,2013)

2.4 Conceptual Framework:

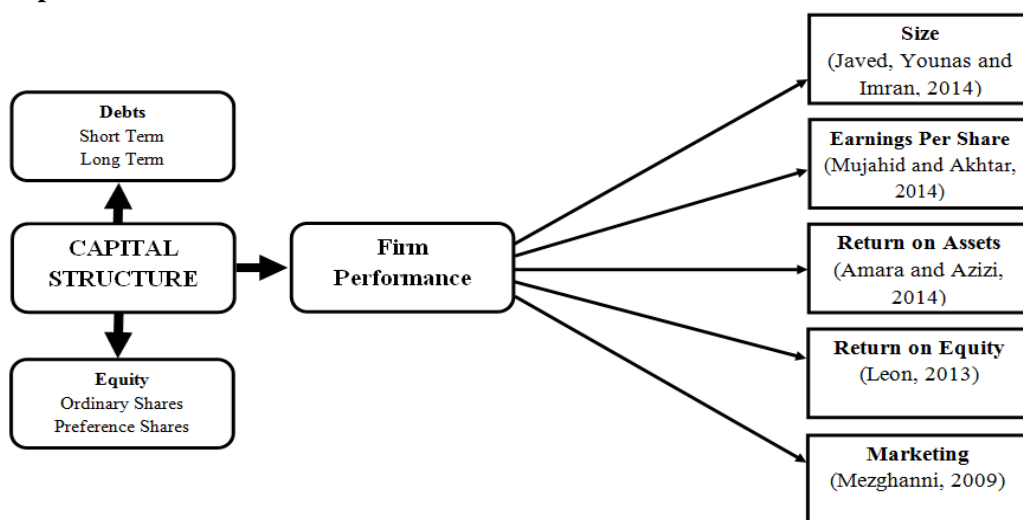


Figure no. 2: Conceptual Framework of the Capital Structure

Firm size expected to be a crucial indicator for measuring firm performance. Debt to equity ratio having a positive impact on firm size as larger firms play better than smaller firms by economies of scale and are flexible through economic recessions, driving to efficient performance including both market return and accounting profit (Goyal, 2013). Numerous empirical studies investigates the relationship of Debt to Equity ratio on firm's performance and found it significantly positive like Gleason et al., (2000) and Zeitun and Tian (2007), while other handful of studies like Tzelepis and Skuras (2004), found a positive relationship but no significant impact of Capital structure on financial performance. Therefore we hypothesis

H1: Debt to equity ratio has a significant impact on size.

EPS measure the profitability of a company from the view of the shareholders: it is a measure of how much profit a company has generated in a given period after tax, divided by the number of shares (Tudose, 2012). Earnings per share (EPS) measure shareholders' profitability by revealing how much profit a share generates (Shahveisi et al, 2006). Therefore we hypothesis

H2: Debt to equity ratio has a significant impact on EPS.

Hall and Weiss (1967) consider "Return on Assets" as the measure to gauge performance to examine the relationship between profitability and size (Dogan, 2013). Return on Assets is often used as a technique to measure the rate of return on total assets after the deduction of expenses and taxes (Heikal et al, 2001). Investors would like the company to value the return on assets as high as the companies with a higher level of corporate profits which is greater than the return on assets while it is low (Heikal et al, 2001). Therefore we hypothesis

H3: Debt to equity ratio has a significant impact on ROA.

According to Goyal (2013) Return on equity is used to measure the firm's profitability through revealing how much profit a firm makes with money pooled by shareholders. In addition, return on equity is another profitability ratio which is chosen as they are vital accounting based and broadly accepted measures of financial performance which is been used by Habib and Victor (1991), Margaritis and Psillaki (2008), Zeitun and Tian (2007), Abbadi and Rub (2012) and Taani (2013). They consider ROE as a vital proxy for their studies. Therefore we hypothesis

H4: Debt to equity ratio has a significant impact on ROE.

Marketing is significantly correlated with capital structure decisions (OECD, 2008). It is observed that companies with more reliance on debt finance spent more on advertising cost as per to meet the loan requirements. Furthermore, Romer (1990) and Lucus (1988) admired the contribution of marketing activities in backing the firm performance (Zeitun and Tian, 2007). Therefore we hypothesis

H5: Debt to equity ratio has a significant impact on Marketing.

3. RESEARCH DESIGN AND METHODOLOGY

3.1 Research design:

This study will be a descriptive explanatory research as it is aimed to describe the characteristics of the main two components of the research topic which makes it descriptive and later would be gauging the impact of the independent variables on dependent variable which makes it fall in explanatory design.

3.2 Research Methodology:

This research is a Quantitative study as it is based on Statistical data obtained from annual reports of the sample companies, Quade (1970) supported quantitative approach because it supports hypothesis and allows for collecting wide range of data which will help my research to answer the research question.

3.3 Data Collection Methods:

Since the data for this study will be collected from the published annual reports of the sample companies, it will be the only source used for this study .Furthermore; Panel data method is adapted for this study. Panel Data is defined as a dataset in which the approach of entities is observed over time (Baltagi, 1997).

3.4 Population and sample size:

The total population for this study is 129 companies registered in 6 sectors of Karachi stock exchange which will be studied within the time span of 2010-2014. Hence the sample size chose for this study is 50 companies from all 6 sectors, selected randomly as shown in Table 2 below:

Table 2: Illustration of Proportion Sampling

No.	Sectors	Total Companies	Selected Companies
1.	Cement	21	8
2.	Food and Care Products	19	10
3.	Chemical	26	10
4.	Pharmaceuticals	9	7
5.	Textile Composite	41	8
6.	Automobile Assemblers	13	7
	<u>Total</u>	<u>129</u>	<u>50</u>

Moreover the sampling technique used for this research is convenience sampling. Hence, convenience sampling was most appropriate to my research as the financial data was not available for most of the companies registered in Karachi Stock Exchange so the companies were selected on the criteria of availability of data for 5 years which was required for this study.

3.5 Accessibility:

The research would extract data from the published annual reports of the sample companies which are conveniently available from the official websites.

3.6 Ethical Issues:

This research is entirely entitled to secondary data which do not lead to any encounter with human behavior, the ethical issues lie with this research are quite less. Only the issues that should be taken into consideration are copyrights and legal access to the published data which will be overcome through proper citation of the facts.

3.7 Data Analysis Methods:

Data analysis is referred as a procedure of systematically applying logical or statistical techniques to evaluate, recap, describe or illustrate data (Dey, 1993). The three data analysis methods are engaged for these studies are Regression, Correlation and Descriptive Statistics using E-views software.

4. DATA ANALYSIS AND FINDINGS

4.1 Descriptive statistics:

	N	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
	<i>Statistics</i>	<i>Statistics</i>	<i>Statistics</i>	<i>Statistics</i>	<i>Statistics</i>	<i>Statistics</i>	<i>Statistics</i>
		%	%	%	%	%	%
Debt Equity	250	3.160	622.200	129.134	102.270	1.695	6.649
Size	250	1.450	352.280	141.851	76.462	0.393	2.710
EPS	250	-59.480	190.300	18.174	29.795	2.943	13.858
ROA	250	-27.450	43.610	8.631	9.002	0.687	6.199
ROE	250	-95.530	223.150	17.221	24.933	3.297	27.428
Marketing	250	0.001	17.240	2.539	3.665	1.646	5.270

Table 3: Descriptive Statistics

According to Table 3, it was found that the five major playing sectors of Karachi Stock Exchange experienced an average of Rs.129 debts with a standard deviation of 102.270. This shows the mean value does not reflect the overall industry mean since the SD is higher than 100%. The companies of the following sectors enjoy large size as the average mean is 141.851 and the standard deviation is 76.462. The companies lie in the following sectors of Karachi Stock Exchange earns 18 rupees of earning for per share and the standard deviation is 29.795. Furthermore, the companies enjoy an 8.631% return on their deployed assets and the standard deviation is 9.002. The sample companies in the chosen industries experiences an average return of 17.221% on their issued equity and the standard deviation is 24.933. Lastly, the sample companies of the chosen sectors are spending on marketing of 2.5% average of their net sales and the standard deviation is 3.665.

4.3 Correlation analysis:

Table 4: Correlation Analysis

	Debt to Equity	Size	EPS	ROA	ROE	Marketing
Debt Equity	1					

Size	-0.107124	1				
	0.091	---				
EPS	0.148589	0.399484	1			
	0.0187	0	---			
ROA	0.150823	0.482369	0.626513	1		
	0.017	0	0	---		
ROE	0.143262	0.465907	0.706628	0.819916	1	
	0.0235	0	0	0	---	
Marketing	0.020901	0.28655	0.246027	0.171988	0.284819	1
	0.7423	0	0.0001	0.0064	0	---

*Correlation is significant at the 0.05 level

Interpreting from Table 4, it shows that the debt to equity is negatively correlated with size and the strength of the relationship between two variables is weak with -0.107. The size variable is insignificant with probability of 0.091 which is higher than the scale of 0.05. However, research findings are similar to the findings of Ahmad, Abdullah and Roslan (2012), Javed, Younas and Imran (2014)

The relationship between debt to equity ratio and EPS is positively correlated and the strength of the relationship between two variables is strong with 0.148. The Earnings per share variable is significant with probability of 0.018 which is lower than the scale of 0.05. . Therefore, this result of my study is similar to the findings of Mujahid and Akhtar (2014), Goyal (2013) and Chowdhury and Chowdhury (2010).

The relationship between debt to equity ratio and ROA is negatively correlated and the strength of the relationship between two variables is weak with -0.150. The Return on Assets variable is significant with probability of 0.017 which is lower than the scale of 0.05. However, Ebrati, Emadi, Balasang and Safari (2013)

The relationship between debt to equity ratio and ROE is positively correlated and the strength of the relationship between two variables is strong with 0.143. The Return on Equity variable is significant with probability of 0.023 which is lower than the scale of 0.05. However, the findings of this study are similar to Musiega (2013).

The relationship between Debt to equity ratio and marketing is positively correlated and the strength of the relationship between two variables is weak with 0.0209. The Marketing variable is insignificant with probability of 0.742 which is higher than the scale of 0.05.

4.4 Regression Analysis:

Table 5: Regression Analysis

	Size	EPS	ROA	ROE	Marketing
Constant	155.7622	18.03732	12.07295	15.42592	2.579535
Standardized Beta Coefficient	-0.107719	0.001061	-0.02665	0.013902	-0.00031
Std. Error	0.03261	0.023177	0.009662	0.023028	0.002396
T-Values	-3.303261	0.045782	-2.75834	0.603687	-0.12789
P-Values (P<0.05)	0.0011	0.9635	0.0064	0.5467	0.8984
R-Square	0.944845	0.816524	0.650684	0.741343	0.86976
Adjusted R-Square	0.930986	0.770424	0.562917	0.676353	0.837036
F-Statistics	68.17978	17.71217	7.41371	11.40715	26.57894
F-Significance	0	0	0	0	0
Durbin Watson	1.970663	1.457207	2.037883	1.993597	1.383713

*Correlation is significant at the 0.05 level

4.5 Impact of Debt and Equity ratio on Size:

$$\text{Size} = \text{CONSTANT} + \beta_1 \text{Debt_to_Equity}$$

$$\text{Size} = 155.7625 - 0.107(\text{Debt_to_equity})$$

According to Table 5, the model shows that R square is 0.944 which indicates that only 94.48% of the dependent variable (Size) is elaborated by Independent variable (Debt to Equity Ratio). Nonetheless, 5.52% of the dependent variables is being explained and addresses by other factors which are not considered in this study. The adjusted R square is shown 0.930, which signals that 93% of variation in size, can be pointed to Debt to Equity Ratio which indicates that a model is a good fit as the variation value is more than 60% of range which is set to be appropriate in the study of (Zygmunt & Smith, 2014). Further, the F-significance is 0.00 which shows that the model is significant. The F-Value of 68.179 shows that there is a relationship between Size and Debt to Equity Ratio. The Durbin Watson Static Test is 1.970 which shows that there is no auto correlation amongst the selected samples chosen for this research which lies between the ranges of 1.5 to 2.5 to be abstaining from auto correlation as mentioned by Folarin and Hassan (2015).

The standardized coefficient beta value for Size variable is -0.107 and probability value is 0.001 which is less than 0.05 significant levels. Size found to have a significant negative impact on debt to equity ratio. Thereby, findings from my study is similar to the findings of Chechet and Olayiwola (2014), Soumadi and Hayajneh (2007), Amara and Aziz (2014)

4.6 Impact of Debt and Equity ratio on Earnings per share:

$$\text{Earnings per share} = \text{CONSTANT} + \beta_1 \text{Debt_to_Equity}$$

$$\text{Earnings per share} = 18.037 + 0.001(\text{Debt_to_equity})$$

Likely to Table 5, the model founds that R square is 0.816 which indicates that only 81.16% of the dependent variable (Earnings per share) is elaborated by Independent variable (Debt to Equity Ratio).

18.35% of the dependent variables is being explained and addresses by other factors which are not considered in this study. The adjusted R square is shown 0.770, which signals that 77% of variation in Earnings per share can be pointed to Debt to Equity Ratio. This illustrates that a model is a good fit as the variation value and is more than 60% of range which is considered to be relevant in the study of Zygmunt and Smith (2014).

Further, the F-significance is 0.00 which shows that the model is significant. Therefore, the F-Value of 17.712 shows that there is a relationship between Earnings per share and Debt to Equity Ratio. The Durbin Watson static Test is 1.457207, which shows auto correlation between the chosen samples for this research as it falls beneath the range of 1.5 to 2.5 which is suggested to be secure from auto correlation as mentioned by Folarin and Hassan (2015). The standardized coefficient beta value for Earnings per share variable is 0.001 and probability value is 0.963 which is more than 0.05 significant levels, although earnings per share are found to have insignificant positive impact on Debt to Equity Ratio. However, my studies concluded with the similar findings of Ebrati, Emadi, Balasang and Safari (2013),

4.7 Impact of Debt and Equity ratio on Return on Assets:

$$\text{Return on Assets} = \text{CONSTANT} + \beta_1 \text{Debt_to_Equity}$$

$$\text{Return on Assets} = 12.072 + 0.026(\text{Debt_to_equity})$$

According to Table 5, the model shows that R square is 0.650 which indicates that only 65.06% of the dependent variable (Return on Assets) is elaborated by Independent variable (Debt to Equity Ratio). 34.94% of the dependent variables is being explained and addressed by other factors which are not considered in this study. The adjusted R square is shown 0.562, which signals that 56.2% of variation in Return on Assets can be pointed to Debt to Equity Ratio. This signifies that this model is not a good fit as the variation value is less than 60% of range which is at least for being appropriate as mentioned in the study of Zygmunt and Smith (2014). Further, the F-significance is 0.00 which shows that the model is significant. The F-Value of 7.413 shows that there is a relationship between Return on Assets and Debt to Equity Ratio. The Durbin Watson static Test is 2.037 which show no auto correlation between the chosen samples selected for this research which indicates that the range of 1.5 to 2.5 is safe from being auto correlation as mentioned by Folarin and Hassan (2015). The standardized coefficient beta value for Return on Assets variable is -0.02665 and probability value is 0.0064 which is less than 0.05 significant levels. this shows that ROE have a negative significant impact on Debt to equity ratio. However, my findings are similar to the findings of Hasan, Ahsan, Rahaman and Alam (2014), Salim and Yadav (2012)

4.8 Impact of Debt and Equity ratio on Return on Equity:

$$\text{Return on Equity} = \text{CONSTANT} + \beta_1 \text{Debt_to_Equity}$$

$$\text{Return on Equity} = 15.425 + 0.013(\text{Debt_to_equity})$$

According to Table 5, the model shows that R square is 0.74 which indicates that only 74.13% of the dependent variable (Return on Equity) is elaborated by Independent variable (Debt to Equity Ratio). 25.87% of the dependent variables is being explained and addresses by other factors which are not considered in this study. The adjusted R square is shown 0.6763, which signals that 67.63% of variation in Return on Equity can be point to Debt to Equity Ratio. The figure illustrates that the model is fit as the variation value is more than 60% of range which is set to be appropriate in the study of Zygmunt and

Smith (2014). Further, the F-significance is 0.00 which shows that the model is significant. However, the F-Value of 68.179 shows that there is a relationship between Return on Equity and Debt to Equity Ratio. The Durbin Watson static Test is 1.993 which show no auto correlation between the chosen samples selected for this research. This lies between the range of 1.5 to 2.5 to be safe from auto correlation as mentioned by Folarin and Hassan (2015).The standardized coefficient beta value for Return on Equity variable is 0.013 and probability value is 0.546 which is more than 0.05 significant levels. Which shows return on equity has a positive insignificant impact on debt to equity ratio. Similar outcomes were generated from the studies of Pratheepkanth (2011), Musiega (2013) and Tailab (2014)

4.9 Impact of Debt and Equity ratio on Marketing:

$$\text{Marketing} = \text{CONSTANT} + \beta_1 \text{Debt_to_Equity}$$

$$\text{Marketing} = 2.579 + -0.0003(\text{Debt_to_equity})$$

According to Table 5, the model shows that R square is 0.86976 which indicates that only 86.97% of the dependent variable (Marketing) is elaborated by independent variable (Debt to Equity Ratio). 13.03% of the dependent variables is being explained and addressed by other factors which are not considered in this study. The adjusted R square is shown 0.837, which signals that 83.70% of variation in Marketing can be pointed to Debt to Equity Ratio. This shows that a model is fit as the variation value is more than 60% of range which is set to be appropriate(Zygmont and Smith, 2014). Moreover, the F-significance is 0.00 which shows that the model is significant; while the F-Value of 26.578 shows that there is a relationship between Marketing and Debt to Equity Ratio. The Durbin Watson static Test is 1.3837 which show auto correlation between the chosen samples selected for this research which lie between the range of 1.5 to 2.5 to be abstain from auto correlation (Folarin and Hassan, 2015). The standardized coefficient beta value for Marketing variable is -0.00031 and probability value is 0.8984 which is more than 0.05 significant levels. which shows marketing have a negative insignificant impact on debt to equity ratio

4.10 Summary Result of Hypotheses Testing:

Table 6:

<u>Hypotheses</u>	<u>Significant Level</u>	<u>Result</u>	<u>Explanation</u>
H₁: Debt to equity ratio has a significant impact on Size.	0.0011	Accepted	The p - value is 0.0011 which is less than 0.01 significant levels. This shows that Debt to Equity ratio is significant with total Size of the companies.
H₂: Debt to equity ratio has an insignificant impact on Eps.	0.9635	Rejected	The p-value is 0.9635 which is more than 0.05. This indicates that Debt to Equity ratio is not significant with EPS of the companies.
H₃: Debt to equity ratio has a significant impact on Roa.	0.0064	Accepted	The p-value is 0.0064 which is below the significant level 0.05. This shows that Debt to Equity ratio is significant with total ROA of the companies.
H₄: Debt to equity ratio has an insignificant impact on Roe.	0.5467	Rejected	The p-value is 0.5467 which is more 0.05. Therefore, Debt to Equity ratio is not significant with ROE of the companies.
H₅: Debt to equity ratio has an insignificant impact on Marketing.	0.8984	Rejected	The p-value is 0.8984 which is more than 0.05 significant levels. Hence, Debt to Equity ratio is insignificant Marketing of the companies.

5. CONCLUSION AND RECOMMENDATION

The Debt to equity ratio found not to be significant with the profitability ratios in his study (Chowdhury and Chowdhury, 2010). Therefore, the result for size variables indicates that the companies with more debt finance obligations will suffer in squeezing their firms' size in the sample companies listed in Karachi stock exchanges. The result for EPS shows that the companies whether use debt or equity Finance wouldn't affect their spending of Earnings per share which supports the irrelevance theorem of Modigliani and Miller. The Result for ROE interprets that the companies relying more on Equity Finance experiences better equity returns compare to the companies which rely more to debt finance which opposes Pecking Order Theory .This study summarizes that the sample companies of the chosen sectors are spending 2.5% average of their net sales. Moreover, the result for marketing variables illustrates that the companies whether uses debt or equity finance, would not affect their spending of marketing activities which supports the irrelevance theorem of Modigliani and Miller.

Recommendation for future researchers is to investigate other variables that are not used in this study. The other variables that can be used are shareholders' wealth, dividends and non-debt shield tax which can be investigated to discover different factors of capital structure impacting on performance of companies registered in Karachi Stock Exchange.

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PERFORMANCE MANAGEMENT SYSTEM – A NOBLE APPROACH FOR PERFORMANCE ENHANCEMENT OF AN ORGANISATION

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Abstract

Performance Management refers to a comprehensive scientific approach to ensure a link between efforts to individual employees with vision and goals of the organization, to achieve excellence in organization on one side and satisfaction and growth of employees on the other side. Therefore the performance management system is an important instrument to facilitate organization to accomplish its goal. Both Individual skills and contributions and organizational objective measurement is needed to develop the important element of the organization, which is human capital. Employees are the critical factor in performance management system, where glowing designed model of system will result strong management guarantee and better employees' performance which show the way to organization's success. With to proper use, performance management system will amazingly beneficial to an organization to enhance its performance, particularly in the management practices in Public Sector Unit(PSU) organization. Based on the emergent framework and extant research, suggestions have been projected which could enhance the efficacy of PMS processes of any organizations

Key words: Performance management system (PMS), Maharatna Companies,Public sector Unit (PSU),

1. INTRODUCTION:

Ask any manager in the modern times what he considers as the primary assets of his / her organization, the answer will be "People". We must recognize that the tacit dimensions of knowledge in an individual may be as vital to achieving organization goals as are the explicit, codified forms of knowledge that have been built up over the time. Today's manager is faced with a problem of increased magnitude how best to utilize the resources available in the organization and it is well established now that the human element is the largest single controllable variable. This suggests that if an organization has to maintain or improve its overall performance, it must improve the performance of the individuals within the organization. Hence it is of utmost importance that for managing and improving individual performance organizations must nurture:

- the ability to identify the variables that affect performance
- the ability to predict the changes that will result if variables are changed
- the ability to change the variables
- the ability to repeat or duplicate the changes.

There is so much dynamism in the business environment that the capacity to adapt and to shift our thinking is critical. The challenge is to transform institutions that have been hand wired for consistency, control and predictability into culture where learning, surprise and discovery are truly valued.

1.1 Definition Of Performance Management System:

Performance management system is the process of creating a work environment or setting in which people are enabled to perform to the best of their abilities. Performance management system begins when a job is defined as needed and ends only when the employee leaves the organization. It is a Continuous Process of

- ✓ Identifying
- ✓ Measuring
- ✓ Developing

The performance of individuals and teams

So, Performance Management System is, “a continuous process of identifying, measuring and developing the performance of individuals and teams and aligning performance with the strategic goals of the organization.”

1.2 Importance of Performance Management System

Performance Management System includes the following actions.

- Develop clear job descriptions.
- Select appropriate people with an appropriate selection process.
- Negotiate requirements and accomplishments in terms of performance standards, outcomes, and measures.

- Provide effective orientation, education, and training.
- Provide ongoing coaching and feedback.
- Design effective compensation and recognition systems that reward people for their contributions.
- Provide promotional/career development opportunities for staff.
- Assist with exit interviews to understand why valued employees leave the organization.

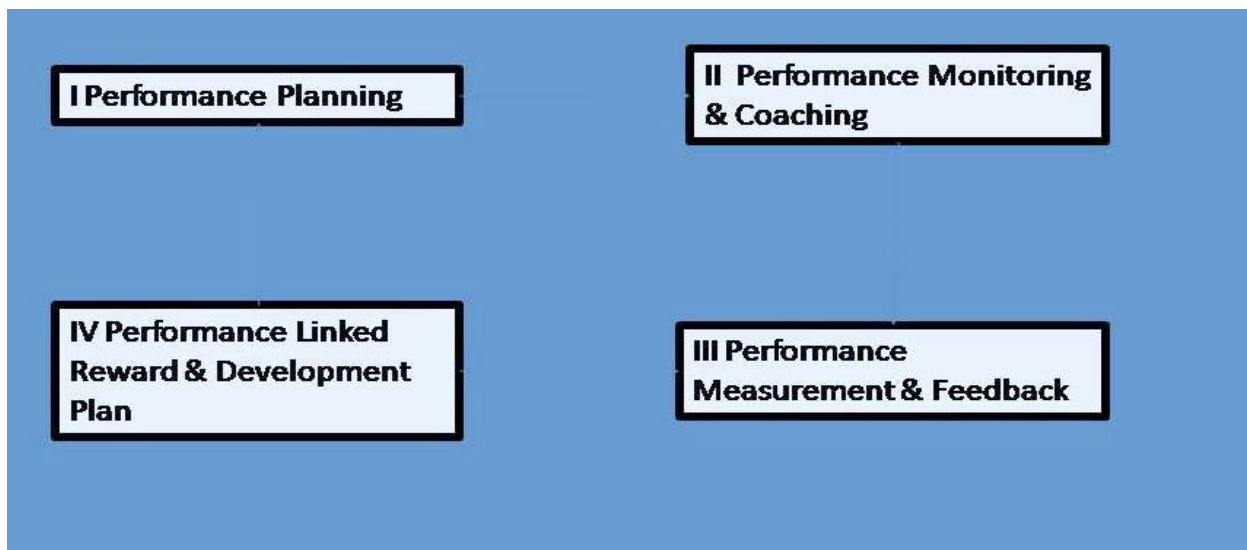
Improvement in performance can come from two sources: (1) technological changes such as higher investment per worker in capital goods and technological improvements in capital goods or (2) changing human behavior in organizations. Whereas increased mechanization technological change, and increased investment per worker in capital goods can all contribute to improved productivity, it is changes in human behavior which result in higher payoffs.

2. PERFORMANCE MANAGEMENT SYSTEM - Conceptual Framework

Performance Management is a process of designing and executing motivational strategies, interventions and drivers with an objective to transform the raw potential of human resource into performance. All human beings possess potential within themselves in a few or more functional areas. However, utilization and conversion of this potential into deliverable performance is often suboptimal due to a variety of reasons. Performance management acts as an agent in converting the potential into performance by removing the intermediate barriers as well as motivating and rejuvenating the human resource.

Fig 1

PMS Process Cycle



2.1 PERFORMANCE PLANNING:

Performance planning involves identifying the job areas and activities where the employee would like to

put most of his efforts, do better than before and make its impact. Identifying Key performance areas and setting targets is a useful way of planning one's own performance. After identifying key performance areas, targets may be set under each key performance areas. Key Performance areas are the key or critical functions of a job role. Each job or Role makes its distinct contribution to the achievement of the organizational goal.

There are six steps to performance planning but the foremost step is performance planning session, a meeting between employee and manager.

- Identifying Job Performance activities; prior to the meeting, the employee and the manager should independently make a list of the employee's job performance activities.
- Developing a final list; the manager and employee now meet to review the two lists, they review each item and develop a final list of employees significant job activities.
- Determining priorities; Once and agreed final list has been developed, the employee and manager review each job activity to determine its importance.
- Developing performance expectations; the manager and employee now jointly develop specific performance process an outcome expectations. During the meeting the manager should try to determine if, the employee has a clear idea of the sequence of activities required to fulfill each of the expectations.
- Setting goals; by this time, both manager and employee should have some idea of the employee's development and growth needs. At this stage one or two job related development goals may be drawn for the employee.
- Setting check points; At this stage the employee and manager set specific times over the coming months when both can sit down to review performance. The purpose is not to evaluate but to identify problems and resolve them. The employee and the manager should met as and when necessary.

2.2 PERFORMANCE STANDARDS:

Standards are vital to the success of any communication programme and a performance appraisal system certainly one of the most critical communication programmes in an organization. Standards are an integral part of Performance appraisal process. Performance appraisal standards provide both the rater and the ratee with a basis for describing work related progress in a manner that is mutually understandable. Performance standards provide a degree of uniformity in the non uniform world of work.

A specific performance standard should have certain characteristics.

- It should enable the user to differentiate between acceptable and unacceptable results.
- It should be of some challenge to the employee.
- It should be realistic and attainable.
- It should be a statement of the conditions that will exist and will assist in measuring a job responsibility.
- It should relate to or express a time frame for accomplishment.

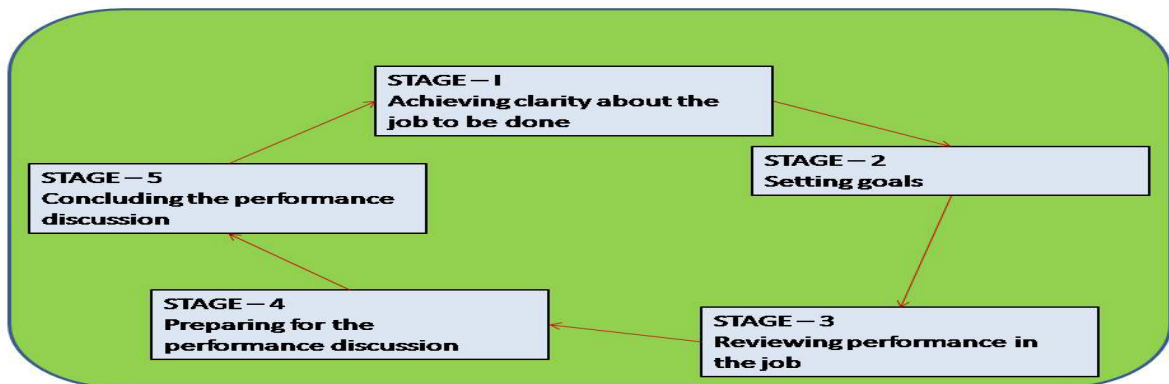
- It should be observable and offer a means of measuring the performance against the requirements of the standards.

2.3 PERFORMANCE GOALS:

Goals serve as bench marks or reference points against which performance on a measure can be compared. Goals are also important because they have a significant relationship with individual and group performance. The following are the requirement for meaningful goals:

- Goals should be challenging
- Goals should not only be demanding but also attainable.
- Goals that are perceived as too difficult or too easy lose their motivational value.
- Although participation will not guarantee performance improvement or attainment, yet there should be wide spread employee participation in setting goals. Such participation will result in greater acceptance of more difficult goals and in a higher commitment to goal attainment.
- Multiple goals should be set for each measure to establish a range within which performance on a given measure can be expected to vary.

Fig 2 - Goals Oriented PMS



2.4 REASONS FOR POOR PERFORMANCE:

The job performance of executives in any organization depends on a number of variables such as the structure of the organization, human resource policies, technology, knowledge, skill and personality of executives etc. It is necessary to identify reasons of poor performances before starting any intervention of performance enhancement in the organization. An attempt was therefore made to analyze reasons of poor performance among executives. Following reasons were included:

- 1) Wrong/unscientific selection policies.

- 2) Performance appraisal system ineffective.
- 3) Career development opportunities not available.
- 4) Organizational structure bureaucratic and rigid.
- 5) No linkage between job performance and compensation and reward.
- 6) Role and responsibilities not well understood.
- 7) Executives lacking in knowledge and skill required for job.
- 8) Negative attitude of executives.
- 9) Highly repetitive nature of executive's job.
- 10) Dissatisfaction and frustration are common place.

2.5 Performance Management Has the Following Characteristics:

- a) Performance management is supposed to be owned and driven by line management and not by HR department or one or two executives.
- b) There is emphasis on shared corporate goals and values.
- c) Performance Management is not a package solution; it is something that has to be specific for a particular organization.
- d) Executives of the organization should develop their own plan of managing performance of all employees.

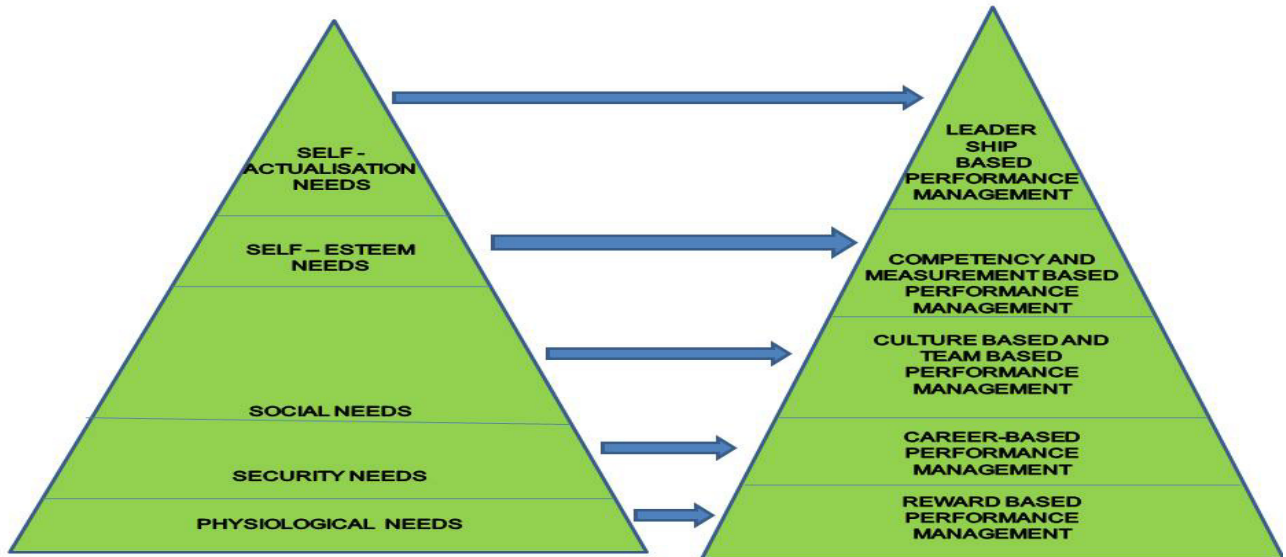
There are following components of performance management:

- 1) Development of mission and goal statement of the company.
- 2) Development of business plan.
- 3) Communication goals and objectives to employees.
- 4) Defining role responsibilities.
- 5) Defining and measuring individual performance.
- 6) Developing appropriate reward and punishment strategies to modify behavior.

7)

Fig 3

MASLOW'S HIERARCHY OF NEEDS VS. STRATEGIES OF PERFORMANCE MANAGEMENT:



3. Review of Literature

An overview of the extensive research related to performance management system is presented. Researcher tried to present a review of literature in a manner to exhibit how it enhance the performance of organisation. Application of the concepts of performance management system as a way to achieve organizational success is addressed herewith from the significant works of Indian and overseas management specialists.

3.1 A study on Performance Management System of Indian VIS-À-VIS International Companies: A Literature Review by Sandeep Kumar Joshi, Dy Manager-Human Resources, Shree Cement Ltd on 2016. This literature review examines the differences and similarities in the performance management system (PMS) in Indian and international companies. Performance management system is the transformation from performance appraisal system which is very important for every organization. In this study, it also investigates that what the important aspects are of PMS. The result indicates that most of the Indian and international companies did not have much differences in their PMS except cultural differences. The important aspect of PMS is its implementation in the organization and acceptance by the employees. By doing extensive literature review, it has been found that performance management system is not having much difference except cultural implication in both Indian and international companies. PMS has both negative and positive aspects in Indian and international companies. In most of the companies the traditional appraisal system is existing, where appraisal is done once or twice in a year and in some companies, feedback system was very poor or absent. This created bias in employee evaluation because if they have been given poor rating then they will not be in the position to know about their mistakes. If they are given good rating then they will not bother to know their mistakes so that they can improve. Moreover, companies introduced PMS but unable to implement properly which does not fulfill the purpose and some

time employee acceptance level is low for the PMS. Therefore, introduction of PMS will not serve the purpose; it required effective implementation and well accepted by employees.

3.2 A study on Performance management system in Maharatna Companies (a leading public sector undertaking) of India – a case study of B.H.E.L., Bhopal (M.P.) by Rajesh K. Yadav, Nishant Dabhade, Department of Management, RKDF College of Engineering, Bhopal – 462047, Madhya Pradesh, on 2013. Extensive changes in the global economy have made it imperative for the governments all over the world to improve the quality of their governance structures. The Government of India has also introduced the New Public Management concepts in public administration with emphasis on ‘results’ or ‘performance’ to improve the efficiency and effectiveness of public services. This research aims to figure out the key variables that are having strong influence on Performance management system with special reference to BHEL, Bhopal (M.P.). Chi square test is applied in this paper to check the authenticity of data given by the respondents. We are also going to study the PM process, awareness level and satisfaction level of employees of BHEL and how the PM system affects the performance and career development of employees. It is suggested that changing culture requires leaders to understand the learning process dynamics and how the learning and unlearning of assumptions and beliefs can be manipulated to modify behavior. Hence cultural aspects could be one of the areas of training. An organization’s leadership has the responsibility to develop a positive culture to facilitate the acceptance of performance appraisal among managers and their employees

3.3 A study on PERFORMANCE MANAGEMENT OF ACADEMIC STAFF AND ITS EFFECTIVENESS TO TEACHING AND RESEARCH – BASED ON THE EXAMPLE OF ESTONIAN UNIVERSITIES, by Kulno Türk at *University of Tartu on 2016*. The aim of the research is to identify options for developing performance management (PM) of the academic staff (AS) based on the example of Estonian universities (economics faculties). We want to find out more about PA and its interaction with other elements of performance – the effectiveness of teaching and research are studied. The analysis includes a review on how the PM system has developed over time, ascertaining special features with respect to the economic crisis. Methods included three questionnaire based surveys of AS carried out in 2013, interviews with nine academic leaders and seven focus group interviews were conducted. Qualitative methods involved the analysis of documentation universities, interviews and participatory observations within a case study. A detailed PA system enables the AS to achieve higher results specifically during periods of restructuring and change at universities, but causes a negative impact for quality and motivation of AS in times of crisis. During the stage of further development of the faculties, it would be necessary to pay more attention to qualitative indicators and reduce the number of quantitative indicators. It is necessary to develop the PM to be applied in conjunction with other management instruments (qualitative management, personnel management). AS emphasized the need for improvement in the quality of research and teaching even in conditions of scarce funding. As the motivation to engage in knowledge work is primarily intrinsic, the usage of detailed quantitative measures in PM should be handled with care. The impact of PA should not dominate teaching and research; it is also crucial to use other management instruments, for example strategic management and quality management.

3.4 A roadmap for developing, implementing and evaluating performance management systems by Elaine D. Pulakos, Ph.D on 2004. is executive vice president and director of the Washington, D.C. office of Personnel Decisions Research Institute (PDRI). Many factors will impact the effectiveness of an organization's performance management system, but three are most important. First, the system needs to be aligned with and support the organization's direction and critical success factors. Second, well-developed, efficiently administered tools and processes are needed to make the system user friendly and well received by organizational members. Third, and most important, is that both managers and employees must use the system in a manner that brings visible, value-added benefits in the areas of performance planning, performance development, feedback and achieving results. She said that to Make Sure the System must be Aligns with the culture and business needs of the organization. Matches the level of support for performance management that exists in the organization. Is considered an important tool for achieving business results by managers and employees. Is as user-friendly, straightforward and easy to use as possible.

3.5 A study on 'Performance Management' by Mr. Srinivas R Kandula, Director (Human Resource), Sasken Communication Technologies limited, Bangalore presented theory and practices of performance management in an integrated perspective. An attempt is made to present theory and practices of performance management in an integrated and pragmatic style. He stated about seven strategies, fourteen interventions and one hundred and forty drivers and all these cumulatively are expected to make an organization not only performance centric but also make performance management a fundamental system of organizational management.

3.6 A study on, Organizational performance management system: exploring the manufacturing sectors, by Dr. Chandan Kumar Sahoo, Associate Professor, School of Management, National Institute of Technology, Rourkela and Ms. Sambedna Jena, Research Scholar on 2012. This paper demonstrates the various practices of performance management system in the manufacturing sectors. The literature review of the popular performance management system utilized by the manufacturing sectors depicts that no single system is successful in improving the performance of a firm. The correct match between the firm and performance management system is essential for its success. The performance management system's function has a significant positive impact on performance of the employees when it's implemented successfully. The review also depicted certain issues on implementation of performance management system in the manufacturing units like costs, lack of strategic feedback system and incentive schemes which undermine the efficiency of a performance management system. Improvisation of performance is an ongoing process and the organization needs to strive to attain optimal level of value, so as to enhance the future potential business. Hence, the process of measuring the manufacturing performance management system needs frequent reviewing and monitoring to combat an increasingly competitive globalized business environment.

3.7 A study on 'Research on Human Resources Development: Present trends and Future Directions' by TV Rao, IIM, Ahmadabad reveals that HRD is a process by which the employees of an organization are helped in a continuous and planned way, to;

- 1) Acquire or sharpen capabilities required to perform various functions associated with their present or expected future roles;
- 2) Develop their general capabilities as individuals and discover and exploit their own inner potentials for their own and/or organizational development purposes; and
- 3) Develop an organizational culture in which supervisor-sub-ordinate relationships, teamwork, and collaboration among sub-units are strong and contribute to the professional well-being motivation and pride of employees.

4. CONCLUSION

This paper clarifies the definition of Performance Management System with the help of extant research. It defines Performance Management System as a combination of four components: Performance planning, Performance monitoring & Coaching, Performance Linked Reward and Development Plan and Performance Measurement and Feedback system, organizational performance and competitive advantage. The overall rationale of this study was to test the key variables that are having brawny influence on Performance management system with special reference to Public Sectors. The researche has figured out the PM process, awareness level and satisfaction level of employees and how the PM system affects the performance and career development of employees. Although Performance management is more a philosophy than a set of policies and tools but the most prevalent notion of performance management is that of creating a shared vision of the purpose and aims of the organization, helping individual employees to understand and recognize their part in contributing to them and thereby managing and enhancing the performance of both individual and the organization.

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TEENAGERS' EXPOSURE TO INTERNET PORNOGRAPHY IN ZARIA, NIGERIA

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INTRODUCTION

In recent years, there have been growing societal concerns about teenagers' exposure to pornography through the internet. For instance, Arulogun (2002) expressed fear about the possible negative consequences that uncensored internet contents will have on the psychosocial well-being of varying categories of users especially children and teens in Nigeria. Infact, there are concerns that teenagers are becoming too exposed to this internet vice considering the fact that Internet usage have been witnessing a very rapid growth during the last decade across the world and hence making internet a big part of teenagers' lives. For instance, Pew Internet and American Life Project survey (2010), opine that 93 percent of teens aged 12 to 17 uses the Internet, compared with 79 percent of adults. Similarly in Nigeria, Longe, (2004) also established that children and teenagers belonging to the age range 7-18 years constitute over 32% of Internet users in Nigeria. In similar vein, observation of this trend shows that newer media which include social networking sites (SNS) such as Facebook, 2go, whatsapp, gaming sites, WeChat amongst others, have become very attractive to teenagers, who often access them through their cell phones. This allows teens to spend most of their time in communicating with people they already know online and sometimes with those they do not. As perceived logically, typical teens that stay online for longer periods than adults are more likely to access the Internet from different locations and participate in a wider range of online activities. However, such teenagers often become more exposed to Internet's pornographic contents through this wide range of online activities.

Nevertheless, this is not to say that the Internet has not been beneficial to the world, as this new media has enormously improved the world's information and communication system like never before. Infact, the emergence of Internet has changed the lives of millions of people who go online on a daily basis at home, at school, at work and other locations such as Internet cafes, to send/receive e-mails, chat, research for school or work, download music or images, and to do many other activities that help their livelihood. The Internet, which is a global network comprising millions of smaller networks and

individual computers connected by cable, telephone lines, or satellite links, permits individuals to connect with other computers around the world from the privacy of their own homes. (Calder, 2004). Against this backdrop, amongst others, Internet access and usage across the world has been witnessing proliferation year by year, with approximately 1.11 billion users in 2007, 1.67 billion in 2009, and 1.97 billion in 2010 (Miniwatts Marketing Group, 2010), indicating an upward trend in the number of digitally literate people. Such a rapid growth has been interacted with people’s needs and motivation. The purposes of Information, communication, and entertainment have been prominent motives behind the Internet use.

However, in spite of these attractive benefits that the internet provides coupled with its increasing prominence in the lives of young people, researchers have continued investigating the influence that the Internet environment may be having on child and adolescent development. Of particular interest here, is its ability to communicate pornography to teenagers, coupled with the perception that they (teenagers) are within the ages of increasing self-sexual awareness and curiosity for sexual expression. It is important to acknowledge the fact that adolescent or teenagers’ sexual development is complex and dynamic; as children get older, they gain a greater sense of their sexual self which is enhanced by interplay of biological and social changes which occur as individual matures through childhood into adolescence. Although puberty begins at different ages, virtually all boys and girls have started the process by 14 years of age. As observed, the expression of sexual curiosity spans a range of behaviors; from talking about sex, looking at sexual materials (e.g. Pornographic content), and to actually engaging in sexual activity

The aim of this research is to create enlightenment on the prevalence of teenagers’ exposure to pornography on the internet. The research adopted both qualitative and quantitative methods of research as the two are considered necessary to sufficiently address the study in accordance with the research objectives.

Teenagers’ Exposure to Internet Pornography

Perceptions	SA	A	U	SD	D
Most teenagers have access to Internet	57 (62.6)	28 (30.8)	2 (2.2)	3 (3.3)	1 (1.1)
Teenagers usually use mobile phone to access internet.	64 (70.3)	23 (25.3)	2 (2.2)		2 (2.2)
Teenagers use the internet often.	47 (51.6)	31 (34.1)	5 (5.5)	2 (2.2)	6 (6.6)
Teenagers mostly chat while they are using internet	59 (64.8)	26 (28.6)	2 (2.2)	1 (1.1)	3 (3.3)
Teenagers mostly watch or download music videos	59	27		2	3

while using the internet	(64.8)	(29.7)		(2.2)	(3.3)
Teenagers often come across sexually explicit contents (e.g. nude pictures) when browsing online	62 (46.2)	27 (29.7)	1 (2.2)	1 (2.2)	
Most teenagers participate in chatting about sex (i.e. sexting) with online friends	42 (46.2)	39 (42.9)	2 (2.2)	2 (2.2)	6 (6.6)
Teenagers are exposed to being sent sexually explicit materials (e.g. nude pictures or sex videos) while chatting online.	50 (55.0)	32 (35.2)	5 (5.5)	1 (1.1)	
Most teenagers send or share sexual contents to their online friends while chatting.	52 (57.1)	27 (29.7)	3 (3.3)	3 (3.3)	6 (6.6)

Key:

Numbers in Parentheses are percentages, SA = Strongly Agree, A = Agree
 U = Undecided, D = Disagree, SD = Strongly Disagree

Access to Internet

From the table above, the result of the data collected through questionnaire survey shows that the highest number of teenage respondents holds the perception that teenagers have access to the internet as 26 of them who represent 62.6 percent of the total respondents, strongly agreed that most teenagers have access to the internet while 28 teenagers who represent 30.8 percent of the respondents agreed. However, while 3 teenage students, who represent 3.3 percent of respondents, strongly disagreed, a teenage student (1.1 percent respondents) disagreed that most teenagers have access to the internet. However, 2.2 percent of respondents are undecided as they could not say whether most teenagers have access to internet or not.

The above result, which claims that teenagers of our society have sufficient access to the internet, is further accentuated by a teacher and counsellor in one of the Secondary School, when he stated thus:

This is the 21st century, students, young ones are allowed access to all sorts of internet-enabled gadgets be it handset, IPAD and other ones.

Mobile Phone as the Mostly Used Medium of Accessing Internet

In the quest to identifying the most commonly used communication medium through which teenagers access the internet, the data collected from teenage student respondents as shown in the table, indicate that mobile phone is the widely used medium through which teenagers access the internet. This is evident as the total number of 64 teenagers who represent 70.3 percent of total respondents, strongly agreed that the most used medium of accessing the internet by teenagers is through mobile phones while 23 teenage students who represent 25.3 percent of the respondents agreed. However, while 2.2 percent respondents disagreed, two teenagers who represents 2.2 percent of the total respondents is undecided

and could not say whether it (i.e. Mobile phone) is the mostly used medium of accessing the internet by teenagers or not.

A teacher in one of the Secondary School, further corroborated the above result when he said that:

“Teenagers of our society mostly access the internet through their phones, laptops and IPAD but the commonest medium is through mobilephone”

Analysis of the Responses of Teenagers’ Coming across Pornographic Contents while surfing the internet

From the table, 62 teenage students who represent 46.2 percent of the respondents, strongly agreed that teenagers often come across pornographic contents when surfing the internet while 27 teenagers who represent 29.7 percent of the respondents merely agree. However just one (1) teenage student who represents 2.2 percent respondents, strongly disagreed while the same percentage of respondents is undecided and could not say whether teenagers often come across pornographic content while surfing the internet or not. The above result clearly shows that majority of the teenage respondents strongly agreed that teenagers are truly exposed to pornographic contents while surfing the internet.

This is also being supported by the interview response of a teacher in one of the secondary school when he said;

“This is a worrisome issue in our society today. And not just on internet, teenagers are equally exposed to pornography through peer group influence. There are so many of them who do not have intention of consuming these sexually explicit materials until their friends or the internet bring it and tempt them to view them”

Guidance and Counseling teacher in one of the Secondary School equally attested to this when he said that;

When teenagers go online to do their homework, and things such as pornographic contents pop-up, they hardly could resist them. The pop-up comes up spontaneously even when you did nothing to bring them up. 2 days ago I was trying to download a song, and a porn site pop-up. So, all of these things get them (teenagers) curious; they really want to know. It is like ‘now this is out, let me see what is inside’. Most time we really do not blame teenagers, we blame people who expose this things to the public. It’s just too free and cheap

Teenagers’ Participation in Chatting about Sex with Online Friends (i.e. Sexting)

The table reveals that majority of teenage respondents hold the perception that most teenagers usually participate in chatting about sex (i.e. sexting) with online friends. This is indicated with 42 teenagers who represent 46.2 percent of the respondents, strongly agreed to the perception, while 39

teenagers who represent 42.9 percent agreed. However, while 2.2 percent of respondents strongly disagreed, 6.6 percent of respondents simply disagreed. The table equally shows that 2.2 percent of the respondents could not say whether most teenagers usually participate in chatting about sex (i.e. sexting) with online friends or not.

Reinforcement to the above result is also the response of a teacher in one of the Secondary School, when he said:

The ones we called children nowadays should no longer be called children. As there is nothing that can be hidden under the sun, they are all exposed. I had caught about few students. I was about to teach, then I saw this particular child and with the help of psychology I could tell when a child is responding or when he is absent minded; the child's head was bent when I caught him, he was with his phone chatting on 2go, and when I read through it, I saw naughty chat with some foul languages, then, I removed the page and went to his folder and saw it full of pornographic movies; I was so mad at him

4.2.5: Teenagers' Exposure to receiving Pornographic Materials during Online Chatting

The data collected from teenage respondents as shown in table 4.2, indicate that 50 teenagers who represent 55.0 percent respondents, strongly agreed that teenagers are exposed to being sent sexually explicit materials (e.g. nude pictures or sex videos) while chatting online, while 32 teenage students, who represent 35.2 percent of the respondents from the school merely, agreed. However, while one teenage student who represent 1.1 percent of the respondents strongly disagreed with that perception, 5 teenagers who represent 5.5 percent of the respondents could not say whether teenagers are exposed to being sent sexually explicit materials while chatting online or not.

As it could be seen from the data collected above, majority of the respondents are of strong opinion that teenagers are very vulnerable to receiving materials during online chatting. a teacher of one of the Secondary School, affirmed to this when she said:

"I have not directly witnessed them (teenagers) viewing pornography but I have often caught them discussing it especially the male ones; they often discuss about the pornographic contents they have gotten from the internet especially when they are chatting on the social media like 2go"

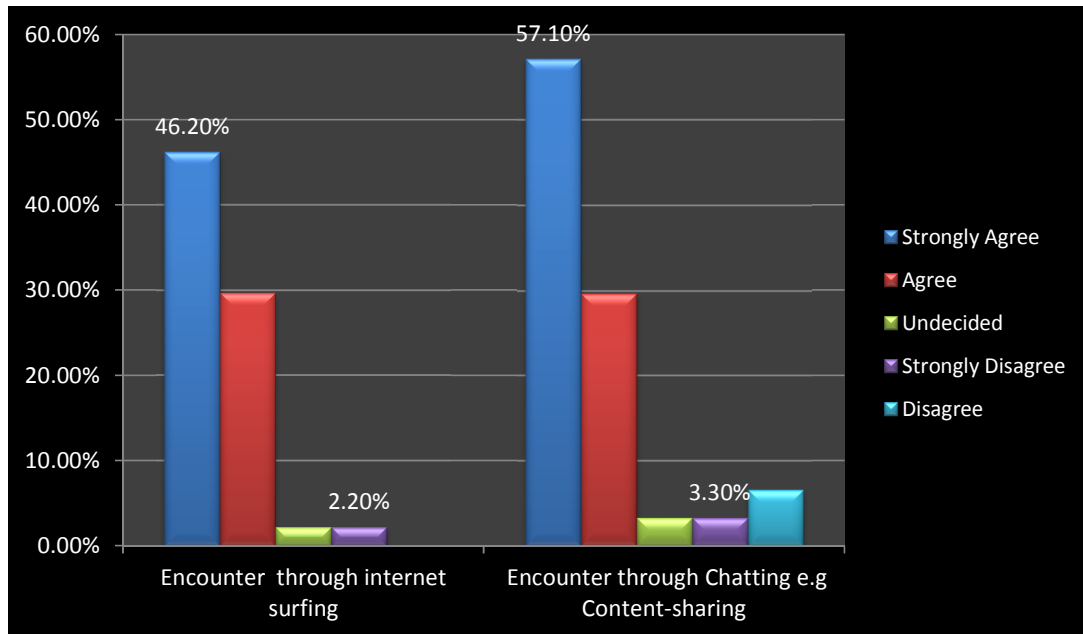


Diagram 1: Graphical Representation of Teenagers' medium of Exposure to Internet Pornography.

Diagram 1 above, shows two major medium through which teenagers were exposed to Internet pornographic materials. As indicated, 46.2 percent respondents strongly agree that teenagers are often exposed to pornography during the process of internet surfing while 57.1 percent strongly agreed that teenagers often encounter pornographic materials through chatting e.g Content-sharing.

Reasons for Teenager's Exposure to Internet Pornography

Reasons for Pornography Exposure

	SA	A	U	SD	D
Teenagers visit pornographic sites to learn the techniques/skills of real-life sex performance.	38 (41.8)	35 (38.5)	4 (4.4)	5 (5.5)	9 (9.9)
Teenagers visit pornographic sites for gratification purpose i.e. To relieve their sexual urges.	32 (35.2)	37 (40.7)	6 (6.6)	10 (11.0)	6 (6.6)
Unintentional exposure to online sexually explicit images/videos is very common among teenagers	47 (51.6)	29 (31.9)	5 (5.5)	6 (6.6)	4 (4.4)

After viewing an online pornographic video/image, teenagers are likely to subsequently revisit the same website to view it again.	52 (57.1)	28 (30.8)	3 (3.3)	5 (5.5)	3 (3.3)
In the quest to get excitement, teenagers resorts to viewing Pornographic materials online	43 (47.2)	31 (34.1)	6 (6.6)	5 (5.5)	6 (6.6)

Internet Pornography as a Medium for Learning Techniques of Real-Life Sex Performance

The responses of teenage respondents when asked about the reasons why teenagers are exposed to internet pornography indicated that, 38 teenage students who represent 41.8 percent strongly agreed that teenagers visit pornographic sites to learn the techniques/skills of real-life sex performance while 35 teenagers who represent 38.5 percent of the respondents from the school, agreed. However, 5.5 percent of the respondents (i.e. 5 teenagers) strongly disagreed to the perception while 9teenage students who make up of 9.9 percent of respondents merely disagreed. It is also revealed that 4.4 percent of the respondents were undecided as they could not say whether teenagers visit pornographic sites to learn the techniques/skills of real-life sex performance or not.

The result clearly indicates that the quest for learning the techniques of real life sexis one of the motivations behind teenagers search for pornography on the internet; this is evident as majority of respondents agreed to this perception. The result is also corroborated by a staff when he said that:

Young ones are always seeking for knowledge and most parents these days hardly sit down to teach their children what they need to know or do and so they seek for knowledge in any way they could get it. Some of them have heard a lot about sex and are curious to know how to do it; so they consequently resort to viewing pornography”

Teenagers Visit Pornography sites For Sexual Gratification Purpose

Also in response to the reasons why teenagers are exposed to internet pornography, the table indicates that 32 teenage students, who make up of 35.2 percent of the respondents strongly agreed that teenagers visit pornographic sites for sexual gratification purposes while 37 teenagers who represent 40.7 percent of the respondents agreed. However, while the majority of the respondents obviously agreed to the perception, very few of them do no concur to it as the table reveal that 10 teenage respondents who represent 11.0percent of the respondents from both schools, strongly disagreed while 6.6 percent of the respondents disagreed. Meanwhile,6 teenagers who represent 6.6 percent of the respondents are undecided on the perception as they could not say whether teenagers visit pornographic sites for sexual gratification purposes or not.

To further validate the above result, a Teacher in one of the Secondary School, opines that teenager usually log into pornographic website to personally experience those pornographic and sexual experiences that has been shared with them by their friends or peers. Also in the words of a teacher,

“Why would anyone want to look for internet sexually explicit materials without you wanting to gratify your emotion? Everyone is looking for a means in whatever form, to

satisfying his own sexual needs or emotional desires”

Teenagers Are Inadvertently Exposed To Internet Pornography

The data collected from teenage respondents from selected schools as indicated by table shows that 47 teenage students who represent 51.4 percent of the respondents strongly agreed that unintentional exposure to online sexually explicit materials is very common among teenagers while 29 teenagers, who represent 31.9 percent of the respondents, agreed. However, while 6 teenagers (i.e. 6.6 % of respondents) strongly disagreed, 4.4 percent of the respondents simply disagreed as 4.4 percent of the respondents (4 teenagers) are undecided and could not say whether it is true that unintentional exposure to online sexually explicit materials is very common among teenagers or not.

With the majority of the respondents agreed that teenagers are inadvertently exposed to internet pornography, as highlighted above, it is logical to see the internet being an entity that is responsible for ‘pushing’ pornography at its users. This is well corroborated by a teacher when he said that;

“When you go to YouTube to download or browse for any material, you do not necessarily have to browse for a sexually explicit content before they are being displayed on the website page, and so, one could easily be tempted to open them. For instance I have seen many of Kim Kardashian sexually explicit pictures and sexual scandals’ videos online. They are not truly sexual scandals but they are just meant for business motive of making money; this is because the more you view or download them, the increase their monetary gain. Kim Kardashian for instance, often have millions of people that download each of her sexual videos, and she has a monetary share on each download that is being done”

Teenagers Resorting to Viewing Pornography in quest for Excitement

Also one of the responses provided by teenage respondents when asked about the reasons why teenagers are exposed to internet pornography, 43 teenage students who represent 47.2 percent of the respondents, strongly agreed that teenagers often resort to viewing pornographic materials in quest for excitement while 28 teenagers who represent 30.8 percent of the respondents, agreed. However, while 5 teenage students who represent 5.5 percent respondents, strongly disagreed, and 6 teenage respondents (i.e. 6.6 percent respondents) disagreed, 6 teenagers that make up 6.6 percent respondents could not say whether teenagers often resorts to viewing Pornographic materials online in the quest to getting excitement or not.

The above responses obviously shows that the highest numbers of the respondents to the question, are of strong opinion that teenagers often resort to viewing Pornography in the quest for excitement. It is also being affirmed by a teacher when he said that:

“Things that catch teenagers’ attention and fancies are usually things that are above them especially things that are meant for the adult or legally married; they are usually anxious and in haste to have a taste of it. Whenever we teachers come to the class and say a little thing that is sexually related, we instantly get the students attention and they become excited and happy

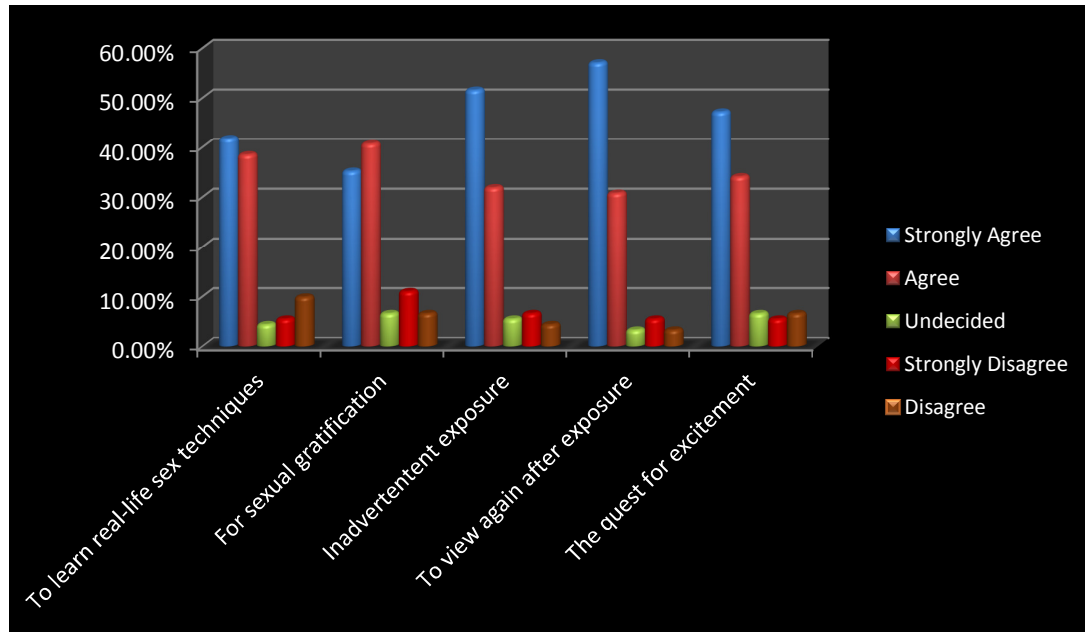


Diagram 2: Graphical Representation of Reasons Why Teenagers are Exposed to Internet Pornography.

Diagram 2 above shows the graphical representation of respondents' views on the various reasons why teenagers find themselves exposed to Internet pornography. It could be seen that majority of the respondents strongly agree that the quest to learn real-life sex techniques, sexual gratification, inadvertent exposure, the urge to view again after exposure and the quest for excitement are the major reasons why teenagers are exposed to the internet pornographic materials.

Discussion of Findings

The data gathered and analysed in this study are further discussed here in relation to the research questions.

In the foremost, it is necessary to find out if the internet is accessible to teenagers in Zaria before enquiring for their exposure to online pornography. Hence, the respondents clearly indicated that the general availability of mobile phone to the teenagers of the sampled population have made internet highly accessible to them. It is also discovered that teenagers of nowadays are not just only enjoying affordability of internet but could also afford internet-enabled mobile phones and even IPAD. This also affirm the opinion of Longe, (2004) when he established that children and teenagers belonging to the age range 7-18 years constitute over 32% of Internet users in Nigeria.

However, it is found out that in the course of surfing the internet, of which is mostly for educational and informational purposes, teenagers are often exposed to sexually explicit contents through internet pop-up adverts of which most time are neither preventable nor avoidable. In this case, they are not to be blamed as this kind of exposure is inadvertent. This validate the opinion of Daniel and Josephine, (2001), In a survey of adult-oriented commercial sites, that the majority of adult-oriented sites (about 74 percent) were found to display adult content on the first page (accessible to anyone who visits the page) and often

through which they display their sexually explicit banner adverts to other sites. Teenagers are also exposed to pornographic contents by peer-to-peer sharing of these sexual contents through their interaction with friends and colleagues.

Apart from surfing the internet for education and informational purposes, teenagers are also found to be highly involved in using the internet for online interaction (i.e. chatting) with their friends and colleagues. However they are not just chatting, they often also chat about sex (also referred to as 'Sexting') with their online friends. Katherine (2006) in her paper, 'Internet Infidelity: A Critical Review of the Literature', opines that people are using the Internet more frequently to form friendships and romances and to initiate inordinate affairs. This is further reinforced the opinion of The National Campaign to Prevent Teen Pregnancy (2014), claiming that nearly 40% of all teenagers have posted or sent sexually suggestive messages, even though the practice is more common among boys than girls.

Apart from a case of chatting about sex, which is mostly done deliberately, teenagers are also very vulnerable to being sent or being exposed to unsolicited sexually explicit materials in the process of chatting online. For instance, an online friend who craves to be noticed based on his or her sexual qualities could send his/her sexually explicit picture to another online friend or could even paste it as a profile's displayed-picture, and then initiate a conversation; this is more common with girls. It equally go in line with the opinion of The National Campaign to Prevent Teen Pregnancy (2014) which added that, sending semi-nude or nude photos online is more common among teen's girls as 22% of teen girls report sending images of this nature, while only 18% of same-age boys have.

All these provide answers to the research question which asked if teenagers are exposed to internet Pornography. It is indeed confirmed that teenagers in the selected schools are well exposed to internet pornography.

Conclusion

Teenagers of the selected schools are well accessible to the internet. They usually access it through their internet-enabled mobile phones. Furthermore, teenagers are well exposed to sexually explicit contents when accessing the internet. Teenagers could either be inadvertently exposed to these sexual contents or intentionally be exposed. As sited, through the internet Pop-up sexual adverts, teenagers often inadvertently become exposed to pornographic internet contents. However, they (teenagers) often intentionally make themselves available to these sexual contents by their involvement in sexting (e.g. through Social media) and deliberate search for them through the pornographic websites.

The issue bordering on teenagers exposure to internet pornography as observed so far, is perceived to be treated nonchalantly by relevant stakeholders and government in Nigeria. This seeming show-of-apathy is evidently reflecting on the present state of lack of coherent policy framework, laws, and efficient enforcement procedure to remedy this social issue in the country. It is viewed as an unexpected and irrational negligence on the part of the government, considering the high level of general awareness about this social issue, coupled with its associated negative implications on the sexual development of Nigeria teenagers.

Though the enormity of the negative implication of teenagers' exposure to pornography on the internet is yet to be generally perceived as a matter of 'State of Emergency' at the moment, one should be

apprehensive about how long this social problem is being allowed to thrive. It is imperative to interrogate the rationality behind allowing the situation to degenerate to a point where its implications such as incidences of rape, early sex, early pregnancy, incest, STD infections among others, becomes not only predominant in the country but also become a major developmental issue that posterity would have to fatefully face, accept and contend with.

It is hereby recommended that parents and teachers should largely discourage the ownership of phones by teenagers until they are matured and well-bred with sufficient sex education. Nigerian government in collaboration with telecommunication service providers should develop software applications that will be sensitive enough to block and remove all pornographic materials that could be accessed by Nigeria internet audience. This should also be supported by creating a dedicated hotline that will receive and swiftly treat complaints or notifications from the network users as regards cases of sexual contents found online.

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ANALYZING THE SHARE OF AGRICULTURE AND INDUSTRIAL SECTORS IN THE ECONOMIC GROWTH OF ETHIOPIA: AN ORDINARY LEAST SQUARES (OLS) APPLICATION

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Abstract

Ethiopia has great resource potential that may not be available in other countries. It has a great potential of various resources that date back to thousands of years. Ethiopia is one of the areas that have diversity in terms of natural resources and industrial components. This helped increasing the gross domestic product (GDP). Hence, the purpose of this study examines and analyze factors (Agriculture and Industrial Sectors) that affecting economic growth of Ethiopia. Research on agriculture and industrial in Ethiopia reveals strategies and solutions to overcome the obstacles confronting the Ethiopia economy by diversifying the economy. To achieve study objective the Ordinary Least Squares (OLS), multiple regressions _ Double log with economic analysis were applied in the study and the secondary data from 1980 to 2016 was used to estimate the contribution level of economic sectors to economic growth. The empirical result shows that political and security instability had negative effects on the agriculture and industrial sectors as well as on the economic growth. This study also found that both agriculture and industrial sectors had positively effected on gross domestic product (GDP). Nevertheless, the effect of industrial sector was smaller, if compared to agriculture sector. Ethiopian government should give opportunities to extensively develop Agriculture and Industrial sectors and in the process help to increase gross domestic product (GDP). Furthermore, government should consider agriculture and industrial diversification as necessary strategies to develop Ethiopia's economy. This study contributes to the body of knowledge because this study attempts to present a clear picture of the agriculture and industrial sector of Ethiopia. The study also identifies the problems that facing the Ethiopian economy and selects the necessary policy to solve the problems.

Keywords: Agriculture sector, industrial sector, economic growth, OLS applications and Ethiopia.

1. INTRODUCTION

There are many different ways for developing and economic growth in a country. It is well documented that agriculture and industrial sectors have significant role in accelerating economic growth of a country, however, sharing of such sectors are different according to the countries. At the first stage of economic

development agriculture and industrial sectors are affective elements for an economy, because such sectors can provide more job opportunities, security in producing sufficient food, and then poverty reduction (Michael & Stephen, 2001). Thus, both sectors are backbone of the country's economy, for the reason that countries cannot exist without agriculture development, and cannot develop without industrialization. The agriculture and industrial sector are two of sectors with great impact on the economic growth in the countries.

Both sectors are vital for economic development, for example, in increasing GDP and decreasing employment. India is one of the countries which continuously its development depends on agriculture and industrial sectors. Therefore, agriculture and industrial sectors have a positive impact on increasing GDP in India (Sahoo & Sethi, 2012). In Pakistan, GDP has increased when the agriculture improved, it means that, the relation between agriculture and GDP are significantly positive (Anwar, Farooq & Qureshi, 2015). Another study supported that the agriculture and industrial sectors have more fundamental impact on Pakistan economy and GDP growth (Nazish, Iqbal & Ramzan, 2013).

Even though investments in both sectors are beneficial for countries, the allocation of risk and returns has fundamental role in the business decisions process concerning the level of vertical combination. In the past few decades, agricultural value chains have likely focused on returns in processing and allocation, whereas the risks drop primarily on dominant manufacturing (Vermeulen & Cotula, 2010). Additionally, the distribution of risks and returns are changed because of alternation in agriculture commodity prices, by enhancing the downstream risks to processors and distributors, concerned about the provision securities, and improving returns from production (Noland & Pack, 2005). Advocates of agriculture-led growth (ALG) contend that investment in agriculture and the accompanying creation of infrastructure and institutions in other sectors is a prerequisite for national economic growth (Schultz, 1988; Stringer & Pingali, 2004).

The fundamental role that agriculture plays in development has long been recognized. In the seminal work on the subject, agriculture was seen as a source of contributions that helped induce industrial growth and a structural transformation of the economy. However, globalization, integrated value chains, rapid

technological and institutional innovations, and environmental constraints have deeply changed the context for agriculture's role. Governments and donors have neglected these functions of agriculture with the result that agriculture growth has been reduced, 75% of world poverty is rural, sectoral income disparities have exploded, food insecurity has returned, and environmental degradation is widespread, compromising sustainability (Byerlee et al., 2009).

The principle aim of this article is to identify Sharing the Agriculture and Industrial Sectors in the Economic Growth of Ethiopia, and determine challenges faced by both sectors. The structure of this research is divided by some sections. In first Section introduction is focused; and theoretical framework of the study followed by. Also, next section in this research summarizes the related literature. Data description and methodology models with the results are clarified in Section 4. The end of this study provides the conclusion.

2. THEORETICAL FRAMEWORK

2.1. The Concept of Agriculture

Agriculture is considered to be a vital determinant of a country's economic strength and development. In addition, it is a type of activity which involves land, labor, capital and organizer to produce plants, animals, and forest resources for consumption and providing the agrarian products which is demanded by other fields (Lawrence & Salako, 2015). Accordingly, "Beyond its primary function of producing food, agricultural activity can also shape the landscape, provide environmental benefits such as land conservation, the sustainable management of renewable natural resources and the preservation of biodiversity, and contribute to the socio-economic viability of many rural areas" (Ahluwalia, 1996).

From a policy perspective the role of agriculture has been significant for some reasons: promoting economic evolution and growth, the transient from an agro-economic to manufactured or modern economy would rely on how important the field of agriculture enables such a change (Behera & Tiwari, 2014). For instance, Pani (1984) implies that one per cent rise in agriculture production raises the net domestic product (NDP) by approximately 0.56 per cent.

It is well documented that agriculture sector has crucial role in employing huge numbers of workforces

than other sectors (industries and services), especially in where labor productivity is not high. Agriculture in developing economies employ more than (60-70%) of the workforce, this includes India and until the 1990s China, while in developed countries less than (10%) of workers are in agriculture (Perkins et al., 2008). Until the Industrial Revolution the majority of the population depended in agriculture for their survival (Sahoo & Sethi, 2012).

2.2. The Concept of Industry

Industry is the manufacture of goods and service in well organized plants with high degree of specialization and automation. It can likewise include other commercial activities that supply goods and services like transportation and hospitality (Verspagen, 2000). In addition, such a sector refers to mining, manufacturing, construction, gas, water and electricity (Sahoo & Sethi, 2012).

The role of Industrialization sector is remarkably important for economic growth, and for poverty reduction. However, the pattern of industrialization, effects on how economy of countries advantage from growth (Sahoo & Sethi, 2012). Thus, expanding industrial field is remarkably significant for economic development (Kniivilä, 2004). Starting with the industrial revolution, technological adjustment has played crucial role in industrial sector (Sahoo & Sethi 2012). In the early 1990s, the value of world's industrial sector rises; for example, over (60%) of such a rise can be attributed to six major industrial countries - the US, Japan, Germany, Italy, the UK and France. While developing nations included 21% of manufacturing vale rise. This shows that there is an obvious gap between developed and developing nations, as analyzed by (Kniivilä, 2004).

2.3. The Contribution of Agriculture and Industry Sectors in Economic Growth

Based on above discussion, agriculture and industrial sectors are regarded as important elements specifically in the initial stages of economic growth of a country. Such sectors play vital role in the balanced economic development of an economy (Michael & Stephen, 2001). It is well documented that both zones have essential role in accelerating GDP growth and holding the key of overall economic development by generating employment and revenue, insuring self-reliance in food production and security, supplying tools to other fields and foreign exchange earnings, (Lawrence & Salako, 2015).

According to (Karshenas, 1996) there is an interdependency between the sectors of traditional agricultural and modern industrial to a nations overall economic growth. Growth in agriculture relies on the industrial demand for agricultural products. Correspondingly, industrial growth relies on a rise in purchasing power of the agricultural field for manufactured products and on the providing of raw materials for processing. Many emerging nations have realized the significance of the agricultural field and its role in industrialization for their economic development, (Rangarajan, 1982).

More specifically, agriculture is essential source of resource for countries that want to industrialize, which could be used for investment in the emerging activities. Accordingly, outstanding industrialization demands a solution to the problems connected with the creation, transition, and the surplus of agrarian resource. Generation of an increasing surplus requires an increasing output of farming resources (Souza & Paulo, 2014).

Growth of industrial sector in developed world generated a rise in demand for primary goods from developing countries. Technological improvements in communication, transportation, and infrastructure developed the trade opportunities. However, emerging nations still continued to fundamentally rely on agrarian or mining. Significant components of manufacturing have moved to developing world which provide industrial exports to the wealthy nations (Naudé & Szirmai, 2012). Expansion of exports can promote economic growth both directly as a part of aggregate output, likewise indirectly through efficiency in resource allocation, bigger capacity, exploitation of economic scales, stimulating technological progress owing to competition of overseas market (Awokuse, 2009). Moreover, production of manufactured goods for exports stimulates efficiency throughout the economy. This is important when the output of an industry is used as an input of another domestic industry (Mahdavi and Fatemi ,2007)

Although several studies have outlined the potential contribution of agriculture and industry sectors to economic development. Their role is been a subject of controversy among development economists. For example, some argued that agricultural evolution is a prerequisite to industrialization; others firmly disagree for a distinct path. Nevertheless, few believe that sharing these sectors in economic growth is more beneficial; particularly for coffee-exporter nations.

In favorer of agriculture role, several authors contend that growth in the entire economy relies on the evolution of the agriculture field (Schultz, 1988; Gollin, Parente, & Rogerson, 2002). These analysts outline that growth in agrarian sector can be a catalyst for growth of domestic output via its impact on rural incomes and supplying of resources for transformation into manufactured economy (Delgado, 1995 ; Schneider & Gugerty, 2011). According to the finding of Awokuse (2009) agriculture indirectly affects on aggregate economic growth, which can provide better caloric nutrient for the poor, stability in the price of food, job opportunity particularly in low-income nations, improvement in the quality of production factors namely (capital and labor), and poverty reduction. Additionally, previous growth theories acknowledged the agriculture field as a magnificent source of recourses to finance the industrial sector's development (Johnston & Mellor, 1961; Schultz, 1988).

In contrast to the above arguments, supporters of opposite perspective argue that there is not strong connection between sector of agriculture and other fields. In such a sector, sufficient innovative structure is essentially required to promote higher productivity and export evolution (Stringer & Pingali, 2004). In addition, in many emerging countries, the sector of agriculture was subject to abundant taxation. For instance, beyond the reform of agriculture in 1979 Chinese agriculture was under large taxation and the incomes were adopted to help development of industrial sector (Yao, 2000). Despite, in theoretical analysis, Jinding & Koo (1990) investigated sharing industry sectors in promoting economic growth, and emphasized those countries where export industrial products can generate higher level of GDP growth to support more income and tax, which are significant to fund initiation of life quality such as health care and infrastructure in the economy.

2.4. Agriculture and Industry: Theory of Investment

Investment theory is a body of knowledge that can be used to support "the decision making process" for choosing appropriate way of investing, among various investment options. It encompasses the capital asset pricing model, efficient market hypothesis, portfolio theory, arbitrage pricing theory, and rational pricing (Eklund, 2013).

In order to decide whether an investment is to be initiated or not, with the consideration of high degree of

profit, there are a number of different decision rules. Such rules commonly consider the future expected cash flow caused by investment, investment cost and capital cost of the company (Love & Zicchino, 2006). Further, Scheibl & Wood (2004) conclude that there are four investment objectives, such as: rise in market share, increase the output of existing capacity, modernize; minimize shareholdings. In addition, Richardson (1960) imposes that the profitability of an investment business relies on other firms' investment behavior. Alfredo & Vicente, (2010) defined investment behavior as how investors work, expect, examine and review the decision making processes, which incorporates the psychology of investment, accumulation of information, comprehending and defining, research and examination. In respect of evaluating an investment opportunity is profitable Richardson (1960) also emphasizes that, it is remarkably important to know whether firms have adequate information. He contended that a necessary demand for constant reaction to the opportunities of profit is for 'imperfections or frictions' and 'market connections' which 'clog the competitive system' to continue. Frictions enforce a restraint on the length to which competitor reacts could react and differ the reaction times of various firms. Friction presences supply firms with adequate knowledge of the entire supply reaction, so that contributing to the resolving the co-ordination problem.

In addition, comprehensive bodies of literature have examined investment behavior of the sectors of industrial and agriculture. For instance, regarding the investment behavior, Scheibl & Wood (2004) adopted the combination of quantitative and qualitative data to exam British brick industries to promote a grounded investment theory. They outline that the high capital cost which associated with overinvestment ought to supply the circumstances that weather stimulate firms to prevent surplus capacity or create pre-emption especially effective. Therefore, in order to the industry significantly profit, the brick firms' capacity decisions are made, by the combinations of these features. The fundamental determent of a brick firm's capacity is the 'size and number of its kilns'. Therefore, the size of kiln and plant has dramatically grown.

While in high income nations, Investment in industrial sectors is high; investment in agriculture is recently getting bigger in low and mid income nations (Vermeulen & Cotula, 2010). This is because of

some structural aspects, for instance; Population development, rise in urbanization rate (which explore the contribution of the world's population that relies on buying food) and diet changes (such as increasing demand for fast food and meat in large industrial nations), and therefore, this leads to increasing demand for food (Godfray et al. 2010). Additionally, agriculture increasingly becomes attractive investment option, when demand for agriculture commodities and energy increases worldwide, meanwhile; when technological and industrial capacity for higher products and returns increase (Kniivilä, 2004).

2.5. Agriculture and Industry: Theory of Growth

Economic growth is an increase in the production and consumption of goods and services. It entails increasing population and/or per capita consumption. Growth rates vary enormously across countries over long periods of time. The Gross Domestic Product (GDP) is considered as essential measure of economic growth which indicates the economic performance (Ayres & Warr, 2005). An increase in real GDP means rise in the value of national output and expenditure (Bjork, 1999). In addition, GDP is defined as "an aggregate measure of production equal to the sum of the gross values added of all resident, institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs)" by (Zanoli et al, 2007).

The extensive body of literature examines the economic growth. In order an economy grow several factors are required, for instance; energy sources, natural capital, including water timber, soil and energy sources (Bjork, 1999). Economic development is a significant macroeconomic tool because of enabling high standard of living and supplying more job opportunities; this encompasses rise in aggregate demand ($AD=C+I+G+X-M$), and rising aggregate supply which means growth in capital, investment, higher labor productivity (Acemoglu, 2009).

Industrial development has had an influential role in the growth of economy. Some countries have managed to obtain growth with equity, while in others inequality has stayed high (Noland & Pack, 2005). Syrquin (1986) examines that, when overall growth accelerates, manufactured sectors commonly leads the way and grows faster than other fields. However, in low income nations the role of manufacturing in GDP is not high, and its immediate attribution to aggregate growth is small.

According to the finding of (Ricardo), who investigate the linkage between agriculture and industrial sectors and their sharing in promoting economic growth, while such a field is subject to declining returns, labor productivity declines the demand for agriculture workforce, differently; employment opportunities in manufactured sector develop (labor surplus in agriculture would turn on to industrial sector) without causing an increase in wages role (Michael & Stephen, 2001). Consequently, production in industry takes over a larger contribution of GDP than agriculture and employment in industry becomes predominant. Ranis & Fei (1961) also examined the relation of both sector in the process of economic growth; they assumed that the agriculture and industrial sectors rely on each other. Industries prefer to employing people who have prior knowledge of working in factories instead of inexperienced farmers (Stringer & Pingali, 2004). Accordingly, Awokuse, (2009) implies that without growth in agriculture, no country can exist and without industrialization countries can not develop.

3. METHODOLOGY, VARIABLES AND DATA DESCRIPTION

The econometric model identifies functional relationships between economic growth and its determinants using Ordinary Least Square Model. The OLS approach to multiple linear regressions was introduced by Gauss in 1794. The OLS technique is the simplest type of estimation procedure used in statistical analyses (Burke, 2010). OLS is performed in economics (econometrics), political science, and electrical engineering (control theory and signal processing), among many areas of application. The OLS model includes dependent, independent variables. Additionally, each of these variables must be estimated; therefore, the accuracy of the estimation depends on the reality and precision of each data sample (Witt & Witt, 1995). However, to benefit from the refined properties of an OLS estimate, numerous assumptions must be satisfied. OLS computational techniques are commonly used to test hypotheses on differences among factor-level means in repeated measures data and are available in various commercial statistical software packages, generally under the rubric of general linear model.

Explaining the growth rate of output over time is usually referred to as growth accounting approach, which attempts to quantify the contribution of different determinants (e.g. Agriculture, Industrial and Service sector) of economic growth. GDP is one of the most commonly-used macroeconomic indicators

for measuring economic growth (Slocum, 2006; Chen & Chiou-Wei, 2009).

There are several different frameworks in which the linear regression model can be cast in order to make the OLS technique applicable. Each of these settings produces the same formulas and same results. The only difference is the interpretation and the assumptions which have to be imposed in order for the method to give meaningful results. The choice of the applicable framework depends mostly on the nature of data in hand, and on the inference task which has to be performed (Lim, 1997; Abdullah et al, 2010 ; Ishikawa and Fukushige, 2007; Hutcheson, 2011). In fact, several factors influence economic growth; each of them includes several items and has different measures and different units of measurement. Hence, GDP growth for industry and agriculture sectors by ordinary least squares (OLS) methods which can be written as below:

$$EG = F (Ag_t, In_t, Z_t) \dots\dots\dots (1)$$

Where: EG = Economic growth presented by real GDP in Ethiopia during the time period t; Ag = Contribution (Add-Value) of the Agricultural sector in Ethiopia during the time period t; In = Contribution (Add-Value) of the Industrial sector in Ethiopia during the time period t; Z_t = Vector of other factors that affect Economic growth.

The above model is determined to measure the sharing of both agriculture and industry of gross domestic product. In sum, in this study the following steps are performed to estimate the economic growth models for Ethiopia for time period 1980 to 2016:

- First:** Stationary test with OLS approach.
- Second:** Using OLS approach to estimate Economic Growth Model.
- Third:** Diagnostic Checking and Accurate Estimation of OLS model.

4. RESULT AND DISCUSSIONS

4.1. Stationary Test with OLS Approach

Stationarity is an assumption about variables in the classical regression model. The typical regression model assumes that variance of time series should tend to converge at a fixed finite constant in large

samples. The stationary test results are reported in the tables below:

Table 1: Result of Unit root test (Augmented Dickey-Fuller test statistic(ADF) at Level)

Variables	Intercept	Prob.*	Intercept with trend	Prob.*
Ln GDP (Growth)	1.892	0.584	1.874	0.358
Ln AG (Agriculture)	1.874	0.698	2.985	0.531
Ln IN (Industrial)	0.897	0.753	3.8745	0.235

Table 2: Result of Unit root test (Augmented Dickey-Fuller test statistic (ADF) at First Difference)

Variables	Intercept	Prob.*	Intercept with trend	Prob.*
Ln GDP (Growth)	3.564*	0.001	3.584*	0.000
Ln AG (Agriculture)	3.254*	0.001	5.365*	0.002
Ln IN (Industrial)	5.245*	0.003	7.235*	0.001

Note: (*), (**), (***) denotes Significant at 1% and 5% respectively.
Note: Number of observations is 37.
Data Source: World Bank, Ethiopian Commercial Bank (2016).

From table (1 & 2), all variables (GDP, AG, IN) are stationary in the first difference (Intercept and intercept with trend) at the 1% and 5% significance level. The OLS estimation procedure is performed after validating the relevance in the first order I (I) of the co-integration concept.

Using OLS Approach to Estimate Economic Growth Model OLS regression is particularly powerful because it allows relative ease in checking the model assumption, such as linearity, constant variance, and the effect of outliers using simple graphical methods. Moreover, OLS regression is one of the major techniques used to analyze data. It serves as the basis of many other techniques. (Lim, 1997; Abdullah et

al, 2010 ; Ishikawa and Fukushige, 2007; Hutcheson, 2011). Many types of samples have been used (e.g., OLS) to estimate the elasticity of variables that explain Economic growth. Different levels of aggregation are used to investigate the agriculture and industrial of economic growth.

This section applies the macroeconomic view to relate GDP as a measure of economic growth. The purpose of this section is to estimate the contribution of Agriculture and Industrial sectors to the economic growth in Ethiopia. Thus, based on Equation (1), can investigate study objectives, which is to identify Sharing the agriculture and industrial Sectors in the economic growth in Ethiopia by applying data from 1980 to 2014. The results of the OLS estimation are reported in Table 3

Table 3: estimates for economic growth of Ethiopia by applying Ordinary Least Squares Estimation

Regressors	Coefficient	p.value	t-test	Standard Error	Decision
Constant	0.025	0.552	0.078	0.330	-
Gross Domestic Product (GDP)	1.540	0.002	7.530	0.163	<i>Accept H_o</i>
Agriculture Sector (AG)	0.775	0.003	3.533	0.233	<i>Accept H₁</i>
Industrial Sector (IN)	0.352	0.002	3.522	0.120	<i>Accept H₁</i>

(*), (**), (***) denotes Significance at 1%, 5% and 10% respectively

Table 3 shows that a one percent increase in agriculture (value add) increases the Ethiopian GDP by (0.775%), and a one percent increase in industrial (value add) increases the GDP of Ethiopia by (0.35%)*. These results also demonstrate that the GDP contribution of Agriculture Sector is much greater than that of Industrial Sector, and consistent with our expectation.

Diagnostic Checking and Accurate Estimation of OLS model After estimating the economic growth model, the diagnostic checking is conducted using (E-views 8.0). The purpose of diagnostic checking is to check the adequacy of the estimation. In current study, diagnostic test is applied to ensure the appropriateness of the OLS estimation based on both theory and statistics tools; this study used several diagnostic tests, including the tests for serial correction, heteroscedasticity, normality and function form. The F-statistics and critical values are reported in Table 4.

Table 4: Diagnostic Checking and accurate estimation of OLS model

Diagnostic Test			
Test statistics:	LM version	F version	Decision
Serial Correlation / LM test	CHSQ(1) = 6.003 [0.014]	F(1, 3) = 0.948 [0.402]	Accept H ₀
Heteroscedasticity /ARCH test	CHSQ(1) = 0.108 [0.743]	F(1, 23) = 0.099 [0.755]	Accept H ₀
Functional Form /Ramsey test	CHSQ(1) = 9.432 [0.002]	F(1, 3) = 1.818 [0.270]	Accept H ₀
Normality /Jarque-Bera	CHSQ(2) = 2.212 [0.331]	Not applicable	Accept H ₀
D.W-statistic test	1.478	1.478	Accept H ₀
R-Squared	0.98	S.E	0.08
R-Bar-Squared	093	F(20, 4)	16.369[0.007]
Notes: t-value in the parentheses (...) and p-value for diagnostic test in parentheses (*), (**), (***) denotes Significant at 1%, 5% and 10% respectively.			

Table 4 show that the Lagrange multiplier (LM) and the F-statistic are less than the critical value. The null hypothesis (H₀; the econometrics model does not exist) is accepted across economic growth model. As shown in Table 4, there is no evidence of autocorrelation presented in this table. The ARCH tests suggest that the errors are homoscedastic and independent of the repressors. The model passes the normality tests. Therefore, the OLS model is correctly specified. Furthermore, table 4 also shows the value of S.E regression given its minimal value, is small. The R² show that OLS model is the appropriate. Overall, OLS models produced results that were statistically accurate, consistent with economic theory, and compatible with our data and objectives.

5. SUMMARY AND CONCLUSION

Based on theoretical hypothesis and empirical investigation, this study provides comprehensive evidence of the Contribution of Agriculture and Industrial Sectors in the economic growth of Ethiopia. The methodological examination incorporated secondary data for the period 1980 to 2016. In addition, the

empirical approach was based on some econometric models: Ordinary Least Squares (OLS), multiple regressions _ Double log with economic analysis were applied in the study.

The empirical investigation of Stationary test with OLS approach provides evidence of stationary in the first

difference (Intercept and intercept with trend) for all variables (GDP, AG, IN) at the 1% and 5% significance level. The results of the OLS estimation shows that both sectors significantly impact on economic growth of Ethiopia, but the impact of agriculture is more effective, for instance, as it is founded one percent rise in agriculture sector, will increase GDP by (77.5%).

In summary, the empirical results indicate that the GDP growth of Ethiopia is influenced by Agriculture and Industrial fields; however, the impact of former is more significant. Likewise, the finding indicates that political instability had negatively effects on the agriculture and industrial sectors as well as on the economic growth. In order to progress in its economy, Ethiopian government should give opportunities to extensively develop agriculture and industrial sectors, because such sectors can help in increasing gross domestic product (GDP) and diversify Iraqi economy.

The main limitation of this study and makes suggestion for future research, study focused on the share and contribution of the agriculture and industrial sectors in the economic growth of Ethiopia. Therefore, for future research in this subject, it would be appropriate and interesting to expand the study by including more variables. Moreover, current study applied the OLS and time period from 1980-2016. Consequently, a future study can formulate and apply different techniques and can also use a different time period to compare and evaluate.

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SOFTWARE QUALITY ASSURANCE TECHNIQUES: A REVIEW

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Abstract

Software quality assurance is the important research area to be considered. Software quality is the basic factor for determining the capability and working of a software. Ensuring the quality of software is known as software quality assurance. This work reviews the several quality assurance techniques that have been developed for the purpose of improving the quality of software. A detailed discussion shows that these methods play a significant role in software quality improvement. Several vulnerability issues have been found and discussed in this paper. With the development of software industry, the risk of attacks is also growing and with the increase in applications development the functionality of software also needs to be increased. Therefore, a number of techniques have been discussed in this paper for the purpose of software quality assurance.

Keywords

Quality Assurance; Agile methods; Code Security; Software Quality

Introduction

Software quality assurance is an important area of research with many significant approaches to verify the software quality control. Software quality assurance is the method of ensuring software quality. Quality of software depends upon several factors. Security code review is a process to audit the application code and it is used by security experts with statistical analysis tools and applications [1]. There are a number of flaws exist in the software and applications. These flaws are mainly the SQL injections, sessions and cookies, input validations etc. Bugs tracking framework is a customized system to track bugs, record information about the bugs and recover data about the bugs if discovered again in any scenario. Agile method is the most mainstream technique in building up any product as it enhances programming quality

at every advancement levels [2]. The techniques required to make agile methods suitable for software improvement are incremental delivery, evolving nature, customer satisfaction, developer's process and simplicity. Static analysis is the strategy for analyzing source code from bugs and errors etc. This analysis is performed through automated processes and can be helpful in improving software quality. Exception handling is the process of dealing with undesired events and can be regarded as bugs fixing technique. This paper has mentioned several such techniques and it is required to have bugs free environment for software development.

In next sections, we described the different issues in quality assurance and their solutions for the purpose. The different methodologies such as the security code, bug tracking, and agile methods have been elaborated.

Approaches for Improvement of Software

Software quality is to determine the efficient and effective processes to ensure software development. The motivation behind this research is to explore the distinctive strategies for software development. A great number of methods for improving the software quality have been studied and mentioned in this article and as follows:

Code Security

The most critical factor in enhancing software quality is its security. In the event that the product isn't anchor, regardless of how compelling its working is, its quality is exceptionally influenced. Security code survey is the technique to identify the vulnerabilities in the product which causes misuse [3]. This technique is generally utilized for sites as everybody can get to sites and can misuse the vulnerabilities in the site either for individual or expert reason [4]. There are two ways for reviewing the source code either by automated tools especially designed for this purpose or manually by experts and reviewers. In this work, we will focus on the manual reviewing. For this purpose, we can review the source code ourselves and by hiring experts. A number of code experts can be hired from several freelancing websites for the cause. They will all report us the vulnerabilities and after that we think about their outcomes for their accuracy and adequacy of the surveys. There are diverse sorts of vulnerabilities exist in a site which ended up being lethal. Following are the couple of well-known attacks which can be misused effectively:

SQL Injection: This a sort of weakness in which programmer can embed a pernicious SQL inquiry in an information field and can gain admittance to the database and can change and erase information [6]. This kind of powerlessness [7] just exists if the info is not legitimately disinfected on the server side, subsequently it can be limited by cleaning contribution on server side. The attack and web application communication is shown in figure 1.

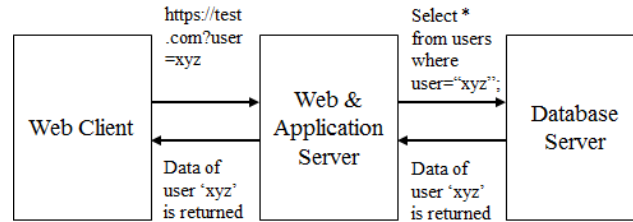


Figure 24: SQL injection and web application communication

Input Validation: If the info is not approved appropriately programmer can run malicious code through information boxes and html frames and so on. Security code audit helps in recognizing and maintaining a strategic distance from these kinds of vulnerabilities. Subsequently every information either through info fields, structures, headers or through URL ought to be entirely approved [8].

Session and Cookies: Sessions and cookies are the most critical components of a site with sign in features since sessions and cookies control the entrance to the site. These two holds the control to enable client to get to either restricted or full substance and permit access for a specific timeframe, so if there exists attack situations in sessions and cookies then a programmer can get to the information without marking in and can get to the information of different clients in this manner making hurt the clients and site. So sessions and treats ought to be overseen security [9].

Above are the couple of vulnerabilities in sites, there additionally exists different vulnerabilities like cross-site scripting, brute-force attacking and so on. Security Code Review recognizes vulnerabilities in a site and enables us to take prudent steps for assurance against these vulnerabilities [9, 4]. Precautionary measures incorporates approving information and all sources of info both on customer and server side, keeping up sessions and treats and getting away strings containing SQL vindictive codes and so forth. Thusly Security code survey causes us make our site secure which prompts the enhanced nature of programming.

Bug Tracking Method

The errors which makes program crash or create uncalled for yields are known as bugs. Bugs can thwart the proficiency, adequacy and full usefulness of the product which brings about affecting programming quality, in this way it is basically required to track bugs and dispense with or lessen them.

Bugs can be followed in two different ways either physically or by bug following frameworks. Physically following a bug is very long, dreadful and expensive process though bug following framework is shabby and efficient device to track bugs [10].

Bug Tracking System is the framework in charge of distinguishing bugs in programming. Most bugs that happens in an undertaking are copy of as of now happened bugs in some other venture or a similar one so it is expected to keep up the history and records of bugs, bug following frameworks ensures sparing the records and reports of bugs [11].

For following bugs, we can either make bug following frameworks our self or can utilize the well-known bug following frameworks in the market like Bugzilla, Lean Testing and so forth. Bug

tracking systems have the jobs like reporting bugs, recording in required information about the bugs, finding bugs, managing complete records about the bugs, and tracking bugs [10]. Software quality assurance is extremely reliant on the bugs following framework as they help in following and dispensing with bugs. Bugs can differ from each other by the going with features, for example, (I) Bug id (which must be extraordinary for putting away and recovering that particular bug) [10, 11]; (ii) Bug Type (bug compose must be distinguished to place it in its applicable class so can be recovered fast); (iii) Bug Severity (bug seriousness ought to be likewise recognized for designers to deal with it with that care and significance); (iv) Bug Location (bug area ought to likewise be put something aside for it to be settled fast).

This all data about the bugs can assist us with tracking bugs and after that we can have the capacity to settle them. Less the quantity of bugs in a product high the quality is so bug following framework assumes a fundamental part in enhancing the product quality.

Agile Approach

Agile method is the fast and another method for dealing with the advancement of software methods. One of the significant approach to verify software quality is its improvement and conveyance time, overhead cost and the inclusion idea of item as indicated by the requirements of the client. Here nimble assumes its part in satisfying every one of these necessities.

The agile strategy takes after an iterative approach of programming advancement which expands improvement speed which later diminishes the advancement and conveyance speed. It centers around the code not on the plan. It confines the documentations which brings about the diminished overhead [12]. Following are the standards of agile technique:

- 1) *Customer Satisfaction*: As the customer is involved throughout the software development life cycle, he clearly defines the requirement and also evaluates each iteration. Hence customer is always satisfied.
- 2) *Incremental Delivery*: The package is developed and delivered in increments and therefore the client defines the necessities that ought to be enclosed in every increment.
- 3) *Developer's Process*: There does not exist any process to follow for developers rather they are allowed to follow their own way of developing software.
- 4) *Evolving Nature*: In this process, it is expected that the system requirements will change later on and software will be able to evolve over these changes.
- 5) *Simplicity*: The overall process and the product is very simple and it is strongly focused to minimize and eliminate the complexity.

Above principles elaborates that how agile method improves the quality of software [12]. Agile method improves software quality by:

- Meeting fully customer needs and requirements.
- Low cost
- Less delivery time.
- Simplicity and evolving

Hence, the software developed through agile method is of better quality as compared to other traditional methods.

Static Analysis

None of the fault-detection software technique can address all concerns about fault-detection. Defects or bugs in software can cost a lot of money to companies especially when the software failure comes into play. Static Analysis or automated static analysis or Source Code Analysis is a tool in which well-defined and clear programming rules are used to find defects as early as possible as they fixed cheaply [13]. Static Analysis is an automated tool for ensuring the software quality. Static Analysis is a tool that analyzes code without running it, Static Analysis is performed on the source code. In the field of computer code development static testing is additionally referred to as rehearsal testing and this is the stage of the White Box Testing. In static testing, instead of using actual program or application this method requires programmers to go through their whole source code manually to find error [14].

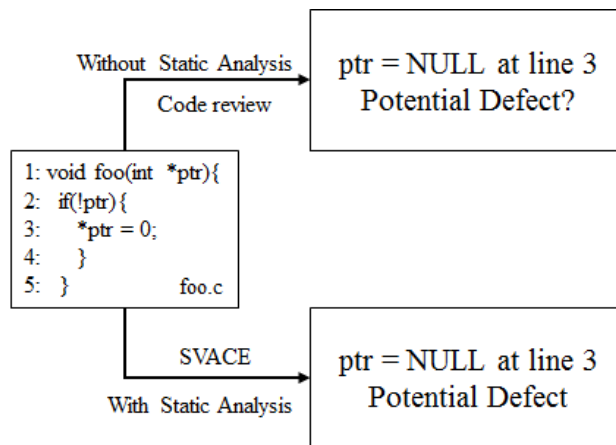


Figure 2: Static Analysis Example

The figure 2 is the graphical representation of the static analysis. Static Analysis scales well it may be run on an out-sized range of software package [14]. It can automatically find buffer overflow, SQL injection flaws etc. with high confidence. Developers feel good with output.

Source Code Analysis is executed as a part of the White-Box testing and is performed at usage period of SDL (System Development Life-cycle). It alludes to Static Code Analysis instruments that attempt to get the vulnerabilities or deformities inside not running or static code by utilizing distinctive systems [15]. There are a variety of techniques which will use to investigate the static ASCII text file for potential vulnerabilities:

1) Data Flow Analysis: Data Flow Analysis is employed to gather dynamic info that's not static of information in software package whereas it's in static state [16].


```

$x = 0;

$y=1;

If ($x==$y) {

echo "x is equal to y";
}

```

Three terms that are commonly used in DFA are: Control Flow Analysis (the flow of data) Basic Block (the code), and Control Flow Path (path that data takes)

2) Control Flow Graph (CFG): It is conceptual diagram that represents code by mistreatment nodes that represent the blocks. A node in diagram symbolize block director edges are accustomed represent methods or jumps from block to dam. A node with solely exit edge is named entry block and a node with entry edges solely is named exit block [16].

3) Taint Analysis: It tries to perceive contaminated variables with controllable data from user and trace to find possible vulnerable functions that are also known as sink. Programming vernaculars like Perl and Ruby have worked in Taint checking and enabled in certain situation. If the debased variable without refining went to a sink, then it flagged as a vulnerability [16][17].

4) Lexical Analysis: Lexical Analysis changes over linguistic structure of code into "tokens" of data entry to digest the source code and make it less complex to control [17]. There are different tools that are used one of them is follow:

5) Finding Bugs: It is a static examination instrument that is utilized to discover coding imperfections in java programming. It is an open source tool and is created by Bill Pugh and David hove Meyer. As find bug is the java tool it operates on the java byte code not on the source code [17].

Exception Handling

This is process of finding and handling misconceptions in bugs while writing codes and running the applications [18]. There are different reasons due to which exception can occur are: (i) invalid command by user; (ii) no permission to access directory; (iii) directory not found; (iv) wrong path to the file; (v) loss in network connection. Some exception occurs due to user and programmer error and other due to failure of physical resources [18]. There are three different types of exceptions:

Checked exceptions: A checked exception is a type of exception that occurs at time of compilation, they are known as compile time exception. They are not to be ignored at compile time the programmer should handle these exceptions very carefully. For example, if programmer tried to read data from a file and the file even does not exist then a "File Not Found Exception" occurs and programmer should handle that exception as compiler raises it [19].

Unchecked exceptions: An unchecked exception is a type of exception that occurs at execution time, these are called Runtime Exceptions also. Unchecked exception includes logical error, improper use of an API or some type of programming bugs etc. These exceptions are not considered at compile time. For example, if programmer declared an array of size 3 and tries to call fourth element of the array then “Array Index Out Of Bound Exception” occurs [20].

Errors: These are not considered as exception. They are beyond the programmer or user control. Errors are usually ignored in code because there is hardly anything you find to do about them. As an example an error will arise if a stack overflow occurs. They are also ignored at compile time [18][19]. Exception Handling is a sort of mechanism that is used to handle error that occurs at run-time [18].

The other option to try/catch block is that an ordinarily utilized method, for example, if/else approach. For the most part, it has symptoms. The try/catch block is smarter to use over its options since it doesn't corrupt the nature of your code and will bring about more powerful code [21]. As restrictive proclamations are branch focuses which may have various experiments that are required for white-box testing. We need to test superfluous restrictive explanations appropriately too that back off time to showcase along these lines Exception Handling is better as there isn't a ton of branch point to test each independently. Bug discovering, settling and testing of bug that all expansion the control stream many-sided quality which result in increment being developed cost that can be dealt with by utilizing Exception Handling on the grounds that there isn't superfluous control stream many-sided quality.

Conclusion

According to the research these methods have been proved effective in improving software quality to great extent so any one can adopt these methods and techniques to ensure the quality of software. The methods discussed in this paper focuses only on the quality by interacting directly with quality improving factors like software security, performance and development speed etc. and are adopted by different software companies. The security code review technique helps a lot in improving the quality of software. Till your software is not secure, it does not matter how efficient it is. It will never be a quality product. If your software or website remains down often due to hacking or some reason no one will be happy with your software. Also the improvement methods are essential enough that software industry cannot survive without implementing and using these techniques while developing the applications.

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INVESTIGATE THE RELATIONSHIP BETWEEN ORGANIZATIONAL LEARNING CAPABILITIES AND ORGANIZATIONAL INNOVATION IN THE FOOD INDUSTRY (SUBSIDIARY INDUSTRIAL ESTATES OF KERMANSHAH PROVINCE)

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ABSTRACT:

The ability to learn is a vital factor for innovator organizations. Innovation is crucial for the survival of organizations in a dynamic environment. So anticipate the impact of organizational characteristics is the utmost importance on innovation. Organizational background shows that organizational learning capability plays a vital role in the development of companies and increase innovation. This study considers the relationship between organizational learning capabilities and organizational innovation and it is lead to the conclusion that organizational learning effect on organizational innovation. The proposed model of the project has four dimensions: conversation, empiricism, risk-taking and mutual interaction with the external environment and was measured by 28 items. Scales have been validity by the results obtained of data collected from 42 food industry under the Industrial Estates in Kermanshah province. 103 valid questionnaires were collected and to test the research model was used by confirmed Factors analysis approach. The results showed that organizational learning capability is a significant and positive impact on organizational innovation.

Keywords: organizational learning capability, organizational innovation, food industry

I. INTRODUCTION

Nowadays scientific and technological changes, is quickly ongoing. Countries to catch up to these changes, trying to invest on training and development of human resources, their own provide the context of growth and development. In today's world growth and development of countries and organizations depends on human knowledge. staff development through education and training, gaining experience and expertise, is not just in a field, but for the present and the future as well and without the development of staff, organizations will not be able to access short-term and long-term goals (Farhang et al, 2011). Nowadays organizational learning has been considered among organizations that are interested increase competitive advantage, innovation and effectiveness increasingly and researchers have studied to analyzing it in different approaches. Richard Cyert and James March were the first ones in 1963 put two words of learn and organization together and was raised learning as an organizational phenomenon.

According to Dodgson organizational learning as the way in which organizations create, complete and organize up to develop knowledge and normal currents work in conjunction with activities and also improving the efficiency of the organization through use of workforce extensive skills. Alegre chiva define organizational learning as a process, which is an organization through which learns, and the learning means any change in organizational models that contribute to improving or maintaining the performance of the organization (Jamal Zadeh et al., 2009).

Statement of Problem:

many experts believe that innovation leads to a firm's competitive advantage in domestic and foreign markets, and it is an essential element for the survival of the organization in the long term. For this purpose, learning is seen as stimulating innovation. The importance of Learning is clear by considering the role of knowledge in the business environment with features such as increasing globalization and cultural differences, social and economic. According to Senge, it is indicating a positive effect on innovation in Western countries although the awareness of the developing countries, especially Iran, is insignificant, considering the importance of learning on innovation in production, deserves more research to be done in this regard. It can be said in relation to learning and innovation, which is the perfect learning environment where the organization is able in that environment using from all sources and activities to market orientation and product innovation (Matoufi et al., 2010).

Importance Of Issue:

In today's dynamic economic environment, the countries found out the big companies are not considered the main factor of economic growth hereinafter. Today, the economy of developed countries is based on small and medium enterprises. For example, half of US exports is from companies with fewer than 20 employees and activity of companies with more than 500 employees is only 7% of the country's export. In the past two decades, with the advent of new technologies in production and communications, emerged changes in methods of production, distribution and organizational structure of enterprises that has increased the importance of small and medium units (Mahdyani and Achak, 2010). Innovation as the most important factor in the performance and survival of the organization, in assessing the competitive environment, innovation as well as group and individual learning processes which aims to finding new ways to solve problems in the organization. (Adam mat, 2007).

Increased competition and complexity of the business environment is one of the characteristics of modern business. Rapid and significant changes in varies field of science and technology are increasingly affecting the process of human society. So that traditional organizations are not able to coordinate with this change and only organization has chance of survival that can be adapt itself with changes in their environment constantly (Sehat and Myjani, 2009). Organizational learning is the process through which an organization learns.

And learning of any changes in the type of organization that improves organizational performance (Alegre chiva, 2007).

Recently, Mr chiva in 2007 analyzed the organizational learning process and integrates it into five essential elements that include testing, risk taking, interaction with the external environment, conversation

and participatory decision-making. Today one of the main factors in the proper management of technology, creating and the timely introduction to market and continuous improvement of products and production capabilities are essential for the survival and success of the company (Sehat and Myjani, 2009).

II. LITERATURE REVIEW

Internal Investigations:

(Hajy Pour et al,2010) consider organizational learning. Their goal was show the effect of organizational learning from organization culture and examined four kinds of culture, including mass culture, development, rational and hierarchical culture and their relation to organizational learning, and their relationship with organizational learning. The results showed that prioritization the types of organizational culture is on the basis of their impact on organizational learning 1- group culture 2- development culture,3- hierarchical culture 4- rational culture .

(Jmal Zadeh et al,2009) examined the relationship of organizational intelligence, and organizational learning, among staff and faculty of the University and came to the conclusion that the dimensions of organizational intelligence (strategic visson, common destiny, the desire to change, spirit, unity, application of the knowledge and performance pressure) has positive and meaningful relationship with organizational learning in both groups of subjects Khosravian et al (2010) examined the relationship organizational climate with culture of innovation (organizational learning, organization, market orientation) in staff of Sepahan Isfahan Cement Company. And their results indicate that there is a positive and significant correlation among all dimensions of organizational climate, and the three components of the culture of innovation.

(Sharifi et al ,2008) examined the relationship between organizational learning and the application of ICT in Islamic Azad University of Garmsar. Their results indicate that there is a direct relationship between the application of information and communications technology. Alam and Moghadam (2010) examined the relationship between organizational learning, and organizational performance. The results indicate that organizational learning is a significant relationship with organizational performance.

(Farhang et al,2010) to examine the factor structure of organizational trust and its relationship with organizational learning in the South East of the country public universities. According to their findings research, there is a significant relation between horizontal and vertical trust and institutional with organizational learning.

(Aqdsy et al,2008) examined the comparative comparison of organizational learning capabilities, from the perspective of nurses, as a source of organizational knowledge between public and private Tehran's hospitals. The results showed that all four organizational learning capabilities have significant relationship with organizational innovation.

(Taslimi et al,2006) examined the mechanisms of organizational learning, the basis for creating a learning organization at National Iranian Oil Refining and Distribution and the results showed that the company has appropriate mechanisms of organizational learning, to facilitate organizational learning, identifying training and development needs, meet the needs of learning development and implementation of knowledge learned in action.

(Hejazi And Veisi ,2007) pay to examine the relationship between organizational learning components of higher education institutions cultivation. The results showed the high level of organizational learning in the sample studied.

(Alavi ,2010) to review the organizational learning and factors affecting it. And accordingly stated that in today's in dynamic environment, only organizations will be successful that able to raise the level of their learning than competitors and through this to overtake your competitors, and to gain competitive advantage and at the same time inside and outside organizational factors effect on organizational learning.

(Hashemi ,2006) to review and assess the factors affecting on organizational learning at the Department of Housing and Urban Development and has identified 9 key factor in organizational learning and these factors include systems thinking, team learning, mental models, shared insight and aspirations, skills and personal power, experience, learning from past experiences, learn from others, and transfer of knowledge.

(Shokri and Kheyrgoo ,2009) pay to investigate the role of learning in innovation and concluded that learning and organizational knowledge was as the factors affecting on organizational innovation and also have a huge impact on organizational performance.

(Javanmard and Sakhaee ,2009) examined the relationship between the individual skills, organizational learning, innovation and organizational performance in small and medium industries and came to the conclusion that individual skills is a positive relationship with organizational performance and it is a direct and positive relationship between individual skills with learning and organizational innovation.

(Matoufi et al,2010) examined the role of learning tends on innovation and organizational performance. Their results suggest that the central learning has a direct effect on innovation in small companies as well as positive effect on organizational performance.

(Masoudi Nadoushan and Javan shargh ,2005) examined the organizational learning and creation learning organization strategies. They discussed the definition of a learning organization, and presented characteristics of learning organizations and after examine the role of key elements such as: leadership, information culture and technology in organizational learning, explain creation learning organization strategies as a formula.

External Research:

(Adam mat ,2011) to examine the relationship between organizational learning ability and success in technical product innovation and came to the conclusion that there is a positive relationship between participatory decision making, testing, interaction with the external environment and the success of the implementation of innovative of technological products.

(Shu-hsien ,2010) examined the prospects for knowledge management, organizational learning and organizational innovation. The results showed that organizational learning is an intermediate variable between knowledge management and organizational innovation. Just as a system knowledge management of one data or essential inputs, organizational learning is a key process and organizational innovation is an important and vital output.

(Haibo and Lorraine ,2009) examined the knowledge management in small companies and its relationship to the strategy and team direction and organizational learning, the results showed that organizational learning and competitive strategies, with formal approaches are positive relation with knowledge

management.

(Dennis ,2010) to examine the development of innovation in staff, influence on ground staff (component) and creative venture. The results indicated that ground staff facilitate the innovation process through activity of grip strength can be developed and through the dissemination of the information obtained, activity of listening, incite or encourage employees to take risks and use the defeat as a learning tool.

(Victor j ,2008) examines transformational leadership on organizational innovation and performance related to organizational learning levels in the pharmaceutical sector. The results of the studies showed a positive relationship between transformational leadership and organizational innovation and between transformational leadership and organizational performance and between organizational innovation and organizational performance and found that in organizational learning, created knowledge and expand dynamically.

(Shu and liao ,2008) examined the relationship between knowledge management and organizational learning and organizational innovation and came to the conclusion that there is a positive and significant relationship between these three components.

(Biv bukler ,1996)to examine the learning process model to achieve the continuous development and innovation. The results showed that organizations to succeed in today's changing environment need to learn in an environment that rapidly changing and realize the importance of the Deming cycle, which is attention to activities related to the learning. This model can also be used by managers in organizations.

The Development Of Organizational Learning:

Kurt and March in 1963, first invented the term of organizational learning. They believed that the efforts of organizations in response to changes in the external environment for the compliance of purposes of organization with the new requirements lead to quest to find procedures that will help the organization to achieve greater effectiveness. Subject learning until the late 1970s did not garner much attention, but after that a number of theorists began its activities in this topic. In the nineties of the twentieth century, this topic was reborn. Depending on how learning it is the title has been studied in recent years. While before writing the famous book by Peter Senge, this was not considered as a very famous and popular (Alam and Moghadam, 2010). Phrase of learning centered organization were prepared in 1992 by Liz et al subsequently by Jipak ha and Aktom com to scientifically and systematically. This term refers to organizations that aim to be a learning organization (Sobhaninejad et al., 2006). Organizational learning also was raised by Argyris and Donald Schon. Fans of the learning organization are emphasized on characteristics such as flat organizations, authorities of subordinates, trust and cooperation among different units. To create learning organizations basic have needs for change and radical transformation in organization. People should be understand that the purpose of learning, is keeping survival and increase competitive power and responsiveness the organization because organizational learning improves, organizational performance (Nezhadirani et al., 2010).

Organizational Learning Theorists:

Organizational learning is the most important opportunity to create change and be keep pace with environmental change. Organizational learning for innovation and creativity is an essential factor and be considered as a bridge between work and creativity. Learning and creativity are interdependent processes

that make up the two sides of the coin And creativity is learn skills that can flourish in different organizational levels. Organizational learning is a process with knowledge acquisition and performance improvements occur over time (ibid.).

Simon has defined organizational learning and growth insight and success revision organizational by people that the results of the structural factors and reflected results of organization. Nonaka believes that organizational learning is the result of repeated internal and external processes. Dojson is define organizational learning as the way organizations create, complement and organize until develop knowledge and routines work in conjunction with activities, as well as improve the efficiency of the organization by using the very skills of the workforce. According to Andre Mayo, organizational learning consists of all the procedures, mechanisms and processes that can be used within the organization in order to accomplish learning. Bob Guans (1996) is define organizational learning acquisition and application of knowledge, skills, values, useful beliefs and attitudes for the maintenance, growth and development of the organization (Sobhaninejad et al., 2006).

Innovation:

Innovation is a new way that a company act in that way or to produce goods. Robbins knows innovation in the process of obtaining creative ideas and converting it into products, services and new ways of operating. In other words, in creativity is obtained information and in innovation, the information presented in different forms. Creativity refers to the ability to create new ideas and innovations means practical those new and fresh ideas (Khosravian et al., 2009).

The Theoretical Relationship Between Organizational Learning And Innovation:

Organizational learning has a positive effect on innovation in organizations. Because, organizational learning is support creativity and innovation and leads to the creation new knowledge and ideas and increases the ability to understand and use them. In fact generative learning that is very advanced shape of organizational learning, When happens that the organization have a desire to research on its assumptions, including the mission, customers, market orientation, abilities, activities, strategies and values, this type of learning is prerequisite for a culture of innovation, basic innovation in products and processes (Khosravian et al., 2009). The only source of strength and persistence organizations, learn better and faster than competitors. Because learning is the main factor and required organization that wants to persist in the modern world economic and competitive environment. (Sharifi and Eslamieh 2007).

Goals And Hypotheses Research:

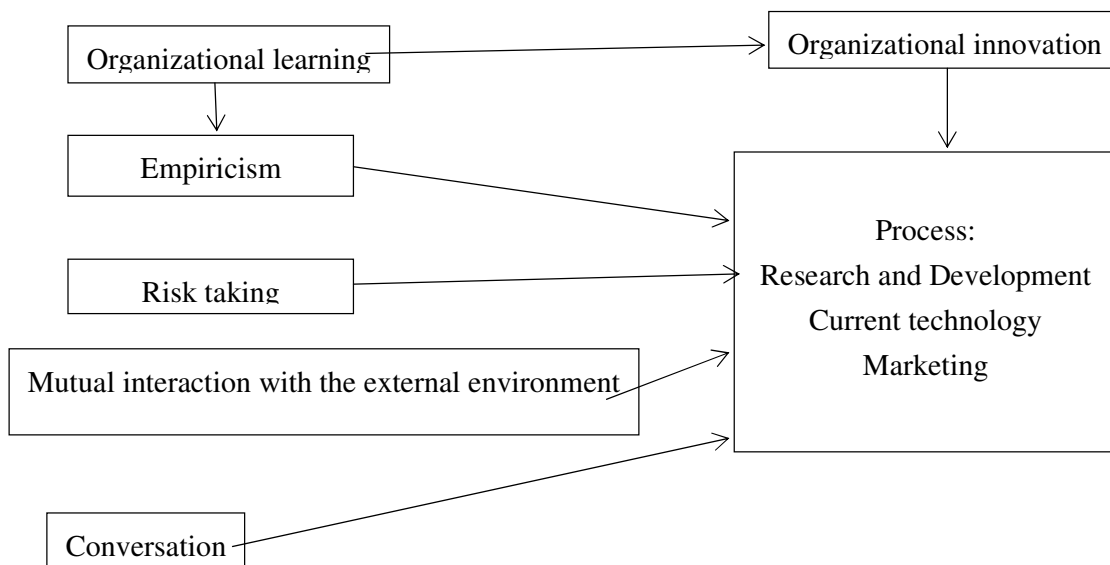
The goal of this study is investigate the relationship between organizational learning and organizational innovation in the food industry in Kermanshah Province and we have defined organizational learning capability in four different dimensions as empiricism, risk-taking, interaction with the external environment, and conversation and we want to measure the effect of the different elements on organizational innovation in the food industry in Kermanshah Province. Innovation is as the most important factor in the performance and survival of the organization in assessing the competitive environment. Innovations include the successful implementation of ideas, and creative ideas within the organization (Adams Matt 2007).

Therefore, in this article, considering all the above issues and the importance of learning and innovation in SMEs and the economy of developed countries is based on small and medium enterprises, so we try to examine the relationship between organizational learning and organizational innovation in small and medium food companies in Kermanshah Province. So the most important goals are as follows:

- 1) Examine the relationship between organizational learning capabilities and organizational innovation in the food industry in Kermanshah province.
- 2) Examine the relationship between empiricism and organizational innovation (process) in the food industry in Kermanshah province.
- 3) Examine the relationship between risk-taking and organizational innovation (process) in the food industry in Kermanshah province.
- 4) Examine the relationship between mutual interaction with the external environment and organizational innovation (process) in the food industry in Kermanshah province.
- 5) Examine the relationship between conversation and organizational innovation (process) in the food industry in Kermanshah province.

To evaluate the effect of different aspects of organizational learning on organizational innovation is intended as a model (Figure 1), Moreover, according to what was mentioned earlier and also the research model, the hypotheses discussed in this article is as follows:

- 1) There is a significant relationship between organizational learning and organizational innovation.
- 2) There is a significant relationship between empiricism and innovation process.
- 3) There is a significant relationship between risk-taking and innovation process.
- 4) There is a significant relationship between mutual interaction with the external environment and innovation process
- 5) There is a significant relationship between conversation and innovation process.



“Fig.1”theoretical model research

III. RESEARCH METHODOLOGY

The methodology of this research is descriptive, of survey type. The research is the basis of how to obtain the required data and in terms of classification of research according to their purpose is descriptive research. Descriptive research include collection of methods that Their goal describe the conditions or phenomena studied Implementation of descriptive research can only be for understanding the current situation and help to the decision making process.

In terms of supervision and control degree, this study is among a field research, because the researcher examines the variables in their natural state. And since this research shows how companies can apply organizational learning strategy for innovation in organizations and success in the competitive environment will be practical. The goal of applied research is the development of applied knowledge in a particular field. Applied research attracted attention of researchers and consultants, for examine his interest problems to find practical solutions to correct a problematic situation (Oumaskaran, 2009).

Statistical Population:

Statistical population included a group of people who have one or more common characteristic is that this characteristic is target of researcher, and it may be selected for the study (ibid).

Statistical population of this study is food industry under the industrial estates in the province of Kermanshah, which are about 42 cases, and questions was collected and analyzed from managers in this industry. Because the number of managers is limited, does not use sampling method and questionnaire distributed to all managers statistical population ultimately 103 questionnaires were collected from 126 questionnaires.

Sample And Sampling Methods:

The unit of analysis in this research is, the food industry under Industrial Estates in Kermanshah province because the number of industry is limited (according to statistical taken from industrial estates of the province 42 companies) Therefore based is on census, the results obtained compared with similar external and internal studies has better generalization capability. So, of all the statistical population companies has been used, as a complete census in statistical sample, also the number managers in relation to The statistical population has been extracted, and the number of acceptable managers between 100 and 126 Manager.

Data Collection Method:

In this study, for collecting and compiling research literature is used library method. Also, the tool of questionnaire used for data collection from managers. Questionnaires was based on the standard questionnaire based on the Likert scale is developed as five option of completely disagree = 1 to fully agree = 5. Likert scale is ordinal scales that of a regular series of statements that is made have been developed in a particular order. These phrases is supplied a special case of the phenomenon measured as terms that are equal weights in terms of value of measured.

Research Tools:

Validity: The aim is that, whether the instrument can characteristic that tools is designed for it be measure or not? Since, the questionnaire was standard, only to determine the face validity have been used of

faculty members and respected experts comments and measured face and content validity of that.

Reliability :

Reliability is one of the technical characteristics of measurement tool and dealing with the fact that, measuring tools in the same conditions, to what extent provides the same results. In this study to obtain the reliability of the questionnaire was used of Cronbach's alpha coefficient for pre- test. In this way before final implementation, 30 research sample were randomly selected then questionnaires were given to them by using the data obtained from the questionnaire and SPSS software was calculated Cronbach's alpha reliability coefficient, For items related to empiricism (0/75), risk taking (0/85), mutual interaction with the external environment (0/73), conversation (0/85), current technology (0/87), research and development (0/82), market-oriented (0/72) it can be said items are in the same path , and have acceptable coordination and reliability.

Statistical Analysis Methods Of Data:

Using descriptive statistics, for evaluation of central characteristic, and set the statistical frequency distribution tables. Inferential statistics (analysis of variance) use to test the hypothesis. In this study, to analyze the data by software Spss is used multiple regression analysis statistical tests. Regression analysis is a statistical method in which the dependent variable explains and predicts independent variable or variables. You can also use LISREL software to analyze data, and analysis structural equation because; this software for qualitative and quantitative data is higher to other software accuracy.

Conceptual And Operational Definition Of The Research Variables :

In this study considered two variables, independent variables and the dependent variables Independent variable, as organizational learning and its dimensions, including (empiricism, risk-taking, mutual interaction with the external environment and conversation) and organizational innovation is the dependent variable.

The Research Variables:

To do any scientific research, should be determined variables. The variable is a quantity that amount of it changed from an observation unit to another observation unit. The independent variable is organizational learning and the dependent variable is organizational innovation. Organizational learning is an issue that plays a role in both the survival of the organization, and also in the success in the field of competition, learning is considered as the capability to gain competitive advantage. The process of understanding and gain new insights is on the central core of organizational learning. Organizational learning is the process of improving actions through better knowledge and understanding, in other words is a process that enables organizations to transform information into knowledge, and consequently, the ability of the organization to be more in conformity with environmental demands (Hajipour and Pourkashani, 2010).

Innovation is a new way that a company act in that way or to produce goods. Innovations include the development in a variety of manufacturing processes goods, management systems, organizational structure and strategies created by a company (Khosravian et al., 2009).

Operational Definition Of Variables:

1) Aspect of organizational learning: indicators considered for these aspects are:

- Empiricism: one of the reagents is used to measure organizational learning is empiricism. To measure these components used of these questions :(initiative and creativity, offering new ideas and thoughts, use of external resources for learning, asking about how to do things).
- Risk taking: Another reagents used to measure organizational learning, and used for the assessment of these questions (encouragement to conduct risks, receptiveness of the risk, entering into realm of the unknown).
- mutual Interaction with environment: to assess these components of these questions will be used (get information from outside of the organization, feedback of information obtained from outside organizations, encouraged to interact with the external environment, attention of organization to the competitors, and strategies of the organization, adapted with new strategies).
- Conversation: To assess these components used of these questions (free and open communication in the organization, facilitating communication by managers, create joint working groups, to share organization work processes).

2) Aspects of organizational innovation: indicators considered for these aspects are:

- Current technology: to assess these components used of these questions: (passing the courses of technology, using the Internet to get things done, the use of technology for packaging and production).
- Research and development: To assess these components used these questions: (capital allocation to research and development, participation in national and international conferences and exhibitions).
- Marketing: to assess these components used these questions: (create new markets by using new methods of marketing, the use of sales agents, and the use of e-mail marketing).

Findings:

1. Describes the demographic variables:

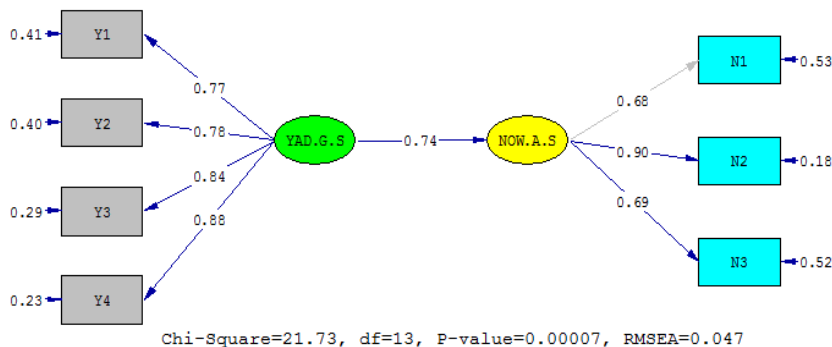
In this study 73.8% of respondents were male and 26.2% of the respondents were female. In terms of age frequency distribution, (8.7 %) less than 25 years, (36.9%) between 25-35 years (27.2 %) between 36-45 years (23.3% %) between 46-55 years and (3.9 %) more than 55 years. In the field of frequency distribution of Education, 10 members (9.7%) of them were high school, 12 members (11.7%), of the University, 59 members (57.3%%) that allocated most frequently were Bachelor, 21 members (20.4%) MA, 1 (1.0%) was PhD. In terms of frequency distribution, level of work experience, 40 members (38.8%) have 1-3 years work experience. While 46 members (44.7%) of them 4 to 8 years, 15 members (14.6%), 9 to 15 years and 2 members have had (1.9%) more than 15 years of experience.

2. Describe the independent variables:

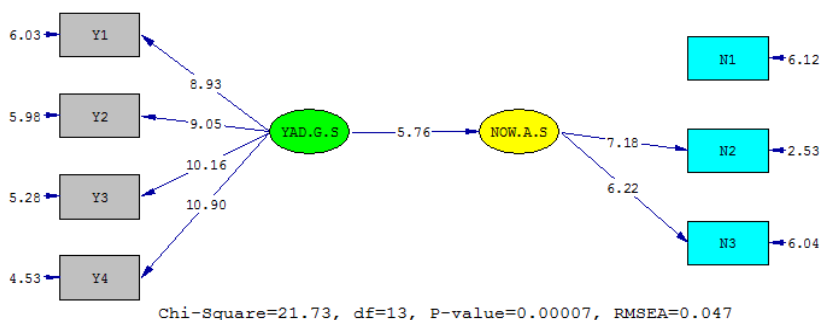
The Structural Equation Modeling:

To test the research hypothesis was used from the structural equation modeling. LISREL or the structural equation modeling (SEM) is a very general multivariate analysis technique that allows researchers to a set of regression equations to examine in the same time. (Houman, 2005, 11).

To assess the factors affecting on organizational innovation and determine the coefficients of each of the variables affecting on it has been used the structural equation modeling with LISREL software.



“Fig.2” Structural model of research on the standard estimate



“Fig.3” structural model of research in a significant number

As in Figure (2) and (3) can be seen, according to the amount of freedom degree (13) and significance level of 0.00 we find relationship between independent and dependent variables and also the relationship is significant.

Test Hypotheses And Determine The Relationship Between Variables:

The research hypotheses were analyzed by Pearson correlation coefficient test. All hypotheses that examined the relationship between organizational learning and organizational innovation were confirmed and showed a significant relationship between organizational learning and its dimensions with organizational innovation.

Table 1: Results of testing hypotheses by using the correlation coefficient

Hypothesis	Relationship	Significance level	Pearson correlation coefficient
The relationship between learning and organizational innovation	0.627	0.000	have
The relationship between empiricism and organizational innovation	0.550	0.000	have
The relationship between empiricism and organizational innovation	0.508	0.000	have
The relationship between mutual interaction with the	0.484	0.000	have

external environment and Innovations			
The relationship between conversation with innovation	0.626	0.000	have

Table 2: Results of Friedman test statistic, the dimensions of organizational learning

Statistic	Amount of Statistic
Number	103
chi-squar	44.367
Degrees of freedom	3
sig	.000

The result of this test with the amount of chi-squar = 44.36 and in 99% confidence level means that in level of 1% (sig = 0.000) is significant.

Table 3: Results of Friedman test average rating, dimensions of organizational learning

Components	Mean of ranking	ranking
Empiricism	1	3.01
risk taking	3	2.24
mutual interaction with the external environment	4	1.97
conversation	2	2.78

Also used the Friedman test result of mean rank in Table 3 show that empiricism is in the first with coefficient 3.01, so the highest importance among the dimensions of organizational learning and respondents believe is the highest ranking and the most important. Conversation with a coefficient of 2.78 is in the second priority and interacting with the external environment is also with a coefficient of 1.97 is in the last priority (fourth). As a result less importance than the other three dimensions on the organizational learning.

IV. DISCUSSION AND CONCLUSION

The goal of this study was to examine the relationship between organizational learning and organizational innovation. Results obtained of 42 the food industry subset of industrial estates of the province of Kermanshah showed that there is a positive and significant relationship between organizational learning and organizational innovation and organizations if using learning in the organization can become innovative organizations. And effective organizational learning capabilities can help to improve innovation in organizations. Organization to create and enhance their innovation capacity has need factors that could stimulate innovation and open platform to create new products and processes. In this study were referred four important factors of organizational learning in company, which can be lead to increased innovation. The analysis results show that conversation aspects has the highest effect on create organizational innovation in the company and dialogue between employees can improve the quality of

decision-making and a key role in better access to information and development and improvement of the organization's conclusions. This study showed that the correct use of innovation management increases capabilities and innovative capacity of companies in the introduction of products and processes, in organization facilitates the necessary changes. Of course most of the companies do not have proper culture of innovation to initiate changes in their organization and most of the staff and sometimes managers show fierce resistance against this. Also in survey mutual interaction with others has been shown that there is a positive and significant relationship between mutual interaction with the external environment and organizational innovation There are several advantages of interacting with others and through which an organization can reach a higher profitability and it is possible by reducing costs, access to new opportunities, speed in meet the needs of customers and the organization. Considering that there is a positive and significant relationship between risk taking and innovation and this is because that risk taking of organizations will create profitability for organizations and risk taking associated organization with new and new things and makes possible achieve innovation in organizations. Also there is a positive and significant relationship between empiricism and innovation but empiricism is in the last level of priority and has less importance than the other dimensions the reason is that empiricism does not result of innovation in organizations always. Because employees and managers need to understand and to practice their new experiences and see if this is efficient empiricism and efficient and can be implemented it in practice or not. It can be concluded that is possible achieving innovation in organizations through dialogue, mutual interaction with the external environment, risk taking, and ultimately empiricism. However, empiricism is the lowest importance and priority and organizations should pay more attention to conversation and mutual interaction with the external environment because conversation and common understanding can help employees and managers that understand the meanings of ambiguous and covered information. Therefore, to develop the communication channels for create a dialogue between staff should be provided amenities and facilities to the interaction of people to express ideas and new knowledge and the exchange of information, organizational learning provide field and the necessary conditions for innovation and after that to improve performance and competitive advantage. Organizational learning with creating new ideas lead to innovation and improved performance and not only directly but also through innovation affects performance.

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TRAFFIC CONTROL USING REVERSE LANE SYSTEM (A QUEUING THEORY APPROACH)

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Abstract: U.A.E faces a major traffic problem at peak hours which results in mishaps, accidents, traffic jams etc. Traffic congestion is a phenomenon where automobiles queue up in lanes which has reached beyond its capacity. This happens at peak hours when most of the working population goes to earn their livelihood and students leave for schools & colleges. Remaining might just add on to the existing load of traffic creating further jams. This paper focuses on major causes which result in traffic snarl up and the ones which are overlooked at a place like U.A.E where roads are so sleek and smooth that we are just tempted to check the top speed of our vehicles if we are able to do so.

There are many solutions to deal with traffic problems suggested by renowned thinkers but the one which we are going to discuss is a major cost effective technique to control traffic which is a reverse lane system. Besides this, some other methods are suggested which can curb the traffic to some extent. The experiment was conducted on one of the busiest roads extending from Sharjah entrance junction on Sheikh Mohammed Bin Zayed road till National Paint junction spanning 1 km length. We utilize queuing technique $(M/M/C):(FCFS/\infty/\infty)$ where multiple lanes serves as more than one queue in the model & National Paint junction end serves as multiple servers.

Keywords: Reverse Lane System, contra-flow, congestion, queuing theory, road traffic.

Objectives:

1. Our major objective is to see how efficient will be our reverse lane system in reducing the load on traffic.
2. How can we utilize the emergency lane as a reverse lane to curb the congestion?
3. Comparison of traffic conditions under regular lane system and reverse lane system using queuing theory model $(M/M/C):(FCFS/\infty/\infty)$.

4. We discuss some techniques which will make our reverse lane system much safer post implementation as safety on road is our first priority.

Introduction: It all started with the finding of oil which dates back to mid 300 AD, but the sole purpose of utilizing refined petrol for running a car happened in 1886 with Mr. Karl Benz, who patented his first Benz Patent Motorwagen. Since then, we just have seen little improvements in that model which today, after more than a century has seen some grand improvements in so called petrol powered automobile. Back during those days no one must have thought about what if thousands of cars pile up in one direction with as little movement as 10 km/h whereas the top speed of any average car is 200 km/h. Scientists have linked the traffic flow on a road to fluid flowing through a pipe but when we decrease the diameter of the pipe, fluid flow increases unlike actual traffic.

Blame it on the shift of middle class to the higher upper class which can afford a car or two depending on the different routes taken by the working members of the family or just the joy of riding your own vehicle on the sleek roads of U.A.E, one finds different reasons to buy a car and million reasons just to drive it even if the shortest errand is at a walk-able distance. Traffic congestion or snarl up was not evident until the number of lanes was not sufficient to hold the traffic at peak hours.

The inception of RLS (Reverse Lane System) was realized when road breadth for both directions was not enough to handle traffic and there was no option to expand the road or add an additional lane due to occupied infrastructure/buildings etc. The growing economy where everyone can afford and own a car as it is no more a luxury but in fact one of the basic needs in Dubai. Parking fees, constant maintenance charges, annual renewal cost does not hold back the common man in UAE to own a car. This problem would not even be discussed, had it not been for the ever increasing number of cars in U.A.E owned by the local community and expatriates. We certainly do appreciate the regular efforts by Dubai Transport Authority & Dubai Government in improving road conditions and finding innovative solutions to ever increasing number of vehicles. With a speed limit of 120 km/h on Sheikh Mohammed bin Zayed Road, we experience frequent congestions at some junctions out of which one without doubt is the National Paint Junction in Sharjah. In-spite of being equipped with 7 broad lanes to handle all and any type of vehicle, it is still not enough to handle heavy congestions at peak hours of incoming and evening. It could be due to narrowness in each individual lane as it approaches to that junction as the road was built much later than the buildings surrounding it. So, the construction of 7 lanes had to be optimized by reducing the breadth of each lane. There is not enough room for the drivers on the adjacent lane to steer freely, hence the only safer option is to reduce speed which piles up vehicles.

Quite recently, Dubai government has introduced emergency lanes at the ends of each side to respond to emergency situations or in case of evacuations only. These lanes are mostly left vacant and rarely used. This sums up two emergency lanes, one on each side of the fast lane in both directions. Utilization of these emergency lanes as a reverse lane with proper guidelines and indications can loosen up the traffic to a greater extent. A reverse lane system basically just adds an extra lane on a congested road by transferring the divider further towards the direction of less traffic in the opposite direction. The total number of lanes on both the direction remains same, we just shift dividers from one direction to another. In this paper, we take into account just a single lane which can be utilized as a reversible lane depending on the traffic condition on either side whereas in reality, we have two lanes at our disposal. With adequate sign installation either as readable signs or overhead lighted signals, these lanes can be converted from an emergency lane to a reversible lane and vice-versa. But the major hindrance in making these lanes perform the desired operation is the barrier in between which is not movable barrier but in fact a wired barrier built on heavy dividers fixed on ground which also holds the radar system to the given road.

Literature Review: *Shuguo Yang, Xiaoyan Yang (2014)* performed a similar experiment at Shenzhen intersection in China

with different variations in the optimum number of lanes required to smoothen the traffic. They also tested the Poisson arrival of vehicles using Chi Square distribution. *Zsuzsanna Bede / Géza Szabó / Tamás Péter (2010)* discuss how RLS (Reversible Lane System) has improved traffic conditions in North America & Hungary by discussing case studies from the mentioned countries. Disaster comes in different ways and such calamities can be faced if we are equipped with our pre built resources of capable road networks able to handle heavy congestion. Initially, the use of RLS can serve the purpose of reducing waiting time but such systems are a blessing in the instance of a disaster such as a nuclear threat, fire spread, terrorist attack or a aerial crash which cannot be predicted unlike natural disasters for which we can anticipate the damage and prepare our infrastructure to cope with it.

Three treatments are combined in the design of evacuation network operating plans: reversing lanes, eliminating intersection crossings, and reserving lanes for use by emergency vehicles (*Chi Xie and Mark A. Turnquist*). Lane reversal techniques have been employed for emergency evacuations and reducing traffic delays (*Wolshon & Lambert, 2004*). *Cova & Johnson (2003)* sought further improvements to the reverse lane system by blocking interconnected routes in an intersection which in-turn results in uninterrupted flow.

A.de la Escalera, J.M Armingol & M.Mata 2003 analyze different variant and environmental factors under which traffic sign recognition is done by intelligent vehicles. They treat various recognition patterns under increasing speed. *Zsuzsanna Bede/ Tamás Péter (2011)* developed a positive non-linear dynamic system of RLS. The function of every element & the contacts between the elements cease in case direction change in any part of the network, then new contacts and new functional elements are activated in a RLS. RLS was positioned in US78 in Gwinnett County, Georgia by converting a five lane system to a six lane by joining a two-way left turn lane with the former. The results showed that the number of accidents increased slightly (*Bretherton, W.M. Elhaj,1996*).

Similar experiments were carried out in Connecticut Avenue in Washington, D.C, Canal road in Washington D.C, & Tyrole road in Charlotte, NC. It showed initially that such systems caused a slight increase in accidents and mishaps as is with any new modification to the existing system which has been followed for years. However, the acceptance level of public understanding was high and late after adapting to the new change, it turned out to be safer & secure (*Brian Wolshon, Laurence Lambert, 2006*).

1. Methodology: We use queuing theory to measure the effectiveness of reverse lane system when compared with a normal lane. The model which we employ to compare the said techniques is $(M/M/C):(FCFS/\infty/\infty)$, it comprises of multiple queues & each queue has its own service counter. Multi channel queuing theory treats the condition in which there are several service stations in parallel and each customer in the waiting line can be served by more than one station. Each service facility is prepared to deliver the same type of service. The new arrival selects one station without any external pressure. When a waiting line is formed, a single line usually breaks down into shorter lines in front of each service station. The arrival rate λ and service rate μ are mean values from Poisson distribution and exponential distribution respectively. Service discipline is first come, first served and customers are taken from a single queue i.e. any empty channel is filled by the next customer in line.

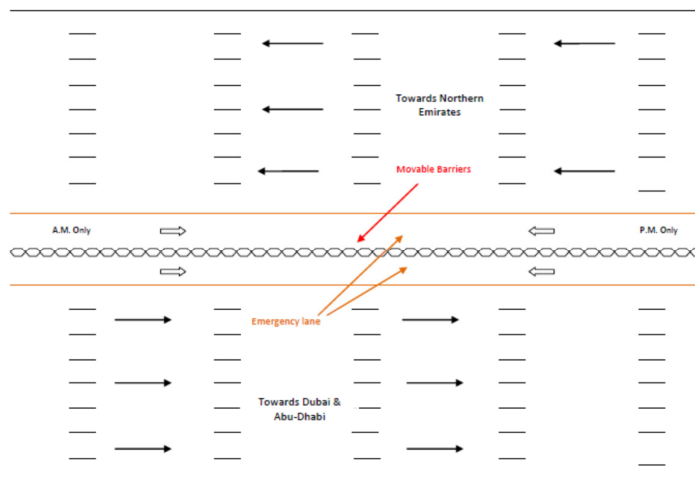
Here, we replicate the above model as a multi lane system of a road to measure the effectiveness of the existing system when compared with an upgraded reverse lane system theoretically by spreading the traffic evenly on all the lanes. This model of

queuing theory is one where multiple lanes are handled by a separate service representative dedicated for each lane. In our experiment, we treat different vehicles as customers and the end point of the 1 km mark as the end of service.

Initially, we analyze the following values related with queuing theory (M/M/C):(FCFS/ ∞/∞) with number of queues/lanes as 7 (c_0) and then compare it with converting a single lane into a reverse lane ($c_1=8$).

The arrival rate $\lambda=38$ cars/minute remains the same in both cases, but the service rate gets effected post conversion to reverse lane ($\mu_0=13$ cars/minute & $\mu_1=18$ cars/minute). All the values of λ & μ are meant for a single lane which is the fastest lane. Later, we consider the readings for the lane which is converted to reverse lane to ease up the traffic.

1. Expected (average) number of customers in the system
2. Expected (average) number of customers waiting in the queue
3. Average time a customer spends in the system,
4. Average waiting time of a customer in the queue,
5. Probability that a customer has to wait,
6. Probability that a customer enters the service without waiting
7. Average number of idle servers
8. Utilization rate



Above is a sketch plotted from the tools of Microsoft word, depicting the two emergency lanes being used for inbound traffic in morning and for outbound in evening. The permanent dividers can be alternated with a shifting mechanism for barriers called as Zipper machines. As for the radar, they can be installed as overhead radars.

An important factor to keep in mind before setting up the infrastructure for such a mechanism is that the technique of shifting from a normal lane to a reverse lane should be safe and smooth. An overhead lighter sign can show the activation of the reverse lane as when required. The incoming traffic should have a clear vision of the direction of the traffic approaching them. The permanent fixed barrier can be transitioned to a temporary movable one. We can exploit the latest technology used in luxury vehicles that of automated lane detection system (Intelligent Vehicles) to shift the movable barriers from reverse lane to a normal lane.

Any new technology is not accepted quickly and takes time to adapt to the environment and its users. Risk analysis could be carried out to know the potential benefits and drawbacks of the system. But once the whole system is made compatible with intelligent vehicles, there is no need for extra precautions as the vehicles itself can sense whether the reverse lane is activated on its side or of the opposite end. Obviously, the question arises for the fate of non-intelligent vehicles, which has to be left to pure judgment of its driver.

Apart from the standstill of traffic, pollution is the second most important reason why the problem of multiple cars on limited lanes must be addressed before the problem becomes a critical one. A complete blockage of cars contributes almost double the amount of pollution when compared with moving traffic.

Also, a safe and healthy alternative medium of transport for humans is of vital importance at this age of ever growing population. Past researches suggest important facts about the advantages of adopting a reverse lane system out of which some are:

- Reduced travel time & waiting time,
- Less fuel consumption, and
- Significant reduction in harmful emission.

This system is also called as Contra-flow reverse lane system which was first tested in United States by Ralph T Dorsey on the roads of Downtown Los Angeles in 1928.

Since then, Reverse Lane System has been experimented in all parts of the world either as a counter-action to heavy congestion, an emergency lane or an evacuation lane. The prerequisites in the smooth run of this lane improvement can only be successful by giving proper guidelines & road signs to drivers to make quick decisions and adapt to the change in the flow of traffic.

1.1 Applying Queuing Model (M/M/C):(FCFS/ ∞/∞):

Here, we replicate the above model as a multi lane system of a road to measure the effectiveness of the existing system when compared with an upgraded reverse lane system theoretically by spreading the traffic evenly on all the lanes. The figure below shows seven lanes on both the sides at the entrance road towards Dubai, while after shifting the barriers on the opposite end, we have an extra lane on the heavy congestion side.

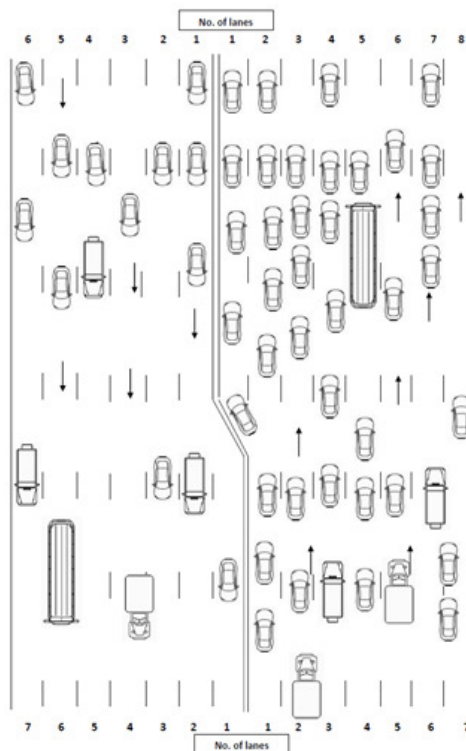
Let, n = number of customers in the system,

p_n = probability of n customers in the system,

c = number of parallel service channels ($c > 1$),

λ = arrival rate of customers,

μ = service rate of individual channel.



1. Expected (average) number of customers in the system,

$$L_s = \frac{\lambda \cdot \mu \left(\frac{\lambda}{\mu}\right)^c}{(c-1)!(c\mu-\lambda)^2} p_0 + \frac{\lambda}{\mu} = L_q + \frac{\lambda}{\mu} \quad \text{where } p_0 = \left[\sum_{n=0}^{c-1} \frac{1}{n!} \left(\frac{\lambda}{\mu}\right)^n + \frac{1}{c!} \left(\frac{\lambda}{\mu}\right)^c \frac{c \cdot \mu}{c \cdot \mu - \lambda} \right]^{-1}$$

2. Expected (average) number of customers waiting in the queue,

$$L_q = L_s - \text{average number being served}$$

$$= L_s - c \cdot \frac{\lambda}{c\mu} = L_s - \frac{\lambda}{\mu}$$

$$= \frac{\lambda \cdot \mu \left(\frac{\lambda}{\mu}\right)^c}{(c-1)!(c\mu-\lambda)^2} p_0$$

3. Average time a customer spends in the system,

$$w_s = \frac{L_s}{\lambda} = \frac{\mu \left(\frac{\lambda}{\mu}\right)^c}{(c-1)!(c\mu-\lambda)^2} p_0 + \frac{1}{\mu}$$

4. Average waiting time of a customer in the queue,

$$w_q = \frac{L_q}{\lambda} = \frac{\mu \left(\frac{\lambda}{\mu}\right)^c}{(c-1)!(c\mu-\lambda)^2} p_0$$

5. Probability that a customer has to wait,

$$p(n \geq c) = \frac{\mu \left(\frac{\lambda}{\mu}\right)^c}{(c-1)!(c\mu-\lambda)} p_0$$

6. Probability that a customer enters the service without waiting,

$$1 - p(n \geq c) = 1 - \frac{\mu \left(\frac{\lambda}{\mu}\right)^c}{(c-1)!(c\mu-\lambda)} p_0$$

7. Average number of idle servers = $c -$ (average numbers of customers served)

8. Utilization rate, $\rho = \frac{\lambda}{c\mu}$

Before starting with our calculations, below is a set of primary data collected on the eve of 10th Oct 2016 at 18:30. This experiment considers a length of 1000 meters of road between National Paint junction and the road towards northern emirates.

Average length of a car: 4.5m

Safety distance between two cars= 2.5 m

$\lambda = 38$ cars/min, $\mu = 13$ cars/minute

$c_0 = 7$ lanes

$c_1 = 8$ lanes (after shifting the divider to the side of less traffic). As we increase a fast lane and the total number of lanes increases from 7 to 8, which in turn effects the service rate which is $\mu = 18$ cars/minute.

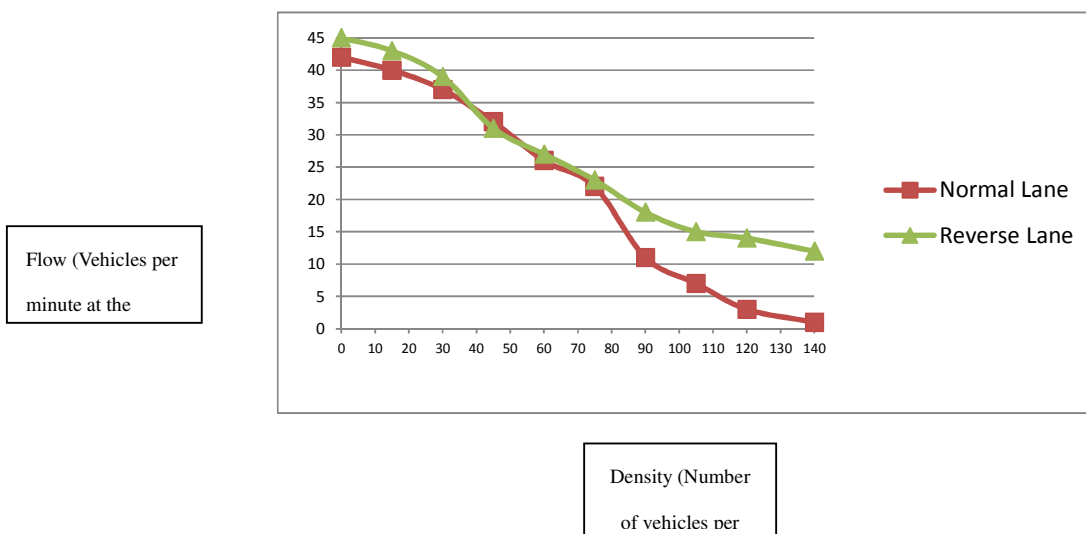
Sr. No:	Parameters	Symbol	$c_0=7, \lambda=38$ cars/min, $\mu= 13$ cars/minute	$c_1=8, \lambda=38$ cars/min, $\mu= 18$ cars/minute
1.	Probability of 0 customers in the system	p_0	0.0536	0.1211
2.	Expected/average number of customers in the system	L_s	3.1572	2.1117
3.	Expected/average number of customers in the queue	L_q	0.2342	0.0006
4.	Average time a customer spends in the system	W_s	0.0831	0.0555
5.	Average time a customer spends in the queue	W_q	0.0062	0.000015
7.	Utilization Factor	ρ	0.4176	0.2639

Above values refer to a theoretical conversion of a single lane from a normal lane to a reverse lane on the high traffic side. The

effects on the other end of low traffic intensity are ignored.

1.2 Graphical Representation of flow and density

Flow (q) = the rate at which vehicles pass a fixed point (vehicles per hour) = Average measured time headway. Density (Concentration) (k) = number of vehicles (N) over a stretch of roadway (L) (in units of vehicles per kilometer).



The above graph shows the plot of flow of traffic against density for a 1000 m stretch. The line with squared intervals shows how the entry of nearly 40 vehicles per minute at the initial point reduces drastically to almost a single vehicle with normal traffic conditions. Whereas, our post-reverse lane modification, the lane can accommodate at-least 10 vehicles even after heavy congestion.

Though our research takes into account only a distance of 1000 meters, but the discussed RLS should be installed at complete length of dense traffic path. Hence, with our research & utilization of two emergency lanes, one on each side, we either work them as a Reverse lane, Normal uniform lane or as an emergency lane.

1.3 RLS automation with Intelligent Vehicles:

Much work related to Intelligent Vehicles is dedicated towards creation of an automatic pilot, reception of road borders or the recognition of obstacles in the vehicle's path such as other vehicles or pedestrians (A.de la Escalera, J.M Armingol, M.Mata,

2003). But the futuristic vehicles demand the same attention & concentration towards the development of traffic sign recognition.

The factors which come into play while designing the said parameters of the basic intelligent vehicle system are the ones close by unlike traffic signs which are placed either overhead, or on the side pavement. Traffic signs such as speed limit, lane restrictions or turn signs are placed on either side which is not perpendicular to the sensory cameras of the intelligent vehicles. Furthermore, it lacks proper lighting after sunset. But our RLS faces no such problem as the lane itself is on the median which restricts the vision pathway ahead of it and not sideways. Irrespective of the daylight, if the road signs are equipped with panel lights, recognition of a reverse lane system can be made without any hindrance.

Limitations:

Public awareness and education of RLS: Much of general public is not aware of the existence of such a system which makes it more of a challenge to implement such a major change on highways of U.A.E. This knowledge can be imparted during driving classes prior to becoming an official driver. Practical tracks should be replicated within the driving schools to give hands on experience of what such a system looks like.

Lane switching time interval: Further research can be carried out in studying the optimum amount of time required to wait before the activation of a reverse lane from one direction into another. Obviously, instant switches are prohibited due to high risks of collision. The reverse lane has to be vacant before switching to maintain safety of drivers.

Conclusions & Future Work: The reverse lane system is analyzed using queuing model VI. The results state that there is higher probability of zero customer in the modified reverse lane system as well as the average number of customers in the system reduce by 1. Also, the average time spent by a driver in the modified lane decreases. The benefits reaped by transferring a general lane on the opposite end of low traffic intensity to a speed lane of congestion are shown here with help of numbers. The risk of shifting mechanism used to transfer the divider from low traffic area to high traffic area is left open for further research. Initial risks of installation of such a system still exist but the long term benefits outgrow them. This system currently is based on the judgment of the driver but it can be realized to its full potential by automating the whole system with intelligent vehicles. In an era of technology where almost anything can be automated and with Dubai Expo 2020 approaching, the traffic conditions need an immediate attention to detail as we come closer to the year 2020.

We can expect more than double of the current traffic but the expected traffic will not suit the existing infrastructure. Thus, a reverse lane system can be incorporated to loosen the traffic considerably. Rather than increasing the cost by building overhead/tunnel lanes, with just minor modifications we can achieve similar benefits out of RLS.

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DEMOCRACY, POLITICAL STABILITY AND ECONOMIC GROWTH: EVIDENCE FROM MENA COUNTRIES

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Abstract

This paper examines the nexus between democracy and economic growth, while taking into account the role of political stability, using dynamic panel data model estimated by means of the Generalized Method of Moments (GMM) over the period 1998–2011 for 17 MENA countries. Our empirical results show that there is a bidirectional causal relationship between democracy and economic growth. In addition, political stability is a key determinant variable of economic growth, and eventually democracy and political stability, taken together, have a positive and statistically significant effect on growth.

Keywords: Political stability, democracy, economic growth, MENA countries

JEL: C33, F68, O11, O43, P16, P26

1. Introduction

Democracy is a fundamental factor for sustainable economic development and, therefore, can lead a country to a situation where it is not, only possible to have more democracy, but also is even so necessary that economic development will continue. The spread of democracy has not reached the Middle East and authoritarianism survived the third wave of democracy and maintained its resistance to the challenge of democratization for many reasons beyond the scope of this document (Heydemann, 2007). This challenge has continued until the events of the Arab Spring exploded at the end of 2010. However, as this series of events is still ongoing, it is unclear whether the Arab Spring has brought democracy to the Middle East or

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not. If we take the Arab Spring as evidence, one can say that there is a great popular support for democracy in this region. In addition, the popular movements in the Arab world show that transition to democracy may be accompanied by political instability that can probably hurt growth. This suggests that the effect of democracy on growth depends on political stability. In this paper, we propose this hypothesis to be tested empirically.

The impact of democracy depends on the development and inter-reacts with other institutions the most important ones are the quality of the State institutions and the prevalence of the rule of law.

Until today, interactions between stability, the nature of the political regime, and economic growth have been enigmatic. According to Rostow (1990), the economic takeoff would require the existence of a strong regime or political stability, which is a prerequisite for economic growth. However, it turned out that the presence of political instability and poor governance causes sustainable decline in the savings which are originally developed and deemed that political stability does not appear to be systematically related to democracy such as the countries with high levels of growth in the presence of the stability and the absence of political democracy.

Political stability is the respect of the political system, whatever it is, the rule of law, and the respect of private property. Without this, the expected economic results of political stability will probably not be realized. However, if a non-democratic political system is willing to really observe this rule of the law, this means that it is ready to take the first step which will undoubtedly lead to a system increasingly democratic. In this sense, the non-democratic regime (called authoritarian usual) would be a temporary step on the way to real democracy. This stability becomes productive when the regime, as was the case of, "Asian dragons" at the beginning of their economic takeoff, invests this stability to reassure investors and encourage their economic commitments in long-term projects, including the country's needs.

This article contributes to the literature through the relationship between democracy and economic growth, and the role that political stability can play in this relationship. This study is intended to provide a modest contribution to the existing literature by highlighting three major aspects of the relationship. Firstly, most of the scientific papers have sounded to treat this relationship from an exclusive theoretical perspective.

Secondly, to our knowledge, none of the empirical studies have appeared to focus on investigating the two-way association binding democracy and growth through applying the simultaneous-equation modeling with a “growth model” framework. Finally, treating this type of relationship within the MENA region context constitutes a contribution for our analysis, in itself.

Therefore, we will attempt to answer the following question: under what conditions could democratization prevent or stimulate economic growth? To do this, we will try to explore the effect of political stability on the relationship between democracy and economic growth of the MENA countries.

The procedure is to present, the relation between political stability and economic growth, then to treat the literature of the theoretical and the empirical studies. In the next section, we study the importance of political (in) stability as a framework for democracy based on lessons we learned from the Arab Spring which prove that the transition to a more democratic political regime may be accompanied by political instability while affecting the economic growth. Afterwards, we will investigate through the instrumental method GMM, a two-step relationship between democracy and economic growth while taking into account the effect of institutional quality, including the political stability of countries in the MENA region. Finally, we draw some general conclusions and offer recommendations.

2. Political stability, democracy and economic growth

2.1. Role of institutions in economic growth

The concept of governance finds its origins in the New Institutional Economics (NIE), which took the political and the institutional factors in explaining development and growth.

North (1990) defined institutions as the set of game rules of a society, or more formally, "designed the human constraints that shape human interaction" The game rules can either be formal, such as laws and regulations whose implementation should be ensured by the State or its directors, or informal, such as social capital and culture (Persson and Tabellini, 2005).

During the last two decades, many studies have explored the role of institutions. They can be regarded as an inter-temporary contract that determines behavior. Aoki (2000) found that the institution is a system of shared beliefs; therefore, good institutions are those which stimulate the activities of agents with high

social returns.

Thus, Greif (2006) states that institutions can be defined as a set of social, rules, beliefs, values and organizations which encourage the regularity of the individual and social behavior.

In general, the recent work by Economides and Egger (2009) on the determinants of economic development, provided that institutional quality is a determinant of economic growth.

A good institutional quality is one that ensures property rights and minimizes transaction costs, creating a favorable investment environment, to the stimulation of entrepreneurial activities, creativity, growth and development.

It also reduces uncertainty for economic policymakers and offers incentives for productive and innovative behavior. A high degree of certainty implies lower transaction costs, making more profitable economic projects and therefore more likely to be undertaken. By affecting agents' economic expectations, good governance enables them to use a longer time horizon, while providing incentives for productive behavior of high and efficient.

The emerging consensus in the literature is that institutional factors are the major components of economic growth; the most remarkable is political instability.

Measuring governance is carried out by the World Bank through six different indicators for 212 countries, which include; the degree of empowerment of the citizens, political stability, effectiveness of the public power, the regulatory burden, the rule of law and the control of corruption.

To study the impact of the policy of institutional quality, we have taken the political stability index with a value between -2.5 and 2.5.

2.2. Defining political (in) stability

Political stability is the perceived risk of destabilization or overthrow of a regime by unconstitutional means and the likelihood of the violent threats against governments that include the following elements: military coups, political tensions, civil wars, social unrest, ethnic tensions, political violence, unpredictable changes in institutions and rules, including violence by national groups.

The same political situation in a country can be considered as stable or unstable, depending on the

definition of political instability. There is no consensus in the literature on a precise definition of political instability greater than these alternatives. Historically, the widely accepted definition of political instability in political science was that of Lipset (1959), which defined it as the persistence or continuity of certain types of political systems.

According to Lipset (1959), a country is politically stable if there is either a liberal democracy or a dictatorship for 25 years. This definition would lead to a conclusion that some countries (e.g. Italy, Belgium), which experienced very frequent changes of government in the period after World War II, would be regarded as politically stable because they remained democratic for the entire period.

The second definition of political instability concerns the legitimacy of the political system. According to Sanders (1981), a political system can be considered exactly as "more" or "less" stable or compared with other systems or with itself over a different period. Sanders went on to suggest that revolutions are a sign of political instability as they may be caused by discontent and dissatisfied individuals.

The third reason for political instability is called social unrest (De Haan and Siermann 1996). According to this view, political instability is equivalent to socio-political tensions, civil disobedience protests that are considered a threat to the political power of the current government. Thus, political instability is measured with the number of violent political events, for example, riots, strikes, coups or political assassinations. Social unrest, in particular, is not only a challenge for the political regime but also can affect the property rights of individuals.

2.3. The effect of political (in) stability on economic growth

The relationship between economic growth and political stability is an object of interest for political scientists and economists. A positive link between political stability and economic growth is confirmed by Alesina and Perotti (1996) and Feng (1997).

On a sample of 113 countries analyzed over the period 1950 and 1982 period, Alesina and Perotti (1996) estimated the relationship between political stability and growth of GDP per capita. They consider political instability as a composite index based on a number of events, such as demonstrations, political murders, coups, civil wars and all violent political action as the propensity of the government to collapse.

Socio-political instability affects economic growth because it creates an uncertain political and economic environment, which raises the risks and reduces investments and also leads to higher inflation.

Several authors, as articulated political instability is a phenomenon that directly and adversely affects economic growth at least for two reasons.

First, it directly leads to breaks in the process of wealth creation and thus disrupts market activities and labor relations. It also has a direct negative effect on productivity (Landa and Kapstein, 2001).

Secondly, political instability does not allow the institutions to effectively guarantee the rights of private property, which increases transaction costs and subsequently negatively affects investment and reduces growth. This pathway of causation was underlined by several researchers. According to Aisen and Veiga (2013), political instability is likely to create volatility and frequent policy changes. This tension would be detrimental to macroeconomic performance of a country (see also Campos and Nugent, 1999).

In addition, political instability could indirectly affect economic growth via the accumulation of factors of production. Indeed, Dixit and Pindyck (1994) emphasize the impact of political instability on the accumulation of production factors, such as investment capital and human capital.

Political instability can cause the decrease of the investment volume by the increased risk of loss of capital and enable institutions to ensure property rights, resulting in lower investment earnings (Alesina and Perotti, 1996). Thus, human capital accumulation can also be affected by political instability because uncertainty about the future and the abandonment of skills can make people invest less in education.

Moreover, many previous studies indicated the importance of the negative relationship between economic growth and political instability. There are two common arguments in the literature about the impact of political instability on economic growth.

Firstly, political instability increases political uncertainty affecting the incentives of economic agents and therefore growth. Some studies have assumed that existing governments behave according to their own agenda in a political system that is both unstable and polarized because of a high probability of a change of government due to large differences in the political and economic preferences of the following government (Alesina and Tabellini 1990).

Second, the change of government is linked to economic, political, social and institutional circumstances. With a strong propensity to executive changes comes the political uncertainty and possible threats to property rights (Alesina and Perotti 1996) by the impact on growth.

It seems indisputable that the related studies, which had tried to provide new findings to the problems of political instability and its interaction with economic and social spheres, highlighted the fact that the political regimes aspiring to limit the negative effects of disturbances and fluctuations experienced by the institutions of the state, must bring the appropriate remedies to the root causes of political fragility to decline its consequences on the economy and support growth.

2.4. The empirical literature

2.4.1. The relationship between democracy and economic growth

The nexus between economic growth and democracy has made subject of several academic research works and studies elaborated over the past few decades. There studies can be categorized into two strands; the first of which has undertaken to examine the impact of democracy on GDP. As for the second strand, it has proposed to study the effect of economic growth on democracy. With respect to the first line of thought, proponents of this stand base their arguments on the important question of whether democracy does actually help in promoting economic development or not. In fact, controversial results have been reached as to the effects of democracy on economic performance.

Table1. Summary of the existing empirical studies on the democracy and economic growth relationships.

Study	Countries	Review periods	Applied Methodologies	Causality relationship
Yi Che et al. (2013)	The United States and Columbia (a comparative study)	1960–2000	GMM in system	G → D
Paldam and Gundlach (2012)	A cross-country	1972-2008	OLS	G → D
Rodrik and Wazciarg	154 countries	1950-2000	Fixed effect	D →

(2005)				G
Papaioannou and Siourounis (2008)	166 countries	1960-2003	Fixed effect	D → G
Feng (2003)	106 countries	1975-1995	Granger causality test	D → G
Persson and Tabellini (2006)	150 developed and developing countries	1960-2000	Fixed Effect	D → G
Benedikt Heid et al. (2012)	150 countries	Period after war	System GMM	G → D

NB: G and D indicate GDP and democratic index

→ indicates the unidirectional causality

We summarize some studies in table 1. As indicated on this table, economic growth appears to depend highly on democracy along with some other variables (Papaioannou and Siourounis, 2008; Rodrik and Wazciarg, 2005; Persson and Tabellini, 2006). However, it can also be argued that democracy seems to depend on the GDP, as well (Benedikt Heid et al 2012; Acemoglu et al. 2008; Yi Che et al 2013; Moral-Benito and Bartolucci, 2012; Benhabib et al. 2011). Overall, our literature review suggests that the empirical results of the previous studies are inconclusive. A potential reason is that the past studies have not considered the two-way linkages between democracy and economic growth, the joint dynamics of which can be simultaneously determined.

2.4.2. The relationship between political stability and economic growth

The link between political instability and economic growth has been one of the most important topics in empirical research in economics over the last decade. Several studies (Alesina et al. 1996; Fosu, 2001, 2003; Aisen and Veiga, 2008) suggest that political instability is detrimental to economic performance in

the developed as well as developing economies.

Sociologists and economists have tried to test if a stable political system is an essential prerequisite for economic growth or economic growth creates the foundation for political stability.

Alesina et al. (1996) used the GDP per capita growth rates and changes in government to measure the political instability as a dependent variable. They examined a sample of 113 countries and found that political instability has a negative impact on GDP growth, while there is no dependency in the opposite direction. In a similar research framework, Campos and Nugent (1999) found, for African countries, that political instability was the cause of slower economic growth. However, no relationship was found for any other group of countries.

Younis et al. (2008) studied the effects of different political instability factors on economic growth for selected Asian countries between 1990 and 2005. They found a close relationship between political stability and economic growth. Their results showed that the role of political stability is more important than economic freedom.

Aisen and Veiga (2010) used the GMM for dynamic panel data models on a sample of 169 countries over a period that stretches from 1960 to 2004 to study the link between political instability and economic growth. They found that a lower growth is associated with a higher degree of political instability.

Specific country studies include the study of Munoz (2009) and Asteriou and Price (2001). Munoz (2009) used the Autoregressive Distributed Lag Model (ARDL) to study the link between political instability and economic growth for Venezuela for the period from 1983 to 2000. Munoz found that political instability negatively affects growth through investment. In the same vein, Asteriou and Price (2001) studied this relationship in the UK for the 1961 to 1997 period using the GARCH model that showed a negative effect of political instability on economic growth.

In another article, Aisen and Veiga (2013) have empirically determined the effects of political instability on economic growth. By using the GMM system for dynamic panel data models on a sample of 169 countries from 1960 to 2004, they found that the highest levels of political instability were associated with a lower growth rate of GDP per inhabitant. Regarding the transmission channels, they also found that

political instability negatively affects growth by lowering productivity growth through the accumulation of the physical and the human capital. Finally, economic freedom and ethnic homogeneity are beneficial to economic growth, while democracy may have a small negative effect.

Moreover, Kirmanoglu (2003) studied the causal link between political instability and economic growth using Granger causality test for a sample of 19 countries. He concluded that there was no empirically significant relationship between political instability and economic growth in 14 out of the 19 examined countries. Kirmanoglu (2003) reports that only for two countries political stability actually increases economic growth while for the 3 remaining countries; he reports that the causality runs the other way.

Therefore, the literature seems to agree on the importance of political stability of economic growth. Political stability though has lead to the creation of the desired structure, to attract private investors and multilateral companies that can set the stage of the growth environment, and would also lead to the implementation of optimal long term macroeconomic policies.

3. Political (in) stability as a framework of democracy

The theoretical examination of the concepts of democracy and economic growth detects many studies that compete on the nature of the positive or negative relationship between the two phenomena. This proves the nonexistence of a consensus on the issue. This lack of empirical consensus answers a multitude of theoretical issued arguments. This proves the existence of a consensus on the issue. In fact, if several arguments are in favor of the positive role that democracy would play in the process of economic growth, others highlighted the limitations of such a system compared to the stabilizing "merits" of an authoritarian state. Actually, the success of economies and accelerated economic growth without pre requisite democratic of the Asian countries, such as China and Singapore, proves that our empirical results support the hypothesis of a positive contribution of authoritarianism.

So with an autocratic rule, economic development can be achieved as already shown and proved empirically by Baklouti and Boujelbene (2015). The question that arises here is how and by what means democracy stimulates growth. In fact, this study differs from previous studies by setting focus on the role

that can play the political stability on the nature of such a relationship.

Moreover, democracy would have the effect of ensuring investors against the existence of discretionary behavior and predators, and minimizing the risk of political instability. Thus, the existence of a set of rules, laws, and counter powers would help to avoid the risk of arbitrary decisions, so that democracy would be synonymous of long time horizon and optimal economic choices. Clague et al. (1996) emphasize the fact that, statistically, democracy - provided that it is politically and socially properly "rooted" - offers better guarantees for the implementation of property rights and contracts than authoritarian with the same level of political stability.

Political stability does not appear to be systematically related to democracy. The stylized facts do appear relatively high levels of growth in the presence of political stability and absence of democracy. Thus, the good macroeconomic performance of a number of non-democratic Asian countries (Hong Kong, Singapore, Taiwan and China) contradicts the idea supporting good economic facts of Democracy (Sandalicar, 2013). Moreover, growth levels of 4.5% per year achieved by the precursor of the Arab Spring countries; Tunisia during 23 years of dictatorial politics and undemocratic regime challenges the idea of the economic benefit of Democracy (Jamshidi, 2014). Similarly, democracy in political instability does not promote growth. Thus, the combined effect of democracy and political stability could support economic growth.

The results of the theoretical work suggest that political (in) stability can influence the nature of the effect of democracy on growth. Ozler and Tabellini (1991), report that political instability reduces the time horizon, not only for the investors but also for the policy maker. Therefore, the necessary reforms so huge dodge these effects which are particularly noticed in weak democracies, in which the partisan system is highly fragmented. In addition, government short time horizons is capable of holding the flight forward and adopt bad economic policy through which it hopes to receive medium-term failure of his successor.

Furthermore, according to Clague et al. (1996), a government short time horizon is not encouraged to respect its commitments or, the rules and principles which must, in principle, control and monitor

economic activity (property rights, contract law, taxation ...).

Moreover, Feng (1997) supports the idea that democracy offers a stable political environment, which reduces the unconstitutional changes of government in the political system and create conditions that are conducive to sustainable economic growth.

Democracy can hurt economic growth when civil liberty and social demands turn into strikes and demonstrations that disturb the dynamism of investors and push foreign investors to liquidate their positions, stop their activities and leave the country.

The various social events can turn into political turmoil and therefore, the impact of democracy on economic growth in this case can only be negative. In fact, political (in) stability can impact the nature of the relationship between democracy and the nature of the political regime and economic growth.

Ranmali Abeyasinghe (2004) examined the hypothesis that democracy and political stability have significant effects on the economic growth of the developing countries. In a more recent article, Jong-A Pine (2009) also found that high levels of political instability reduce economic growth. As for private investment, Alesina and Perotti (1996) showed that socio-political instability creates an uncertain political and economic environment, which raises the risks and reduce investment. Political instability also leads to higher inflation, as it is evidenced by Aisen and Veiga (2006) who also added that political instability shortens the perspectives of governments, disrupts the long-term economic policies which are conducive to better economic performance.

The experiences of several countries that have experienced a change of political regime, particularly the Arab Spring countries (Tunisia, Libya and Egypt) show that the transition to a more democratic political system may be accompanied by political instability that affects economic growth. The lesson from these experiences is that the stabilization of the political situation seems to be an imperative for countries weakened by a long period of transition. For example, Tunisia is currently in a dominant economic focus. Therefore, the impact of democracy on economic growth depends on political stability.

4. Data and Model Specification

The present study applies data which are an excerpt from the World Development Indicator (WDI, 2011-CD-ROM), and cover the 1998 and 2011 period with the exception of democracy and corruption related variables, which are respectively extracted from the sites Freedom in the World Index (Freedom House, 2011) and Transparency International.

The objective of this paper is to analyze the causality between democracy index and economic growth using the production function where the GDP depends on endogenous variables including democracy index. This extended production function provides a meaningful framework to explore the two-way linkages between these two variables. These dynamic simultaneous-equation models are also constructed on the basis of the theoretical and the empirical insights from the existing literature. Thus, our proposed model, takes the following from:

$$\text{GDP} = f(\text{CPI}, \text{DEM}, \text{H}, \text{K}, \text{L}, \text{SIZE}, \text{DEM*PS}, \text{FDI}) \quad (1)$$

This essentially states that economic growth is a function of the corruption perception index (CPI), Democracy Index (DEM), human capital (H), capital stock (K), labor force (L), government size (SIZE), the term of interaction between democracy and political stability (DEM*PS) and foreign direct investment (FDI).

Since our study is a panel data study, Eq. (1) can be written in panel data form as follows:

$$\begin{aligned} \text{GDP}_{it} = & \\ & \alpha \text{GDP}_{it-1} + \beta_1 \ln H_{it} + \beta_2 \ln L_{it} + \beta_3 \ln K_{it} + \beta_4 \text{CPI}_{it} + \beta_5 \ln \text{SIZE}_{it} + \beta_6 \text{DEM} + \\ & \beta_7 \text{FDI} + \mu_{it} \end{aligned} \quad (2)$$

Where i represents the country (in our study, we have 17 countries¹); t represents the time (our time frame is 1998–2011). The annual data on gross domestic product (GDP) in constant US dollars are used as a proxy for economic growth (GDP). The corruption perception index (CPI) represents the index of

¹ Tunisia, Algeria, Libya, Morocco, Egypt, Kuwait, Iran, Arabia, Jordan, Bahrain, Lebanon, Oman, Qatar, Syria, United Arab Emirates, Yemen, Iraq

perceived corruption published by Transparency International, and the index ranking countries on a scale from 10 to zero, according to the perceived level of corruption. A score of 10 represents a reputedly total honest country, while a zero indicates that the country is perceived as completely corrupt. Concerning the democracy index (DEM), it has been designated by Freedom House, and is a construct of the average of the political rights and civil liberties. This variable is rescaled in such a way as the value ranges from 1 (most democratic) to 7 (less democratic). The (PS) is an index for political stability compiled by the World Bank. This index measures the likelihood that the government in power will be destabilized by unconstitutional means, including domestic violence and terrorism. This index captures the idea that the likelihood of changes in government can affect the quality of governance by affecting the continuity of policies (Kaufmann et al. 2009).

The human capital (H) is measured by gross enrolment in high school, the physical capital stock (K) as a proxy gross capital formation (% of GDP) because it took into account the inventory change, and labor capital (L) measured by the rate of participation in the total active population (% of total population aged 15 and over). The government size measured by final consumption expenditure of general government (% of GDP) and (FDI) are the foreign direct investment (% GDP).

The two-way link between democratization and growth is empirically examined by making use of the following two equations:

$$\begin{aligned}
 \text{GDP}_{it} = & \\
 & \alpha \text{GDP}_{it-1} + \beta_1 \ln H_{it} + \beta_2 \ln L_{it} + \beta_3 \ln K_{it} + \beta_4 \text{CPI}_{it} + \beta_5 \ln \text{SIZE}_{it} + \beta_6 \text{DEM} + \\
 & \beta_7 \text{FDI} + \beta_8 \text{PS} + \beta_9 \text{DEM} * \text{PS} + \mu_{it} \quad (3)
 \end{aligned}$$

$$\begin{aligned}
 \text{DEM}_{it} = & \alpha' \text{DEM}_{it-1} + \delta_1 \text{GDP}_{it} + \delta_2 \ln \text{INDUST}_{it} + \delta_3 \ln \text{ENERG}_{it} + \\
 & \delta_4 \ln \text{LIFE}_{it} + \varepsilon_{it} \quad (4)
 \end{aligned}$$

Where DEM_{it} is the degree of democracy for country i in period t ; DEM_{it-1} is the lagged democracy variable used to account for the persistence of democracy over time. The equation 4 essentially states that

the democracy is a function of the economic growth (Glaeser et al. 2007; Acemoglu et al. 2009), the industrialization (Goujon and Kafando (2012)), the energy consumption and the life expectancy at birth (Barro, 1999). Energy use in kg of oil equivalent is used as a proxy for the natural resources (ENERG). The level of industrialization (INDUST) that captures the industrialization variable of the modern theory is also used by Goujon and Kafando (2012). Differently Lipset (1959), which uses the percentage of men in agriculture and the energy consumption per person and considering the given problem in the sample of the MENA countries, we use the value added of the industrial sector percentage of GDP (Industry, value added (% of GDP)) to measure the level of industrialization in the region. (LIFE) measured by life expectancy at birth, total (years) of the database of the World Bank. The descriptive statistics mean and standard deviation (Std. Dev.) of these variables are recorded below in Table 2.

Table2. Descriptive statistics

Variables	Mean	Std. dev
GDP	4.624	3.067
Democracy	5.544	0.827
Industrialization	3.612	0.391
FDI	3.422	4.164
Human capital	4.426	0.213
Capital stock	3.149	0.310
Labor capital	3.919	0.153
Energy consumption	9.910	2.633
Life expectancy at birth	4.285	0.827
PS	-0.481	0.911
Government size	2.785	0.346
Corruption	3.898	1.106

NB: These statistics are based on annual data relevant to the years ranging from 1998 to 2011.

Regarding the correlation matrix results, they are reported in the following table (Table 3). It is worth

noting that the correlation coefficients prove to suggest that the reported regression models would not be seriously distorted by multicollinearity. The correlation analysis helps indicate that economic growth seems to correlate positively with foreign direct investment, government size, life expectancy at birth, corruption perception index, the labor capital as well as with human capital. Besides, the GDP seems to correlate negatively with democracy, capital stock, energy consumption, along with industry. Furthermore, democracy appears to correlate positively with the human capital, energy consumption, life expectancy at birth and the industry, while it negatively correlates with other variables.

Table3. Correlation matrix

	Variable	1	2	3	4	5	6	7	8	9	10	11	12
1	GDP	1.0000											
2	DEM	-0.1967	1.0000										
3	CPI	0.0641	-0.1495	1.0000									
4	Ln(H)	0.1553	0.5298	0.1373	1.0000								
5	Ln(K)	-0.1451	-0.3016	-0.2559	-0.1862	1.0000							
6	Ln(L)	0.2424	-0.1116	-0.0465	-0.4615	-0.1966	1.0000						
7	Ln(ENERG)	-0.0266	0.7423	-0.4183	0.3959	-0.1357	0.1278	1.0000					
8	PS	-0.5195	-0.1133	0.1205	-0.2392	0.2206	-0.5292	-0.3086	1.0000				
9	Ln(FDI)	0.3498	-0.1684	0.1734	0.2881	-0.0084	-0.3212	-0.3549	-0.1063	1.0000			
10	Ln(SIZE)	0.0862	-0.4424	0.6129	-0.1348	0.3170	-0.0448	-0.6440	0.1281	0.1517	1.0000		
11	Ln(LIFE)	0.3125	0.2249	0.3432	0.5953	-0.0364	-0.1773	-0.1201	-0.2180	0.5543	0.3447	1.0000	
12	Ln(INDUST)	-0.0707	0.5762	-0.2623	0.3226	0.0728	0.0553	0.8417	-0.2526	-0.3233	-0.2967	-0.1413	1.0000

Eqs (3) and (4) were estimated simultaneously by means of the generalized method of moments (GMM). The GMM is the estimation method, the most commonly used in models with panel data and in the two-way linkages between some variables. This method uses a set of instrumental variables to solve the endogeneity problem. It is well-known that the GMM method provides consistent and efficient estimates in the presence of arbitrary heteroskedasticity. Moreover, most of the diagnostic tests discussed in this study can be cast in a GMM framework. Sargan test was used to test the overidentifying restrictions in order to provide some evidence of the instrument validity. The instrument validity is tested using Sargan's test which cannot reject the null hypothesis of overidentifying restrictions. In other words, the null hypothesis of the instrument appropriateness cannot be rejected.

The Durbin–Wu–Hausman test is used to test the prevalence of any endogeneity problem. The null hypothesis would then be rejected, suggesting that the ordinary least squares estimations might be biased or inconsistent, and that the instrumental technique variables' need to be implemented.

5. Analysis and Results

Worth recalling, our objective consists in investigating the economic growth trend and democracy in the 17 MENA countries. For this sake, the Arellano and Bond (1991) GMM estimator has been applied to model the dynamic simultaneous-equation panel data. Based on the diagnostic tests, the estimated coefficients of Equations (2), (3) and (4) are provided in Tables 4, 5 and 6 below. As can be noticed, the AR (2) tests show no evidence of autocorrelation at conventional levels of significance for each of the estimates. As for the Durbin–Wu–Hausman test, it indicates that the endogenous repressors' effects on the estimates prove to be meaningful, and that the instrumental variables techniques seem imposed. The instruments' validity will be tested through the Sargan test, whereby the null hypothesis, relevant to overidentifying restrictions, cannot be rejected, i.e., the null hypothesis stipulating the instruments' validity and appropriately should be retained.

Table4. Equation (2) related results

Dependent variable :	Coefficient	P-Value
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economic growth		
(GDP) _{t-1}	9.424**	0.035 (4.47)
DEM	0.621***	0.000 (0.12)
CPI	-0.062***	0.000 (0.09)
FDI	0.205**	0.022 (0.01)
Ln(SIZE)	-0.923***	0.001 (0.26)
Ln(H)	3.066***	0.000 (0.39)
Ln(K)	1.376***	0.000 (0.29)
Ln(L)	-0.351	0.376(0.87)
Number of observations	221	221
Sargan test	61.84	0.235
DWH test	28.014***	0.000
AR2 test	-0.24	0.814

NB: The bracketed values represent the standard errors. Sargan test refers to the over-identification test for the restrictions appearing in the GMM estimation. DWH test is the Durbin–Wu–Hausman endogeneity test. The AR2 test is the Arellano–Bond test relevant to the existence of the second-order autocorrelation in first differences. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table5. Equation (3) related results

Dependent variable :	Coefficient	P-Value
economic growth		
(GDP) _{t-1}	16.270***	0.000(4.26)
DEM	-0.502***	0.000(0.13)
CPI	-0.095**	0.027(0.08)
FDI	0.035**	0.030(0.01)
Ln(SIZE)	-1.093***	0.000(0.24)
Ln(H)	1.555*	0.068(0.37)
Ln(K)	1.376***	0.000(0.26)
Ln(L)	-0.348	0.349(0.85)
PS	1.335***	0.007(0.49)
DEM*PS	-0.310***	0.001(0.09)
Number of observations	221	221
Sargan test	63.05	0.459

DWH test	28.014***	0.000
AR2 test	-0.51	0.611

NB: The bracketed values represent the standard errors. Sargan test refers to the over-identification test for the restrictions in GMM estimation. DWH test is the Durbin–Wu–Hausman endogeneity test for. The AR2 test is the Arellano–Bond test for the existence of the second-order autocorrelation in first differences. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table6. Equation (4) relevant results

Dependent variable :	Coefficient	P-Value
democracy		
DEM _{t-1}	-18.192***	0.001(5.70)
GDP	-0.206**	0.014(0.07)
Ln(ENERG)	0.177***	0.000(0.03)
Ln(INDUST)	0.675	0.386(0.20)
Ln(LIFE)	5.293***	0.000(1.18)
Number of observations	221	221
Sargan test	33.60	0.117
DWH test	36.766**	0.025
AR2 test	-0.62	0.535

NB: The bracketed values represent the standard errors. Sargan test refers to the over-identification test for the restrictions in GMM estimation. DWH test is the Durbin–Wu–Hausman endogeneity test for. The AR2 test is the Arellano–Bond test for the existence of the second-order autocorrelation in first differences. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The analysis of the interactions between the nature of the political regime, stability and economic development, have often given perplexed results as to the existence of a correlation on the direction of causality.

On the one hand, there is a correlation between the nature of the political regime and development, the assumption that democracy would cost in terms of growth or a stimulant would not seem obvious.

One the other hand, as to the link between stability of the political regime and development, the research managed to generate stronger results without leading to a politically or economically strong deterministic

pattern. Therefore, it is legitimate to test the combination of democracy and political stability for economic growth.

Table 4 depicts the estimated results relevant to equation 2. Indeed, the impact of the one-period lagged values of real GDP on the dependent variable turns out to be positive and significant. Similarly, it appears that democracy has a positive and statistically significant impact on economic growth at a rate of 1%. Noteworthy, the proxy DEM which is used as a democracy measure in our model will be inversely related to the second, that is, an increase in DEM would necessarily denote an increase in autocracy and, therefore, the country is dubbed as less free. That is to say, the more we approach the authoritarian regime, the more economic growth improves. Then, we can say that a relatively low level of democracy in the countries of the MENA region is a determinant of a better economic performance. This is affirmed by (Doucouliagos and Ulubasoglu 2008; Narayan et al. 2011; Aisen and Veiga 2013; Baklouti and Boujelbene 2015).

In fact, maintaining a more or less authoritarian practice is considered essential for the preservation of strong economic growth for the country to benefit from greater prosperity and greater stability. This result corroborates that of Booth et al. (2015) which provide that non-democratic countries can achieve economic growth. This is also consistent with the work of Barro (1996) who found that democracy has a negative effect on economic growth after considering the empirical link for 100 countries over a period which runs between 1960 and 1990. Actually, he demonstrated that “too little” and “too much” democracy disadvantages economic growth through reducing the rate of accumulation of physical capital and increases the public spending.

Democracy is also unable to implement measures to increase investment, because it forces people to reduce their consumption levels. However, authoritarian regimes are able to take such measures. Moreover, proponents of this view argue that democracies are often unable to limit public social spending to stimulate growth distribution dealing with pressures (Haggard, 1990). Furthermore, democracy undermines property rights of security by allowing some groups that have political power to make wealth of property owners. Therefore, this process leads to economic uncertainty and reduces economic growth.

Besides, the form of government adopted by the countries of the MENA region may be particularly favorable to economic growth. This cuts the overall impression of a strong confidence in the democratic institutions of these countries, and a search for stability and economic development through authoritarian regimes.

A striking example of successful economies and accelerated economic growth without pre requisite democratic regimes is the case of the Asian countries such as China and Singapore, which stand as a proof of our empirical results' validity, sustaining the hypothesis of a positive contribution of authoritarianism.

The MENA countries could usefully learn from the example set by a number of Asian countries not only to find their proper paths to economic progress, but also to stop thinking that the absence of democracy constitutes an obstacle impeding their own development, the overall growth and prosperity.

Table 5, which provides the results of the **Eq 3**, shows that upon the introduction of the "PS" variable, the impact of the "DEM" variable becomes negative. Our result shows that political stability can affect the nature of the relationship between the nature of the political regime and economic growth. In other words, with the introduction of the "political stability" variable, the impact of democracy on growth turns negative, that is to say the opposite of what we have shown earlier that is, the freer country is, the more economically prosperous it becomes. This means that it is essential to have a stable political situation that democracy is a stimulant of economic growth. Furthermore, political stability can be a channel through which democracy affects growth (Feng 1997 and 2005).

The political instability greatly reduces the time horizon, not only for the investor but also for the political decision maker (Rodrik, 1999; Jong-A-Pin, 2009; Aisen and Viega, 2010; Ari Aisen et al. 2011). In addition, taking into account the experiences of three countries, such as Tunisia, Libya and Egypt (As mentioned above), this has led some to reconsider arguments to demonstrate and prove that when democracy and political instability, are taken together, there have a negative and significant effect on growth.

The dimension of 'political stability' seeks to measure the likelihood of the violent threat to, and the changes in government. This measure reflects the idea that the likelihood of the radical changes in

government can affect the quality of governance by affecting the continuity of policies (Kaufmann et al. 2003). This variable is an indicator which varies between -2.5 and 2.5. The highest values reflect higher marks, that is to say a low instability of the government, while the lower indicate the country with high political instability.

Indeed, political stability plays an important role in the relationship that links democracy and economic growth, as it can create uncertainty at the political level (instability and political violence) and therefore the risk associated with the uncertainty. These certainly harm the credibility of the country's laws and policies.

Referring to the work of North (1990) and Rosenberg and Birdzell (2008), the increase of economic activity is accompanied by a good institutional quality. Furthermore, a healthy institutional environment helps to minimize uncertainties (corruption, political violence, forced nationalization, the denial of contracts, political instability, the weakness of the rule of the law and the absence of Civil Liberties); transaction costs and contributes to the effective and fair application of the necessary government regulations. In case the quality of governance is poor, the lack of political stability marked by the presence of social events and major changes in politics through coups reduces the time horizon and discourages democracy meet its commitments, its rules and principles which must, in principle, control the economic activity.

This suggests that it is through political stability that democracy has an indirect impact on economic growth as the main characteristics of political stability are identified as the legitimacy of the effectiveness of conflict management mechanisms and sustainability of the exploited system. With stable political regimes, citizens perceive institutions and leaders to have reached this status through a legitimate manner acceptable to the majority.

The FDI variable has a positive and significant impact on the real GDP as shown in (Table 4). The positive sign of this relationship is justified by the importance of foreign direct investment through the transfers of expertise and technology from foreign firms and through capital inflows for the host country and access to new markets, stimulate the economic growth. This result corroborates those of (Anwar and

Sun (2011); Hassan and Anis (2012); Adams (2009) and Belloumi (2014)).

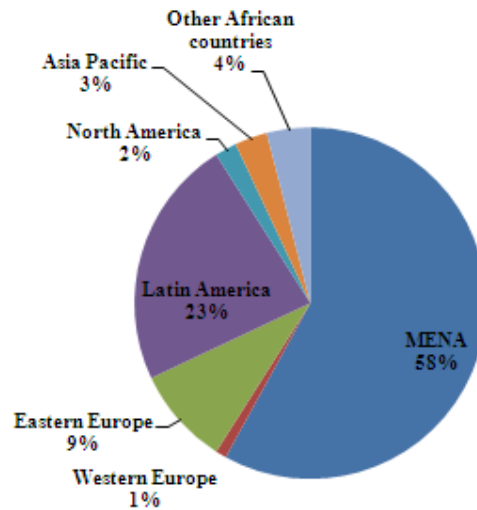
Statistically, the variable of corruption (CPI) has a significant negative impact on economic growth in our sample. Indeed, the negative impact of the rise of corruption on economic growth may be due to the importance of corruption in the MENA region and adversely affects a just and stable governance and leads to a lower quality public services.

This result strengthens the idea of Avnimelech and Zelekha (2011), Dzhumashev (2009), and also Blackburn and Sarmah (2008), and Bhattacharyya and Hodler (2010) who state that corruption lead to an increase of inflation, which, in turn, reduces capital accumulation and economic growth.

According to **Eq. (4)** presented in table 6, the sign of the coefficient for lagged democracy is negative and significant. Similarly, economic growth is negatively and significantly related to democracy at a rate of 5% (the DEM variable is inversely related to democracy). As expected, the coefficient of the real GDP is significantly negative, with reference to the modernization theory advanced by Lipset (1959). The negative sign shows that with increasing economic growth, the DEM variable, which is inversely related to democracy, proves to be decreasing. This empirical finding reveals that the MENA countries', economic performance has led to strengthening democratic principles, which has been made possible only following the initial development stage, as often asserted by the authoritarian regimes and states. In fact, this can be better illustrated through the statement put forward by Moore (1966) announcing that: "no bourgeoisie- no democracy", which confirms well what we have shown empirically.

Therefore economic growth stimulates the democratization of the political regimes (Barro, 1999; Acemoglu et al. 2009; Papaioannou et al. 2009; Boix, 2011). This result was confirmed in several empirical studies (Epstein et al. 2006; Acemoglu et al. (2009), Glaeser et al. 2007; Papaioannou et al. 2008; Freeman and Quinn, 2012), because a high level of economic development leads to a higher level of education and a more diverse society. Diversification leads to a greater demand for institutions supporting pluralism and education that lead to pluralistic values and tolerance. These two factors (diversification and education) should increase demand for democratic governance (Lipset 1959).

Figure 1: The MENA countries hold nearly 60 percent of the world's proven oil reserves



Source: OPEC¹ 2010

As shown in Figure 1, the countries of the MENA region are rich in natural resources. These resources allow the ruling class to purchase foreign and domestic support while blocking the political reform. A vast literature in political science stressed the negative impact of the natural resources (including oil, gold and diamonds) on democracy (Barma et al. 2014). Countries with a wealth of natural resources have seen their standard of weakening democracy because it can evoke a cost to the opposition leaders since taking wealth from the state for their own use. This is the reason that significant revenue resources can be a political incentive to undermine democracy.

In addition, the countries of the MENA region are rich in natural resources, and are assisted to the accompaniment of political violence and the income from this wealth has been used by public policymakers to block the establishment of democracy (Jensen and Wantchekon, 2004). In other words, the exploitation of the natural resources leads to annuities by caught policy makers who establish institutions interested in ensuring the expropriation of these annuities for their own profits at the expense of the whole society and perverse policy incentives. Therefore, the rich natural resource exacerbates competition for takeover, synonymous control of these resources.

According to the overall results, we can conclude that: first, there is a bidirectional causal relationship

¹ Organization of the Petroleum Exporting Countries

between economic growth and democracy; second, the combination of democracy and political stability would help to sustain economic growth. Therefore we can conclude that democracy can stimulate economic growth through political stability and disadvantage in the situation of political instability.

6. Conclusion and implications

This paper is an investigation into the causes of back ambiguity of the relationship between economic growth and democracy. To find the condition in which democracy could prevent or stimulate growth, our estimation was to verify if the institutional quality and political stability could specifically impact the nature of such a relationship.

Through the dynamic simultaneous-equation panel data models, we firstly, showed that democracy stimulates growth through political stability, that is to say, it is important to allow greater visibility of the effects of democracy on economic growth and, secondly, that economic performance in turn is a key factor for democracy. Democracy is a desirable objective that can be reached only after an economic and social maturation. It should be seen as the difficult realization of a long modernization process that is faster and better led by the authoritarian regimes than by the democratic ones.

In fact, we tried to show that there is a two-way relationship between democracy and economic growth while taking into account the effect of political stability. Moreover, we try to demonstrate that the positive effects of democracy on growth can be realized only in the presence of a stable political framework. Therefore, these results imply that economic growth, democracy and political stability are complementary.\

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FINANCIAL LITERACY AND INFORMATION PERCEPTION: AN EMPIRICAL ANALYSIS FROM THE TUNISIAN CONTEXT

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Abstract:

This paper presents a literature review about financial literacy and examines the overall level of financial literacy among the Tunisian organizations. Also, it provides an overview of the financial education initiatives taken in Tunisia. Because most financial literacy programs are relatively new, much of the literature reviewed here is also new and part of a field that is still developing as a program of research.

Keywords: Financial Literacy, Household, Education, Information, Decision.

Jel classifications codes :

D14 : Personal finance

G11: Investment decisions

I20: Education

1-Introduction

Many programs and initiatives to promote financial education have been launched in recent years all over the planet. Since the last financial crisis, the trend was further accentuated. The aim is to develop the financial skills of large sections of the population. Countless public and private institutions are doing so in the world: international organizations, central banks, ministries of finance or education, financial services, charitable foundations, etc.

According to the 2005 OECD study about the Project on financial education, few countries have conducted systematic surveys, but the conclusion was unanimous. There is everywhere a master's deficit financial matters by individuals. Even more disturbing: not only do individuals know or do not sufficient finance, but they believe most often learn much more than is the case.

An Australian survey has shown that while 67% of respondents said they understand the principle of compound interest; they were only 28% gave the correct answer to a problem based on this notion. Or

changes in the social world and financial products, make each day more necessary in-depth education of the public in financial matters.

Financial education will, therefore, aim to give all citizens a body of knowledge and skills enabling them to make informed choices in the economic context, and to analyze which types of loans and investments are most appropriate for them. Moreover, the first objective is to give everyone access to a basic financial tool that represents the bank account. In all OECD countries, between 3 and 10% of people do not have access to bank account, which excludes them from whole areas of social life. The problem is even more pronounced in emerging countries.

Financial education can be beneficial to all of the society members. Individuals can more quickly optimize the management of their capital and financial provision for unforeseen situations. Improving financial education programs can help to decrease the risk of financial exclusion and also to strengthen the integration of the most disadvantaged. Finally, the economic system will be better by favoring behaviors advising on savings and the provision of liquidity to financial markets.

In recent years the Tunisian government, particularly the BVMT¹, has been aggressively working to increase the financial knowledge of the general population. The goal is similar to that set out by the OECD. This lack of financial literacy and lack of financial access are both pressing problems for the Tunisian population and could lead to welfare reducing financial decisions.

2. Literature Review

2.1 Financial literacy: a conceptual review

General literacy refers “to a person’s ability to read and write”. The usual definition of literacy developed by the Literacy Definition Committee and used by the National Adult Literacy Survey² is “using printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential” (Kirsch et al. 2001, p. 3).

This idea of literacy has been expanded to the study of particular skill sets, for example, computer literacy (Wecker, Kohnle, and Fischer 2007), statistical literacy (Callingham and Watson, 2005) and health literacy (Baker 2006). The Educational Testing Service (ETS) identifies four types of literacy: prose, document, quantitative and health skills. ETS³ offers two sets of adult literacy tests. Each type of literacy measures how well an individual can understand and use information. For example, health literacy measures how well an individual can understand and use health-related information related to five activities (health promotion, health protection, disease prevention, health care maintenance and systems navigation).

Even though numerous financial literacy definitions have been proposed, there is no commonly accepted meaning. Following the proposed financial literacy conceptual framework depicted in Figure 2 and 3, financial literacy could be defined as measuring the individual’s capability of understanding and using the

¹ The Tunisian Stock Market Exchange : www.bvmt.com.tn

²The 2003 **National Assessment of Adult Literacy** is a nationally representative assessment of English literacy among American adults age 16 and older. Sponsored by the National Center for Education Statistics (NCES), NAAL is the nation's most comprehensive measure of adult literacy since the 1992 National Adult Literacy Survey (NALS).

³Available at www.ets.org.

personal finance related information. This definition is direct, does not contradict existing definitions within the literature and is consistent with other standardized literacy constructs. Referring to the international papers talking about financial literacy we can conclude that the factors that make financial education¹ increasingly important include changing demographic profiles, the growing complexity of the financial sectors, and the increase in the personal indebtedness while personal savings are decreasing. The organization for economic cooperation and development's financial understanding is weak amongst clients across their 30 member countries and that customer, among other things, believes that they know more about financial issues than is really the fact. The surveys also reported that consumers consider that financial information is complicated to find and comprehend (OECD: 98).

This phenomenon can be conceptualized in the subsequent dimensions. It requires the casual use of the expression "financial literacy." Secondly, it relates to the perception that financial literacy implicates two separate systems(the information system and the human behavior system), which means that it is not considered as a one encompassing process. Thirdly, the gap between difficult economic and financial information, on the one hand, and decision –makers' mental procedures, on the other, is complex to reunite without using an interface.

Financial education shows all the training and learning programs providing basic knowledge in finance, management and economics (Lusardi and Mitchell, 2007).

The basics in these matters are now considered an essential element of contemporary necessities and even as one of the first needs to live well this is why the modern financial education in first place concrete initiatives to promote and improve "life-skills."

The content of financial education programs aimed at ensuring that each can control his budget of current expenditure and investment. The ambition of these financial education programs is to fight against the "illiteracy" or "illiteracy" financial. Expressions, critical, point to a serious problem: most people do not know much about the most basic financial rules (Mr. Van Rooij, 2011). These financial education programs may focus on adults (to "fix") and children (for "preparation" and prevention). Indeed, financial markets are becoming increasingly sophisticated, and households assume more responsibility and risk when making financial decisions, which is why financial education is becoming more and more essential to individuals and not only for their financial well-being but also to facilitate the proper functioning of the economy.

They take a particular rise since the crisis of the late 2000s which saw the one hand; many investors suddenly take the knowledge that they had not paid much attention to their investments and, hand, a loss of confidence in financial institutions. Financial education helps develop budgets and manage revenue (Lusardi, 2011). According to the literature review, financial literacy helps small investors to save and invest in an efficient manner and avoid being victims of fraud. The presence of financial illiteracy can

¹ OECD (2005) defines financial education as "the process by which financial consumers/investors improve their understanding of financial products and concepts and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being" (p. 26). Lusardi and Mitchell (2007c) use the OECD definition as the basis for their review of financial literacy.

be a source of inequality but also of individual and collective social problems, lack of knowledge of the economic reality financial and becomes a matter of prime importance with the increasing financialisation (and its consequent crises) of the economy. In developing countries as in highly developed countries, financial education is a new and important area of social policy and a highly innovative line of social intervention. The OECD is one of the first international institutions that have taken the global movement for the year a series of financial education expertise and initiations.

The organization has seen since the 1990s that people were better to interpret and understand the functioning of financial markets following the development of the combined complexity of financial products and individual responsibility for financial decisions. According to recent survey results (Fin Scope Survey III Uganda, 2013) and empirical evidence in Africa, financial literacy can explain a part of the low demand for financial service. These studies suggest that furthering financial education program along other intervention strategies aims to enhance financial inclusion in developing countries (Cole et al., 2011; Sayinzoga et al. (2013).

Some governments have for their part accepted that it was their duty to help them. The OECD also formed in 2008 a global network of experts from public agencies responsible for policies on financial education. The "International Network on Financial Education" (International Network on Financial Education - NCI) allows more than 250 experts from sixty countries to discuss the trends in financial education and discuss good practices and principles before that OECD publish their reports. Through its working groups, the NCI pays particular attention to methodologies to measure the level of "financial literacy" of individuals and to assess the effectiveness of financial education programs, as well as issues related to the role of schools in the financial education of youth. The government of the emerging context should increase the visibility of these initiatives and strengthen cooperation in financial education, the OECD launched a website in 2008 called, International Gateway for Financial Education (IGFE)¹ while forming an international information base on the subject. The site lists hundreds of programs, websites, tools, research and statistics in over 70 countries worldwide.

2.2 Financial literacy from a financial education perspective

In a press release, the Swedish Minister for Financial Markets Mats Odell states that "(2007) it's high time for us to discover the knowledge gaps and do our best to support and strengthen the households' ability to deal with their personal finances. Only then will we get the sense consumers the Swedish financial sector deserves and requirements to face tougher competition".

This press release marked the start of the Swedish financial education program, which aims to instruct Swedish citizens how to become financially capable. The program grew to incorporate a network of public authorities and organizations under the umbrella name of the National Assembly for Increased Financial Self-Confidence. The program launch came after a decade-long international debate about alleviating financially distressed consumers (OECD, 2005, pp. 62–64).

According to the report, financial distress at the individual level resulted from changing economic and political conditions, and the altered pension systems and the increased complexity of financial products demand a better standard of financial awareness.

¹ www.financial-education.org

The OECD concludes that without valid measures to remedy financial literacy, a substantial number of citizens will end up in financial isolation (OECD, 2005).

Financial literacy events are, thus, defined by the ambition of including people in a social setting of financial norms. The Swedish program was initiated by surveying 1000 households on two occasions, 2007 and 2009 (Finansinspektionen, 2009). The criteria used in the studies correspond to Remund's (2010) definition of financial literacy as competence in managing money.

The study measured this ability implicitly, indicating an independent financial literacy norm besides which all household might be impartially compared and evaluated. Because the questionnaires were developed to measure people's attitudes towards their financial affairs, it allowed for the identification of archetypes, such as "the spender" or "the typical less-informed person" (Finansinspektionen, 2007, pp. 8– 37).

The construction of these categories indirectly helped to clarify the meaning of "financially literate further", although by delineating what it not rather than what it is. In 2010, a third survey was carried out to measure the population's mastery of numbers and financial concepts. The survey executors acknowledged that numeracy and financial literacy were difficult to differentiate. Even so, it was concluded that financial literacy, understood as a culture-based resource connecting "familiarity with financial products and concepts". It determined and supported by the individual's level of numeracy, referring to a skill-based cognitive ability "to process numerical information and perform simple calculations" (Almenberg and Widmark, 2011, p. 2, 7).

Accordingly, it was suggested that financial illiteracy could be indirectly alleviated by raising the level of numeracy (Almenberg and Widmark, 2011). Moreover, when market participation was evaluated based on these two measures, the findings resulted in the identification of yet another autonomous relationship. The authors establish that increased numerical competence leads to increasing the financial literacy level, which in turn leads to greater activity in the stock markets (ibid.) – all resonating with the "literacy-comes-first argument" (Rogers, 2001).

Consistent with the NLS arguments (e.g., Street, 1997), financial literacy extends beyond the written domain, and therefore efforts aimed at affecting financial literacy include various mediating tools and practices.

This financial education model is organized around practices that enable financially illiterate youth to reflect on the financial issues that are found in their domain. This detour connects popular culture with the financial problems that occur in the context of a young person's life.

Deviations from this norm can then be used by the regulatory agencies to pinpoint the financially illiterate groups in society and to justify efforts to remedy the financial shortcomings among those groups.

The research problem focuses in particular, according to its role in organizations, on the complexity of the financial literacy construct. The difficulty is supplementary exacerbated by the reality that the majority and the most current of the existing financial literacy programs focus on financial literacy at consumer level rather than about organizations. Consequently, before innovating the financial literacy program for education designed to the decision-makers in organizations can be considered, it is essential to verify the decision-makers 'perception of the financial literacy construct.

In this study, we aim to investigate how individual’s decision-makers in organizations perceive the financial literacy construct, as well as how it is seen by the different economic and financial sectors and decision-making levels. A literature research on the complexity of financial literacy in organizations was conducted, followed by an empirical study of decision-making literary construct, as well as how it users’ of the financial literacy construct from an organizational point of view.

3. Methodology and Data

3.1 Data and variable Definition

Our empirical study is based on qualitative research. We use a questionnaire as a method of data collection. This study was conducted among 698 individuals at the Tunisian organizations during the first semester of 2016. The survey consists of 22 questions of which six (6) elicit demographic and socioeconomic information and 16 measures the respondent understands of investment and finance. The survey is divided into two parts; the first part covers population and socioeconomic variables of age, gender, marital status, education level, and income. The second part, which is devoted to measuring financial literacy and economics educational attainment, uses 11 exam-type questions (true /false) and a dummies proxy.

Table 1: summary of responses to the distributed questionnaires

Sector	Sample	Completed questionnaires	Response rate (%)
Primary sector	113	41	36.28%
Secondary sector	143	119	83.21%
Tertiary sector	194	174	89.69%
Government sector and parastatal	180	140	77.77%
Academic	68	38	55.88%
Total	698	512	73.35%

The total population of decision-makers in organizations in the Tunisian context could not be known, use was made of purposeful sampling. The sample collected to use in the empirical part was composed by a limited member of organizations in the economic categories (primary, secondary, and tertiary, and government, parastatal and academic sectors). We provide a summary of the sample size, completed questionnaire and response rate (by sector). Due to confidentiality considerations, the names of the chosen organizations that contributed to our research (per sector) were not listed.

3.2 Measurement of Financial literacy

The measures of financial literacy used in existing studies are often crude, for example, Lusardi and Mitchell (2006, 2007a) rely on only three questions to measure financial literacy, and Stango and Zinman (2008) rely on one question. In our research w rely on 11 questions (exam-type questions), which cover

topics ranging from the workings of interest rates and interest compounding to the effect of inflation and the difference between bonds and stocks. These questions aim to measure the financial knowledge of the respondent (Financial Literacy (FL): a scale that takes the numbers of the correct responses).

Measuring financial literacy level is necessary to identify potential needs and gaps, as well as identifying groups at risk. Different researchers and organizations have defined and measured financial literacy in many different ways. Few have been known about financial literacy level of people in developing countries in Africa (Refera, 2016). Building on the OECD (2005) definition of “financial education”, Atkinson (2008) define financial literacy as “*a combination of awareness, knowledge, skills, attitude and behaviors necessary to make sound financial decisions and ultimately achieve individual financial well-being*”.

Across studies, both performance tests (knowledge-based) and self-reported methods (perceived knowledge) have been employed to measure financial literacy (Huston, 2010). For instance, financial literacy has been widely measured using the three simple questions on the compounding of interest rates, inflation and risk diversification originally designed by Lusardi and Mitchell (2007a) for the U.S. Health and Retirement Study. In the pilot study of the OECD, and its International Network for Financial Education (INFE), financial literacy is measured considering its three components: knowledge; behavior and attitudes (Atkinson, 2008). In all different approaches, there is a tendency to measure financial literacy through objective tests of financial concepts rather than by asking respondents to provide a self-assessment of their understanding of financial issues. In fact, when using both methods to assess financial literacy results show a discrepancy between what individuals believe they know and what they know, with the self-assessment often higher than the actual understanding (OECD (2005), Lusardi and Mitchell (2009)). The measure used in this study also follows this approach as the questions used to construct the financial literacy index are aimed at evaluating objective knowledge.

4-Empiricals results

4-1 Descriptive evidence on financial literacy

Table 2: Overall financial literacy level

Financial literacy level		Frequency	Percent	Cumulative Percent
Valid	,09	8	1,6	1,6
	,18	8	1,6	3,1
	,27	24	4,7	7,8
	,36	32	6,3	14,1
	,45	40	7,8	21,9
	,55	104	20,3	42,2
	,64	128	25,0	67,2
	,73	144	28,1	95,3
	,82	24	4,7	100,0
	Total	512	100,0	

The results present the overall participants' score on the financial literacy test, suggesting that the investor's knowledge about investments is inadequate. The table demonstrates that 42.2 percent of respondents don't answer correctly the half of the financial literacy test. Seeing that the questions are fundamental, answering less than half of them correctly indicates a low financial literacy level among the participants.

4-2 The individual decision-makers' perception of the financial literacy construct

In this section, we will address the objective of verifying the individual decision-makers' perception of the financial literacy construct and the need for financial literacy in an organizational context.

The section A of our questionnaire enclosed statements testing the households' perceptions of the financial literacy concept, also, the participants had to indicate their perceptions of the current status or need for financial literacy for decision-making in organizations. The research findings from section A of this questionnaire are summarized in Table 4.

Table 3: Responses to statements on financial literacy for decision making in organizations

Statement	Rating scale (%)					
	Strongly disagree	disagree	unsure	agree	Strongly agree	Total
1-Financial literacy mitigates against risks involved in decision making.	0	0	14	34.66	51	100
2-Financial literacy is a process to be followed rather than an achieved result.	0	5.33	1.33	53.33	24	100
3-It will be to the overall benefit of your organization if decision makers at all levels are financially literate.	18	0	0	29.33	51.33	100
4-Employees in your organization do not need financial training to understand the basics of how business success is measured.	66.66	24	0	8	1.33	100
5-Seniors managers have to understand the meaning of financial ratios to evaluate their organization's performance.	0.66	0	8	58.66	32.66	100
6-Managers seldom admit that they do not know how to read their organization's financial statements.	3.33	36.66	6	30	24	100
7-In general, there is a shortage of financially literate people in decision-making positions.	2	12.66	6	64	15.33	100

In a statement (1), a significant number of respondents 85.66% agreed or strongly agreed that financial literacy mitigates against the decision-making risk. In this regard, Bernstein¹ (1998); concurs that individuals can test their degree of risk aversion by defining their certainty “equivalent.” Thus, the new financially literate decision-makers are, the advanced their certainty equivalent will be. Therefore, we can deduce that financially literate decision-makers are well again prepared to make a trade-off between risk and return.

Regarding statement (2), 77.33% of the respondents agreed or strongly agreed that financial literacy is a procedure to ensure rather than an achieved result. Financial literacy is a lifelong progression. The

¹Bernstein, P.L. 1998. *Against the Gods: the Remarkable Story of Risk*. New York: Wiley.

decision-makers' financial knowledge and skills have to adapt to these changes because economic circumstances continually change. Although 1.33% of the respondents were unsure, and 5.33% of them disagree. Widdowson and Hailwood (2007) contend that 'financial literate can influence the allocation of resource in the economy.'

In a statement (3), 80.66% agreed or strongly agreed that financial literacy could be a benefit for the decision makers of the organization. 'Zulauf¹ (2003) confirms that "investors and governmental organizations alike recognize that financial literacy contributes significantly to financial success."

In a statement (4), 90.6 % of the participants disagree or strongly disagree that employees in an organization do not need financial training to understand the fundamentals of business' success measure.

Of the respondents, 91.32% agreed or strongly agreed with the statement (5) that senior managers have to comprehend the sense of financial ratios to evaluate their organizations' performance. Although it is necessary for managers to understand the meaning of financial ratios, Brooks² (2007) mentions "the critical need for non-financial managers to know about and recognize the limitations of ratio analysis." Although, 54% of the respondents strongly agreed or agreed that, in a statement (6), "managers rarely admit that they do not be familiar with their organization's financial statements."

Berman's³ (2001) improve that 60% of the employees cannot read an income statement. Hence 79.33% agreed with the declaration (7) that there is a frequent shortage of financially literate households in decision-making positions.

4-3 Financial Education programs in Tunisia

This section covers financial education programs offered by the website of the Tunisian stock market. The Tunisian Financial Education Portal⁴ is designed to give household direct access to programs, resources and key initiatives developed by the BVMT⁵ for the financial betterment of all citizens. it also serves as a global clearinghouse on financial education, providing access to a comprehensive range of information, data, resources, research and news on financial education issues and programs around the globe.

The portal provides a new approach to practice for social workers, providing financial education services to their clients through the use of personal-finance video games. Addressing the financial concerns of individuals and families has long been part of social work practice. However, video games designed for educational purposes (i.e. digital game-based learning) provide a new interactive teaching method which emphasizes experiential learning. Some technological advantages to using video games for educational purposes are interactivity, accessibility, individualization, low cost per user, the ease of updating the

¹Zulauf, M. 2003. *Financial Literacy.CELCEE*. [Online] Available at: <http://www.celcee.edu/publications/digest/dig03-09.html>. Accessed: 23 June 2006.

²Brooks, M. 2007. 'No governance without financial literacy', *Leader*, July. [Online] Available at: <http://www.leader.co.za>. Accessed: 14 August 2008.

³ Berman, K. 2001. *Business Literacy: Training with Bottom-Line Results*. [Online] Available at: www.business-literacy.com/articles/bottomline.html. Accessed: 15 March 2007.

⁴ <http://www.investia-academy.com>

⁵ The Tunisian stock market : <http://www.bvmt.com.tn/>

content, and the attractiveness of the graphics. Educational video games support and strengthen: school achievement, cognitive abilities, motivation towards learning, attention, and concentration.

In addition to the website and online tools, several authorities organize public events addressing a more or less wide target audience to increase the awareness of financial issues and provide information. Overall, the literature indicates that digital game-based learning is a viable and promising method for social workers to provide financial educational services to their clients.

5. Conclusion

With reference to the research problem and the results of the literature study and empirical survey, financial literacy can be regarded as one of the basic requirements needed to facilitate sound financial decision-making. There is also general agreement that there is a dire need for financially literate individuals, who can participate fully in the various financial levels of a stock market. This paper added to existing knowledge by exploring what younger adults know and do not know as determined by a set of simple questions that assessed their financial and economics knowledge. In this paper, we show that lack of understanding of economics and finance is widespread. Many papers suggest that a large proportion of the households knows little about finance and that many individuals are unfamiliar with basic economics concepts, such as risk diversification, inflation, and interest compounding. There is also considerable evidence that financial literacy is correlated with wealth accumulation and portfolio decisions. Future studies may use ours as a basis for extending work to gain a better understanding of Tunisians' knowledge, attitudes, and behavior in personal investment. Future research should also be done on how investor education, especially those offered by companies and plan sponsors to retirement participants improve their knowledge and investment performance.

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Appendix:

Questionnaire

A- Financial literacy index:

1-Suppose you had 100D in a savings account and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow?

(1) More than 102D, (2) Less than 102D, (3) exactly 102D, (4) Do not know, (5) Refusal.

2-Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?

(1) More than today, (2) the same, (3) Less than today; (4) Do not know, (5) Refusal.

3- If interest rates rise, what will typically happen to bond prices?

(1)They will rise, (2) they will fall, (3) Do not know, (4) Refusal.

4-Which of the following statements describes the main function of the stock market?

(1)The stock market helps to predict stock earnings,(2)The stock market results in an increase in the price of stocks,(3)The stock market brings people who want to buy stocks together with those who want to sell stocks, (4)None of the above,(5)Do not know,(6)Refusal.

5-Which of the following statements is correct? If somebody buys the stock of firm B in the stock market:

(1)He owns a part of firm B, (2)He has lent money to firm B, (3)He is liable for firm B's debts, (4)None of the above, (5)Do not know, (6)Refusal.

6- Which of the following statements is correct? If somebody buys a bond of firm B:

(1)He owns a part of firm B,(2) He has lent money to firm B, (3)He is liable for firm B's debts, (4)None of the above, (5)Do not know,(6) Refusal.

7- Considering a long period (for example 10 or 20 years), which asset normally gives the highest return?

(1)Savings accounts, (2) Bonds, (3) Stocks, (4) Do not know, (5) Refusal.

8- Normally, which asset displays the highest fluctuations over time?

(1)Savings accounts, (2) Bonds, Stocks, (3) Do not know, (4) Refusal.

9- When an investor spreads his money among different assets, does the risk of losing money:

(1)The increase, (2) Decrease, (3) Stay the same time, (4) Do not know, (5) Refusal.

10-Stocks are normally riskier than bonds. True or false?

(1)True, (2) False, (3) Do not know, (4) Refusal.

11- If the interest rate falls, what should happen to bond prices?

(1)Rise, (2) Fall, (3) Stay the same, (4)None of the above, (5) Do know, (6) Refusal.

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A METHOD FOR CLUSTERING BANK CUSTOMERS USING RFM MODEL AND THREE PARAMETER GREY NUMBERS

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Abstract

In practice, decision processes are usually affected by different sources of uncertainty. The presence of uncertainty influences the result of a decision model. People and organizations face with uncertainty for taking small and large decisions that occur during their life. The aim of this study is presentation a method for clustering Bank customers based on RFM model in terms of uncertainty. According to the proposed framework, first we determine the values of RFM parameters, including Recently transaction (R), Frequency transaction (F), and Monetary value of the transaction (M) using three parameter grey numbers. We cluster customers using a different approach based on three parameter grey numbers. Thus, Bank customers are clustered to three main clusters as good, normal and bad customers. We evaluate validity of the clusters using Dunn index and Davis-Bouldin index and then we detect the properties of customers in any of the clusters. Finally, we offer recommendations to improve customer relationship management system.

Keywords: Clustering, Data mining, Grey system theory, RFM Model, Uncertainty

Introduction

The relationship marketing is sought to establish relationships with the target customers who buy again in the future and encourage others to do so [10]. Customer satisfaction is a major factor in the success of many organizations and in several studies [7]. To improve customer satisfaction and loyalty, economic enterprises must investigate about the factors affecting the customer satisfaction and his revisit and gain their loyalty through customer satisfaction [24]. Given organizations have recognized that customers are their most important asset, they consider relationships with customers as beneficial interactions, which require proper management [20, 35, 43, 49].

Data mining tools are popular means of analysis customer data within the analytical customer relationship management (CRM) framework. Many organizations have collected and stored a wealth of data about their current customers, potential customers, suppliers and business partners. However, the inability to discover valuable information hidden in the data prevents the organizations from transforming these data into valuable and useful knowledge [3]. Data mining tools could help these organizations to discover the

hidden knowledge in the enormous amount of data.

Some of researcher provide a definition regarding data mining as being the process of extracting or detecting hidden patterns or information from large databases [1, 2, 3, 6, 8, 22, 23, 27, 34, 36, 41, 42, 51].

One of applications of data mining, is clustering. Clustering can be considered the most important unsupervised learning problem; so, as every other problem of this kind, it deals with finding a structure in a collection of unlabeled data. A cluster is therefore a collection of objects which are similar between them and are dissimilar to the objects belonging to other clusters. So, the goal of clustering is to determine the intrinsic grouping in a set of unlabeled data [22].

In recent years there has been a massive competition among Banks, in order to attract new customers, retain customers and make them loyal. Therefore it is essential that banks, like other institutions, know their customers well, design their related processes and design a good communication system through identifying elements of customer relationship. Since there is uncertainty in any field, the main question is how we can identify key customers of the Bank in the situations of uncertainty? Three parameter grey number is a concept that can be very helpful for answer this question. In this study we cluster Bank customers using three parameter grey numbers and try to create customer satisfaction and loyalty by effective relationship, attract and retain them. The proposed framework is based on RFM model that is used to extract behavior patterns of transactions and consider three factors for each customer. The RFM model first introduced by Hughes [16].

1. Literature Review

There are many applications of data mining, one of them is market segmentation [20]. In many studies RFM model is used to segmenting for example Hsieh (2004) has segmented Bank customers using neural network and RFM model. Liu & Shih (2005) have used Analytic Hierarchy Process (AHP) and paired comparisons matrix to evaluate customer loyalty and their lifetime value. They have used data mining tools to customer clustering. Sohrabi and khanlari (2007) in their study have calculated customer lifetime value in a Bank based on RFM model and have divided customers into 8 clusters using K-Means approach. Hu & Jing (2008) have studied on RFM model capability to segmenting customers in the automotive after-sales service companies. In this study customers have been clustered into 8 clusters and after analysis the characteristics of customers, their lifetime value have been determined. Wu, Chang & Lo (2009) have discussed customers value of a company's equipment manufacturing industry using RFM model and K-Means. According to the results customers have been clustered in 6 groups. Cheng & Chen (2009) have proposed a model based on combination of numerical value of RFM parameters and K-Means approach. Based on this model, customers have been divided into 3, 5 and 7 clusters and then customer relationship management have been evaluated and implemented by description the characteristics of each cluster customers. Namvar, Gholamian and KhAkabi (2010) in their study have used RFM model and have calculated life time value of customers. They have used K-means too. Hosseini, Maleki & Gholamian (2010) have mined the database of an automotive supply company using developed RFM model. In this study weights of the components of the model have been determined by paired comparison, then data have been clustered using K-Means algorithm. Khajvand & Tarokh (2011)

to estimate the future value of a customer have used RFM model, K-Means algorithm and life time value of customers. Then have predicted future value of cluster using time series. Li, Dai & Tseng (2011) have analyzed the characteristics of customers in a knitting factory based on developed RFM model using K-Means approach. As the result customers have been segmented into 5 clusters.

On the other hand, some studies have been done on grey clustering approach (GCA). Wen and Huang (2004) have used c++ to develop grey clustering toolbox. They have concluded that this method gives sharper results and also improve the performance of analysis. Lee, Lin & Hsiao (2007) have used grey theory and GCA to achieve the parameters of types of services of supply chain model. Wen (2008) have expanded grey clustering toolbox and have used it for analysis of the top test scores in Chicago. Lin, Wu & Huang (2009) have used GCA to incipient fault diagnosis in oil-immersed transformers. They have developed this method so didn't need linguistic variables, membership function, network design and parameter assignment.

2. Grey System Theory

Grey system theory has been proposed by Deng in 1982 [5] for the first time and has been developed by others [30]. Grey system theory works on unascertained systems with partially known and partially unknown information [9]. If black represents the information that is completely unknown and white represents the data that is quite clear, grey is other information that somewhat are clear and somewhat are unclear. A system contains grey information is called gray-system.

A three parameter grey number like $a(\otimes)$ can be expressed as $a(\otimes) \in [\underline{a}, \tilde{a}, \bar{a}]$, where \underline{a} is lower bound, \tilde{a} is center of gravity (the number has the highest possibility) and \bar{a} is upper bound. Let $a(\otimes) \in [\underline{a}, \tilde{a}, \bar{a}]$

and $b(\otimes) \in [\underline{b}, \tilde{b}, \bar{b}]$ be two three parameter grey numbers, the four arithmetic operators are defined as

follow:

$$a(\otimes) + b(\otimes) \in [\underline{a} + \underline{b}, \tilde{a} + \tilde{b}, \bar{a} + \bar{b}]$$

$$a(\otimes) - b(\otimes) \in [\underline{a} - \bar{b}, \tilde{a} - \tilde{b}, \bar{a} - \underline{b}]$$

$$\frac{a(\otimes)}{b(\otimes)} \in [\min\{\frac{\underline{a}}{\underline{b}}, \frac{\underline{a}}{\tilde{b}}, \frac{\underline{a}}{\bar{b}}, \frac{\tilde{a}}{\underline{b}}, \frac{\tilde{a}}{\tilde{b}}, \frac{\tilde{a}}{\bar{b}}\}, \max\{\frac{\underline{a}}{\underline{b}}, \frac{\underline{a}}{\tilde{b}}, \frac{\underline{a}}{\bar{b}}, \frac{\tilde{a}}{\underline{b}}, \frac{\tilde{a}}{\tilde{b}}, \frac{\tilde{a}}{\bar{b}}\}]$$

$$a(\otimes) \cdot b(\otimes) = [\min\{\underline{a}\underline{b}, \underline{a}\tilde{b}, \underline{a}\bar{b}, \tilde{a}\underline{b}, \tilde{a}\tilde{b}, \tilde{a}\bar{b}\}, \max\{\underline{a}\underline{b}, \underline{a}\tilde{b}, \underline{a}\bar{b}, \tilde{a}\underline{b}, \tilde{a}\tilde{b}, \tilde{a}\bar{b}\}]$$

If λ is a constant scalar then:

$$\lambda \cdot a(\otimes) = \begin{cases} [\lambda\underline{a}, \lambda\tilde{a}, \lambda\bar{a}]; & \lambda > 0 \\ [\lambda\bar{a}, \lambda\tilde{a}, \lambda\underline{a}]; & \lambda < 0 \end{cases}$$

Although these operators have many application, but there are better operators too [13]. We can represent a grey number as $a(\otimes) = \langle m(a(\otimes)), w(a(\otimes)) \rangle$ which $m(a(\otimes))$ and $w(a(\otimes))$ are respectively mid-point and half-width of $a(\otimes)$.

$$m(a(\otimes)) = \frac{1}{2}(\underline{a} + \bar{a})$$

$$w(a(\otimes)) = \frac{1}{2}(\bar{a} - \underline{a})$$

let $a(\otimes) = \langle m(a(\otimes)), w(a(\otimes)) \rangle$ and $b(\otimes) = \langle m(b(\otimes)), w(b(\otimes)) \rangle$ be two grey numbers, the four arithmetic operators are defined as follow:

$$\begin{aligned} & \langle m(a(\otimes)), w(a(\otimes)) \rangle \dot{+} \langle m(b(\otimes)), w(b(\otimes)) \rangle = \\ & \langle m(a(\otimes)) + m(b(\otimes)), |w(a(\otimes)) - w(b(\otimes))| \rangle \\ & \langle m(a(\otimes)), w(a(\otimes)) \rangle \dot{-} \langle m(b(\otimes)), w(b(\otimes)) \rangle = \\ & \langle m(a(\otimes)) - m(b(\otimes)), |w(a(\otimes)) - w(b(\otimes))| \rangle \\ & \langle m(a(\otimes)), w(a(\otimes)) \rangle \dot{\times} \langle m(b(\otimes)), w(b(\otimes)) \rangle = \\ & \langle m(a(\otimes)) \cdot m(b(\otimes)), w(a(\otimes)) \cdot w(b(\otimes)) \rangle \\ & \langle m(a(\otimes)), w(a(\otimes)) \rangle \dot{\div} \langle m(b(\otimes)), w(b(\otimes)) \rangle = \\ & \langle \frac{m(a(\otimes))}{m(b(\otimes))}, \frac{w(a(\otimes))}{w(b(\otimes))} \rangle \\ & 0 \notin \langle m(b(\otimes)), w(b(\otimes)) \rangle \\ & \frac{1}{\langle m(b(\otimes)), w(b(\otimes)) \rangle} = \\ & \langle \frac{1}{m(b(\otimes))}, \frac{1}{w(b(\otimes))} \rangle \end{aligned}$$

There are several methods for ordering interval numbers [17, 38, 39]. But they often fail to order some pairs of intervals, as demonstrated by some simple examples. Hu and Wang (2006) introduced new methods for ranking interval numbers as follows [14]:

If $m(a(\otimes)) < m(b(\otimes))$ then $a(\otimes) \prec b(\otimes)$

If $w(a(\otimes)) \geq w(b(\otimes))$ & $m(a(\otimes)) = m(b(\otimes))$ then $a(\otimes) \prec b(\otimes)$

Note that by this definition, the mid-points of intervals determine their order when $m(a(\otimes)) < m(b(\otimes))$. When $m(a(\otimes)) = m(b(\otimes))$ the order of A and B is determined by their degrees of uncertainty or interval widths [37, 50].

3. Methodology of Research

The aim of this study is presentation a method for Bank customers clustering in terms of uncertainty. Based on the proposed methodology, first we extract data from the database of the Bank. This data includes customers's personal information and RFM parameters that is collected, pre-processed and prepared for using in next steps. We perform clustering operations based on RFM model. Due to uncertainty of this data, according to experts's opinions, intervals are determined for a range of values for type of customers. As regards data is grey in this problem, customers are clustered using GCA. We evaluate clustering validation by Dunn and Davies-Bouldin indicators. Then we analyze status of customers in each cluster. Finally, according to the results we will provide guidelines for the identification of valuable customers of Bank and provide better services for them.

One important feature of this study is combination of RFM model with GCA that creates a method based on RFM parameters in terms of uncertainty. Because of the uncertainty we can't define a good, normal and bad customer explicitly, so we use three parameter grey numbers to cluster customers and determine

intervals and areas for RFM parameters for different types of customers.

4. Results

The RFM model is one of the most common models used to calculate the customer values. In this model three criteria are considered such as: Recently, Frequency and Monetary value of transactions [4]. In this study we define the Recently as the time distance between the last transaction made by a customer up to newest them during a certain period. The least amount of this index means it has high value. We define the Frequency as the number of customer transactions during the period. The most amount of this index means it has high value and we define the Monetary as the amount of money that a customer exchange during the period. The most amount of this index means it has high value.

In this study we use the database of Bank customers. We collect data of RFM parameters and customer characteristics to clustering and cluster analysis.

Then we process the collected data to prepare them for use. Data pre-processing is included clearing, delete records with a lot of missing data, converts attributes, normalization, discretization, remove outliers, creating new criteria and etc.

We remove variables that have not effect on the clustering and missing data to improve data quality. Also we transform some criteria to obtain proper criteria for example we calculate customer’s age based on his/her birthday. This criteria are listed in Table 1.

Table 1. The criteria for clustering and cluster analysis

	Criteria	Type of Field	Range
1	Customer number	Numeric	1-995
2	Gender	Boolean	Man / Woman
3	Age	Numeric	18-79 years old
4	Education	Categorical	
5	Marital status	Boolean	Married and single
6	Car ownership	Boolean	Owner and non-owner
7	Recently	Numeric	2-659 days
8	Frequency	Numeric	2-23 iterations
9	Monetary	Numeric	144000-2424000

The RFM parameters that are extracted from the database, not very accurate. Considering uncertainty of this data, we can’t define them explicitly. So we use GCA to clustering Bank customers. For this purpose, we must define the scope and range of RFM variables for type of customers such as: good, normal and bad customers. Table 2 represents these ranges.

Table 2. The range of RFM parameters for each type of customers.

Type of Customer	Recently	Frequency	Monetary
Good	[2 , 221)	[16,23]	[1664000 , 2424000]

Normal	[221,440)	[9,16)	[904000,1664000)
Bad	[440,659)	[2,9)	[144000,904000)

Grey clustering approach is a method for segmenting and clustering items, based on grey system theory. We use this method to finding cluster of alternatives have grey value [45]. To overcome the difficulties with imprecise data and incomplete information in the prediction of environment, the GCA was introduced and applied to predict the behavior of customers. GCA was applied to other areas [29, 32, 48]. First we find sample matrix. In this study there are 995 clustering objects (customers) and 3 clustering indicators (RFM parameters). Let d_{ij} be the sample value of j th index for i th object. D is a matrix whose element is d_{ij} , i.e.,

$$D = [d_{ij}]_{n \times m}; \quad d_{ij} = [\underline{d}_{ij}, \tilde{d}_{ij}, \overline{d}_{ij}]$$

Then we determine grey clustering functions. Grey clustering function $f_{jk}(x)$ denote the function that the j th clustering index belongs to the k th clustering criteria. Here $\lambda_{jk} = [\underline{\lambda}_{jk}, \tilde{\lambda}_{jk}, \overline{\lambda}_{jk}]$ is the critical value of k th clustering criterion for j th clustering index, which is taken by the midpoint of k th clustering criteria interval.

$$\underline{\lambda}_{jk} = \underline{a}_{jk} + \frac{\overline{a}_{jk} - \underline{a}_{jk}}{4}; \tilde{\lambda}_{jk} = \tilde{a}_{jk}; \overline{\lambda}_{jk} = \overline{a}_{jk} - \frac{\overline{a}_{jk} - \underline{a}_{jk}}{4}$$

Note that we have three kinds of grey clustering functions which are expressed by fuzzy membership functions in figure 1-3.

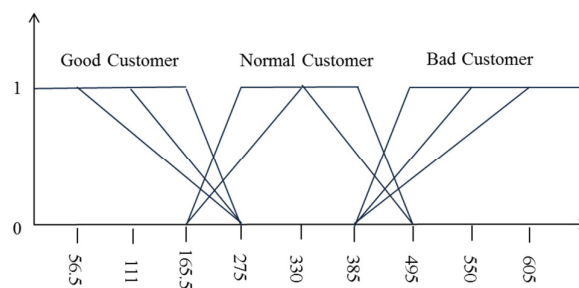


Figure 1. Grey clustering function for Recently index

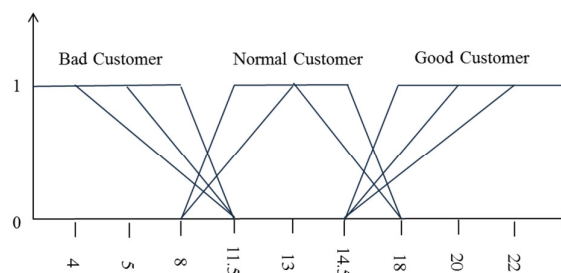


Figure 2. Grey clustering function for Frequency index

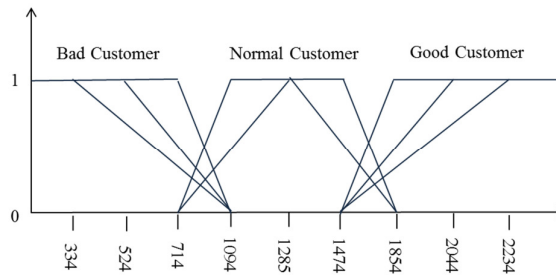


Figure 3. Grey clustering function for Monetary index

Then we compute clustering weight that is denoted by η_{jk} (weight of index j belonging to the k th criterion).

$$\eta_{jk} = \frac{\lambda_{jk}}{\sum_{j=1}^m \lambda_{jk}}$$

Otherwise, normalized λ_{jk} could be used. The normalization will give us stability in numerical computations. We can obtain the following clustering weight matrix. Table 3 gives these weight for RFM indicators in our study.

Table 3. weight matrix for RFM parameters

	Bad Customer	Normal Customer	Good Customer
R	[0,0.1672,0.3343)	[0.3343,0.5015,0.6687)	[0.6687,0.8343,1]
F	[0,0.1364,0.3636)	[0.3636,0.5,0.6364)	[0.6364,0.8182,1]
M	[0,0.1667,0.3333)	[0.3333,0.5004,0.6667)	[0.6667,0.8333,1]

So we compute clustering vector. The clustering coefficient σ_{ik} denotes the degree of object i belonging to grade k , which is computed as:

$$\sigma_{ik} = \sum_{j=1}^m f_{jk}(d_{ij}) \eta_{jk}$$

where $f_{jk}(d_{ij})$ is a function of sample value d_{ij} , and η_{jk} is a clustering weight. Then a clustering matrix is defined as:

$$\sigma = [\sigma_{ik}]_{n \times d}$$

Each row in the clustering matrix, i.e., vector $\sigma_i = (\sigma_{i1}, \sigma_{i2}, \dots, \sigma_{id})$ is the degree of clustering object i

belonging to each class. If there is k_0 such that $\sigma_{ik_0} = \max\{\sigma_{ik} \mid k = 1, 2, \dots, l\}$.

Then we assign the i th object to the clustering grade k_0 [18, 46].

The result of this operation can get functions. For example Recently of transactions for a good customer is defined as:

$$f_{R,Good}(x) = \begin{cases} 1 & x \leq 56.5 \\ -0.0046x + 1.2586 & 56.5 < x < 275 \\ 0 & x \geq 275 \end{cases}$$

$$\tilde{f}_{R,Good}(x) = \begin{cases} 1 & x \leq 111 \\ -0.0061x + 1.6768 & 111 < x < 275 \\ 0 & x \geq 275 \end{cases}$$

$$\bar{f}_{R,Good}(x) = \begin{cases} 1 & x \leq 165.5 \\ -0.0092x + 2.5114 & 165.5 < x < 275 \\ 0 & x \geq 275 \end{cases}$$

Now we can determine the weight vector and degree of membership of customer to each cluster such as: good, normal and bad customers. For example we have a customer by R=171, F=10, M=515000. His/ her degree of membership to good customer cluster equal [0.3183,0.5290,0.9498], for normal customer cluster equal [0.1566,0.2168,0.3972] and for bad customer cluster equal [0,0.1982,0.4891]. Then we compare these three parameter grey numbers according to what has described. The maximum of theirs is [0.3183,0.5290,0.9498] that is related to good customer cluster.

Similarly we can obtain degree of membership of all customers to each cluster and then we evaluate status of each cluster based on its customers.

In next step we evaluate the cluster validation that is concerned with the quality of clusters generated by algorithm. In this study we use Dunn and Davis-Bouldin indicators to evaluate validity of clusters obtained by GCA. Regarding the fact that in this study data is uncertain, we calculate the amount of this indicators using grey number rules. Amount of them can be seen from table 4.

Table 4. Amount of Dunn and Davis-Bouldin indicators

Number of clusters	2	3	4	5	6	7	8	9	10	11	12
Dunn index	0.017	0.016	0.016	0.019	0.022	0.022	0.023	0.027	0.029	0.029	0.029
Davis-Bul din index	2.993	2.993	2.998	3.002	2.997	3.000	3.023	3.030	3.031	3.032	3.032

We calculate value of this indicators for 2, 3,...12 clusters. Because of lack of a significant change in the observed parameters after iterations 12, we don't continue afterwards. The best value of Dunn index is for 3 and 4 clusters. The best value of Davis-Buldin index is for 2 and 3 clusters so the best number of clusters equal to 3.

Using clustering each customer is in a cluster. Status of clusters based on their customers in table 5 are obtained from result of GCA and customer characteristics.

Table 5. Status of cluster

Clusters		Good customers	Normal customers	Bad customers
Number of customers		31%	36%	33%
Average age		68.20	28.11	48.92
Gender	Woman	53%	53%	24%
	Man	47%	47%	76%
Matrimony	Single	18%	20%	30%
	Married	82%	80%	70%
Education	Low literate	10%	0%	9%
	Diploma	17%	18%	29%
	Bachelor	37%	51%	27%
	Master	14%	21%	18%
	PHD	22%	10%	17%
Car Ownership	Owner	78%	55%	86%
	Non-owner	22%	45%	14%
RFM Parameters Average		1.51	1.49	1.04

5. Discussion

According to the results of clustering, Bank customers are clustered into three clusters as good, normal and bad customers.

Good customers who are most valuable to Bank, form the 31 percent of all customers approximately (less than half of the customers), their average age is approximately 68 years old, most of them are married, generally they are masters and PHD and most of them have car. Normal customers form almost 36 percent of the all customers, their average age is approximately 28 years old, most of them are married, most of them are bachelor, almost half of them have car. Bad customers have the lowest value for Bank, approximately include 33 percent of customers, their average age is approximately 49 years old, most of them are married men, most of them are car owners.

With this resolution and taking into account the characteristics of each cluster customers, Bank should strive to maintain good customer and their value. Therefore, we suggest the Bank by more communicate and interact with customers, trying to adhere these customers.

Because bad customers have lowest value for the Bank, therefore, we suggest a more accurate study on the causes of these. So Bank should research and ask reasons of the gap in the process of buying patterns and try to overcome these. Also Bank can consider the special volume discounts try to improve customer RFM parameters in this cluster.

Normal customers are the customers that should be preserved and gradually become good customers by

taking appropriate strategies. Therefore, Bank must take decisions to prevent them from entering them to the bad customer cluster.

Thus, by identifying customers, we can determine strategies for attracting, maintain and loyal to more customers that have more value for Bank.

6. Conclusion

In this paper, we have introduced a novel method to cluster Bank customers in terms of uncertainty. We combine GCA and RFM, for customer clustering evaluation. There are some improvements over existing methods in the following aspects.

This method is applied to cluster Bank customers when the levels of attributes are defined in terms of intervals in the customer criteria. It is helpful to deal with the uncertainty of customer criteria and observation value.

Interval weights are introduced to deal with the uncertainty of weight distribution.

The grey clustering approach is generalized in the new method. It combine with RFM model to identification customers.

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MANAGING CONFLICTS OVER AND CHANGING MUSEUM CONTEXTS FOR CONSERVATION DECISIONS CONCERNING MUSEUM ARTEFACTS

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1. Introduction

1.1 In the past: curators and conservators as the owners and carers of museum objects, respectively

‘The conflict over the collections between one group, the conservators, who see themselves as ‘carers’, and another, the curators, who see themselves as ‘owners’ (Keene 1996, 82).

There is a traditional view of conservators as the carer of museum objects. This understanding not only comes from their professional codes and ethics such as stated by the American Institute for Conservation of Historic and Artistic Works: Guidelines for Practice (2009): ‘In an emergency that threatens or will cause the lost of cultural property, the conservators should take all reasonable action to preserve the objects.’ Moreover, Clavir (2002, 33) also argues that ‘conservation is rooted in the physical care of objects while curators are responsible for the intellectual care of collections.’ In a discussion on the use of museum artefacts by their original owners (Clavir 1986, 80), the curator and conservator express their concerns for anthropology objects.

Audrey Shane (1986, 84) states:

“As a curator, I feel the use of museum objects is an important function of the museum. All the preventive measures and repairs are of little use if no one is allowed to learn from the object.”

Miriam Clavir (1986, 84) emphasises:

“The true nature of an object including its origin...setting and subsequence use should be respected and preserved. Conservators should strive to maintain a balance between the cultural needs of the society and the preservation of cultural property.”

Curators and conservators both agree the use of these objects by source communities as a way of preserving them, but there is not a clear line of ‘how much use are allowed?’ Thus it causes conflicting

views between the two professions. Clavir (1986) further suggests that there should be museum policy and funds for the appropriate staffing to supervise the handling and use of objects, which is in many cases being overlooked. In this case, conservators are very willing to work out practical problems and propose solutions. And through the discussion, curator Audrey (1986) did admit the museum should have a better loan policy and be assertive about its loan procedures. This example shows both conservator and curator are working on the best interest for objects. While the preservation of objects' conceptual integrity is based on the exploiting of their material evidence, the decision on drafting a loan policy which accommodates both the use and preservation of objects is negotiated and agreed by both parties.

The expression of conservators as carers and curators as owners of objects does not necessarily mean this relationship affects the ability of conservators to make conservation decisions in a negative way. We can view this relationship like teachers and parents of a child, normally both are working on their best to care for a child. In the case of neglect, family abuse or inappropriate parenting, it is the responsibility of teachers to stand out and protect the child or vice versa. This relationship works both ways, curators can use conservators' advice as a valid excuse to refuse a loan request if the risk is too high. This is a healthy mechanism to monitor the museum system and it also opens up the opportunity for communication between conservators and curators.

Clavir (2002) comments "Although there are very different views on the role of conservators and curators, the work of conservators in supporting objects as historical evidence as well as authenticating provenance of the objects is recognised widely." In the case of opening consecrated Tibetan sacred objects with interior contents (Reedy 1991), again there is a conflicting view between curators and conservators. Curators think that the provenance study and other academic reasons justified the opening of consecrated Tibetan statues. However, conservators argue that technical studies of manufacturing methods and physical composition of consecrated statues can usually provide better information about its provenance than can the intrusive opening. In many cases, when it comes to conservation decision making, curators are seen more like authoritarian. There is no doubt that the ability of conservators to make treatment decisions is affected by their relationship with curators. But if both curators and conservators can work with source groups together then the third party (source groups) will certainly bring a new power balance between the two concerned.

There are examples which show that the relationship between curators and conservators does not necessarily cause conflict. It depends on the type of objects in the collections. Clavir (2002, 49) comments if the collection is more fine arts based than mechanical, working or ethnographical objects, and if the object is so unique, there seems to be an agreed view on preserving the original, physical and aesthetic integrity as the priority. For instance Da Vinci's Mona Lisa is so high profile internationally and due to its preciousness, it is considered not suitable for loan. Any conservation treatment which aims at retouching or restoring the painting to its known earlier state will cause public dispute undoubtedly. Thus neither the curator nor the conservator dares to make any problematic decision. And it has nothing to do

with conservators' capability.

1.2 At the present: The public as the owner while curators and conservators as carers of museum objects

Since the practices of repatriation and returning grave, sacred objects and human remains have become an international norm, the recognition of source community and social significance of objects also becomes an external factor that reshapes the museum professionals' values and work ethics. Many museums have been working with source communities and 'serving the society who they serve' has become a mantra and an obligation to current museum professionals, including curators and conservators. Moreover, the belief of nurturing a more diverse society also encourages a more inclusive approach when making conservation decisions. In the case of U'mista, both a community cultural centre and museum at Alert Bay, Canada, opening storage collections to local communities and providing access to ritual or ceremonial objects, were all justified as conserving the history and culture of a minority group. Clavir (2002) further argues "Conservation as an integral element of presenting a museum's public image and good stewardship over its collections also needs to find a balance between conservation and access." This does not mean compromising any elements of an object's integrity, but rather how to make conservation decisions 'fit for purpose.'

As the conservation contexts have changed, we can say that the public is the owner of museum collections (Clavir 2002, 46). On the one hand, museum collections and leaning need to be beneficial to all. On the other hand, most of the heritage conservation expenses are also from taxpayers. Thus curators and conservators now have a 'shared responsibility for conservation decisions on how to make access and use of museum objects possible' (Clavir 2002, 42). This new conservation context not only makes conservation decisions more relevant to the society's needs, but also help conservators to be more flexible and realistic when making decisions. The old days 'work behind the scene' no longer satisfies the public as conservators are pushing to the front line where public engagement, funding and business values are prioritised. In the following, we will explore how conservators and curators can work together in the ever-changing conservation context and how such a relationship affects the ability of conservators to make conservation decisions.

2. Science Museum: Conserving the True Nature of Objects or One Version of History

"Conservators believe that the integrity of the object should not be compromised by museum activity...the curators believe that objects are sources of information and that their use or representation for the purpose of disseminating knowledge is fundamental" (Clavir 2002, 36).

At the Science Museum things are quite different as Mann (1994, 44) comments "Demonstrating how

things work rather than maintaining an encyclopaedic archive of artefacts seems to be the mission of the Science Museum as well as being ethical.” Therefore the museum also adopts a different strategy for the conservation treatment of objects. These working objects are originally built with the intent to be operated daily in the public space. If their technical information can not be fully appreciated, can their conceptual integrity still be preserved? Besides, in the real world, not only curators have pressure from funding and public education, but also conservators need to justify what they are doing are beneficial to the society. Both curators and conservators argue with the help of computing system, the objects’ conservation history now can be well documented for future referencing. Additionally, it is possible to put restored objects’ original components back in the future. However, is it really ethical to exploit artefacts for the public benefits (Mann 1994)? Museums and conservation work both need to fit for their social purpose just like museum collections. If museum work can not be appreciated and enjoyed by people, what is the meaning of having museums and objects? Conservators need to recognise that nothing is permanent, and the idea of conserving objects is fundamentally against the nature. If objects can be utilised and appreciated fully while it is still perceived valuable by the society or source communities then a culture or tradition is preserved. But who can decide what is valuable and what is not is beyond the power of curators and conservators.



2.1 The restored 1922 Austin Seven Prototype
Image copyright: The Science Museum, London

Although the Science Museum makes conservation decisions for the benefit of public education and engagement, is it really ethical to restore the Austin Seven prototype as Meehan (1999, 12) describes ‘as near as its original appearance as could be discovered’ at the cost of irreversible treatments (see image 2.1)? In this case, conservators and curators work together for the same goal though we can not tell if what they did is for the best interest of the collections. Certainly they are making the full use of it. Nevertheless, how museum education can benefit people’s understanding of the collections if it is sacrificing the true nature of objects. It is reasonable to say the interpretation and conservation of history is always an open dialogue for power negotiation among government, people and museum professionals. Curators and conservators both need to be diplomatic and responsive.

3. Conservation and Access: The U’mistá’s Experience

“The tangible evidence that objects provide is important, but the meaning of the objects lies even more so in the intangible aspects of the culture they symbolize and the cultural knowledge and norms they represent” (Clavir 2002, 119).

Here is an example at the U’mistá, both a community cultural centre and museum at the Alert Bay, Canada. Clavir (2002) comments “The museum is not only a preserver of local ritual regalia, but also a

keeper of local social customs. In order to solve the conservation versus access dilemma, the centre purchases contemporary collection for use. The older objects are kept as sources of information and material evidence.” Besides, through the use of the new collection by local families, the social and ethnographical values will transfer to new artefacts. Thus new objects also gain their cultural significance.

This conservation and access policy has evolved from trial and error experience of the centre; of course there were cases when loan objects were badly damaged due to the nature of the ritual dance (Clavir 2002). Thus the curators and conservators have been working together with local communities to develop a more ethical and safer way of using ritual regalia from the collections. In so doing, the conservation of the objects’ original use, the continuity of their museum use and the evaluation of risk assessment were realised. Conservators and curators can work together for the shared goals and support each other in decision making only if the access policy and the institution’s aims are clearly understood and followed by each member of staff.

4. Conservation and Fundraising: The Modern Museum’s Business Values vs Conservation Risk Management

“The conflict between the relationships can also be seen as a power struggle within an organisation structure. Conflicts over how museums direct its priorities and resources are becoming more prevalent as museum budgets shrunk and museum culture changes” (Clavir 1993).

As the labour government had made that learning as the fundamental function of museums, consequently the government funding is allocated according to the museums’ performance of hitting the targeted visitors. This situation is even worse by the removal of entrance fees at major museums throughout the UK. Facing the competitive situation, museums all do their best to get as much funds as they can. The fact that museums are always fighting for more funding has introduced more and more museum professions from business backgrounds. With this business-driven mind, museums have been transferred into commercialised organisations. Renting museums for evening functions, corporate venues, private purposes, fundraising dinners or filming are all normal practices nowadays. Both curators and conservators have to accept the fact that museum objects are just part of the selling points. Thus they need to take the risks and make things happen. Here is an example from the National Portrait Gallery, London.



4.1 Statue of Edward William Lane
 Image copyright: The National
 Portrait Gallery, London

The National Portrait Gallery has patrons' fundraising dinners regularly. At these occasions, the director, curators and members of the senior management teams are all expected to attend. The dinners are usually hosted at where the Gallery's 15th-19th century collections are displayed. Before the event, the conservators always put covers on paintings near the catering kitchen and some screens are used too but the latter are more for aesthetic purpose rather than for the collections' safety. Paintings, statues and busts are presented as usual. In 2008, an incident happened when the dinner took place, one of the left-hand fingers of the plaster statue of Edward William Lane (by Richard James Lane, 1829. National Portrait Gallery 2009, see image 4.1) was knocked off by the caterer's trolley. Many visitors noticed this damage and were very surprised that the Gallery let it happen. At the end, the finger was put back by conservators couple months later and they did make it look very natural. But the credibility of the Gallery's collection care is put on dispute by the inadequate preventive conservation measures. In my view, risks can be minimised though unavoidable. The collections' safety should not be compromised by financial needs. Both curators and conservators need to work on policy that reflects the current use of museum space instead of adapting a passive approach. Again 'how to make it work' is the shared responsibility that conservators and curators are now frequently facing. This is not to say that there is no tension between these two professions rather there are times when they work together on conservation decisions for the benefit of the whole.

Another good conservation practice encouraged by the limited museum resources available is the 'preventive conservation'. Good preventive conservation practice allows most if not every object receives equal and adequate care while using conservators' time more effectively and sensibly. This practice also soothes the relationship between conservators and curators as it improves the long-term conservation of objects for the future generations (priority of conservators) and fulfils a museum's public responsibility for stewardship, access and learning (priority of curators).

5. Conclusion

In the current practice, what affects conservation decision more is the demand from the public, source communities, the government and the museums' responsibility to engage the public. Although curators and conservators are recognised as professionals and their opinions are consulted, their power over objects is limited sometimes. There are situations when both curators and conservators have no choice but to accept objects like nothing more than decorations at corporate functions. The fundamental conflict lies in the relationship between the curators and conservators is how to satisfy the use of objects while also conserving them for future generations. Others argue that we are the future generation for conservators in the past, so we should have access to use objects. Besides, the social fashion has been changing over time, hence what was cherished in the past could be used as handling objects today. This is to say, it is

unreasonable if we limit access in the name of long-term preservation. How do you know future generations will appreciate our taste? It seems more sensible to consider the relationship between the two within the contemporary social and museum contexts. Conservation ethics and objects' values can be interpreted differently to fit the current museums' aims. Artefacts can be used differently so as to fit for their present purpose and for what they are valued now.

The relationship between curators and conservators can no longer be described simply as a matter of power struggle over decisions concerning objects. Within the current museum context the relationship between conservators and curators is moving towards 'building a shared responsibility and mutual understanding.' This positive relationship encourages problem solving; makes conservation decisions relevant to the society's needs; and it works on the benefit of the whole. Finally, in my view, there are situations when conservators' decision making is affected by their relationship with curators at the professional level. Nevertheless, conservation decisions are affected more by the changing museum context which involves all professionals in the field to accept and adapt to it.

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