STRESS MANAGEMENT POLICY ANALYSIS: A PREVENTATIVE APPROACH
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Abstract
At the present world human resource is considered as one of the most important resource. In the era of dynamic business most of the organizations invest a huge amount of money and spend a great deal of time and efforts as though they can properly utilize and manage this vital resource. Stress is one of the burning questions that hinder the officers’ and workers’ performance and productivity. In this paper all experiences of jobs are discussed which affects human minds and bodies. It has been essentially built the inputs which are obtained by conducting a comprehensive study covering the aspects of stress in today’s business. An attempt has been taken to address three major key areas related with the types and sources of work related stress, impact of stress on individuals and the way of managing stress.

Keywords: Stress, Employee Stress, Stress management, Occupational stress, Reduction of stress, Prevention of stress.

INTRODUCTION
Every era in history has been characterized by some incapacitating diseases. Plague, Polio and Pneumonia were eliminated when the environmental conditions were improved or when the germs or viruses were destroyed or protected through drugs or vaccines. In the modern society we have some characteristic diseases, but normally consider not being so easy to eliminate. It leads to psychosomatic disease or heart disease and it is a major contributor to disturbances in one’s emotional, family and social life. It inhibits creativity and personal effectiveness and it is present as general dissatisfaction that is so obvious in our daily lives. The name of this condition is stress. Stress is a feeling of emotional or physical tension. It is a form of tension in the body or mind for which there is no release or outlet.

The Canadian Centre for Occupational Health and Safety (CCOHS) declares that stress can worsen when there are high demands placed on a worker in a particular job, but the worker has little control over those demands.

The modern meaning of stress was laid by Dr. Walter B. Cannon, a physiologist at Harvard almost 100 years ago. He was the first to describe the “fight or flight response” as a series of involuntary physiological and biochemical changes that prepare one to deal with threats of danger (Cannon 1918). Professor Hans Selye in 1956, first time introduced before the public the concept of stress in a medical sense to indicate the overloading of works on human body. He found that any problem, real or imagined, could cause the cerebral cortex (the thinking part of the brain) to send an alarm to the hypothalamus (the main switch for the stress response, located in the midbrain) (Selye 1976). The hypothalamus then stimulates the sympathetic nervous system to make a series of changes in our body and our heart rate, breathing rate, muscle tension, metabolism, and blood pressure all increase (Stress and Stress Management 2010). Job stress is the major cause for job dissatisfaction, which creates disturbances in the quality of life, so, it results unhappiness (Kumar 2011). The theory of preventive stress management in organizations was originally formulated in 1977.

Stress is very much dynamic condition in which people confronted with opportunities, constraints or demand related to what one
desires and for which outcome is perceived to be both uncertain and important. Stress is associated with constraints and demand. Two conditions are necessary for potential stress to become actual stress. There must be uncertainty over the outcome and the outcome must be important. Stress produces not only the bad things all time but also produce some positive outcome in some special events. Sometime when people remain under pressure they feel to get something and they work more and harder which increase the total productivity. This paper will provide the critical view about the stress and consequences of it which will be more helpful to manage it and development of way to handle more stressful situation. The overall cost of stress at work has been estimated to be in the range of 20 billion Euros in the European Union and more than 150 billion dollars in the USA, mainly for health care and treatment costs, absenteeism and turnover (Daniels 2004).

Everyone suffers from stress on some level and no one is free from it. Sometimes stress levels are comparatively higher and sometimes they are lower. Hence stress is a normal part of everyday life and we cannot really avoid it. But it is necessary to be able to manage stress, otherwise chronic stress, if left untreated, can lead to a variety of stress related illnesses such as hypertension, heart disease, anxiety, depression, memory impairment, panic attacks, digestive disorders, autoimmune diseases and chronic fatigue syndrome (Cooper 1996, Porth 1998, Gruner 2006, and Provino 2010).

If anybody is resulted by stress, he/she feels non-sleeping, remains nervous in much of the time, gets sick a lot, apathy of participate in anything, change in the quality of work, and remains irritable and moody. Stress and stress related problems such as anxiety and depression are now the foremost reasons for absenteeism from workplace in the United Kingdom (UK) costing the economy at least £26 billion in lost working time, where treatment cost is not included.

Rahim (2010) studied on the employees of the banking sector of Pakistan and expresses that the banking sector is becoming increasingly competitive around the country, which increasing psychological problems, such as stress, strain, anxiety, depression, sleep disorders, etc. He expresses that the biggest killer is not AIDS or cancer but psychological problems.

**OBJECTIVES**
The main objective of the study is to evaluate the stress and the way of managing it in personal and organizational life. Other objectives of this paper are follows:
- define stress clearly,
- identify the causes of stress in personal and social life,
- measuring the extent of stress,
- identify the prevalence and development of indicators for stress,
- measuring the impact of stress on job,
- the importance in managing stress, and
- ways of managing stress.

**METHODOLOGY**
This study has been conducted based on both primary and secondary data available on the relevant field. The primary data are collected through personal interviews from some professionals. Research works, publications and texts on this relevant field are used for this study. This study is covered by 90 respondents broadly from different fields and categories. Among the respondents, 70 were married, 20 were unmarried; 70 were male, and 20 were female. Again among the 90 respondents, 20 were working in financial organization, 5 in service organization, 40 in manufacturing, and 15 were physician and 10 were businessman (table-1). To measure the
opinion of respondents especially for physicians we used 5 point Likert scale (1-5) which indicate more popular to least.

Table 1: Sample distribution.

<table>
<thead>
<tr>
<th>Nature of respondents</th>
<th>Married</th>
<th>Unmarried</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Businessman</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Employee of service organization</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Manufacturing employees</td>
<td>35</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>Physician</td>
<td>10</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Employee of financial organization</td>
<td>15</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Male</td>
<td>55</td>
<td>15</td>
<td>70</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>

We emphasized that the cause-effect relationships is the relation between stress and cardiovascular illness. Stress also effects the organization that is linked to absenteeism and productivity.

DEFINITION OF STRESS
Stress can be defined in general term as people feel pressures in their own life. The stress due to work load can be defined as reluctance to come to work and a feeling of constant pressure associated with general physiological, psychological and behavioral stress symptoms. Hence stress is the harmful physical and emotional responses that occurs when the requirements of the job do not match the capabilities, resources, or needs the worker and he expressed that job stress can lead to poor health and even injury. Stress is increasing due to globalization and economic crisis, which affects all professions, and as well as families and societies, almost all countries of the world (Bharatai and Newman 1978). Stress is our body’s physical and emotional reaction that frightens, irritate, confuse, endanger, or excite us and place demands on the body. Stress can be caused by events that are pleasing as well as events that create crisis in our lives. But stress is a normal part of daily life and the effects of stress are not always negative.

In small quantities, stress is good; it can motivate us and help us to become more productive, but too much stress or a strong response to stress can be harmful. Stress can arise from any situation or thought that makes one feel frustrated, angry, or anxious. Everyone sees situations differently and has different coping skills, so, no two persons will respond exactly the same way to a particular situation. Situations that are considered stress provoking are known as stressors. Many professionals suggest that there is a difference between what we perceive as positive stress, and distress as negative stress. But we often use the term stress to describe negative situations. This leads many people to believe that every stress is bad for us, which is not true actually (Stress and Stress Management 2010).

Positive stress has the following characteristics (Stress and Stress Management 2010):

- motivates, focuses energy,
- is short-term,
- is perceived as within our coping abilities,
- feels exciting, and
- improves performance.
On the other hand negative stress has the following characteristics (Stress and Stress Management 2010):

- causes anxiety or concern,
- can be short or long-term,
- is perceived as outside of our coping abilities,
- feels unpleasant,
- decreases performance, and
- can lead to mental and physical problems.

The reaction of body to stress can be described by following three stages (Truch 1980):

**Alarm Reaction Stage:** the body identifies and first reacts to the stress. In this stage the body first releases hormones that help in the defense against the stressor.

**Resistance Stage:** the body continues to resist the stressors as they persist. If the stressors continue and there is a consistent state of resistance, there is potential to move into the third and final stage.

**Exhaustion Stage:** the body and mind are no longer able to make the necessary adjustments to resist the stressors and there is physical and/or mental exhaustion.

**SOURCES OF STRESS**

At present stress is the number one problem for working people. It is increasing continuously day by day due to globalization and global economic crisis. It creates the fight or flight response in the brain, the stress hormone then circulates in the blood stream which causes the heart to speed up, the arteries to narrow and blood sugar to rise. In our daily life we face different type of stressors, such as biological (toxins, heat, cold), psychological (threats to self-esteem, depression), sociological (unemployment, death of a loved one, birth of a child), and philosophical (use of time, purpose in life). In any case, regardless of the stressor, the body’s reaction will be the same (Greenberg 1990).

Hans Selye (1976) in his classic book *The Stress of Life* briefly described the stress reactivity as a three-phase process termed the general adaptation syndrome as follows:

**Phase 1, Alarm Reaction**

The body shows the changes characteristic of the first exposure to stressor. At the same time, its resistance is diminished and, if the stressor is sufficiently strong (severe burns, extremes of temperature), death may result.

**Phase 2, Stage of Resistance**

Resistance ensues if continued exposure to the stressor is compatible with adaptation. The bodily signs characteristic of the alarm reaction have virtually disappeared and resistance rises above normal.

**Phase 3, Stage of Exhaustion**

Following long-continued exposure to the stressor, to which the body had become adjusted, eventually adaptation energy is exhausted. The signs of the alarm reaction reappear, but now they are irreversible, and the individual dies (Greenberg 1990).

Source of stress vary according to age, place, time, situation etc. We have listed sources of some of negative stresses as follows:

- death of a close family member or a close friend, the death of a business partner, sick of children or any family member, losing health benefits or no health insurance, personal injury or illness, change in health or behavior of family member, loss of a friend,
- pregnancy, sexual difficulties, divorce, filing for divorce, relationship break-up, losing contact with loved ones,
- detention in jail, detention of family member or partner in jail, life
sentence of a close person, death penalty of a close relative or a friend,

- unemployment, losing of job, cannot find a job or losing job of a friend, changing of job, lack of training necessary to do a job, job insecurity, change in working hours, change in living conditions,

- bankruptcy/money problems, substandard housing, selling a home or land for money,

- feeling unsafe in neighborhood due to crime, being abused or neglected, military deployment in the locality, and

- change in sleeping habits, change in eating habits, change in finances, not having enough money to pay bills or house rent.

Now we have listed sources of some of positive stresses as follows:

- starting a new job,
- receiving a promotion at service,
- marriage ceremony or birthday ceremony,
- buying a suitable home or a car of new model,
- having a child,
- winning prizes or winning a lottery,
- planning to enjoy a vacation,
- holiday seasons, and
- taking educational classes or learning a new hobby.

We realize that stress comes from the four basic sources. Among them first two are called external sources of stress and last two are called internal sources of stress. Stress and Stress Management (2010) expresses the four basic sources of stress as follows:

**The Environment:** The environmental stressors include weather, noise, crowding, pollution, traffic, unsafe and substandard housing, and crime etc.

**Social Stressors:** We can experience multiple stressors arising from the demands of the different social roles we occupy, such as parent, spouse, caregiver, and employee. Some social stressors are deadlines, financial problems, job interviews, presentations, disagreements, demands for our time and attention, loss of a loved one, divorce, and co-parenting.

**Physiological:** Situations and circumstances affecting our body can be experienced as physiological stressors. Physiological stressors are rapid growth of adolescence, menopause, illness, aging, giving birth, accidents, lack of exercise, poor nutrition, and sleep disturbances.

**Thoughts:** Our brain interprets and perceives situations as stressful, difficult, painful, or pleasant and some such situations create stress in our life.

**External Sources of Stress**

External sources of stress consist of environmental, organizational, job-career, co-worker, and family and so on. The source of external sources can vary according to the following circumstances:

- change of social circumstances, such as bereavement of spouse, moving job, marriage, holidays etc.,
- pressure to conform to social or employment patterns of behavior,
- conflict in relationships misunderstanding with the coworkers, superiors, subordinates, colleagues, or an absence of praise and being valued by others,
- lack of support, time to be listened to and time for relaxation,
- having a high-pressure job, being unemployed or only having a small range of social circumstances, e.g., rarely leaving the house, few hobbies,
- strict deadline, too tight or too loose supervision, lack of parity of
authority, working at a long stretch, lack of having chance of entertainment policies, and
• boring and noisy, smoke filled work environment, cramped offices bitter fumes, the glare of sun and the burning heat (e.g., in street and rerolling mills), and high turnover rate in organization.

Cary Cooper has developed a concise yet complete list of six sources of work stress (Cooper 1983) as follows:
1. **Job Conditions**: Quantitative and qualitative work overload, people decisions, physical danger, technostress.
2. **Role Stress**: Role ambiguity, sex bias and sex-role stereotypes.
3. **Interpersonal Factors**: Poor work and social support systems, lack of management concern for the worker, political rivalry, jealousy, or anger.
4. **Career Development**: Underpromotion, overpromotion, job security, frustrated ambitions.
5. **Organizational Structure**: Rigid and impersonal structure, political battles, inadequate supervision or training, non-participative decision making.
6. **Home-work Interface**: Spillover, lack of support from spouse, marital conflict, dual career stress.

At present employers are critically analyzing the stress management issues which give to lower job performance of employee originating from dissatisfaction and high turnover and finally affecting organizational goals and objectives in production. Stress has become major problem for employer mainly in developing nations. Sometimes employees do not like to work with their organizations due to high levels of stress among them and majorities were between the age boundary of 26-35 years (Imtiaz and Ahmad 2009).

**CONCEPTUAL ISSUES**
Is there anybody who is not familiar with the term *Stress*? Definitely the answer will be “no”. In the era of super flexibility and rapid changing environment we all experience stress, rather it, is better to say “we are anxious about to stress and the way of managing stress fall us in stress too.” Before managing stress we should know what it is. According to oxford dictionary, stress is defined from various points of view. Among these we pick up the following two meanings:

1. Mental pressure: Pressure or worry caused by the problems in someone’s life.
2. Physical pressure: Pressure put on that can damage it or make it loose its shape.

According to the father of stress researcher Professor Hans Selye, “Stress is the spice of life, the absence of stress is death.” The famous author R. S. Schuler defines stress as a dynamic condition which an individual is confronted with an opportunity, constraint or demean related to what one’s desire and foe which the outcome is perceived to be both uncertain and important. From these above discussions we can find some of inputs about stresses as follows:

• stress is caused by our reaction to the external environment,
• it affects directly related to our mind and body that means it has physical and emotional effects on us, and
• stress creates positive and negative feelings.

We can define stress in many ways based on its area and impact. Though the impact of
stress is directly related to both the body and mind of individuals but from the view point of sources we can define it in the following ways:

**Direct Stress:** When the sources of stress are directly related to the person then it is called direct stress. Suppose, Mr. X and Mr. Y are working in the same department of the same factory and suddenly Mr. X loses his job, then stress for Mr. X is considered as direct stress.

**Indirect Stress:** When the sources of stress is not directly related the person then it is called indirect stress. In the previous example the incident of losing job of Mr. X creates a stress for Mr. Y who is still in that job. The losing of job of peer group (Mr. X) of Mr. Y or the fear of losing his (Mr. Y) job could be a cause of stress. It is of course the impact of direct stress is more than that of indirect stress.

**Short-term Stress:** From the view point of duration of time, when the stress affects for a limited period of time then it is called short-term stress i.e., in a production-oriented factory in the peak period of production (generally 3 to 6 months) or at the end of the month in accounts department of a company workers face a short-term stress. Some of the short-term stresses are short temper, headache, shortness of breath, sleep disturbances, difficulty concentrating, upset stomach, apathy, and job dissatisfaction.

**Long-term or Perpetual Stress:** When the stress affects for a long period of time then it could be called long-term or perpetual stress. From the view point of outcome functional stress when the result of stress is positive or stress improves someone’s performance then it could be stated as dysfunctional stress. Long-term stress can create some problems such as, cardiovascular diseases, musculoskeletal disorders (in the back and upper limbs), psychological disorders (depression and burnout) etc.

**Certain Stress:** From the view point certainty, when the result of stress is known to individuals then it is called certain stress. For example, the peak period of production is generally temporary stress and known to all. Certain stress is less harmful and produce very constructive result and sometimes does not produce higher result.

**Uncertain Stress:** When the length of time as well as result of stress is not perceived by the stressors is called uncertain stress. Generally uncertain stress is harmful and produces negative result or hinders the group performance.

Stress is a universal experience in the life of each person and every employee even executives and managers cannot avoid it. It is estimated that in the world about 100 million workdays are being lost due to stress and nearly 50% to 75% disease are related to stress (Bashir 2007).

**OCCUPATIONAL STRESS**

Occupational stress was formally identified in 1989, when the Commonwealth Commission for the Safety, Rehabilitation and Compensation of Commonwealth Employees initiated several research projects. Occupational stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker, which can lead to poor health and even injury (Rehman 2008). Sources of occupational stress have been categorized by Cooper and Marshall (1976) as follows:

- intrinsic to the job,
- role in the organization,
relationships at work, career development, organizational structure and climate, and home-work interface. Here ‘intrinsic to the job’ will include physical aspects of the working environment, such as noise and lighting, and psychosocial aspects, such as workload. Occupational stress has been defined by many researchers (Cox 1978, Cummings and Cooper 1979, Quick and Quick 1984) as a negatively perceived quality which, as a result of inadequate coping with sources of stress at work, has negative mental and physical health consequences.

In a recent survey of employees, more than 80% said that they feel stress on the job, about 70% expressed a need to learn how to manage stress and 45% felt their co-workers needed help in managing stress. The organization should consider that Occupational Stress Indicator (OSI), to whether to improve for preventing stress (Cooper et al. 1988). The results of a large-scale household survey indicated that 19.5 million working days were lost in the United Kingdom (UK) during 1995 due to work-related illness, such as, musculoskeletal, stress, anxiety and depression (Jones et al. 1998). Heller et al. (2002) and Rode (2004) expressed that job stress creates negative relationship with the satisfaction of the employees.

Work-related stress has growing interest across Europe in recent years due to dramatically globalization of the economy, use of new information and communications technology, growing diversity in the workplace (Landsbergis 2003). Organizations suffer business loss through lost working days due to work related illness or accidents, absenteeism, staff turnover, lowered performance, and the associated, often hidden, costs of training replacement staff and the added burden placed on the colleagues of absent or under-performing staff (Clarke and Cooper 2000).

Houtman (2007) expresses that stress has also been associated with a number of other ill-health outcomes, such as cardiovascular diseases (Kivimäki et al. 2002), musculoskeletal disorders, particularly back problems (Hoogendoorn et al. 2000) and neck-shoulder-arm-wrist problems (Ariëns et al. 2001), as well as absence from work (Houtman et al. 1999). When people are in a state of stress, they often feel concerned, less vigilant and less efficient in performing works (Barling et al. 2004). When stress reactions persist over a longer period of time, they may develop into more permanent, less reversible health outcomes, such as chronic fatigue, burnout, musculoskeletal problems or cardiovascular disease.

Our study has identified some different types of stresses which are related to the work term as work-related stresses as follows:

- Some people always feel urgency in the work life, they are always fighting to beat deadlines and have the habit of doing anything at the eleventh hour, which leads to tension and stress.
- When people around us life juniors do not behave according to the expectation, and failed to give the results which expected leads to interpersonal conflicts and it cause pain, guilt and deep impression for a long time. Someone does not agree with the view and opposes, does not keep his promise and is cheated with respect to money, supply of goods, and quality of goods.
- Minds of most of the people run with a tremendous velocity with one thought after another. Mind velocity is high during emotions of hurry, impatience and desperation. High
velocity of mind leads to fatigue of the mind due to constant alertness and loss of concentration. Modern man suffers from worry of too many tasks to be done simultaneously, which leads to stress.

- Unrealistic target leads to tremendous increase in the stress level. Modern executive punish themselves by creating deadlines without bothering about health, wealth, family or peace of mind. Such unrealistic targets make one miss out the quality. Due to fear of failure one’s stress levels go high.
- Today’s business always in competitive mood and some want to win the competition and climb the ladder of success in my way, even by making loss. Such competition shoots up stress in the mind.

Occupational stress risks have been increasing for many years, but at the end of the last decade it increases alarm due to global financial crisis and globalization. By the end of the 1990s in many countries there has been a combination of increasing and stabilizing job demands, together with decreasing job sovereignty which would have resulted in an increasingly stressful situation within countries. High and increasing quantitative demands, combined with low or decreasing control over work pace, increase stress-related outcomes. Some countries showed an increase in stress-related health problems at work, but it was also observed that workers who developed health problems had left the labor market on long-term absence, or were receiving disability pensions (Houtman 2007).

Finally we can express that job stress is considered rising and has become challenge for the employer and because high level stress is results in low productivity, increased absenteeism and collection to other employee problems like alcoholism, drug abuse, hypertension and host of cardiovascular problems (Meneze 2005).

**THE AFFECT OF STRESS**

Previously described various types of stresses could end with different results. Whether the stress with constructive or destructive it depends what types of stresses they are. Certain stress usually produces constructive result where the uncertain stress usually produces destructive result. It is an important factor to consider in case of finding out the result of stress what type of stress it is but the result of stress depends on some factors like;

- the individual strength and personality,
- the environment or situation,
- adoption process, and
- previous experience.

The World Health Organization (WHO) predicts that by 2020, depression will be the second most long term condition worldwide. Everyone is affected by stress differently. The strength of an individual plays an important role in making the end result. The environment and situation, age, ability, attitude the mentality to adopt etc. are also important factor over here. In facing stress the support from environment and situation dramatically produce constructive result. The way of finding the best to avoid, cope with or face the situation is a most considerable factor. Generally before adoption with the situation generally it is needed to find out the types of stress and in which way the individual wants with cope with or face the way of perceiving the goals and situations as well as the conflicts the preparation and planning, classification and justification of the way, identifying various alternative and implement the best ways or methods or processes to face could be a better way to face stress.
Stress is caused by our reaction to the external environment. The manner in which we perceive and understand the changes or the particular events some event can bring happiness and causes stress in two different people depending upon how they react it. Body’s non-specific response to any demand made on it. On one side stress provides the means to express talents and energies and pursue happiness on the other side it can also cause exhaustion and illness, either physical or psychological. It is concerned with an individual’s perceptual and cognitive characteristics.

The factors that contribute to the experience of stress are many and varied. It is found that both positive and negative events in one’s life can be stressful. However, major life changes are the greatest contributors of stress for most people.

Too much travel, entering into a new environment, like new colony, new job generates stress. The social institutions of marriage or divorce can cause stress. Pregnancy can also generate stress, some of the untoward incidents like critical illness of death of a relative can also cause stress in individuals. Time, pressure, competition, financial problems, noise, disappointments could be sources of stress. We can divide the sources of stress into two categories: Physiological or Biological. The causes of some stresses lie in the biological make up of our body, or the interaction of our body with the food we eat or environment we live in. Some examples of the biological causes of stress include:

- lack of physical fitness, such as dwarf, blindness, lack of hearing, hair fall and other problems of limbs of body,
- poor diet, such as deficiency of vitamins, minerals, starch etc.,
- genetic disorder results in chemical imbalances in the body,
- excess of harmful diet, such as taking of too much caffeine, alcohol etc.,
- changes in body functions, such as puberty pregnancy, menopause, ageing etc., and
- psychological or psychodynamic problem.

The term ‘psychodynamic’ refers to subconscious thoughts and feelings, which often arise from childhood experiences. The way in which we learned to cope in childhood is by using defense mechanisms that involved a degree of self deception. We still use these defenses today. Examples of psychodynamic causes of stress include:

- inner conflicts that have not been addressed, but repressed (pushed out of conscious awareness),
- encountering situations that evoke stressful feelings which were experienced in childhood,
- lack of self-awareness,
- being one is capable of achieving far too much-setting standards and expectations too high and therefore falling short of them, and
- not having the skill of knowledge to cope with certain situations, such as spiritual development.

The need for individual spiritual development has long been recognized by religion. It is only during the last 30 years that psychology has acknowledged the existence of a spiritual side to the individual. Some spiritual causes of stress are as follows:

- violation of personal or religious moral code, contravention of accepted group practice, or violation of laws (‘sin’),
- lack of spiritual development,
- an absence of truth i.e., self-deception and deception of others,
- the lack of a sense personal agency i.e., one can influence events or the
failure to recognize and experience choice, and
• absence of a relationship with God, and lack of forgiveness.

CONSEQUENCES AND SYMPTOMS OF STRESS
As stated earlier stress is caused by or reaction to the external events and bring about changes in our response and our general behavior. It is important to learn how to know when our stress levels are out of control. Stress affects the mind, body, and behavior in many ways, and everyone experiences stress differently.

The stress response, also called the fight or flight response, first described by Cannon, refers to the physiological and emotional changes brought on by stress hormones in response to certain situational or event stressors (Cannon 1918). Stress associated with positive events, helps us respond effectively in times of trauma. It also increases our performance or efficiency in ordinary times. On the other hand distress tends to block our performance, create health problems, increase anxiety and depression, and reduce optimal efficiency (Selye 1976). The presence of stress can be divided into three different categories; i) Physiological, ii) Behavioral and iii) Psychological. Now we describe these three symptoms as follows (table-2):

<table>
<thead>
<tr>
<th>Physiological Symptoms</th>
<th>Behavioral Symptoms</th>
<th>Psychological Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Perspiration</td>
<td>• Impulsive behavior</td>
<td>• Physical trauma</td>
</tr>
<tr>
<td>• Eating disorders</td>
<td>• Eating more or less</td>
<td>• Moodiness</td>
</tr>
<tr>
<td>• Irritability</td>
<td>• Easily distracted</td>
<td>• Anxiety</td>
</tr>
<tr>
<td>• Headaches</td>
<td>• Depression/Isolation</td>
<td>• Agitation, inability to relax</td>
</tr>
<tr>
<td>• Hair loss</td>
<td>• Speech problems</td>
<td>• Overestimation of danger</td>
</tr>
<tr>
<td>• Loss of sex drive</td>
<td>• Lower energy levels</td>
<td>• Fear and tension</td>
</tr>
<tr>
<td>• Illness</td>
<td>/sleeplessness</td>
<td>• Memory problems</td>
</tr>
<tr>
<td>• Insomnia and nervous</td>
<td>• Crying for no apparent</td>
<td>• Irritability or short-tempered</td>
</tr>
<tr>
<td>tone of voice</td>
<td>reason</td>
<td>• Depression</td>
</tr>
<tr>
<td>• Tiredness and tiring</td>
<td>• Sleeping too much or too little</td>
<td>• Inability or difficulty concentrating</td>
</tr>
<tr>
<td>easily</td>
<td>little</td>
<td>• Change in personality</td>
</tr>
<tr>
<td>• Increased heartbeat</td>
<td>• Change in personality</td>
<td>• Dissatisfactions</td>
</tr>
<tr>
<td>and blood pressure</td>
<td>• Laughing in a high pitch</td>
<td>• Seeing only the negative</td>
</tr>
<tr>
<td>• Tense, muscle ache</td>
<td>• Grinding of teeth</td>
<td>• Strenuous exercise</td>
</tr>
<tr>
<td>and pain</td>
<td>• Irritable/Aggressive</td>
<td>• Metabolic disturbances</td>
</tr>
<tr>
<td>• Trembling</td>
<td>• Increasing smoking and use of drugs and alcohol</td>
<td>• Panicky</td>
</tr>
<tr>
<td>• Nervous ticks</td>
<td>• Being accident-prone</td>
<td>• Feeling overwhelmed</td>
</tr>
<tr>
<td>• Dryness of throat</td>
<td>• Susceptibility to illness</td>
<td>• Poor judgment</td>
</tr>
<tr>
<td>and mouth</td>
<td>• Loss of appetite or over eating</td>
<td>• Constant worrying</td>
</tr>
<tr>
<td>• Urinating frequently</td>
<td>• Burnout</td>
<td>• Underestimation of ability to cope</td>
</tr>
<tr>
<td>• Sleeping problems</td>
<td>• Nervous habits (nail biting, pacing)</td>
<td>• Underestimation of help available</td>
</tr>
<tr>
<td>• Diarrhea, Indigestion and frequent urination</td>
<td>• Increased errors</td>
<td>• Depression or general</td>
</tr>
</tbody>
</table>

Table 2: The three categories of symptoms of stress.
The impact of excessive stress on team work is also harmful, and it can damage:

- individual work performance,
- team performance,
- working relationship,
- cooperation between team members, and
- team spirit.

Though stress is caused by our reaction to external environment, it should be reminded that a positive attitude can dramatically reduce the stress. So in case of managing stress at first we have to develop a positive outlook that plays an important role. Stress can be managed if we understand the reasons which cause stress and the level of stress. We should also try to estimate if we could bring about any change in environment that can subsequently reduce stress. Both the individual and organizational cooperation is necessary to manage stress.

**IMPACT OF WORKPLACE STRESS IN EUROPE AND THE USA**

A 2001 report from the UK’s Mental Health Foundation, “Burn out or Burning Bright?” determine the following two reasons to increase stress (Ingram and Pilla 2007):

- Most companies did not view stress as a mental health problem. Only series diagnosable conditions were seen as mental health problem, while stress is compared at some point by everyone.

- Senior executives recognized that more junior employees felt they had to hide stress were perhaps unable to recognize stress which could become unhealthy.

Approximately 1 in 3 European workers is affected by work-related stress according to European surveys. It has been estimated that work related stress cost Member States at least 20 billion euro per annum. In 2001 in a report of the American Institute of Stress (AIS) expressed that job-related stress costs the US industry $300 billion per annum. due to absenteeism (1 million workers are absent on an average workday because of stress-related complaints), diminished productivity, employee turnover, direct medical costs, compensation claims and legal and insurance fees. In the USA in 2003 survey examining attitudes in the workplace found stress about the economy, increase in emotional ailments including substance abuse and depression, incidents of among coworkers. In 1 in 4 employees in the USA view their jobs as the number one stressor in their lives, 3 in 4 employees
believe that today’s workers have more on-the-job stress than a generation ago.

**REDUCTION OF STRESS**
The emotional and physical disorders that have been linked to stress including depression, anxiety, heart attacks, stroke, hypertension, immune system disturbances that increase susceptibility to infections, a host of viral linked disorders ranging from the common cold to herpes to certain cancers, as well as autoimmune diseases like rheumatoid arthritis and multiple sclerosis (Stress and Stress Management 2010). Hence we need to control the stresses which are harmful to our mind and body.

**Individual Approaches to Reduce Stress**
Planned life could reduce or prevent negative stress. To manage stress we can follow the sequences as follows:

- problem identification,
- goal selection,
- generation of alternatives,
- choose the best,
- implementation and evaluation the outcomes, and
- take corrective action if necessary.

Besides this we can apply the following tips to get rid of from stress which provided by Dr. Peret Jaret:

**Do Nothing:** At least once during the day, take five or ten minutes to sit quietly and do nothing. Focus on the sounds around you, your emotions and any tension in your neck, shoulders, arm, chest, etc. Doing nothing can be considered as a real struggle. Just sitting quietly slows the heart rate and reduces blood pressure, countering two of the most obvious effects of stress.

**Laugh Out Loud:** Keep something handy that makes you laugh. It could be a collection of your favorite comic strips or a funny voice mail from, say, your child or a friend. You could even take a few moments to think about watching your favorite television comedy.

**Tune In:** In a study at Monash University in Melbourne, Australia, two groups of students were told to prepare an oral presentation. Some worked in silence; others listened to Pachelbel’s “Carone in D Major” stress caused the silent workers’ blood pressure and heart rates to climb. Not so the volunteers in the musical group whose measurements remained steadier. They also reported feelings much less stress.

**Think Happy:** Focus on someone or something you care deeply about for anywhere from 15 seconds to five minutes. Or picture a scene from a peaceful vacation phrase that makes you feel positive about you and the world can work. It sounds like advice from a greeting card, but thinking happy calming thoughts can counteract the psychological changes that occur when under stress. “A lot of stress we experience comes from negative emotions we carry around with us grudges, anger, hurt” says Laskin who studies healing power of forgiveness.

**Hit the Road:** Get from your desk, the coach wherever you may be and take a minute walk. Those who began walking four times a week, the scientists found, reported feeling less distressed and sleeping better. Tests showed that their blood pressure was more likely to hold steady when they do not have an hour to spar. Do not sweat it. Taking five or ten minute walks whenever you are under pressure may be just as effective.

**Breathe Easy:** For five minutes, slow your breathing down to about six-belly breaths a minute. In other words, inhale for about five minutes to relax your entire body. Start by testing by your toes; then consciously relax them. Move on to the muscles in your feet, and then your calves, upper legs, but tocks, moving upward until you end by scrunching up and then relaxing the muscles in your
If you start your day feeling tense, chances are you will feel tense all day, says stress expert Gueth. If you take your troubles to bed with you, they are likely to disturb your sleep, and that can mean even more tension. **Rise Relaxed:** Right before bed, and after the alarm goes off in the morning, take five minutes to relax your entire body. Start by tensing your toes; then consciously relax them. Move on to the muscles in your feet, and then your calves, upper legs, but tocks, moving upward until you end by scrunching up and then relaxing the muscles in your face. If you start your day feeling tense, chances are you will feel tense all day, says stress expert Gueth. If you take your troubles to bed with you, they are likely to disrupt your sleep and then can mean even more tension.

**Organizational Approaches to Reduce Stress**

Organization plays an important role in reducing stress. For better use of these human resource to pick up the best result management must consider these areas as follows:

- personnel,
- selection of job replacement,
- training and development,
- use of realistic goal setting,
- redesigning job,
- increased employee involvement,
- improve organizational communication, and
- establish wellness programs.

The following guidelines could help the organization in maintaining a negative-stress-free environment:

- All employees must evaluate risks to health and safety and whenever possible employers should implement avoidance and control measures. The preventive strategies and compliance facilities plays an important role in reducing stress.

- Company should carry out the activities including: timely inspection, investigate hazards and complaints, receive information from the workers regarding health and safety, and keeping consultancy with the worker about any safety issues.

- In stressful occupations such as the police force, social and health services, Power Supply Company, crime reporter in press media, journalism, Nursing (specially in public medical hospital), workers in overheated, sound-polluted, just covered area (like steel mill, cement industry) sweeper, night guard, the employer should minimize the risks and treat personnel who have suffered from violence at work with due care.

- Key personnel like managements and personnel officers receive training to recognize stress related problems such as high absenteeism, high turnover.

- The organization should have a “stress policy” or guidelines so that staffs know that to do if they are suffering from stress.

- Instead of just offering staffs stress management workshop, employer could set up stress working parties that could actively involve the staff, trade unions and other representatives who could then develop stress policies and make other useful recommendations.

- Arranges health related seminars, stress management workshops, managing pressure to increase performance workshop.
Other Approaches to Reduce Stress

Other techniques to escape from the stress are as follows:

- meditation can also be a good effort to bring down the stress levels,
- taking exercise, especially walking is the easiest and most effective means of reducing stress
- effecting time management, such as taking a mental health day and spend time with friends,
- taking good food and nutrition, avoiding foods with high fat, sugar, caffeine, salt etc.,
- developing communication skills with honest, direct, and respectful ways and
- spending time to relax or reading a good book, or listening to music or playing an instrument.

A widely recognized proactive stress management method is to maintain a healthy physical state through regular exercise, a nutritional diet and good sleep. Another well recognized proactive method of combating stress is to maintain a strong mental state through stay intellectually stimulated (mental exercise), gain stability from relationships (family/friends), practice relaxation/meditation and participate in religion.

McKeown (2005) expresses that prevention and careful management of psychological illnesses will ease the strain on the economy, health care systems and individual well being.

HOW CAN WE PREVENT STRESS?

If we eliminate some of the avoidable stress in our life, it frees us up to enjoy ourselves more and to accomplish more of our goals. We have to be aware of situations that caused stress us in the past. For example, if we notice that we become irritable whenever we catch the bus at rush hour, we have to try catching it at a less busy time. We can schedule meaningful and enjoyable activities which makes a significant difference in reducing stress. We can enjoy music, sports or art for meaning and enjoyment. We can choose a balance diet in our daily life. It is important to leave time for sleep and for restful, relaxing activities, such as reading a favorite or taking a walk. Everyone must schedule time for relaxation each day to refresh the mind and body from the tensions of the day. Some people increase their stress by being critical of themselves and what they are accomplishing. It can be helpful to identify some positive features about ourselves and remind ourselves of these features when we feel negatively about ourselves.

We can prevent stress by taking care of our health, such as eating well, getting enough sleep, exercising regularly, and avoiding alcohol or drug. These healthy habits are not easy to maintain, but they really pay off. Those who are non-pious or not serious in prayer they can participate in religion or spiritual activities to prevent stress.

We have to seek out people who are encouraging and supportive, rather than critical and pressuring. It is very helpful to have relationships with people we feel comfortable with. The common support systems usually include, friends, family members, peer support, professionals and members of one’s religious or spiritual group. If our feelings are very stressful, then we do not keep them bottled up but we can share them with others who are very helpful and benevolent. We always talk in mind with positive sides if we feel stress for some works, which prevent us from stress. Laughter is the best medicine to prevent stress and we can spend few minutes of each day with amusement.

ANALYSIS OF FINDINGS

From the study of all respondents’ views we found that most of the sources of stress are
organizational workload and family related problems. 70% of respondents told that their stress mainly comes from workload and a little bit from family, 30% told their stress mainly from family related problems and moderately from organizational workload, in organizational level 70% of women told that they feel stress due to social insecurity, among the 40 respondents of organizational level 75% think that due to over control and excessive supervision they feel stress. From the study we found that most of the stress we can minimize by individual approaches. In this study we observed all physicians told 7 ways to control the stress and among the 7 ways we found Do Nothing is the most popular one and 80% suggest it as the first choice and scored 4.0 point in the five point scale, Laugh Out and Rise Relaxed stood the 2nd and 3rd position with 3.5 and 3.0 scale point respectively.

CONCLUDING REMARKS
The study indicates that nobody can be free from stress, everybody under the stress a little bit or more. Managing stress is a collaborative effort especially within an organization that helps individual to focus problem-solving in a structured and systematic way. The objective of this study is not to eliminate the stress rather to prevent the negative stress that hinders the individual and group’s performance. Choose the best way to prevent stress in individual’s organizations and within individuals. It is also necessary to remind that the negative effect of stress could never be over looked and it is necessary to consult with physicians or psychiatric consultant.

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LIFE SAVER ON THE WEB: E-LOYALTY

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Abstract
It is known that customers are the most important people for any organisation in today’s competitive markets. Establishing long term, strong and good relationships with present and potential customers has come to the fore for continuing their existence in the market and also remaining profitable. Establishing customer loyalty is priority for traditional firms which have strategic marketing plans. Therefore, there have been many studies pertaining to customer loyalty in marketing. However, as in all other fields, many changes can be observed in customer loyalty. Now it has been possible to offer goods and services through internet which is one of the most important technological development and which has lots of impacts on people’s lives. As a result of the introduction of internet “electronic loyalty” term has emerged in the marketing agenda. The study has been carried out theoretically by examining national and international literature on definition, importance, features, models of e-loyalty and ways of building it.

Key Words: E-Loyalty, Internet, E-commerce

Jel Classification: M30, M31

1. Introduction
“A long time ago, there was money to be made in selling people a commodity. Making your product or service better and cheaper was a sure path to growth and profitability. Today, of course, the rules are different. Plenty of people can make something cheaper than you can, and offering a product or service that is measurably better for the same money is a hard edge to sustain” (Godin, 2006:8) and technological progress has enabled modern mass production and many factories have seen remarkable increases in their output. The number of the production units has increased rapidly everywhere technology reaches. Meanwhile, there has been increase in the number of transportation vehicles such as cargo planes, ships, trains, trucks and lorries. Additionally, many factors, such as increasing population, adopting free market economy, changing living and working conditions of people have created huge markets.
“Because it’s so easy to outsource the actual manufacturing, suddenly your plant foreman isn’t your most important asset. Southwest does not succeed or fail because of its pilots—pilots are easy to find and hire now. It’s easy to make ball bearings, T-shirts, bottled water and mortgages. Making isn’t hard any more. Ford makes Jaguars, Anheuser-Busch makes Kirin, an anonymous plant in Vietnam makes Nike sneakers. The making is not hard or special or differentiating any longer” (Godin, 2006: 36). Some technological devices such as microchips, notebooks and digital music players can be produced for famous brands such as IBM, Cisco, Asus and HP as needed in countries
such as China, Malaysia, Indonesia, Taiwan and Thailand. Goods and services are produced more than necessary via using advanced technology and put on the market. In order to make customers choose you, you need some different things. The change which started after industrial revolution obliges important changes in markets and marketing. Marketers have understood that it is no longer possible to carry on their business life and activities by producing only one type of product and offering same products to the consumers (even if they have same expectations and necessities). The trend has changed today. Now “top priority is to meet customers’ demand” understanding is the focus of today’s marketing. Business firms those are aware of this situation turn onto the activities aimed to please and build customers’ loyalty by giving priority not only to production but also to their demands since meeting customers’ needs is one of their priority targets. It comes into prominence to determine marketing and customer relations strategies according to the information taken from the customers by keeping in contact with them. For this reason, today’s big companies spend millions of dollars to produce non-temporal, long term loyal relations with their customers by listening their demands with different methods and efforts, and meeting these demands with the most proper and productive way.

The changeover from product based marketing strategy to customer based marketing strategy is one of the most important changes of the companies. Many companies invest in the technologies allowing customer based relation marketing strategy. Today customers are more informed and the companies those are aware of this situation focus on the customer, customer demands and customer loyalty (Alhaiou, 2009:1).

2. Customer Loyalty

Today many business firms are no longer local and tend towards international activities. They have increased the number of their customer. Mass production and selling these products in various markets have become prior for companies. However, customer relations and loyalty which used to be built by personal efforts at local and small markets before industrial revolution have gained another dimension. A perfume produced in France or a tropical fruit grown in Costa Rica can be transported to a potential customer at international markets in a few days or sometimes in a few hours. A needed product or service can be purchased in a few minutes via internet. Mostly, there are no face to face encounters between customer and seller.

In addition to increase in number of customer and the distance between the customer and the company, the changing customer patterns make it difficult to follow up and satisfy the customer. Today the major problem of business firms is the decrease of the customer loyalty in time. One of the most important aims of a company is to increase the number of the loyal customer (Sarac, 2006: 71).

Nothing can prevent the customer to go for other companies for a better opportunity, unless the managers establish loyalty based relationships (Reichheld, 2003: 4). So, the firm that loses their customers decreases their profitableness and it cannot be possible for it to hold on in the market.

There are many important expressions in the literature about customer loyalty and its importance. According to Gommans (2001: 43) “building brand loyalty, maintaining it, marketing practices for sustainable competition advantage and customer satisfaction are directly related to the profitableness of the company”.

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If your customer is happy, they tend to be loyal. If they are loyal, they not only buy your products again but also they give advice to your potential customers (www.zoomerang.com).

3. The Importance of Customer Loyalty

The descriptions in the literature about the customer loyalty bear a resemblance to each other. “Customer loyalty can be defined as the willing of being continuous customer of the same company” (Çoban, 2005: 297). Another definition is that customer loyalty is the behavior of purchasing the same brand or product again. But this is a superficial description. More deeply it can be described as “in the circumstances where customer has chance to change the product brand or come across with different brands, customer loyalty can be responsible for purchasing the same good or service again” (Peng et al, 2005: 75).

It can easily be seen that the conditions those are expressed in the definitions occur today’s markets. For example, people see many domestic and foreign origin detergents, oil, milk or many other products. Customers suddenly come across with the discounts of different brands, the chance to raffle after the purchase and suchlike marketing services. In this case, customer loyalty comes into prominence. The important point is to make customer loyal.

4. The Advantages of Customer Loyalty

“The quantity of loyal customers determines enterprises’ survival and development. Customer loyalty is the key factor of upgrading enterprises’ competition ability and the footstone for enterprises’ development and main headspring for enterprises’ long-range profit” (Peng et al, 2005: 77). According to Deb and others (2009: 253) “Loyal customer reduces the cost which companies spend to gain new customers and helps the companies increase their profit. Besides, it makes easy to understand their loyal customers’ attitudes, the companies have deeper ideas about their customers’ demand and it becomes easier to meet their needs and please them”. The most important advantages of customer loyalty for companies are (Eskandari, 2009: 20-22):

- **Acquisition Cost:** Getting a new customer is always much costlier. Because, the most important reasons for this situation are commercials, financial discount to new customer, commissions etc.

- **Referrals:** It is an incontrovertible truth that people interact with each other. The customer who has purchased a service or a product may recommend it to others because of satisfaction, trust or something else. The cost of gaining new customers decreases because new customers purchase as a result of the recommendations during the decision period. Today, many establishments such as language courses, holiday tours, hotels, restaurants and many others take this reality into consideration.

- **Price:** Old and loyal customers are braver than the ones who will buy the product or the service for the first time. Because they purchased it before and saw the service or the product, they are less sensitive about the price.

- **Operating Cost:** Free phone calls, e-mail, brochure, introductory meetings, and individual interviews for potential new customers who do not know anything about the service or the product can be free for the customer but it can be really costly for the business firms. These activities are done less for the loyal customers.

- **Revenue Growth:** Loyal customers are more inclined to repetitive purchase and purchase other products of the same they have enough information about the products and services. As a result there can be a significant increase in income.
5. E-Loyalty and Importance

Internet revolution is mentioned as the most important change effecting trade since money replaced barter (Reichheld et al, 2000-1: 173). Internet has changed traditional marketing methods. As a result of this change, the distance between company and customer has grown. The internet customers have become much more powerful. The e-firms which are aware of the customers’ power have understood that the key to is e-loyalty.

With the rapid growth of online consumer shopping practices, establishing and continuing customer loyalty has become the focus of most marketing theories and practices (Gommans et al, 2001: 43). The loyalty of a customer on internet environment is much more important than in traditional marketing. When the speed of internet is taken into account, customer loyalty will be more important for the future cyber marketing firms (Peng et al, 2005: 78). E-loyalty helps customer retention and decreases costs to gain new customers (Reichheld et all, 2000-2:105-106). Loyalty is important for profitableness of electronic services since gaining new customer in electronic marketing is much more expensive than gaining them in traditional marketing (Oliveira, 2006: 2). Customer loyalty is seen as a really important source in electronic trading field and it is the magical weapon of the competition (Peng et al, 2005: 81).

5.1. Definition of E-Loyalty

It is a well-known truth that business to customer (B2C) electronic trading is rapidly growing and it will grow incrementally in the following years. Remarkable potential of online retail purchasing which is the alternative way of traditional shop purchasing is the proof of this fact (Devaraj, 2003: 184). Although customer loyalty has drawn attention for a long time, it has been ignored by many company those are active in cyber marketing. That’s why focusing on establishing and continuing customer loyalty is a new subject in terms of cyber marketing (Peng et al, 2005: 75). In addition to this, online firms are started to understand the importance of customer loyalty and today it has its part as electronic loyalty in marketing literature. Customer loyalty is important for remaining profitable for the firms serving in electronic environment. Many researchers should understand how to retain customers in electronic environment better (Rui Sousa, 2007: 10). According to a comprehensive research by Bain & Company, 5% increase in the customer loyalty increases the profit of the company 25-95 %. According to the same study, gaining a new customer is seven times expensive than holding existing customer (www.zoomerang.com). E-firms which have realized this situation and potential before have focused on e-loyalty as their target.

Traditional loyalty and electronic loyalty are not totally different. Common definition in the literature is that online loyalty is a consumer’s intention to buy from a website or to visit it again (Cyr, 2006: 8). Another definition is that e-loyalty is to expand traditional brand loyalty concept to online customer behavior. Although the theoretical bases are identical with traditional brand loyalty, e-loyalty is a new concept in the literature. E-loyalty is specific in terms of internet based marketing and purchaser attitude. E-loyalty is related to quality customer support, strong and in time distribution, reasonably priced shipping and handling, clear privacy policies (Gommans, 2001: 44).

5.2. The Features of E-Loyalty

There are some differences between the elements of traditional customer loyalty and electronic loyalty. Before anything else, some physical elements those affect traditional purchasing do not exist in electronic purchasing and some elements are limited. That’s why there are important differences in terms of loyalty between them. These differences

- Internet offers stronger searching engines for less effort and at short notice for products and services for the customer. Thanks to forming electronic database and reaching the data easily techniques, the companies can reach information about customers more easily and have an opinion about online customer value. Electronic trading benefits from many information technology practices both for customers and service.
- The most important specialty of electronic transaction is its difference from physical purchasing environment. This physical difference can cause panic and mistrustfulness at the customers. Another problem is the probability to be defrauded on electronic environment. Against these negativities the firms have to gain their customers’ trust.
- The way of doing business of the online companies is different than the traditional ones. Traditional companies are face to face with their customers. This brings additional responsibilities and gives more opportunity to the employees those are in interaction with the customer. Frowning and any negative change in tone of voice can make the customer have negative impressions about the firm. Similarly, a smile and excitement may make the customer more interested in the product or the service. Unfortunately, internet environment lacks these opportunities.
- Customer chooses what to purchase at cyber environment using their five instinct just like at traditional markets. Choosing a cybershop which has high credit score is the most and supportive choice of the customer to decrease shopping risk.
- Customer makes his purchase choice depending upon his own trust and his online information obtained through his previous purchasing. But cyber environment is free environment in terms of the information given. It is difficult to know whether the information is right or wrong. On the other hand, trust that was built as a result of the previous shopping is an effective factor on consumer attitude. The fact that all the information is open to everyone makes it possible for the customer to reach all the products and services. The price changes happen rapidly and the competitors respond these changes immediately. As a result the price based advantage has been reduced to a large extent.
- The consumers do not want to spend time and energy to search and compare prices because of fast paced life and busy schedule. That’s why customers want to be loyal to some shops serving online. In this way saving time increases, physical costs reduce and consumption risk reduces. Therefore, internet using customers have instinctive preference for loyalty in the name of making purchasing less risky and making decisions more rationally.
- In internet environment companies are able to communicate with customers spontaneously and they can create very active databases thanks to technological opportunities. They can do one-to-one private marketing in order to increase the customer’s satisfaction. That’s why the efforts to have loyal customers should focus on the cyber customers’ shopping experiences.
- Word of mouth marketing is an available important marketing method at traditional marketing. In the public surveys carried on by Reichheld and Schefter (2000) it is proved that public praise marketing has much effect on
electronic trading. More than half of the internet using loyal customers is the result of word of mouth marketing. The customers those took recommendations from loyal customers are more valuable than the ones gained by commercials and knocked down price.

E-loyalty happens in internet environment. Internet is a perfect market because information stands at the tips of people’s fingers and they have the opportunity to compare the offers of the salesmen spontaneously. But this specialty may cause the loss of customer loyalty. Unless the companies gain loyalty from their customers, they will not provide repetitive purchase and future (Xiaujuan Ou et al, 2003: 1734). Because of the fact that your customer is only a click away from your competitors, gaining e-loyalty is much more difficult than gaining traditional loyalty (Wolfgang, 2009). For this reason business firms have to be careful about some points for loyalty in internet applications. Although the firms know the difficulties of e-trading, there are some general mistakes, here are the biggest mistakes made on e-trading (Gilpatrick, 2001: 12):

- **Not making the website simple and understandable:** In some sites there are too many links than necessary, information, banners (advertisement bands on the websites) and advertisements, those make the website complicated.

- **Not investing enough in technology:** As a result of not investing enough in technology, there can be some negative effects such as busy servers because of overloading, not using appropriate interfaces and nor using mobile system for security.

- **Not employing staff member for call center or helper:** There should be some staff members, free telephone lines and instant messaging service like MSN to answer urgent questions and needs of the customers.

- **Not answering the customer in time:** Not answering the customers’ questions those they transmit via e-mail or website in a short time is a huge mistake.

- **Not being long-term:** E-trading is a long marathon. The plans and strategies should be at long date and competitive.

### 5.3. The Factors Affecting E-Loyalty


- **Electronic trust:** Electronic trust has a role to accelerate and consolidate e-loyalty. Electronic trust is the most important factor for decreasing anxiety and panic at the services at which there is no physical appliance such as online banking. Thanks to the trust, e-loyalty can be established. A customer who has e-trust may recommend it to their friends and relatives.

- **Production according to the customer’s demand and interaction:** These two factors contribute to electronic loyalty in terms of customer attitude. Most of the internet user customers prefer the products produced according to the customer’s demand. This clearly shows the importance of meeting customer’s need (customization) in building electronic loyalty. Computer producer Dell gives opportunity to its customers to form their own computer with the help of hardware choosing facility. High participation of the customer on the design of the product forms a strong and effective relationship with the brand. As a result brand loyalty can be gained.

- **Satisfaction:** The continuous satisfaction of a customer is ended up with electronic loyalty. If the customer is satisfied after they purchased a
product or service on virtual environment, they will come to the websites which satisfy before when they need the same or similar product or service.

- **Investment:** The firms who run business in an electronic environment should invest in high quality websites and electronic software in order to raise customer loyalty. This means privacy, security, ease of use, graphic style, endurance, fast answering and information quality in electronic services.

- **Promotions and advertisement tools:** Online firms design their websites, promotions, advertisements and other marketing tools not only to gain customer but also to make them loyal. Electronic loyalty is not a onetime work, it is a continuous work.

- **Keeping track of customer information:** This can be helpful to gain loyalty for online sale companies. For example, it is important for a book firm to keep past shopping information, personal information and liked products after you enter your username and password.

- **Background information with the customer:** This background helps the electronic firm to offer product or service according to the customer’s wish and prevents competitive risks.

- **Competitive price:** It is not possible not to be effected negatively because competitor firms are only a click away and price comparison is available. That’s why offering competitive price is very important in gaining customer loyalty and continuing it for the firms those are in business in electronic environment.

- **Operative security:** In electronic environment operational security and privacy plays an important role in gaining customer loyalty. According to recent researches the main reason why the customers do not extend their online purchasing is the possible online credit card fraud. Privacy anxieties of the customers have caused some failures. There are some techniques and tools those firms can use in order to gain electronic trust which is the most important fact for electronic loyalty. The most common ones are cryptography, approval and authorization.

- **Brand trust:** Trust has a very close relationship with electronic privacy and it is a very important factor in purchasing attitude. Generally, because you cannot look into the sales man’s eyes, you cannot touch the product, you cannot smell or feel it developing trust with these methods is not possible in electronic marketing. Brand trust contributes to reduce suspense. Trust is one of the attitudinal factors forming loyalty at the same time. That’s why brand trust sweeps away some disadvantages caused by some misunderstandings such as internet is not a reliable shopping environment. These misunderstandings still prevent many potential customers from purchasing online.

- **Ease of use website:** Another unique factor in gaining electronic loyalty is an important role which is formed by first impression such as surfing the site with ease, fast loading pages and fast purchasing process.

- **Appropriate content of the website:** A website should be designed to offer appropriate content to its customer group. Global electronic marketers should multiply their language choices as much as they can because they can be reached everywhere and they address to the whole world. It is also recommended that the companies should change the content of their websites appropriate to local circumstances. While designing a website appropriate for local markets, it is necessary to understand the local culture and it is also necessary to design the
website according to the culture. For example colors have different meanings for communities.

- **The loading speed of the page:** Electronic firms should be aware of the fact that most of their customers’ time is limited. The loading speed of the page should be high. The surf inside the website should be easy and people should be able to find the information in a short time. According to many researches 58% of the internet users make surfing mistakes and these cause time loss.

- **Server reliability and answering speed:** In addition to website design, the reliability of the servers has important effects on electronic loyalty. The servers which collapse during transactions, surfing and ordering goods will have some negative effects on gaining customers loyalty.

- **Order follow-up and fast delivery:** Order and delivery is the other factors those have effects on the development of customer loyalty. The logistic system that guarantees fast delivery plays an important role on development of customer loyalty.

- **Online customer support line:** Sometimes web designers have to design complicated websites because of some reasons and circumstances. On this situation a free telephone line and instant messaging service on the internet should exist.

- **Quality:** Because there are not some senses like touching, smelling, feeling or seeing on internet shopping, one way to overcome this negativity is to sell well-known, high quality and guaranteed products.

- **Electronic mail:** Electronic mail is used by many companies in order to inform customers about innovations, learn their wishes, answer their questions, give technical support and have feedback by sending them questionnaire. Interacting with the customers via electronic mail affects the impression of the customers in a good way. By doing so, firms can focus on how to satisfy their customers.

- **Fast solution:** The wish, demands and complaints of the customers, which are sent via electronic mail, should be answered immediately. This plays a critical role in building loyalty.

6. **E-Loyalty Models**

Online companies have made many researches to develop customer loyalty. For this aim many e-loyalty models have been formed in literature. The seven elements recommended for applicable and effective electronic loyalty models are (www.thecustomerinstitute.com):

- **Value:** It is important to offer a competitive price because the price of a product or service can easily be compared with only a click of a mouse.

- **Building brand:** Brand names are more important in internet environment. The name of the domain of the website being the same with the brand name is good for its being memorable and good for its image. Rich web content is necessary to improve the image.

- **Trust:** Trust is thought to have an important role in developing loyalty and continuing it. Many customers are afraid of identity fraud and because of this they avoid to give their identity information to the websites. There are some ways to develop trust to websites. Cryptography and authorized access are some of them. Some firms such as IBM, Apple, Heinz, Proctor and Gamble are famous for being trustful.

- **Coziness of the website:** First impression is very important in terms of e-loyalty. Ease of surfing, strength of the server, fast shopping,
fast checking, fast page loading, and personal interface builds e-loyalty.

- **Technology**: According to researches, 58% of the internet users make mistakes while using the websites. Search for information and surfing inside the site should be easy and fast.

- **Safety**: Firms should secure their customers about privacy and supplying safety to their customers.

- **Customer services**: In order to develop e-loyalty a website should have a well customer service system. System should include phone counseling, frequently asked questions link and can evaluate the orders and deliver at the right time to the right place

7. Conclusion

The importance of loyal customers is put into words on all occasions in today’s competitive markets. Many companies those have difficulty in continuing their activities and increasing their profits have understood the importance of the loyalty of the customers and started to work hard for developing customer loyalty. Many companies are trying to get information about their customers and to offer products and service those they could prefer and wish for. Consequently, for online operating companies, developing e-loyalty and having loyal customers are important tools to help the firms in the competition with other companies. As it can be seen with the help of literature scanning in the research, it is a well-known phenomenon that gaining new customer is much more expensive than holding existing customer of a company. In an environment in which the competitors’ products, services and their prices can be learnt and compared in a few seconds, the companies, which will develop e-loyalty and have loyal customers, will decrease their costs and increase their profits. The marketing experts should develop plans and apply them in order to establish strong relationships with their customers for long and trust based relationships. The plans and studies which are done to develop e-loyalty should be supported by technical infrastructure which is especially important in developing customer trust. Because trust is very important in terms of developing loyalty and the companies should have very good technological infrastructure in order to gain the customers’ trust in cyber environment.

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CURRENT STATE AND PROSPECTIVE DEVELOPMENT OF ELECTRONIC COMMERCE IN SERBIA

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Abstract
The fast advancing global information infrastructure enable the development of electronic commerce at a global level. The nearly universal connectivity which the Internet offers has made it an invaluable business tool. This fast emerging economy is bringing with it rapidly changing technologies and increasing knowledge intensity in all areas of business. The paper analyzes the concept of e-commerce with a special emphasis on the status and prospects of its development in Serbia. In this work, the quality and quantitative method have been applied, based on the usage of descriptive and statistical analysis.
Keywords: Electronic business, Electronic commerce, Payment cards, Commercial banks.

I. Introduction
E-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals. E-commerce is emerging as a new way of helping business enterprises to compete in the market and thus contributing to economic success. E-commerce can help deliver economic growth, increased business opportunities, enhanced competitiveness and better access to markets. E-commerce can apply to purchases made through the Web or to business-to-business activities such as inventory transfers. A customer can order items from a vendor's Web site, paying with a credit card or with a previously established account. Personal and account information is kept confidential through the use of secured transactions that use encryption technology. With the development of network economy, e-commerce plays a major role on new economy stage.

II. The Concept of E-Commerce
E-commerce consists of buying and selling of products and services over electronic systems such as the internet and other computer networks. E-commerce is a commercial activity dealing directly with the trading of goods and services and with other related business activities, in which the electronic communication medium plays a central role. These activities include the communication of information, the management of payment, the negotiating and trading of financial instruments and the management of transport. (Heng, 2003)
E-Commerce is a part of e-business and its goal is to generate profit through the various set of activities based on buying and selling principles. E-commerce is strongly related to the information technologies and telecommunication technologies. Some of the benefits that accrue to an organization from implementation of e-commerce are increased revenue since you will be able to reach more customers, improved customer satisfaction since services will be readily available and fast in their provision, cost reduction because it will not have to incur heavy wage bill, reduced space requirements and hence reduced rent or lease payments. Other benefits include increased efficiency since automation enables you to do more with less input, increased level of output and employee satisfaction.

The uptake of e-commerce is influenced by its potential to create business value and by awareness of its participants of the potential benefits. A major reason for most
companies, irrespective of size, to participate in business is to extract some benefit from it. E-commerce is no different. The benefits of e-commerce are classified in two main categories: tangible and intangible.

The tangible benefits are benefits that directly accrue to the organization and contribute directly to increase in revenue and profit. These include: Efficiency which is the ability of the business process to produce the same level of output using reduce resource output or to produce more output using the same level of input. Increased automation of processes where most of the operational activities which were done by people are carried out by machines without physical presence of people. E-commerce enables accessibility of markets that would have been otherwise inaccessible without automation.

Intangible benefits are benefits that do not directly contribute to increase in revenue but may give goodwill and customer loyalty to the organization. They include, enhancing well-being and education of customers. By providing information to customers online, they are enabled to learn more about the organization and also how to carry out their transaction effectively and efficiently at reduced time and cost. Give organizations competitive advantage in that the organization that use automated business processes are able to provide products and services at reduced prices than their competitors. Customers are enabled by e-commerce to carry out their transaction at any place in the world and at any time of the day that is convenient to their lifestyle. To extract benefits from e-commerce, it is important for businesses to overcome the e-commerce inhibitors and challenges. (Chaffey, 2004)

E-commerce challenges are classified as technological and managerial related.

Technological challenges are related to the acquisition, installation and maintenance of the necessary hardware and software. These challenges are Security and Web site issues. The organizations data may face threats from hackers and data loss occasioned by things like viruses. Technology issues including costs, software and infrastructure.

Others are managerial challenges and include people and organizational issues. The people in the organization may resist adoption of the new technology as they may fear that it would lead to loss of jobs. They may also be reluctant to adopt new methods as they may fear change. If the management does not support the e-commerce project, it means that the project will lack the necessary resources and is thus bound to fail.

According to a new report by the Interactive Media in Retail Group (IMRG) e-commerce sales will pass the 1 trillion euro ($1.25 trillion) by 2013, and the total number of Internet users will increase to approximately 3.5 billion from around 2.2 billion at the end of 2011. The study estimates that e-commerce sales in 2011 increased to 690 billion euros ($961 billion), an increase of close to 20% from a year earlier.

Experts predict a promising and glorious future of ecommerce in the 21st century. In the foreseeable future ecommerce will further confirm itself a major tool of sale. Successful ecommerce will become a notion absolutely inseparable from the web, because e-shopping is becoming very popular and natural. At the same time severe rivalry in the sphere of ecommerce services will intensify their development. Thus prevailing future trends of ecommerce will be the growth of Internet sales and evolution.
Top 10 Countries ranked by Online bayers in 2012 (milions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Online Buyers (milions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>219.8</td>
</tr>
<tr>
<td>US</td>
<td>149.8</td>
</tr>
<tr>
<td>Japan</td>
<td>73.3</td>
</tr>
<tr>
<td>Germany</td>
<td>41.2</td>
</tr>
<tr>
<td>UK</td>
<td>34.8</td>
</tr>
<tr>
<td>France</td>
<td>26.5</td>
</tr>
<tr>
<td>Brazil</td>
<td>23.7</td>
</tr>
<tr>
<td>South Korea</td>
<td>23.3</td>
</tr>
<tr>
<td>Russia</td>
<td>23.1</td>
</tr>
<tr>
<td>India</td>
<td>19.2</td>
</tr>
</tbody>
</table>

Source: www.internetretailer.com

III. E-Commerce implementation in Serbia

The Republic of Serbia is lagging enough in the application of e-commerce compared to developed European countries. The basic reasons are associated to the economic situation in the country, standard of living and computer illiteracy of the population. Every year the Statistical Office of the Republic of Serbia publishes statistics on the usage of information and communication technology in households and businesses. The report for 2012 showed that 98.2% of households have TV sets, 83.9% have mobile phones, 50.4% have personal computers and 21.4% have laptop computers. The overall usage of computers in Serbia is still unsatisfactory, with 44.8% of the population having no access to computers. The survey also showed rather weak results in e-Commerce. The fact that 75% online shopping in Serbia is done by individuals shows that that firms still abstain from online shopping. Unfortunately, the volume of turnover in e-shops in Serbia is so low that it is mostly an alternative form of shopping and business. This state is confirmed by the data of the Republic Institution for Statistics, according to which 40.1% of enterprises having the Internet ordered products and services by electronic way and 20.7% of firms received orders in this way. About 600,000 people in 2012 ordered goods and services on the Internet. In 2011 in Serbia, 73.8% of enterprises with the Internet had Web presentations of their assortments. According to the last researches, great majority of citizens in Serbia want to buy online or they already bought on the Internet, but this experience they had mostly in foreign Web shops. (Statistical office of the Republic of Serbia, 2012)

Basic requirement for the development of e-business in Serbia is the institutional and legal regulation. The institutional push for advancing e-payment and e-banking in Serbia was marked by the Law on Payment Operations introduced on January 1, 2003. All payment operations were transferred from the Accounting and Payments Operations Office to commercial banks, and all payment transactions were completely overtaken by the banks. The reform of the payment system opened a new segment of
commerce and urged the banks to compete for clients. The most widely recognized payment card brand on Serbian market is DinaCard, national payment card, while the most successful international brands are Visa, MasterCard, Diners and American Express. DinaCard system has been founded on 2003 with the aim of stepping up development of non-cash payments, decreasing the amount of cash in the money supply and fighting gray economy. DinaCard system has enabled a number of domestic banks, who were not members of international payment systems, to offer to their clients a payment card which can be used in the largest acquiring network in Serbia. The National Bank of Serbia performs transmission, the clearing and settlement of DinaCard transactions, as well as settlement of domestic transactions with Visa and MasterCard payment cards. The National Bank of Serbia regulates DinaCard business, according to the Operative rules for DinaCard System, while business with international payment cards is regulated in accordance with operative rules of respective systems. Requirements and conditions for issue and use of payment cards may differ significantly among different banks, even for the same brand of payment cards, while the differences among different payment card brands are even more significant.(The National Bank of Serbia, 2010)

### Payment Cards and Accessing Devices in Serbia

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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</thead>
<tbody>
<tr>
<td><strong>Number of Payment Cards Issued</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debit Cards</td>
<td>3,443,015</td>
<td>4,327,537</td>
<td>4,613,448</td>
<td>4,548,241</td>
<td>4,884,814</td>
</tr>
<tr>
<td>Credit Cards</td>
<td>382,158</td>
<td>857,608</td>
<td>1,039,042</td>
<td>1,082,771</td>
<td>1,022,544</td>
</tr>
<tr>
<td>Business Cards</td>
<td>33,129</td>
<td>55,237</td>
<td>72,975</td>
<td>97,777</td>
<td>107,032</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,858,302</td>
<td>5,240,382</td>
<td>5,725,465</td>
<td>5,728,789</td>
<td>6,014,390</td>
</tr>
</tbody>
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<th>2005</th>
<th>2006</th>
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<th>2008</th>
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</thead>
<tbody>
<tr>
<td><strong>Value of Transactions with Payment Cards issued in Serbia (RSD milions)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debit Cards</td>
<td>58,746</td>
<td>118,070</td>
<td>186,220</td>
<td>255,497</td>
<td>300,854</td>
</tr>
<tr>
<td>Credit Cards</td>
<td>10,479</td>
<td>32,868</td>
<td>39,618</td>
<td>43,711</td>
<td>38,545</td>
</tr>
<tr>
<td>Business Cards</td>
<td>2,824</td>
<td>6,288</td>
<td>9,629</td>
<td>14,070</td>
<td>15,739</td>
</tr>
<tr>
<td>TOTAL</td>
<td>72,049</td>
<td>157,226</td>
<td>235,467</td>
<td>313,278</td>
<td>355,138</td>
</tr>
</tbody>
</table>

The legislative layer of e-Commerce is just developing in Serbia, influenced by the corresponding EU legislature, international standards, certain regional initiatives Serbia has endorsed, and Serbia’s legal tradition. Challenges refer to the validity of documents produced and exchanged electronically, security of transactions, and trust, copyright and ownership issues in trade using a website. The most important regulations in the legal framework for electronic business are laws on electronic signatures and electronic commerce. The Law on Electronic Signature has been enacted by Serbian Parliament on December 21st, 2004. The law regulates areas such as: electronic signatures and qualified electronic signatures, electronic certificates and Certificate Authorities, as well as the rights, duties and responsibilities of electronic signature users and Certificate Authorities. Essentially, the law defines a framework in which electronic signature is considered as a legal equivalent of personal signature, thus enabling legitimacy of electronic documents. The Law on Electronic Commerce is...

Adoption of legislation created the conditions for the intense development of electronic business in the future. Electronic banking services were offered in Serbia with certain time lag compared to developed countries. But the delay was not turned out to be so bad: in early stage of electronic banking development, numerous banks in developed countries experienced certain problems concerning security and abuse of transactions. Foreign banks that had entered Serbian market set reliable and secure electronic banking systems, with domestic banks following. Banks in Serbia usually offer to their clients an integrated set of electronic banking services. The most of the banks have a package of services, such as: account information inquiry, detailed report on current account transactions for chosen period of time and detailed payment-card reports. Majority of banks also offer a number of useful applications on their e-banking websites: modules displaying list of exchange rates, loan calculators or currency conversion calculators. Certain banks also offer business intelligence systems to their business clients.

IV. Conclusion

Electronic commerce is revolutionary and modern way of conducting commercial activities and is based on the use of information and communication technologies. In modern business, trade is facing a number of changes that result from the globalization of markets and the development of information technology. For a quick and adequate development of electronic commerce in the Republic of Serbia should identify the opportunities and risks of the business environment in trade organizations. In this sense, the main task of the organization is to monitor changes in the turbulent business environment with special emphasis on the globalization of markets, understanding the needs and requirements of our customers and the experience of developed countries. The development of electronic commerce in Serbia institutional framework is an important pre-condition that reduces the risk of doing business in this area.

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www.internetretailer.com
A CRITICAL STUDY OF ENVIRONMENTAL RESOURCES IN ECONOMIC ANALYSIS
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ABSTRACT
The natural environment has attracted heightened academic and policy interest since the end of the 1980s. This paper reviews the literature to provide deeper insights on the nature of environmental resources, that component element, and their essential economic characteristics. Current literature explicitly emphasizes two points. First, many environmental resources are renewable resources and have the futures of public goods-accessible to all at no change-with the result that such resources are open to over-exploitation to the point of extinction in many cases, which have social costs. Second, environmental resources constitute natural capital and should be admitted as a component of national capital stock, which gave rise to the notion of sustainable development whose essential argument is that current economic development should be made to be compatible with investment in environmental resources for future generations.

KEYWORDS: natural environment, renewable resources, over-exploitation, extinction, national capital stock

JEL CODE: 

INTRODUCTION
The natural environment-referring to the conditions under which human beings, animals, and plants have to live in and reproduce themselves-has attracted heightened academic and policy interest since the end of the 1980s. Prior to this period, the focus of interest was on economic growth and efficient resources allocation, and the engine of economic growth and development was conceived to lie in capital accumulation. By the beginning of the 1990s, as just suggested, protection of the natural environment became a major development policy objective, the concept of ‘sustainable development’ being evolved to capture the three key objectives of economic development: economic, social, and environmental. Global concern for the environment lay behind the 1992 United Nations ‘Earth Summit’ in Rio de Janeiro, Brazil, which focused on the importance of biodiversity and sustainable use of the Earth’s genetic resources. Environmental problems also constitute the 7th agenda in the Millennium Development Goals (MDGs), which require achieving sustainable development patterns and preserving the productive capacity of national ecosystems for future generations.

The central objective of the present paper is to provide insights into the nature of environmental resources, their component elements, and the way current economic literature attempts to incorporate environmental resources into analysis of national capital stock or national wealth. The rest of the paper is structured into six sections as follows: Section 1 provides a conceptualization of environmental resources. In section 2 the concepts of renewable and non-renewable environmental resources are examined. Sections 3 and 4,
respectively, deal with the types of goods and services produced by ecosystems and so-called environmental accounting dealing with how current literature incorporates natural capital into national capital stock. Section 5 explains the notion of sustainable development, and section 6 concludes the paper.

1. Conceptualizing Environmental Resources

Abstractly conceived, environment refers to the conditions, circumstances, and influences surrounding and influencing the development of an organism or group of organisms. In our present context, the organism refers to human agents and the groups of human agents are generally communities, regions, countries, etc. On the other hand, the conditions, circumstances and influences surrounding and affecting the development of the groups of human beings is the natural environment or ecosystem with all its life-support capabilities and short-falls. Environmental resources on the other hand, refer to the goods and resources provided by the natural environment otherwise called ecosystem or environmental or ecological services, which may be categorized into three: (i).those derived from the atmosphere (the whole mass of air enveloping or surrounding the earth) e.g. clean air, ozone layer, etc. (ii). those derived from water- e.g. water itself, fish, etc; and (iii). those derived from land and soil – e.g. timber, farmland, minerals etc.

Many environmental resources provide a flow of services to producers and consumers overtime. Put differently, environmental resources serve both as production inputs and final consumption goods (Cavendish 1999). The earth’s atmosphere, specifically clean air and ozone layer, is a major contributor to the sustenance of life on earth, as suggested by the dangers posed by depletion of the ozone layer and associated global warming (the effect of burning fossil fuels increasing the quantity of carbon dioxide in the atmosphere so that the earth warms up, which could cause large-scale climate changes, among other catastrophic results – see, for instance, Hamilton and Fay 2009; World Bank 2010; Bowen et al. 2010; Lombery 2009; Jones and Keen 2009; Noble and Watson 2006). Also, many of the resources found in the natural environment are renewable and have the characteristic of public goods, to which we return.

Indeed, the natural environment produces a wide range of economic benefits. However, early attempts at environmental resources evaluation were hampered by economists’ limited and quite often defective knowledge not only of what constituted environmental resources ‘beyond the obvious ones of timber and fish’ (The Economist, 23rd April 2005), but also the types of services provided by the ecosystems apart from difficulty of putting ‘cash values’ on such services. Natural scientists, biologists and ecologists particularly, however, have produced in recent decades abundant evidence that the natural environment produces a wide range of economic benefits. Indeed, ecologists now know a great deal more than they used to about how ecosystems function, which habitats deliver which services and in what quantity those services are supplied. The World Bank publishes or sponsors several publications, starting since the early 1990s, that provide useful insights into
how ecosystem resources can be valued (World Bank 1992; Munasinghe 1993; Felli et al. 2000). These studies, however, tend to focus on forests and water-related issues, including dams, coastal beaches, irrigation projects, etc., the reason being, apparently, that these elements constitute, arguably, the most visible and, perhaps, the most useful of the renewable environment resources.

As scientific understanding of environmental services improves, new financial opportunities emerge. For example, the importance of tropical rainforests in protecting the ozone layer has only recently become appreciated, which explains, probably, the demand by developing countries for monetary compensation from the industrialized world for their tropical rain forests. Further to this, fuller understanding of environmental resource uses in the rural economy has led economists to begin to re-evaluate the extent of rural poverty and inequality in developing countries (see, for instance, Cavendish, op. cit. on Zimbabwe).

Environmental Resources as ‘Global Commons’

The natural environment, including its renewable resources, has often been described in the literature as representing common property resources—alternatively, ‘commons property’, ‘common pool resources’, ‘open-access property’, etc. so-called because they belong ‘at once to everyone and no one’ (The Economist 23rd April 2005, p. 11; see also Black 2002, p. 67; Ostrom 1991; Ostrom and Walker 1994; Kebede 2002). Their exploitation or use is open to all in a country or community at no charge, so that nobody is excluded from their use. So for common-pool resources or global commons barring unwanted users is difficult to enforce (exclusibility principle); they are thus unclaimed public domain with no private property rights over them. Common-pool resources are, therefore, similar to public goods, the difference; however, being that, in certain circumstances, the use of a common-pool resource by one person will subtract the amount available to other users (the substractibility principle). Examples of global commons or common-pool resources would include: the atmosphere (air); fisheries resources at sea, streams and lakes; waters in lakes, rivers and streams; forests and fossil fuel reserves, etc. — these, indeed, represent ‘mankind’s vast inheritance of shared natural resources’ available to all inhabitations in a society at zero charge.

However, not all forests would qualify to be classified as global commons in the sense of having no private property rights over them (in the manner the atmosphere (air) can be classified). Forests may be classified into four categories. The first is forestland that has become accessible and is adjacent to the local market (for production of marketed or commercial goods) or to the subsistence households (for non-market consumption goods). Such forestland often is highly valued agricultural land with secure property rights. Such forestland gradually gives way to harvested forestland and eventually to unclaimed open-access natural forest (Hyde et al. 1996).

The historical origin of the global commons concept traces to the Industrial Revolution era of the 1700s. As the latter began to unravel in Great Britain, cows still would graze on the commons in many villages in England and its American colonies (Perkins et al 2001 pp. 198-9). The essence of a village
commons was open access, free of charge, to any member of the village. The first villages to take advantage of open access would have ample grazing for their livestock; their only cost being the time it would take to herd their animals to the commons, allow them to graze, and herd them back home. But the amount of land was fixed and soil fertility and climate limited the quantity of grass. With more villages using the fixed commons, the grass became sparse, so the animals took longer time to feed or, in the case of open rangeland, the herder was forced to travel farther to find forage, so that everyone’s costs rose.

The effect of rising average cost to each herder was to eventually discourage grazing on the commons. But none of the new herders had to pay the rising costs to each other of the previous entrants and more grazing took place than the commons carrying capacity would sustain, which was to the disadvantage of the village as a whole. Eventually, overgrazing exhausted the commons as a useful source of feed.

The dilemma of the commons is a widespread phenomenon, applicable to any (limited) resources to which access is unlimited by fee or regulation. Grazing on open range, whether in the African Savanna or elsewhere, has the same outcome: ultimate degradation or destruction of the resource. For example, open access to tropical forests for logging or access at fees well below the social cost results in overextraction and destruction of the native forests in Brazil, Ghana, Thailand, and many other tropical countries. Similarly, open access to fishing grounds in the North Atlantic, in Peru’s Pacific waters, and in some inland lakes in Africa (e.g. the Lake Chad in West Africa), and Lake Victoria in East Africa) already has depleted fish stocks beyond their ability to regenerate. We return to the Lake Chad.

Briefly, the concept of commons implies that there is no ‘exclusion’ principle so that the resources in question are shared freely (without any price of access) by all inhabitants in a community. Because there is zero user price to exploit commons property, there is a tendency to overexploit them or abuse them or exploit them for beyond their carrying capacity. An ecosystem’s carrying capacity is the maximum stress that it can absorb without changing to a vastly different state. Ecosystems are endemically subject to natural shocks and surprises – e.g. fires, floods, storms, earthquakes, droughts, etc. Ecosystems, however, possess self-organizing ability which determines their capacity to respond to such shocks. On the other hand, over-exploitation of a natural resource will undermine its self-organizing ability which could lead to serious environmental degradation – e.g. biodiversity loss, to which we now turn.

1.2. Biodiversity Loss

Biodiversity loss, referring, as already noted, to irreversible loss of certain categories of animal and plant species, is, perhaps, the most important manifestation of the ecological crisis. In the last eight decades or so – i.e. since the 1930s – some 40% of animal species have become completely extinct in the industrialized world and another 660 species are endangered (Volkvo 1985, p. 96). Although these figures may appear speculative, they nonetheless reflect awareness of the ecological crisis facing mankind.
A. Market Failure

This is the most commonly cited factor in the economic literature, whereby it is argued that the interplay of market forces—deemed grossly imperfect—does not secure the economically optimal balance of habitat conversion and its conservation. Such ‘market failure’ can originate in three factors.

First, there is the pervasive ill-defined, disputed or non-existent property rights problem. Recall the free-access or common-pool character of renewable ecological resources, whereby there exist no enforceable mechanisms to exclude anybody from using renewable environmental resources, which lead to their over exploitation.

The second is that there exist missing or incomplete markets for ecological resources. Biodiversity and genetic resources are known to be broad international values conferred by highly specialized and generally local forest or aquatic resources. Although there is some evidence of an evolving international market for the protection of genetic resources—especially those that go into pharmaceutical research and biotechnology—this market is yet grossly thin, and the resource values of species often need to be protected with specialized management criteria or in specialized local forest reserves or some local specialized habitat. There is considerable difficulty in arranging secure property rights for specialized habitats, more so because neither flora nor fauna obey property boundaries. But it is pretty difficult, if not impossible, to ensure that a particular animal or plant species is confined to a particular locality so that other agents are excluded from using it. Biodiversity protection demands special land-use management that are more complex than fences and permanent restrictions on forest reserves and national parks (Hyde et al. 1996).

Third, market failure can originate in externalities which fail to capture the environmental benefits of resource conservation—such as, for instance, failure to impute the costs of biodiversity losses to transport systems or water pollution from agricultural production. Recall that externalities are benefits that accrue to society as a whole (external economies) or costs that accrue to society (external diseconomies) but cannot be internalized by the private individuals undertaking the activities. A private farmer, for instance, may be unwilling to undertake costly changes in farming technology that are deemed beneficial to biodiversity since other farmers and not necessary the farmer himself, will benefit from those changes.

B. Government Economic Policy

These can, and do indeed, have adverse side effects on biodiversity. Price controls and subsides in agriculture, urban development, water provision, transport, energy, etc. these distort the costs of the exploitation of environmental resources and, hence, leading to their degradation. Exchange rate devaluation during the structural adjustment programmes (SAPs) of the 1980s aiming to promote agricultural export incentives had the unintended effect of pushing farmers in Sub-Saharan Africa to exploit land and forest resources in unsustainable ways (Lopez, op. cit.; Cromwell and Winpenny 1991; Glickman and Teter 1991; Reed 1992).

C. Poor Information on Functions of Economics

This gives rise to sub-optimal and unsound policy choices manifested in offering ‘perverse incentives’ which
encourage behaviour that lead to degradation of natural resources. Scientists point out that ecosystems undergo ‘irreversible collapse’ (a situation whereby an environmental resources that has been impaired cannot be replaced in the future by another asset that provides equivalent services—e.g. depletion of the ozone layer by GHG emissions) when certain thresholds of change are attained. But knowledge of such thresholds is, at best, poor among private agents in developing counties, although it is of vital importance in designing biodiversity policy.

2. Renewable and Non-Renewable Resources

The literature conceptually divides environmental resources into two categories: renewable and non-renewable—depending on whether they are depletable (limited in supply by nature and thus exhaustible) or non-depletable (available for use on a continuing basis).

Renewable Resources

Renewable ecological resources as just stated, refer to those natural resources which are available for use on a continuing basis—e.g. the earth’s atmosphere including the air, solar energy, the land and soil, plant, fish and plant populations, etc. In contrast, there are non-renewable or depletable resources, which are used up when used at all, and must definitely ultimately become exhausted—e.g. coal, oil, gas, inland lake etc. It is noted, however, that there is difficulty in establishing whether certain environmental resources are renewable, which may depend on the intensity of use. A good example may be cited in underground water resources which are renewable if pumping is restricted to what is replaced by rainfall, but can be destroyed by overexploitation, leading to drying up or replacement of fresh water by sea-water. Some environmental resources which are in principle non-renewable or depletable—e.g. iron ore—in fact exist in such large reserves that any possible depletion date seems rather remote.

To return to renewable resources, most environmental resources are renewable resources: they can regenerate themselves over time, given certain conditions, of course. Forests or open rangelands reproduce themselves each year. Fish breed new stocks, wide life replenishes its herds and forests reseed themselves. Air and water cleanse themselves of pollutants through biological, chemical, or mechanical transfers. Provided annual harvests do not exceed the annual growth of the stock, it is possible to exploit renewable ecological resources sustainably—the difference between the rate of harvest and the rate of growth being called the rate of depletion. Indeed, the faster these resources can be replenished, the greater the rate of economic growth that can be sustained indefinitely. Three questions arise then in respect of renewable resources. First, what constitutes the maximum sustainable exploitation? Second, what is the economically optimal exploitation? And, third, what is the danger of over-exploiting the resources to the point of irretrievable loss or extinction?

Sustainable Exploitation of Renewable Common Resources

Most common resources are renewable resources—e.g. fish stocks in the open sea or tropical rainforests: they can regenerated themselves, given time, if there is no destruction of their self-
recreating potential via overexploitation or degradation. It is, therefore, possible to exploit renewable natural resources sustainably if the annual rate of exploitation does not exceed the annual rate of growth of the stock. The difference between the rate of exploitation and the rate of regeneration or growth is called the rate of depletion (see, for instance, Tietenberg 2000). The faster these resources/stocks can be replenished, the greater the rate of economic growth that can be sustained indefinitely. This can be illustrated with example from fisheries in an open access lake.

When (commercial) fishing begins in a lake, the fish can replenish their stocks more rapidly, and the sustainable catch increases, given that fish feed is made available. But as the fishing effort increases (more fisherman enter the lake), the fish stocks may not be replenished as rapidly as the rate of increase in fishing effort, which results in decline in the fish stocks as well as the sustainable catch. As fishing effort continues to grow (as the number of fishermen/boats in the lake continues to grow), the fish stocks may be so small or so scattered that reproduction cannot replace the catch at any level, which leads to extinction. The fishery model provides a good illustration of the common resource problem. Recall that with the village common, it was assumed that more entrants increase the costs for all. In the case of the fishery, even if the costs of operating a boat are constant (the same per boat), the catch per boat, and hence fishermen’s revenue, fall. The lesson here is that where there is open access to environmental resources or where a natural resources is not effectively controlled, as is the case in developing countries, stocks cannot be maintained and extinction becomes a reality.

**Non-Renewable Environmental Resources**

Non-renewable resources, as already hinted, refer to depletable resources – so called because such resources are used up when used at all, and must eventually get exhausted in their supplies. Non-renewable resources are thus fixed in their supply (by nature) and are thus not unlimited in availability. Perfect examples are crude oil, coal, gas, etc. Fossil fuels are not unlimited in supplies; once extracted and used up the stocks of fossil fuels are not replaceable. Non-renewable resources can be destroyed by over-extraction, leading to exhaustion. In sum, non-renewable resources are depletable resources, existing in quantities with a finite life span. Earlier, we contrasted non-renewable resources with renewable resources which are available for use on a continuing basis e.g. solar energy.

**Marketed Non-renewable Resources**

Logically, for non-renewable resources increases in consumption implies a reduction in available stocks. Economic development experience, however, gives little support to the hypothesis that marketed non-renewable resources – e.g. minerals some form of energy, etc. are becoming scarce in the economic sense because potential or actual shortages are always reflected in higher or rising market prices, which provide incentives to discover new sources of supplies and increase reserves, improve efficiency, find substitutes, and make technological innovations.

A perfect example here is rising energy prices since the 1970s in the
wake of OPEC-inspired price increases. Between the early 1970s and 1981 crude oil prices rose from less then $2/barrel to $44/barrel; in the 1980s prices were stable at around $20/barrel; as from the 1990s through the late 2008 prices rose sharply exceeding $100 before tumbling in the wake of the global economic meltdown. These price increases have provided incentives for exploitation of ‘marginal fields’, conservation and innovation of energy-saving devices apart from discovery of substitutes in synthetics, solar energy, etc.

Currently, world energy demand is growing rapidly. The latest forecast (available to the authors) by the International Energy Agency (IEA) shows global energy demand, under current policies, increasing by more than 60% from 2004 to 2030. The IEA concludes that global primary resources are adequate to meet projected demand increases: proven reserves of gas, oil, etc far exceed cumulative projected consumption and more reserves are likely to be added during the projection period (Saghir and O’Sullivan 2006).

Rather than decline in supply marketed non-renewable energy and raw-materials have, indeed, increased in supply. So the problem is not how to increase supplies but rather how to manage the rents accruing from them to finance structural transformation; as well, the ‘side effects’ associated with their extraction and consumption pose environmental problems. The latter, however, do not come under the purview of the present paper.

3. Valuing Environmental Resources: Goods and Services Provided By Ecosystems

Many environmental resources, as noted earlier, provide a flow of services to producers and consumers over time. Put differently, ecological resources serve both as production inputs and final consumption goods. Ecological systems, beyond providing food and production inputs, control floods, filter pollutants, assimilate waste, pollinate crops, maintain a genetic library, preserve and regenerate soils, operate the hydrological cycle, and maintain the gaseous composition of the atmosphere. The tropical rainforests, for instance contain and supply most of the plant species which provide essential ingredients in pharmaceutical preparations (see, for instance, Ihe and Nwafo 2005 on Southeastern Nigeria). Forests, swamps or ‘wetlands’ provide essential environmental services: they are known to filter and purify water, and act as reservoir to capture rain and melting snow. ‘Wetlands’ lie mostly in the tropical and semi-tropical regions, between 30° North, 30° South of the Equator, a zone which incorporates much of Asia and the Pacific, most of Africa, and Central and South America.
Figure 1 Economic Values Attributed to Environmental Resources (with Examples drawn from a tropical rainforest)

<table>
<thead>
<tr>
<th>Total Economic Value of a tropical rainforest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use values</td>
</tr>
<tr>
<td>Direct use values</td>
</tr>
<tr>
<td>Output that can be consumed</td>
</tr>
<tr>
<td>Non-use</td>
</tr>
<tr>
<td>Option values</td>
</tr>
<tr>
<td>Existence values</td>
</tr>
</tbody>
</table>

* Food  * Ecology function  * Biodiversity  * Habitats
* Biomass  * Flood control  * Conserved habitat  * Endangered species
* Wealth  * Storm protection  * Habitats

Decreasing ‘tangibility’ of values to individuals
Source: Adapted from Munasinghe (1993; figure 3.1, p. 22).

**Illustrating With Tropical Rainforests**

Conceptualizes the total economic values that can accrue from an environmental or ecological resources, drawing examples from tropical rainforests. Thus the total economic value of an ecological resources can be conceptually broken into two broad categories: use-values (outputs or services that can be consumed directly and indirectly) and non-use-values (Munasinghe op. cit.). For instance, tropical rainforests are a vital source of livelihood for rural populations (see Cavendish, op. cit.; Falconer and Arnold 1989; Falconer 1990). Apart from serving as a direct source of food, rainforests are a source of timber, bark, saps, and pharmaceuticals (Ibe and Nwafo, op. cit.).

The indirect use-values of tropical rainforests come in the ecological services they provide: they influence local and regional climates, preserve soil cover on site, and in the case of watersheds, protect soil downstream from floods. Earlier studies show that the social value of forests (e.g., the ecological functions-see figure 1) usually exceeds the direct use-value sometimes by a considerable margin (see, for instance, Anderson 1987).

**Mangrove Rainforests: Ecological Functions.**

Mangrove rainforests provide an example of an ecosystem whose social benefits/values usually exceed the direct use value5. The services and functions they render to society as a whole are hardly appreciated, which has led to their destruction in many countries.

Mangrove rainforests occur in coastal areas in the tropics where waters are shadow and river deltas receive suspended sediment (mud)-often termed coastlands. The mangrove rainforests of the Niger Delta in Nigeria is the largest in the world covering some 11,700 km^2.
Mangrove prop-roots trap sediment from ebb and flood tidal currents, gradually extending land seawards; mangrove forests commonly consist of several shoreward belts of red, black, and white mangroves which constitute highly productive marine and estuarine ecosystems. As just noted, although society derives, directly or indirectly, immense benefits from the ecological services of mangrove rainforests they are hardly appreciated in policy and planning circles.

It is noted that primary productivity in estuaries may be twenty times higher than in the deep sea and ten times higher than in near-shore waters or deep lakes. Mangroves generate a large volume of degradable waste (leaves, stems, and the like) called detritus, the primary energy source for tropical coastal marine ecosystems. Colonies of microscopic life feed on detritus and are in turn consumed by estuarine species-shrimp, some fish, and small crustaceans, which serve as forage for birds, predatory fish, and eventually human beings.

Other ‘free’ services are provided by mangroves, including storm protection, erosion control, wastewater cleanup, and areas for educational and leisure activities, as well as many direct products (fuel, construction timber) and indirect products (food from fish, shrimp, and birds). Moreover, mangroves are a renewable resource-reproducing and regenerating themselves at no cost; sustainable yields of fish and timber can be harvested on a continuing basis provided the ecological processes governing the mangrove system are not over exploited and destroyed.


More recent literature centred around the notion of sustainable development (see section 5) has developed a framework for so-called environmental accounting whereby overall national wealth or capital assets is meant to include not only produced capital (machines, plant, infrastructure, etc.) and human capital (knowledge, experience and skills inhering in a nation’s workforce) but, also, environmental or natural capital (forests, soils, rangeland, beaches, etc.) (Pearce and Warford 1993; Pearce and Atkinson 1993). It means that if an economy uses up natural capital in generating current output, as is often the case, then the economy’s capacity to generate income will decline in the future if the natural capital is not replaced. This replacement can be done through higher investment in produced capital (including human capital), technological change must occur to boost productivity of all produced capital, or both must be done. Only by so doing can the economy create capacity to keep its consumption level or income per capita from declining over time-which is a key test for sustainable development, to which we return.

This suggests an alternative, if partial, criterion for sustainable development: the maintenance of the total capital stock, including produced and natural capital stocks. The depletion of natural capital must be compensated for by net investment in produced capital. It means, therefore, that sustainability can involve the depletion of natural resources and the eventual relative decline of the natural capital base (farming, fishing, foresting, mining, petroleum and other industries based on natural resources). As the latter decline, the non-natural resources dependent
industries, including manufacturing, utilities, construction, finance, transportation, telecommunications, the service industries, must also grow. Indeed, this structural transformation is what economic development is all about. Perkins et al. (2001, p. 288) thus concludes:

“When an economy develops from a natural resources base, the net benefits or rents from the primary sectors provide much of the finance for secondary and tertiary industries. And some of the finance may go into research and development of new technologies that will increase productivity;”

It should be stressed that this transformation to produced capital does not provide a rational for wanton exploitation of natural resources. Natural resources should be exploited efficiently. The substitution of produced capital for natural capital in the course of economic development may turn out to be inefficient; nor is there guarantee that this process can produced forever. Natural resources also provide inputs in the supply of produced capital and service in the forms of raw materials, energy and waste sinks; and if technological change fails to reduced this dependence on raw materials, a nation or even our planet earth may run out of needed resources.

Environmental Accounting

The concept of sustainability as the transformation of natural resources into produced capital can be incorporated into the national accounting framework. We define gross national (or domestic) product (GNP or GDP) as the sum of value added in the production of finished goods and services in an economy. The concept of GNP makes no allowance for the depreciation or consumption of (existing) capital stock, hence he adjective gross. Another income concept, net national product (NNP), is equal to GNP less the depreciation of produced capital (Dm):

\[ \text{NNP} = \text{DNP} - \text{Dm} \] …(1).

NNP is an appropriate measure of the resources available to the economy to meet its consumption needs once allowance has been made for capital depreciation. Given that GNP consists of consumption C and national saving S, then: \[ \text{NNP} = C + S - \text{Dm} \] …(2).

As long as national saving equals or exceeds depreciation consumption is less than net product and can be sustained indefinitely. Sustainable development means, in effect, that the stock of capital with labour generates NNP each year; if saving is enough to take care of replacement of used up capital, development becomes sustainable.

We need therefore to obtain a measure of the stock of natural capital and its depletion (Dn) to include in net product, which is called adjusted net national product (ANNP):

\[ \text{ANNP} = \text{GNP} - \text{Dm} - \text{Dn} = C + S - \text{Dm} - \text{Dn} \]…..(3)

ANNP has the same implication as NNP: if enough saving is made each year to take care of Dm and Dn, the economy can sustain its level of consumption. Put differently, the basic sustainability criterion is that net national saving (NNS) must be positive (-ie. NNS>O), where NNS is measured as: \[ \text{NNS} = S - \text{Dm} - \text{Dn} \]…..(4)
Adjusted Net National Income
Empirical Example for Selected Countries

The empirical literature has produced estimates of ANNP based on the above framework, table 2. Note the high resource depletion Dn for Indonesia and Nigeria; these were more than balanced by high national saving rates so that NNS remained positive.

Table 2: Adjusted Net National Income for Selected Natural-Resource-Rich Countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>GNP</th>
<th>Dm</th>
<th>Dn</th>
<th>ANNP=GNP-Dm-Dn</th>
<th>National Savings</th>
<th>Net national savings = NNS-Dm-Dn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costa Rica</td>
<td>100</td>
<td>3</td>
<td>8</td>
<td>89</td>
<td>21</td>
<td>+10</td>
</tr>
<tr>
<td>Indonesia</td>
<td>100</td>
<td>5</td>
<td>17</td>
<td>78</td>
<td>30</td>
<td>+8</td>
</tr>
<tr>
<td>Brazil</td>
<td>100</td>
<td>7</td>
<td>10</td>
<td>83</td>
<td>21</td>
<td>+4</td>
</tr>
<tr>
<td>Philippines</td>
<td>100</td>
<td>11</td>
<td>4</td>
<td>85</td>
<td>18</td>
<td>+3</td>
</tr>
<tr>
<td>Nigeria</td>
<td>100</td>
<td>3</td>
<td>17</td>
<td>80</td>
<td>23</td>
<td>+3</td>
</tr>
<tr>
<td>Mexico</td>
<td>100</td>
<td>12</td>
<td>12</td>
<td>76</td>
<td>17</td>
<td>-7</td>
</tr>
<tr>
<td>Malawi</td>
<td>100</td>
<td>7</td>
<td>4</td>
<td>89</td>
<td>2</td>
<td>-9</td>
</tr>
</tbody>
</table>


It should be noted, however, that both Dm and Dn are only approximations for most developing countries. For this reason, neither NNP nor ANNP has been used much in official estimates, and they have hardly affected policy discussions. The United Nations and the World Bank, however, are encouraging countries to begin incorporating resources and environmental assets into their stock of national wealth.

Dixon (1997) has produced estimates on the structure of stock of wealth by world regions. The Middle East (rich in petroleum resources), West Africa rich in tropical rainforests and South Asia (rich in flood plains for cultivating rice), in that order, have the highest share of natural capital in their stock of national wealth. In contrast, North America, Western Europe, and Japan and the East Asian newly industrializing countries (NICs) have low share of natural capital (slight share of produced capital) in their national wealth. Economic development involves transition from a national-capital driven to produced-capital driven growth momentum. How a country’s natural capital is managed how rents proceeds accruing therefore are invested to accumulate produced capital explains a lot about each country’s development path.

The Southeast Asian, NICS approximate the textbook model of how natural capital had been converted into produced capital that lead to sustainable growth and development, ‘which setting in motion forces that eventually limited the further and depletion of natural resources’ (Perkins et al., op. cit., p. 231). Rapid expansion of export-based agriculture (rubber, palm produce, rice, etc.) supported by government policies on land reform, investment in R x D, physical infrastructure and fiscal incentives, generated rapid growth in
exports and foreign savings to finance investment in export-based industrialization, which, in turn, facilitated labour mobilization and relocation from rural to urban employments raising rural incomes and wages and further encouraging agricultural intensification (see also Hayami 2001, and Harrold et al. 1996).

5. Sustainable Development and The Natural Environment

The notion of sustainable development grew out of the United Nations World Commission on Environment and Development (WCED 1987), otherwise known as the Brundtland Report. The notion of sustainable development is conceived as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’. Rather than predicting greater environmental degradation and difficulties in a world of ever-declining natural environmental resource levels, the Brundtland Report foresees ‘the possibility of a new era of economic growth, based on polices that sustain and expand the natural environmental resources base’.

The literature of the 1980s took off from this notion, expatiating on the idea that economic development requires a strong policy of protecting the environmental capital base as a component of the national capital stock (see, for instance Pezzy 1989; Pierce et al. 1989; Solow 1986). More recent literature-particularly from environmentalists-goes further and separates out natural capital for special attention. This literature proceeds from the position, that most forms of economic growth make demands on the environment, both by using (sometimes non-renewable) natural resources and by generating waste and pollution, which jeopardizes growth for future generations. The notion of sustainable development attempts to resolve this dilemma by insisting that economic policy decisions should have utmost regard for their possible environmental outcomes. In this way, the right kind of growth outcome-based on biodiversity, the control of environmentally unfriendly activity, and replenishment of renewable resources such as forests, fish stocks, etc. – is generated, and this can protect or even enhance the natural capital base. Current economic development is then rendered compatible with investment in environmental resources for further generations. How to achieve this compatibility has posed serious difficulty for developing countries, generally, where the urge to achieve rapid economic growth is most felt.

Relative Productivity of Natural and Produced Capitals

A second point of debate concerns the relative growth-promoting capacity of natural and produced capitals. Environmentalists tend to argue that fossil energy resources and other natural resources like wilderness areas, game reserves, pristine rainforests, etc. are very special kinds of capital assets that should be preserved so that we can attain sustainable development. Economists, on the other hand, tend to view sustainable development quite differently: they regard natural resources as a special category of capital-along with produced capital, including human capital.

Both economists and environmentalists agree that our generation should bequeath an adequate
stock of capital assets for the future generations, with economists arguing that economic development necessarily results in produced capital substituting for natural capital in the long run; that further generations will benefit more from larger stocks of produced capital such as additional scientists and engineers, medical personnel, better laboratories and more efficient transportation, etc. than from larger stocks of natural capital such as crude petroleum, gas, coal, etc. Briefly, economists would argue that sustainable development is better understood in terms of substitutability of natural capital and produced capital (see Neumayer 2010; Atkinson, Dietz and Neumyer 2008; Hamilton et al. 2008).

Figure 2 illustrate this process using the production isoquant or production indifference curve, where production capital proxied by human capital ($K_H$) on the vertical axis and natural capital ($K_N$) on the horizontal axis are two kinds of capital that would be requires to attain a certain level of future output $Q$, holding other inputs fixed. Output $Q$ can be produced at point $C$ with a conservationist policy emphasizing reducing fossils energy consumption currently (by present generation) consuming much oil, gas, coal, etc $Q_r$ $Q$ might be produced at point $B$ using a low natural capital intensity and high produced capital intensity.

Figure 2 Substitutability of natural capital and produced capital in development.

Either of these strategies appears feasible; and a more desirable one is that generating a higher consumption both for present and future generations.

What about producing at point $A$, where our isoquant hits the vertical axis indicating that $Q$ can be produced only with produced capital and no natural
capital? Is this a feasible alternative? Yes, with the greater scientific and technological knowledge represented by point A, society can develop and introduce substitute technologies like clean coal or solar energy to substitute completely for exhausted fossil energy. Point A indicates that in the long run, fossil fuels are not essential and can be completely replaced by produced capital. This is an optimistic view mesh in line with the neoclassical perspective on economic growth on which factor combinations change in response to factor scarcities.

The World is Facing a Malthusian Trap?

Modern economics is more or less optimistic that natural capital is substitutable (by produced capital), so that growing natural resource scarcity itself cannot constitute a bottleneck on long run development but would rather act as the main inducement to changes in behaviour (on how to manage resources) and technology. In contrast, classical economics—especially the Ricardo-Malthus strand—was not particularly optimistic regarding natural resources as fixed (by nature) and exhaustible in the long run, and non-substitutable by produced capital. Unlike modern economics which operates on the assumption of substitutability between inputs in the production function, classical economics operated on the notion of complementarity between inputs—specifically, capital and labour considered to be variable inputs combined with land assumed fixed in supply in fixed proportions in the classical production function.

Specifically, the classical scenario was premised on the thesis that rapidly growing human populations would exhaust the earth’s capacity to produce the means of subsistence or food (by using up available agricultural land assumed fixed in supply), until rising death rates and falling birth rates harshly would keep population in check. This Malthusian thinking remains influential today, although current focus has shifted focus from land and agriculture to all natural resources and the global environment.

Both historical and current evidence disprove the Malthusian trap thesis. Indeed, the Malthusian trap has been avoided, historically, in several major ways. First, tremendous progress in technology has helped to increase the productivity of land note the effect of the Green Revolution in pushing lack the threat of famine in high-population countries of Asia—specifically, India, Indonesia etc. Second, resource scarcities have provided the major incentive to search for substitutes. Logically, for non-renewable resources increases in consumption implies a reduction in available stocks. Economic development experience, however, gives little support to the hypothesis that marketed non-renewable resources—e.g. minerals, energy, etc. are becoming scarcer in an economic sense because potential or actual shortages are always reflected in higher or rising market prices, which provide supply incentives to discover new sources of supplies and increase reserves, improve efficiency, find substitutes, and make technological innovations.

A perfect example here is rising energy prices since the 1970s in the wake of OPEC-inspired likes in crude oil export prices: between the early 1970s and 1981, oil prices rose from less than $2/barrel to $44; in the 1980s prices were stable at around $20/barrel. Since
the 1990s prices have risen rapidly, exceeding $60/barrel. These price developments have provided incentives for exploitation of marginal fields, conservation and innovation of energy-augmenting technologies in automobiles and home devices apart from discovering of substitutes in synthetics, solar energy, etc. Besides, man-made fuels such as ethanol derived from plants (mainly corn), or diesel ‘conjured from coal and gas’ hold out the promise of unlimited supply.

So the problem confronting global policy now is not how to increase marketed supplies but rather that the un-marketed side effects associated with their extraction and consumption have become serious problems. In the case of fossil fuels – e.g. crude oil, natural gas, coal, etc.-the real issue is not a potential shortage but the environmental effects associated with their use particularly local air pollution and carbon dioxide emissions. Similarly, solid mineral extraction generates pollution and destruction of natural habitats.

A relevant question to ask, however, is whether the processes of technological change, discovery of substitutes, etc. can continue indefinitely to postpone the Malthusian resource trap indefinitely. Even though current global trends in population growth rates show remove the dash (-) slowing down, the rates remain high enough to expect a doubling of the world’s population by 2050 or so (World Bank 1992, p. 26). Most of the growth recorded in world population since the postwar II decades has originated in populous Asia and Latin America. A rising share of this population will aspire to the high consumption standards of the industrial middle class in the OECD countries, which suggests more intensive demands on resources and pollution of the environment-a trend now observed for China. As a result, the world’s stocks of non-renewable fossil fuels will become depleted and the environment gets more polluted.

6. Conclusion
Current explicit recognition of environmental resources as an legitimate component of national wealth suggests that environmental resources should be accumulated, nurtured and protected in much the same way as produced capital. But environmental resources constitute inputs into the production of goods and services just like produced (physical and human) capital; they can be-and usually are-depleted and degraded in the course of economic development just as produced capital is. It is also through natural growth of renewable resources that environmental resources can be regenerated and augmented, just as investment replenishes the stocks of produced capital.

A key economic characteristic of environmental resources is that many of these resources are renewable resources and have the features of public goods-accessible to all in a community/country at no charge, so that excluding unwanted users is difficult. Consequently, such resources are open to overexploitation to the point of extinction in many cases, which imposes costs on society as a whole. National and international policy interventions to grapple with the latter are on-going. A future paper will attempt to surrey the issues connected with this problem.

Note:
1’Give us the money or the forest gets it’ is credited to United Kingdom environment minister Eliot Morley;
quoted in The Economist April 23rd 2005, p. 79, as blackmail he received from developing countries.

2For insightful comments on this problem with regard to Nigeria, see Keyburam (2007) and Muoghalu (2007).

3See Onuoha (2008)

4The number of species on earth has never been ascertained; an estimated 5-100 millien have been put up in the literature. According to the United States National Academy of Sciences (1998), a typical 10 km² of pristine rainforest may contain as many as 125 different species of mammals, 100 species of reptiles, 400 species of birds and 150 species of butterflies. See also Toby (1996).

5This section relies on insights in Maler (1998), Soderbaum (1996), and Chomitz and Kumari (1998).

6This section relies on Perkins et al., op. cit., pp. 228-31 but see also Aronsson and Lofgren (2010).

7Depreciation of produced capital—referring to the expiration of the economic usefulness of produced capital assets—results from two sources: physical and functional factors. Physical depreciation involves normal wear and tear, deterioration and decay, and even loss through accidental destruction, through fire, war, etc. Functional depreciation involves inadequacy, supercession and technological obsolescence. In economies where technological change is rapid—e.g. the countries of the Organization for Economic Cooperation and Development (OECD)—technological obsolescence tends to be rapid.

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THE SPIRIT OF ENTREPRENEURSHIP IN SPIRITUAL ORGANIZATION: A STUDY IN THE BUSINESS OF THE TAREKAT OF SHIDIQIYAH INDONESIA
Misbahul Munir¹, Umar Burhan, Khusnul Ashar, and Multifiah¹

Abstract
This research aims to (a) discover the rationality of the values of local wisdom which is found in the teachings of the order (tarekat) of Shidiqiyah which has motivated the emergence of a strong spirit of entrepreneurship; (b) to explain how wealth is understood in the Shidiqiyah order; (c) to explain the behavior of the business agents of the members of the Shidiqiyah order in their effort to acquire wealth. The findings of this research shows that: (1) the strong spirit of entrepreneurship in the Shidiqiyah order is closely related to the the eight vows of willingness of the members of Shidiqiyah order, the teaching of the unity of faith and humanity, and the culture of charity, giving and maintenance of communication. (2) the members of the order believe that wealth has a very important position in their life, since wealth has not only an economic meaning but also spiritual, social, cultural and evangelical meaning; (3) in their effort to acquire wealth, they conduct business by giving emphasis to hard work and proper business management, but they also implement their strength in spiritual and social capital to achieve success in business.

Keywords: spirit of entrepreneurship, wealth, rationality, homo Islamicus

INTRODUCTION
The order of Shidiqiyah (tarekat Shidiqiyah) is a local religious order in Indonesia which has received much attention from the public lately. Despite the pro and contra concerning this order, it can disseminate its teachings in Indonesia and recruit many followers within quite a short period of time (A'dam, 2008). It would not be a surprise to see that this has motivated many efforts to research this order, whether it be for its teachings, its contributions to education, its dealings with the society and public at large, and its role in politics and the economy. At a glance, this heightened interest is understandable, considering that the order has unique characteristics, especially in terms of its teachings and its views on earthly life, which is much different from the other religious orders.

The unique features of the order of Shidiqiyah can be observed from the economic behavior of its adherents, especially in developing business units which can support and accelerate the development of the order in Indonesia.

At present, many kinds of product have been developed by the order of Shidiqiyah, ranging from the construction of a three-star hotel in Jombang, manufacturing mineral water (Maqoo), building a partnership with cigarette company (HM. Sampoerna), opening a business for handicraft made of pandan and bamboo, opening a restaurant (Yusro), manufacturing tea bags, distributing honey products, etc. The order also has a strong and established unit for social and humanitarian purpose (DHIBRA), one of whose product in the development of social savings account Tajrin Faf'a. In distinction from other understanding of the tasawuf and orders in general which tend to embrace a kind of fatalism, this order can concoct a version of the tasawuf teachings with strong emphasis on entrepreneurship in a unified teachings and rules of behavior.

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The obedience to a religious teachings and its impact on the spirit of capitalism has been found in several empirical study, among others the study by Weber as written in *The Protestant Ethics and Spirit of Capitalism* (2003), where it is proposed that the Protestant teachings in Calvinist sects play a strong role in the economic activities of its members, since the members of the sect has a culture or teaching which considers hard work as a virtue for them to achieve spiritual well-being. The Protestant teaching embraced by the sects, especially those related to economic education, has given rise to the spirit of capitalism and this can overcome traditionalism. Weber states that the power of religious values has active part in a qualitative manner in the formation of the spirit of capitalism. It is stated that religious awareness is not only a consequence of the social and economic realities but religion is also an autonomous factor and at the same time holds a potential to lend its mark on the behavior system (Sudrajad, 1994).

However, the teachings and behavior of the *Shi`i* order can also be taken to refute Max Weber's thesis above, since it is believed that unlike the Protestants (especially Puritan Calvinist sects), Islam has no theological affinity in the development of capitalism (Weber, 2003). As stated by Abdullah (1979), despite the fact that Islam is believed to be a religion which has a universal monotheistic theology, Islam is also seen as the religion of the warring class, which has a tendency to preserve feudal interest, has stronger orientation towards social prestige, *sultani*-oriented, and patrimonial-bureaucratic. As stated by Djakfar (2007), Weber also believes that Islam has a tendency to reject reason and knowledge, especially technological knowledge.

According to Effendi (2001), the primary reason why Weber managed to reach his conclusion is the economic practice among the Muslims which did not support the growth process of the capitalism as a whole, especially the *sufi* practices of Islam with the *zuhud* teachings which is anti-worldliness attitude in their *zuhud* teaching or the exhortation to forget about the world and this may have served as the basis for the above conclusions. Further, Weber also believes that the Muslims (different from the Protestants) do not have simplicity, frugality, perseverance or calculated way of thinking in their economic activity. In short, the Muslims are considered to be lacking in *beruf* or calling and also lacking in asceticism which is strongly affiliated with the growth of capitalism.

The *Shi`i* order has never taken lightly the worldly matters, and they even give serious attention to it in order to it so that the material well-being can facilitate the worship to Allah. *Zuhud* (asceticism) is not necessarily an effort to run away from worldly matters, but the worldly matters are never taken to heart. Though dealing with worldly matters everyday, but the heart never falters from Allah swt. The economic behavior of the members of the *Shi`i* order not only goes against Weberian thesis but also against the assumption of certain people who have negative opinion against the teachings of *tasawwuf*, and the institution of *tarekat* which are so far always position as the opposite of entrepreneurship or the ideas which believes that the *tasawwuf* has no similar points with the spirit of entrepreneurship.

This research is based on the idea that this economic behavior is a unique feature which is inspired by a local wisdom in the teachings of *Shi`i* order. It is said to be unique in the sense that the order is a *sufi* religious organization with its emphasis on asceticism (*zuhud*), where this usually means an effort to limit oneself only to things related to the cleansing of human soul (*takhallus*), to the adornment of the self with *dzikir* (repeated recitation of certain passage or phrase) and good deeds (*tabligh*) where this is believed to be a means to gain intimate knowledge of the One (*Dzat*) who created the universe (*tajally*). This research aims to discover the rationality behind the values of local wisdom which is embedded in the teachings of the *Shi`i* order, which has stimulated the growth of a strong entrepreneurship in the organization of the order, to explain their understanding on the meaning of wealth, and to explain their business behavior in acquiring wealth.

Economic Rationality : The Perspective of Classical Economics and Islamic Economics

As stated by Hamouri (1991), rationality is the main key in modern economic thinking. Rationality serves as the principle or axiom that human beings are rational creatures. An economic man (*homo economicus*) would choose among the many alternatives of choice with the aim to maximize utility. Before choosing, she/he would prepare a list of ranked priority of the various alternatives. The requirement of rational choice is that all individuals know completely the information concerning the alternatives and have the ability to determine his or her rank of
priority in accordance with his or her preferences. When the two requirements are met, then rational choice is possible.

The concept of rationality was proposed due to the demand of the consumers to maximize utility and the demand of the producer to maximize profit, all contained by the same set of constraints. The constraint in neoclassical economics is the scarcity of sources and income which can be acquired by human beings from nature, though human wish is basically boundless. While in Islamic economics, as stated by Mannan (1993), the constraint is understood as the limitation of human ability, both in physical terms and in knowledge, in achieving or obtaining the unlimited resources which has been made available by Allah SWT. Based on the statement above, then human beings or individuals should make a rational choice so that the choice can result in maximum satisfaction or profit for the human beings.

According to neoclassical economics, with its idea of rational economic man, the actions of rational individual would be based on self-interest, which is the only aim of all human activities. Neoclassical economics ignores moral and ethics in spending and neglects the idea of limited time available on earth by ignoring the dimension of afterlife. Adam Smith, as stated by Samuelson & Nordhaus (2001), believed that individual actions with its self interest would bring good to the society as a whole due to the invisible hand working through competition in market mechanism.

In order to determine whether an individual is rational or not, there are two parameters for such purpose in neoclassical economics. The first is the goal, that is the goal is said to be rational when it is a goal of maximization (Arrow, 1986), both maximization of satisfaction (for a consumer) or maximization of profit (for a producer). Maximization here is understood (both in the perspective of the consumer and producer) as the maximization of profit and satisfaction which is of material nature, since so far neoclassical economics always uses measurable parameters which can be standardized (applicable in general) in each unit of analysis.

The second parameter is the process to achieve maximization of satisfaction or profit. This means that the action to achieve the goal is said to be rational when if fulfills certain criteria, that is: completeness, transitivity and continuity (Graafland, 2007). In other words, individuals in neoclassical economics is modeled as an actor which can evaluate, choose and act appropriately in various decision making situation in order to obtain the best results (Lowenberg, 1990 in Mnawar, 2007). Basically, the individual is modeled as autonomous actor which has perfect ability in making choices. The decision made by such actor is always consistent, principled, deliberate and solely focused on the optimization of goal achievement. Therefore, the decision made by unclear criteria such as emotional impulse, sensuality, habit, traditional is not neoclassical and hence can not be said to be rational (Gellner, 2000).

In Islamic economics, rational action is the one where one achieve economic and spiritual satisfaction and profit in the world and in afterlife, while in the neoclassical economics, the goal is limited only to the economic satisfaction and profit. Therefore, the time dimension in Islamic economics is wider and this has received special attention in the level of economic agents in Islam. In Islamic economics, the economy is run not only based on the logic of reason but also based on the values of moral and ethics and still abide by the guides from Allah SWT. (Kholish, 2009).

Human beings need to act rationally since human beings have certain advantage over other creatures of Allah. Human beings are considered to be rational when the individual directs his or her behavior to achieve the maximum stage in accordance with Islamic norms (Shiddiqi, 1992). Rational individual is an individual who tries to maximize al-falah rather than maximizing his or her own interest. According to Shiddiqi (1992), rational action in Islamic economics does not always necessarily imply maximization, since human beings have to control and direct their want so as to bring about the maslahah (benefit) instead of madarat (disutility) in the life on earth and in the afterlife. While need emerges from an objective thinking or identification on the various means required to gain benefit for life. Need is directed by normative and positive rationality, that is the rationality of Islamic teachings, so that it is limited and measurable in its quantity and quality. Therefore, a Muslim consumes a good or services in the effort to fulfill her or his needs so as to obtain maximum benefit for her or his life. This is the principle and goal of the Islamic law (syari'at Islam) itself, that is maslahah al-i'bad (true benefit for mankind) and also as the means to obtain the maximum al-falah.

Therefore, the rationality of a consumer in consuming goods and services in the
economic perspective of Islam is to obtain maximum maslahab, and same must also applies to the producers. In other words, the rationality of productive activity is to provide goods and services which can provide maximum maslahab for the consumer (Misanam et. al., 2008). More specifically, the goal of production activity is to improve the maslahab or benefit which can be manifested in many forms, among others: (1) the fulfillment of human needs in moderate level, (2) identifying the needs of the society and how to fulfill them, (3) preparing the provision of goods and services in the future, and (4) the fulfillment of the means for social activity and worship to Allah. The last goal, especially, is the most original form of the goal of production in Islam. In other words, the goal of production is to obtain the divine blessing (berkah), which may be physically unable to be felt by the entrepreneur him/herself. Besides fulfilling the needs of the human beings themselves, production must also be oriented towards social activity and worship towards Allah SWT. This goal would bring a wide-ranging ramification since the production does not always produce material and may even require sacrifice of material (Qardlawy, 2001). Production activity can still continue without providing material benefit since it would bring larger benefit in the form of reward for the afterlife (pahala) since it has been written clearly and unambiguously in the Al-Quran (QS. Al-Shaf: 10-12).

METHOD

This research applies the phenomenologico-qualitative approach using inductive logic, where syllogism is built on specifies or data in the field and leads to the general conclusions. Such an approach is usually not used as a tool for gathering data in the sense of frequency but for analyzing a social process which is being underway and the meaning of the facts which appear in the surface. In this way, analysis in this approach can be taken to understand a process and facts and not only to explain away the facts.

The paradigm of scientific knowledge and social science and the problems which are proposed in this research certainly brings certain consequences to the choice for research approach. This research applies the qualitative approach since the approach can be used to see reality which in this case is not merely a result but a process in progress and also other realities around the process. Qualitative approach is basically very careful with its philosophical position, where most interpretivists would give much attention to how the social world is interpreted, understood, experienced or produced (Mason in Manzilati, 2009).

The background for this research is the entrepreneurship spirit in the religious order of Shidiqiyah in Jombang. The choice of Shidiqiyah order in the regency of Jombang, Indonesia as object of research is based on the phenomenon and information of the group, which is said to have unique characteristics which is relevant to the problems which have been planned for this research, that is: (1) strong commitment to develop economic sectors; (2) strong commitment to the teachings of the Shidiqiyah order. The strong commitment to develop economic sector is at least evident from the number of business units that they have developed so far. The subject of this research includes the actors or persons who are directly involved in the reality under observation, especially in terms of their perception, motivation and benefit obtained from the business units that they have built.

The sample or informants in a qualitative research (known as internal sampling) is not geared towards making statistical generalization or simply a representation of the population, but more towards theoretical generalization. The sources of data used here does not represent the population but tend to represent the information, since its completeness and depth is largely independent of the amount of data sources (Bogdan & Taylor, 1993).

In this research, since the determination of sample or informants is also related to the depth of the information, then the informants were selected by purposive sampling. The objective of the analysis in this research tends to the analysis on the meaning behind the information, data and process of a social phenomenon. Based on this objective, then the data analysis method in this research is the group performance analysis and individual experience and institution behavior. Based on the objectives and kind of analytical method, this research would apply the following analytical methods: (1) analysis of life history, (2) case study and (3) focus group discussion (FGD).

RESULT AND DISCUSSION

The Internalization of the Meaning of Lailaha Illa Allah in the Business Action of Shidiqiyah Order
The economic activities or the business units of the Shidiqiyah order, as mentioned above, is an interesting phenomenon for research and study, and many people are wondering why this religious order is involved in so many business, while Shidiqiyah as a tarekat or religious order should give more attention to spiritual matters and cleansing the soul, but the fact is that the existence of the many business units has resulted in an image of rapacious wealth hunter. Actually, the very nature of Shidiqiyah order as tarekat with Laailaha illa Allah (There is no god but Allah) as its core teaching is the motivating force behind Shidiqiyah’s many business units. The teaching of Laailaha illa Allah taught by Kyai Muchtar (where kyai is a honorific) as the mursyid or grandmaster of the order does not stop at merely intoning or chanting (dzikir and wirid) where one must recite the words in a certain manner for certain number of times, but the intoning or chanting should be able to motivate a person to struggle to realize the meaning of Laailaha illa Allah, or termed as the jihad fi sabillillah (holy struggle/war), while the struggle fi sabillillah would certainly require a lot of funding.

The importance of the spirit of Laailaha illa Allah in business is made possible by its ability to stimulate heightened motivation and its distinctive output from the perspective of the members of Shidiqiyah order, since the wealth obtained by the spirit of Laailaha illa Allah is not used for personal satisfaction but spent for the development of Jamiatul Mudzakkirin, that is for helping the poor and orphan. The business which is based on the spirit of Laailaha illa Allah actually has a deep meaning and internal values, that is the idea that all human life would end in the principle of taubid or Laailaha illa Allah (There is no god but Allah), and therefore there is no purpose in life but for Allah and Allah is the only goal, and that is the essence of taubid. The meaning of taubid indicates that all of the life goals for human beings is to worship Allah (Koran, 51:56) and to none other.

A human being is truly subject and subservient only to God Almighty and to none other, and not even to her or his own urges (egoism), since it would taint one’s spirit of taubid. Therefore, in Al-Quran it has been written about the kinds of human urges, that is nafsu amarah (Koran, 12:53), nafsu lawwamah (Koran, 75:2) and nafsu mutlinmainnab (Koran, 89: 27-28). The nafsu amarah is one which tends to the acquisition of pleasure and satisfaction of utility in material terms. The nafsu lawwamah is analogous with the realization of the soul who is regretful of its nafsu amarah and therefore has the tendency for good deeds. While nafsu mutlinmainnab is the most noble of the urges, since it reflects the meaning of Laailaha illa Allah and the divine values within it, that is an urge (nafsu) which is inspired by a calm and holy soul. In the economic context, the levels of nafsu can be understood as the self interest which has reached the awareness of taubid and achieved self perfection. In this stage, das sein and das sollen are no longer separate and the economic actions are no longer intended for the satisfaction of worldly wants but directed towards the creation of falah, that is happiness on earth and in the afterlife. Therefore, all satisfaction of self-interest, for example maximization of profit and utility, is no longer dominated by economic and pragmatic logic but it would also be accompanied by methods of achievement, goals and usage which is consistent with the syariah (Hoetoro, 2007).

According to Triyuwono (2006), when the presence of God has crystallized within a person then the person has truly reached the peak of awareness, the “Manunggaling Kawula Gusti”, which would change the person’ behavior with divine framework as a reflection of the apex of the awareness of Godliness. The divine framework would incite the presence of God in the hearts of each individuals, will remain and then deliver the soul of human beings to be united with the divine (Manunggaling Kawulo Gusti).

The teaching of Laailaha illa Allah which is practiced in the Shidiqiyah order seems to be closer to the teachings of neosufism or modern sufism, which is a development of the classical tasawuf as mentioned above, which is generally “keep the distance” with social world and economic world. The teachings of neosufism endeavor to internalize the values of tasawuf in the modern life without rejecting the material world in human life, and it even has the tendency to lead to the goals which are consistent with the principles of Islamic teaching and at the same time integrate the spiritual values in various aspects of human life, both social, economic and cultural. The term “neosufism” itself was first introduced by Fazlur Rahman in 1979 C.E. in his book Islam and Modernity and this book has since inspired various scientific studies including those in economics, for instance the work of Triyuwono (2006) “Akuntansi Syariah: Menuju Puncak Kesadaran Ketuhanan Manunggaling Kawulo...
In the Shidiqiyah order, the taubid sentence, “Lailaha illah” is understood not only as an incantation (dzikir or wirid) which is to be practiced routinely everyday or after each prayer, but more than than they are sources of inspiration for all behavior in daily life, including economic activity and business. The sentence “lailaha illah” is a spiritual expression which must be united with the rhythm of daily life and that is the core of the teaching of “Manunggaling Keimanan dan Kemanusiaan” which is the basic teaching of Shidiqiyah order.

The teaching of “Manunggaling Keimanan dan Kemanusiaan” itself is a reflection of the teachings of Al-Quran, the surah of Al-Ma’un, verse 1-3 in which it is written that persons who are untrue in their religion do not have empathy, social awareness and are not keen on helping the poor and orphans, though the person might have a great “understanding” or “knowledge” of religion and is part of the category of “practitioner of religion” who practices his or her religion zealously (kebhum minallath). The spiritual piety is not directly comparable to social piety, and this is a simple indicator of a person who is untrue in religion, and therefore it would not be surprising that in several moments and activities in the Shidiqiyah order, this verse has become a motto which is always printed in invitation cards and read in the opening of each sermon, so that the members of the Shidiqiyah order do not forget the teachings contained within it.

According to Kyai Muchtar, the leader of the Shidiqiyah order, the essence of the teaching of Manunggaling Keimanan dan Kemanusiaan is actually inseparable from all practice and ritual in worship which is carried out by an individual, for instance the prayer (shalat), the fast (puasa) and others. When Al-Quran says that prayer can prevent evil and corruption: “Verily the prayers can prevent evil and corruption” (Koran, 29:45), the prayer is actually a media for communication and spiritual link between a servant and his/her God. However, as a means to create peace and harmony among human beings, the prayers are also ended with a greeting of peace (salam), then the greeting of peace is practiced by turning one’s head to the right and left, which bears the meaning that a person in a prayer must pray for the blessing and peace for the right side (the good people) and also to the left side (the bad people), which are spread all over the earth and interact with them in searching for blessing.

The Shidiqiyah order also understands that work and accumulation of wealth is one of the obligations in religion, both in direct and indirect sense. In direct sense, as stated by Kyai Muchtar in various sermons (ceramah pengajian) or as exemplified by the man himself in various business and products which have been developed by the Shidiqiyah order, work which is carried out with true intention due to Laailaha illa Allah is a form of worship. While in indirect sense, it means that in order to implement the essence of Laailaha illa Allah, one would require material means and wealth in sufficient amount. The grandmaster (kyai) relates this understanding with a principle in fiqih which states “mala yaitumun al-wajibu illa bihi fahuwa waajibun”, meaning that “an obligation would not be perfect unless the obligation comes from it being present”. In order to operationalize the principle, the grandmaster took as an example the ritual of wudlu.

On the other hand, there are principles in the Al-Quran and in the Sunnah which are so far being applied by the Shidiqiyah order to explain the importance of wealth in their life. In Al-Quran, for instance, there are many verses which contains the injunction to carry out the jihad fi sabillab with our wealth and our soul. What is interesting here is that the sentence is ordered in such a manner than the word amwal (wealth) is placed before the word anfus (soul). The commandment to carry out jihad with our wealth is always put before the commandment to carry out jihad with our soul (except for Surat al-Taubah: 111) and this is certainly not devoid of meaning.

Several experts in Islam believe that the majority of persons would rather fight the jihad with their wealth rather than with their soul (that is their personal effort and thinking) and some believe that jihad with wealth has more emphasis than jihad with soul. What is clear is that the many calls for jihad with wealth in the Al-Quran has shown that there is an emphasis on the idea that “accumulating wealth or doing business” is a very good as long as it is carried out with the intention of jihad fi sabiillah (Al-Kautsar, 2012). The internalization of the meaning of Laailaha illa Allah in the teaching of Manunggaling Keimanan dan Kemanusiaan is also capable of creating the opportunity for the emergence of a culture of charity, giving and continuous communication (shalatutawabin) or 3S among the members of the Shidiqiyah order. This is consistent with the teachings of the eight Vows of Willingness (Delapan Kesanggupan) of the
members of the Shidiqiyah order, that is: willing to devote oneself (bakti) to Allah SWT; willing to devote oneself to Rasulullah SAW; willing to devote oneself to both parents; to devote oneself to fellow human beings; to the State; willing to love the Motherland (Tanah Air); willing to practice the teachings of Shidiqiyah; and willing to appreciate the importance of time. From the discovery of meaning in the field, which is acquired by observation, in-depth observation and other field data, it can be concluded that the teachings above has directly and indirectly stimulated a spirit of business and entrepreneurship in the religious order of Shidiqiyah.

The internalization of the meaning of Laailaha illa Allah in the business activities of the Shidiqiyah order has lent support to the embedded perspective in sociology of economics, which states that the rationality of economic actions cannot be separated from moral values (Nugroho, 2001). This idea is certainly in direct contradiction with the neoclassical idea which tends to separate the two (Etzioni, 1992), since neoclassical paradigm is not only ignoring the moral dimension but also actively resistant to the inclusion of moral dimension. In neoclassical economics, it is emphasized that individual can have different rank of preferences for a choice but none is considered to be better than the other. Neoclassical economics endeavors to discover the mechanisms (especially price) which can result in the most efficient allocation of resources, that is the allocation which can fulfill individual wants the most. However, neoclassical economics tends to see the will as something which is centered on self interest of the individual which is independent of the social values or altruism, let alone spiritual values (Chapra, 2001). However, the values are important for individuals since they are the reason for the individual to exist and maintain his/herself in fulfilling their own needs and to maintain the continuity of their business.

However, even Adam Smith himself did not wish to eradicate morality and religion in economic activities, and he even supported the social institution of market, religious community and the enactment of laws to strengthen self control and charitable disposition of the mind, since Smith is after all not just an economist but also a professor of moral philosophy (Skousen, 2006). The phenomenon of entrepreneurship in the Shidiqiyah order is a critique against the thesis in Weber's Protestant Ethic and the Spirit of Capitalism (Weber, 2003), that unlike the Protestants (especially the Puritan Calvinist sects), Islam does not have theological affinity in the development of business and entrepreneurship, and moreover, the assumption is based more on the self practices of Islam which tends to emphasize the disdain of the world, forgetting the world, which then contributed to the emergence of a fatalist economic behavior. The inclusion of the moral values of Laailaha illa Allah in the business activities of Shidiqiyah order has important implication for the meaning of wealth in the life of the members of this religious order but also implies that wealth has not only economic function but also has spiritual, social, culture and evangelical (dakwah) value.

The Meaning of Wealth in Shidiqiyah Order

The internalization of the meaning of Laailaha illa Allah in Shidiqiyah order then brings about a shift in the position of the individual, from a homo economicus into a homo Islamicus, who sees wealth in double meaning, where wealth not only has an economic function but also spiritual, social, culture and evangelical functions. The spiritual meaning of wealth is reflected among others in the belief of the existence of blessing (berkah) in it. As with most members of any order, the members of Shidiqiyah believe and trust that wealth can bring blessing. Theoretically, blessing (berkah) contains the idea of a goodness which continues to accumulate and the benefit is continuous. For the members of the Shidiqiyah, it would not be difficult for them to accept the concept of blessing in wealth since the world of tarikat is actually amenable to the spiritual dimensions which are often irrational but is still believed to be true since the members sometimes experience them directly. For instance, what they feel when they acquire wealth and blessing would always be related to the peace, harmony, happiness, harmonious household, good and pious kids, and the benefits which they receive continuously and those who flow to the wide public.

While the meaning of economy and wealth for the members of the Shidiqiyah order can be observed from the efforts of the members of the order to improve their income. Led in the front by Kyai Muchtar himself, the members of the Shidiqiyah order are enjoined to participate in developing all business potential which can give rise to economic profit for them. The signs of success for the Shidiqiyah order in
endevoring to strive in the economic arena is abundant. The partnership with PT. Maan Ghoedaq Shiddiq Lestari to market mineral water has struck a vein of success. The same is also evident from the restaurant of Yustro and the three-star Yusro Hotel. Now the order is making preliminary steps to acquire a 250 ha tea plantation which is estimated to cost tens of billions.

The social meaning of wealth for the members of Shidiqiyah order cannot be separated from the values taught by Kyai Muchtar himself which is imbued by social values in his tarekat teaching. As often stated by the Mursyid or Grandmaster himself and also by his senior disciples, the core of tarekat is the Manunggalan Keimanan dan Kemanusiaan, where “keimanan” or faith here is related to the spiritual depth and “kemanusiaan” or humanity is related to the task of all human beings to become a khalifah (leader) in their worldly life so that the spiritual depth of a person must be directly comparable to his or her social role in the society. As a taseawuf organization, the order of Shidiqiyah does not recognize the dichotomy of taseawuf versus social life, and the realities even shows that it is the other way around: the teachings of taseawuf motivates the members of the order to carry out social, economic and cultural behavior. They believe that spiritual depth without social concern is empty, meaningless and lacking in substance, while social concern without spiritual depth is useless before Allah SWT, since it does not have the value as worship, and even the effort to separate the spiritual aspect of the religion from social concern is considered to be a form of lie or untruth in the religion of Islam itself.

Though wealth has a very important part to play in creating economic independence and improve income, for the members of the Shidqiyab order, wealth is understood not only as a means to fulfill their economic needs alone. The establishment of Yusro Hotel in Jombang can serve as an illustration how wealth can give culture meaning in the life of a multicultural nation like Indonesia. Jombang as a town which is renowned for its santri (religious student) now has a new icon which is not less interesting that its present logo Rinjin Contbong, that is Hotel Yusro. This hotel, which was established by the Shidqiyab order, is the only three-star hotel in Jombang. The physical appearance of the hotel reflects the local cultures of Indonesia and in each of the room there are five holy books of each religion in Indonesia and the paintings on the wall also reflects the symbols of all religion in Indonesia, as if it wished to preserve the culture of religious harmony and tolerance which has long taken root in Indonesia.

From the phenomenon above, it seems that the Shidqiyab order in their hotel business is not only after the material gain but also pays due attention to the symbols as stated above since the Shidqiyab order wishes to maintain and teach the high values of Indonesian cultures which have been formed for a long time, that is the value of tolerance, mutual respect and mutual appreciation on the differences in belief and opinion and the culture of harmony and warm relation (among those from different groups and interests) as the culture of the Eastern people which has been handed down by the ancestors of Indonesian people. This is important since at present this culture seems to be waning and withering in time with the strong undercurrent of globalization which has stimulated the emergence of individualism which only strives after material interest and the social problems which are caused by sentiments of tribal connection, religion, group affiliation and interest.

On the other hand, the meaning of religious dissemination or evangelism (dakwah) for the members of Shidqiyab order is evident from their effort to build a positive image for the order, to stimulate curiosity for the Shidqiyab order, and to attract the wide public to be part of the Shidqiyab order, since tarekat is one of the solution for gaining peace, happiness and “other solutions” in dealing with the daily problem. Of course, this must be accompanied by a new way of seeing or paradigm in understanding the problems in life. Therefore, the meaning of religious dissemination from wealth in this case is inseparable from the perspective of the members of Shidqiyab order in making sense of wealth in relation to the effort of the order to generally strengthen their existence in the midst of society, especially since in its initial emergence, this order was considered to be ghairu mu’tabarah (not recognized by the mainstream groups and other tarekat), to be superstitious and other negative epithets.

The phenomenon of the dual meaning of wealth for the members of the Shidqiyab order lends increasing support to the idea that wealth is not simply part of the economic instrument in the life of the society, and this has been discussed by Simmel (1991) and Weber (2003), who see wealth and money as social phenomenon. This is further proven by
Nugroho (2001) in a study on the essence of the meaning of money for the people in Bantul, who make sense of money with a special purpose approach (where money is seen to have special meaning other than economic one) instead of all purpose (generalization of money in single sense, that is the economic sense). The three studies also criticize the utilitarian approach (which includes classical and neoclassical economics) which sees money and wealth in the society with only a single lens. They see wealth and money as economic instrument but with multiple dimensions. Money and wealth can be understood not only from the economic side but also from the social, culture and political dimensions. Money and wealth as the product of culture have symbolic meaning in the form of qualitative values. This is possible since the proponents of utilitarianism limit the meaning of money within the economic realm. In this way, money can probably “corrupt” values in the numbers, while values and sentiment can in turn corrupt money by embedding it inside the moral, social and religious meaning.

The Behavior of The Members of Shidiqiyah Order In Acquiring Wealth

As it has been stated before, the rationality of the meaning of wealth for the members of the Shidiqiyah order is related not only with the sense of wealth itself in the social, economic, spiritual, culture, evangelical and wisdom (zikmah) context, but it is also related to the rationality of their way in acquiring the wealth. In their daily practice, the members of Shidiqiyah order believe that in their effort to achieve success, including the success in acquiring profit or wealth, their success is determined by not only effort and hard work but also by the principles of “Atas Berkat Rahmat Allah SWT” (by the blessing of Allah SWT). This means that all wealth and riches which human beings have acquired actually do not come from their own effort but also determined by “external forces” whether they realize it or not, and therefore it is not surprising that the members of this order take many kinds of endeavor which they believe would assist them in obtaining wealth or riches as they wish. Among the means which they believe are useful for accumulating wealth are: hard work, prayer, continuous communication with other (shilah turabhin), practicing the “amalan” from the Grandmaster (Mursyid, leader of the tarikat) and lots of charity.

For the members of the Shidiqiyah order, working is an obligation since it is the only way for a person to be independent in economic sense so as to prevent them from begging and impinge upon others. Hard work is important for that matter and also for enabling people to practice their unique culture and the culture of 3S (charity, giving and maintenance of communication) cannot be separated from wealth and therefore the members of the order must work and try to acquire wealth. Even the Grandmaster of the Order himself, Kyai Muchtar, categorizes working and struggling to fulfill economic needs as part of the jihad in Islam to become an independent human being (insan), who can share his or her riches and do not impinge upon others. Concerning the jihad to build the economy, Kyai Muchtar stated in no uncertain terms that jihad in this category requires a trinity, that is: strong will, feeling of ability and power of ability.

The concept of hard work as part of worship and part of jihad for all members of the Shidiqiyah order is similar to the concept of calling in the Calvinist Protestant sects mentioned in Weber (2003). Weber puts down the basis of his argument on the obligation of an individual which is placed by God on him or her. In other words, the concept of calling is a belief that all power on the face of the earth is given by God and acquiring that power is a holy task. The understanding on the concept of calling makes all profane activities in daily life acquire religious overtone. According to Amilda (2010), the most important part of this concept is that work is a holy task, and the obligation to work stimulates the emergence of a work ethic which supports the development of a capitalist mentality who is prudent, wise, diligent and earnest in conducting business.

However, in the Shidiqiyah order, the concept of hard work as worship (ibadah) and holy endeavor (jihad) does not automatically neglect other forces which are “unseen”, such as the power of prayer (especially the prayers from our Mursyid and our parents), “money of blessing” (uang burokeb) or the power of miracle effected through charity. This is perhaps the part which distinguish this order from the teachings of Calvinist Protestants since according to Weber, the spirit of capitalism in its Calvinist variety has driven away the belief in magical power in the world and has led to the dismantling of all magical means of obtaining salvation since such means are considered to be
superstition and sin. While in the order of Shidqiyah, magical means of salvation is considered as support for as long as the individual is maintaining his or her endeavor (ikhtiyar) and hard work as it is commanded in Islam and has the strong base of belief so as to prevent him or her from idolatry (syirik), that is the behavior in which one admits of other powers beside Allah (Al-Kautsar, 2012a).

Prayer is one of the teachings and practice (amalan) which cannot be separated from daily life of this order. They believe that when one wants to achieve success, including success in acquiring blessing or wealth, then mere effort and hard work are not sufficient. They always see that what they are doing is subject to the principle of “Atas Berkat Rahmat Allah Yang Maha Kuasa” (“by the Blessing and Approval of Allah Almighty”), meaning that all of their success is essentially a blessing from Allah SWT, and therefore human beings must humbly pray to Him so as to achieve what they want through prayer. However, this belief does not mean that human beings can stop working, since for them, work is a kind of “syariat” (law) which must be applied in order to obtain the “hakekat” (essence) of the blessing of Allah SWT which has been determined by His will.

In the perspective of economics, the belief that prayer is one of the supporting power for business is categorized as part of the spiritual capital. The concept of spiritual capital itself was first proposed by Zohar & Marshall (2005), as a reaction to the weakness in the narrow interpretation of social capital, that is: though a high level of social capital in a company can benefit the employees, consumers and shareholders, however the construct actually ignores a dimension which is wider than the policy to maintain stability in wider society. However, for Samdin (2007), the concept of spiritual capital from Zohar & Marshall is considered to be imperfect since it does not include belief and religious spirit or religious capital within it. According to him, Zohar & Marshall only introduce the value of spiritual capital for a secular economics which is based on the social dimension or humanitarian values. The point is that the economic concept of spiritual capital is not directly related to certain religion or theological system of belief since they do not believe that companies can be made more spiritual by building a temple or asking the employees to pray.

Moreover, the prayer, dzikir and amalan or “readings” (bacaan) for the members of the Shidqiyah order can also be understood as a means to improve piety and the spiritual degree on individuals, where this would have direct and indirect impact on the improvement of their business. This is consistent with the statement of Monzer Kahf (1995) in the book The Islamic Economy: Analysis of the Functioning of the Islamic Economic System, where it is stated that the degree of one’s piety has positive correlation with its level of production. When a person has heightened level of piety, then his/her productivity would also increase, and the other way around, too, since when the piety is degraded, then it would have negative impact on the productivity and the level of productivity would be reduced.

In the context of business, the need for information, number of connection and relation and the need to build trust with business partner is absolutely necessary. A business would find it hard to grow when it does not have complete, quick and accurate information, when it lacks relation or when it is not trusted by the consumers and other business partners. It is here that the teaching of maintaining communication (silaturahim) become an important part of the business and of other effort to seek “blessing”. Since trust and loyalty would not grow overnight and trust should be built upon connectedness, the sense of knowing one another and warm relationship and also mutual respect.

The concept of “silahutarahim” as a means to build network and maintain the harmony for the business actors among the members of Shidqiyah order can be categorized as social capital. Bourdieu (in Winter, 2000) has given emphasis on the social capital for social networks which give access to group resources so that the individuals in the network can enjoy economic benefit. For Bourdieu, the economic benefit would only be open for the individuals when the individual is involved continuously with the group. It is within this context that social capital can be understood as something instrumental. The harmonious relation between the employees and consumers is essentially the core of the element of trust in the social capital itself. As stated by Putnam (1995), social capital is the expression of the social organization such as network, norms and social trust which can facilitate the mutually beneficial coordination and cooperation.

The belief that charity (sadekah) can bring blessing and wealth for the doer is a belief which is held strongly by the members of the
Shidiqiyah order and this is not merely limited to their belief only since this belief is also practiced and the result has been felt personally by the members of the order. They have even made charity and giving as unique characteristics and culture of their daily life. Though blessing (rizki) may have a far-reaching dimensions, which includes material (wealth) and non-material aspects (such as health, harmony, peace of life), they also believe and feel that the wealth that they have given for charity would in the end not be reduced but on the contrary it would increase due to various unexpected ways. They also believe that those who are reluctant to give or give only sparingly would be reduced in their blessing, and their business would be in trouble and the life would not be at ease.

The meaning of charity as a means to avert bala’ (calamity) is also quite familiar for Muslims, and even Sutikno (2011) in “Memaknai Perilaku Muslim dalam Bersedeka: Studi Fenomenologi Pengalaman Muzakki LAGSIZ Sablith Taqwa Bululawang” has come to the conclusion that charity can be used as an alternatives for health and accident insurance, since routine giving is essentially a way of investing part of wealth to protect oneself, one’s family, and one’s own wealth and business since giving would guarantee protection from Allah SWT as it has been promised and would give “a guarantee of safety and comfort” from the people around him/her. When a business has been guaranteed with such an “insurance plus”, then directly and indirectly, it is believed that the business would be better manager, and would be guaranteed of its survival and in the end result in a more maximum profit and would be able to increase the blessing of the proprietor, both in material and non-material sense.

CONCLUSION

The strong entrepreneur spirit in the order of Shidiqiyah is born from the internalization of the teaching of Laailaha illa Allah and the application of teaching Manunggaling Keimanan dan Kemanusiaan and various other teachings and doctrines in the order of Shidiqiyah, among others the Eight Vows of Willingness of the members of Shidiqiyah order, especially the willingness to devote oneself to Allah SWT and His Messenger; the willingness to devote oneself to the state, Indonesian Republic; and the willingness to practice the teachings of Shidiqiyah order. The strong spirit of entrepreneurship in the Shidiqiyah order is also inspired by the doctrine of Santri, the doctrine of Manunggaling Keimanan dan Kemanusiaan and the culture of 3S (silabturnah, sidekah and santunan). The doctrine of Santri has the meaning of the human being of three (insan tiga or manusia tiga) as the manifestation of the perfection of human nature, which consists of spirit, reason and jism. The perfection of human nature has implications for the balance in human interactions, both with God (Allah), with fellow human being and with the universe. Interaction with God is carried out by worship, interaction with fellow human being is carried out by mur’ama‘alab, in this case to fulfill the economic needs and the culture of 3S would directly motivate them to acquire sufficient wealth and indirectly would motivate them to work hard in business and develop their entrepreneurship as what they have been doing so far.

The teachings, doctrine and culture of the Shidiqiyah order as described above bring an implication that the understanding of the members of Shidiqiyah order on the meaning of wealth is wide-ranging and plays important role in their life. For them, wealth has double meaning, where wealth is understood not only in economic terms alone but also in the framework of other meanings, such as social, spiritual, cultural, evangelical (dakwah) and wisdom (hikmah) sense. The dual meaning of wealth also has an implication for the rationality of the meaning of wealth for the members of Shidiqiyah order, where wealth is aimed not only for material benefit and satisfaction alone. On the other hand, in developing business and entrepreneurship, the spiritual capital and social capital play important role for the business behavior of the members of Shidiqiyah order, since for them the success of a business is determined not only by economic capital alone, though economic capital has important functions which cannot be ignored.

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QUANTUM MECHANICS, RELATIVITY
AND THE CLASSICAL THEORIES

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Abstract
This paper seeks to review certain salient aspects of Quantum Mechanics in the light of the Classical theories. There is also an effort to find an alliance between Quantum Mechanics and Relativity based on the Fourier Transforms. This leads to the theoretical prediction of the gravitons and the “Otherons”. The finiteness or barrier limitations of physical quantities has been discussed with the help of the Taylor series.

Keywords: Quantum Mechanics, Fourier Transforms, Relativity, Taylor Series

1. Introduction
Quantum mechanics is often interpreted as having aspects opposed to commonsense intuition-----a subject “injury to commonsense intuition”. This article seeks to review several facts and ideas of QM with classical interpretations. There is an effort to associate QM with Relativity and to predict theoretically the existence of the Gravitons and the “Otherons”. Finally the barrier limitations of the physical observables has been considered by analysis of the Taylor series.

2. Points to Ponder
Let’s start our review with some points to ponder upon:
1. In Quantum Mechanics the value of an observable results from the interaction between the "system" with the "Measuring gadget".
But when the experimenter[or the technologist concerned] is devising/constructing the gadget he has an isolated view the "system" with its stand alone properties/attributes. It seems to be so.
But QM theory itself cannot ascribe the value of some observable to the system independent of measurement which is a physical process. How does one explain this?

2. On Bell's Theorem:
The QM expectation Liboff (2006, p 563) is given by:
\[
<\sigma_a \hat{a} \sigma_b \hat{b}> = -\hat{a} \hat{b}
\]
\[\text{(1)}\]
a and b are unit vectors.

In the above relation we are considering the measured value of spin which is the outcome of the interaction of some property of the system itself and the measuring process which involves the gadget

The "classical" formula Liboff (2006, p.563) for evaluating the expectation with the hidden variable is as follows:
\[
P(\hat{a}, \hat{b}) = \int d\lambda \rho(\lambda) A(\hat{a}, \lambda) B(\hat{b}, \lambda)
\]
\[\text{(2)}\]
Lambda is the "hidden variable"
A(a) and B(b) are the values of spin along the unit vectors a and b

Now some property of the system may depend on the value of \(\lambda\) and the probability distribution \(\rho(\lambda)\). Is the effect of measurement being fully accounted for by the hidden variable \(\lambda\) and the pdf \(\rho(\lambda)\), especially in view of the fact that the process of measurement
modifies the wave function itself. We must remember that relation (2) depends on classical intuition. Classically we think of a property as something independent of observation. Lambda should have some relationship with the process of measurement apart from the stand alone properties of the system if we are to compare relation (1) with relation (2). Such considerations are not visible given by relation (2). Interestingly each measurement disturbs the closed nature of the system. The Hamiltonian will (generally speaking ) have different eigenvalues pertaining to different states of the system. Clearly the energy of the system is changing with each measurement due to the effect of measurement. Our quantum mechanical system is certainly not a closed one. The variable should relate not only to the system but also to its environment in regard of the measurement issue. Would it be possible remove the contradiction between QM and commonsense intuition, expressed through Bell’s Inequality, by considering the above factors?


Let’s consider a pair of particles [with signals being exchanged between them ] comprising an isolated system. Any change in some property of either particle is due to the signal/s received from the other. Each particle has the knowledge of the signals emitted by it and the consequences of such signals on the other. This is a “continuous process” which may go simultaneously with increasing separation between the particles.

The entanglement of some property ,between the particles, even in the highest level of non-locality seems to be intuitively “natural” so long the system remains an isolated one, comprising the two particles and the signals exchanged between them.

Would it be correct to say that the entanglement of properties in the non-local context should not be considered as an injury to commonsense perceptions?

Work done by a magnetic force(even over an infinitesimally short displacement)=0

Net Force Liboff (2006, p.523) in a current loop in an external magnetic field is given by:

\[ \vec{F} = \nabla (\vec{\mu} \cdot \vec{B}) \]  \hspace{1cm} (3)

How does one prove:

\[ dW = \nabla (\vec{\mu} \cdot \vec{B}) \cdot d\vec{r} = 0 \]  \hspace{1cm} (4)

Since magnetic forces are no-work forces.

The conventional(Classical Analysis) of the Stern Gerlach Experiment  uses the formula

\[ \vec{F} = \nabla (\vec{\mu} \cdot \vec{B}) \]  . Does the forgoing formula for force express a no-work force as expected for forces having pure magnetic origin? The classical interpretation of a continuous smear in the SG experiment results from the application of the formulas (3) and (4). Misapplication of Classical concepts can always lead to erroneous results.
3. Fourier Transforms in QM

Let's consider the Fourier transform, \( F(p,E) \) of an arbitrary well behaved function of position and time \( f(x,t) \)

\[
F(E, p) = \int \int f(x,t)e^{ia(Et-px)} \, dx \, dt
\]

The limits of integration are from \(-\infty\) to \(+\infty\) for both the integrations in the above integral

“a” is constant wrt to “x“ and “t”

Now,

\[
\frac{\partial F}{\partial x} = 0
\]

Therefore,

\[
\int \left( \frac{\partial f}{\partial x} - iaf \right)e^{ia(Et-px)} \, dx \, dt = 0
\]

\[
=> f(x,t)iaE + \frac{\partial f}{\partial x} = 0
\]

[We may use different values for the constant a to obtain relation (6)(7)]

Solving (9) we have,

\[
f(x,t) = Const \times A(t)e^{iapx}
\]

“x” on RHS depends on time

Again

\[
\frac{\partial F}{\partial t} = 0
\]

Therefore,

\[
f(x,t)iaE + \frac{\partial f}{\partial x} = 0
\]

\[
=> f(x,t)iaE + \frac{\partial f}{\partial x} = 0
\]

Solving (10) we have,

\[
----------------------- (11)
\]

From (8) and (11) we have,
\[ f(x,t) = \text{Const} \times e^{-ia(Et - px)} \]  \hspace{1cm} (12)

Relation (12) is again a periodic function.

When (12) inserted into (5) we obtain the Fourier Transform:

\[ F(p_m, E_m) = C_m \delta(p - p_m) \delta(E - E_m) \]  \hspace{1cm} (13)

If relation (13) is integrated over the \((E, p)\) domain we get \(n \times C\) where \(n\) is the number of states having \(E = E_m\) and \(p = p_m\).

For modes covering several particles we may think of a \(\chi\)–function:

\[ \chi(x_k, t_k) = \sum_{k=1,2,3..} C_k e^{-ia(p_{km}x_k - E_{km}t_k)} \]  \hspace{1cm} (14)

“\(k\)” runs over different particles.

Fourier Transform: of \(\chi(x_k, t_k)\) using \(x_k\) and \(t_k\) as variables of integration:

\[ F(p_{km}, E_{km}) = \sum_k \sum_j C_{kj} \delta(p_{kj} - p_{km}) \delta(E_{kj} - E_{km}) \]  \hspace{1cm} (15)

Where, as before, \(F(E, p)\) is the Fourier transform of \(\psi(x,t)\).

Integration of relation (15) wrt \(E_k\) and \(p_k\) (ie, using \(dE_k dp_k\)) over the entire \((E, p)\) domain produces counts the number of states \(E = E_{km}\) and \(p = p_{km}\). “\(k\)” relates to the different particles and “\(m\)” to different modes/states of the same particles.

**Observations:**

1. The function represented by relation (8) satisfies the Klein Gordon Equation provided we are on the mass shell: \(E^2 = p^2 + m^2\). An assumed independence of \(E\) from \(p\) in the Fourier transforms should suggest “off the mass shell” situation. The value of \(\hbar\) is depicted through the constant “\(a\)”.

2. We may obtain a probability density picture for the \(\psi\)-function or the \(\chi\)-function.

The invariance of the exponential part in relations (12) is suggestive of the fact that the Lorentz Transformations are a suitable candidate provided “\(a\)” is a Universal constant. The constant “\(a\)” contains the information for \(\hbar\).

For different sets \((a, c)\) we have different Universes having the same type of fundamental laws but different Universal constants.

**3.1 Gravitons and “Otherons”**

The function \(f(t, x, y, z, x_i)\) along with their Fourier Transform \(F(E, p_x, p_y, p_z, p_i)\) with \(i = 1, 2, 3, \ldots\) The variables \(x_i\) are related to some “hidden dimensions”. And \(p_i\) are their
Fourier counterparts. For the invariance of the ensuing exponential part we may extend our familiar Lorentz Transformations to the extra dimensions. For uniform motion in the $x_i - x'_i$ direction we have,

$$x'_i = \gamma (x_i - vt)$$

$$t' = \gamma \left(t - \frac{v_i}{c^2} x_i\right)$$

Other variables do not change their values on transformation. $v_i$ is the n-Dimensional speed for translation along $x_i - x'_i$ direction the $i$th component being non-zero in this case and $t$ is time. "$c$" is the speed of "n-dimentional light" and should be a universal constant for the higher dimensions.

$$\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$$

In the above context we have $n+1$ dimensions if time is considered.

We may assume a relative motion in some hidden dimension—some translation wrt time in so far as their values in one frame and a transformed one are considered. As a result clocks will tick at different rates for different observers who are spatially at rest. This happens in General relativity in curved space. The GPS is an excellent example in the weak field context. Clocks run at different rates at different gravitational potentials.

Our known "$c$" is the limiting speed of a signal in the 3D case. Such signals are a stream of photons. It is quite possible that the higher dimensional "$c$" s could relate to gravitons or other type of particles which we may call the “Otherons”.

3.2 Why should “p” and “E” represent momentum and energy respectively?

If $p_x$ and $E_t$ are dimensionally the same, “p” representing momentum and “E” representing energy are most plausible to make a proper fit.

3.3 Ultraviolet Catastrophe and the Classical Principles

The Maxwell-Boltzmann distribution is a Unimodal distribution represented by a bell shaped curve. The most probable speed and the mean speed of the particles are quite close to each other. The average speed of a high frequency oscillator is much greater than the mean speed which takes into account all particles/oscillators in the system. That the probability of occurrence of the high-frequency oscillators be less(rather much less) than the ones having their mean speed close to the mean speed of all the particles taken together is in conformity with the classical theories. Raleigh-Jeans theory denies this by assigning equal probability to all modes------like assigning the amplitude of the fundamental to all overtones in the vibration of a string stretched between two fixed points.

3.4 The Uncertainty Principle from the Classical Ideas: Let $X$ and $Y$ are two variables that have an association with each other, for example, the position coordinate $x$ and momentum $p_x$ in the process of some measurement.
\[ \text{Cov}(X, Y) = \sigma_x \sigma_y \rho \]

Or,

\[ \sigma_x \sigma_y = \frac{\text{Cov}(X, Y)}{\rho} \]

The above relation is of the most general nature that emerges from the classical theories. The precise measurement of some physical property would make Cov(x,y) zero. The variables would become independent in the process of measurement—the standard deviation of the other variable would become independent of each other.

If the variables are allied to each other or inter-related in some process of measurement the quantity: \( \sigma_x \times \sigma_y \) is expected to be different from zero. There could be some minimum limit to its value in some particular type of measurement.

### 3.5 Discreteness

We consider a system of "n" particles whose total energy \( E \) and net momentum \( P \) are fixed. There is no net force on the system (assumed)

\[
\sum \varepsilon_i = E \\
\sum \bar{p} = \bar{P}
\]

For an individual particle its momentum and energy remain constant for the time \( \tau \), the relaxation time (average time between successive collisions). That's an extra constraint for each particle [Radiational energy density at some point is assumed to be constant for some physically small time interval].

For such a situation, we get discrete solutions for energy and momentum apart from the continuous ones especially if we consider transfer of energy between different particles with a finite energy speed. We have an indication of such finite speed in our previous discussion. There is also an indication of the said fact in the next section.

### 4. On Barrier Values: Finiteness of the Universe

Let's consider the Taylor series for the expansion of energy in terms of speed or the expansion of momentum in terms of energy without assuming any standard formula:

\[
E(v = v_0 + v') = E(v_0) + \frac{v'}{1!}E'(v_0) + \frac{v'^2}{2!}E''(v_0) + \frac{v'^3}{3!}E'''(v_0) + \frac{v'^4}{4!}E^{(4)}(v_0) + \cdots \tag{16}
\]

\[
p(E = E_0 + E') = p(E_0) + \frac{E'}{1!}p'(E_0) + \frac{E'^2}{2!}p''(E_0) + \frac{E'^3}{3!}p'''(E_0) + \cdots \tag{17}
\]
If

1) The higher order derivatives are non zero[for some order greater than an arbitrary nth order]

2) If in some physical situation there exists an approximation in the form of a truncated, terminating series comprising a fixed number of terms[ex: E=pc for high energy particles or E=m_0c^2 + 0.5mv^2 for slow moving particles]

Then it follows that v' and E' should be less than one or that each of the said quantities should have a barrier value: v < c or E < E_b. So we may use v/c or E/E_b may be used on the Taylor expansion.

[Special Relativity, incidentally, puts a restriction on the speed of light but it does not restrict the value of momentum or energy for that matter. The restriction on the value of energy we find in this paper is not a contradiction. It is analogous to the situation that Conservation of Energy does not disallow the spontaneous flow of heat from lower to higher temperatures while the Second Law of Thermodynamics forbids such an event.

An interesting alternative would be to assume the existence of negative energy states in order to provide a maximum application of the Special Relativity provision of accelerating the speed of a particle as close as possible to the barrier value of “c” without crossing it. The finite energy limitation will not pose any problem if negative energy states are assumed to exist.]

Incidentally, for Taylor expansion or Maclaurin series for that matter we may have E’>1 or v>1. You may consider the expansion.

\[ e^x = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \ldots + \frac{x^n}{n!} \]

The series converges for values of x>1. A necessary [but not sufficient] condition for convergence is that \[ |T_n| \] should tend to zero as n tends to infinity. In relation to the RHS point (2) this is important. If we have

p = A + BE

[where A and B are constants]

in some physical situation as an approximation, E’<1 or E’/E_b<1 is a suitable option. Otherwise the higher powers of E would lead to the failure of the approximation.

4.1 Generalization

This relates to other physical properties. If x and y are two physical properties [measurable] related by the function y=f(x) and the following two conditions are satisfied:

1) The higher order derivatives in the Taylor or Maclaurin expansion of f(x) about some point are non zero [for some order greater than an arbitrary nth order]

2) If in some physical situation there exists an approximation in the form of a truncated, terminating series [E=pc for high energy particles]

The the stated property should have a barrier value. If we have some interaction (or some other physical property that can be measured) having an accurate form

\[ F = A_0 + A_1 \frac{1}{r} + A_2 \frac{1}{r^2} + A_3 \frac{1}{r^3} + \ldots \] (18)
and in some physical situation it may be approximated by a truncated finite series than the quantity $1/r$ should have a barrier:

$$\frac{1}{r} < c_{ur}$$

Or,

$$r > \frac{1}{c_{ur}}$$

$\frac{r}{1/c_{ur}}$ may be used in pace of $r$ in the Taylor expansion.

Similarly,

If we have some interaction having an accurate form

$$F = A_0 + A_1 r + A_2 r^2 + A_3 r^3 + .............$$

and in some physical situation it may be approximated by a truncated finite series than the quantity $1/r$ should have a barrier: $r < c_r$

$$\frac{r}{c_r}$$ may be used in place of $r$ in the Taylor expansion.

5. Conclusions

The role of the classical theories in re-analyzing modern concepts like Quantum Mechanics and Relativity has been discussed. The Fourier Transforms and the Taylor series have been utilized to this end. A link between QM and Relativity has been indicated at.

6. Acknowledgments

I owe my indebtedness to authors whose works have always inspired me to work in the area of physics. I take an opportunity to thank Dr Tanja Likso, Head of Department for Climate Monitoring at Meteorological and Hydrological Services, Zagreb, Croatia, for her financial contributions that have favored the publication. My gratitude goes to the EJER Editor for allowing major concessions in the publication charges. I also thank all journals and their editors who have published my works previously — this has been a continuous source of motivation for me.

References

TAPPING ENERGY BY USING THE EARTH’S MAGNETIC FIELD

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Abstract
We may consider a flat rectangular plate moving horizontally in a vertical magnetic field,motion being in a direction perpendicular to the length of the plate. We have an induced emf=BLV[B,L and V having their usual/conventional meanings] between the tips,in the length wise direction of the conductor perpendicular to the motion.That's the axial EMF. During the formation of the axial emf a current flows along the length of the conductor. This current should get deflected in the lateral direction due to the existing magnetic field, producing a transverse emf between the lateral edges.If the tips are connected by a wire we have a closed circuit condition--we should simply have the Hall voltage between the lateral edges[in the direction of the motion].And we can show this by calculation.The question that naturally arises: Would it be possible to use these voltages as supplementary power sources in moving vehicles---in moving trains,cars,airplanes etc., utilizing the earth's magnetic field? In fact the induced current running out through the wheels in moving trains is at the cost of the engine power. We could think of saving this energy. The other alternative would be to use the energy --the energy that is already being wasted.Saving the energy might increase the speed of the train by a negligible amount spread over a long period of time.But if we use the wasted energy over a long period of time we will gain Ampere-hours--more especially so in consideration of so many trains covering long distances. We could also think of storing the charge running out of the wheels and use it in future.Another application would be to move objects in the earth's magnetic field by tidal,wind or hydro power[of flowing rivers] and utilize the induced emf in a productive way. We have the ready-made field of the earth very much in favor of such enterprise/endeavor

INRODUCTION
The basic point of this writing is to convey the importance of the earth’s magnetic field in tapping energy from other sources. Energy wasted from fuel in generating induced emf in trains and other vehicles may be put to human use. Energy from the waves on the ocean surface or from flowing water in the rivers may be garnered with the help of the earth’s magnetic field which is continuously available to us all over the world irrespective of the hour of the day or the night.

A BASIC CONSIDERATION
Let us consider two electric cells having electrolytes of the same type and electrodes of the same nature. You may take two Daniel cells as an example. One is a large cell with a greater amount of electrolyte and the other is a small one. Both will produce the same voltage but the larger cell containing a larger amount of electrolyte will run for a longer period of time producing the same voltage. Actual advantage is in the gain in terms of ampere hours. The larger cell produces a greater amount of energy at the same voltage. If the running vehicles are considered as sources of electromotive force and if we consider their running for a very long period of time our basic gain would be in terms of ampere-hours.

RUDIMENTARY CALCULATIONS
You may consider the huge number of trains running all over the world starting from the advanced countries to the less advanced ones---the entailing loss of electric charge into the ground due to induced emf. The induced emf is generated due to the loss of fuel
which is spread over a large period of time covering a huge number of trains. For these rudimentary calculations we assume \( \text{Emf}^{[2]} = BLv = 10^{-3} V \)

If a \( 10^{-3} \) volt cell consumes only one 1 joule of energy over some period of time, we have,

\[
W = VQ
\]

Where \( W \): Energy Wasted; \( V \): Voltage; \( Q \): Charge

If \( W = 1 \) J

\( VQ = 1 \)

Or,

\( 10^{-3} \times Q = 1 \)

\( Q = 1000 \) C

That gives us a rough idea of the amount of charge passed in wasting energy at a low voltage! Passing all that charge could take a lot of time. But just think of the large number of trains and other types of vehicles running for long hours. If the wastage of 1 J of energy is spread over a huge number of trains running for long periods of time, the time factor is no more so tediously offensive.

**SOME DETAILED CALCULATIONS**

Lets consider a train moving in the vertical magnetic field (\( B \)) of the earth. The speed of the train = \( v \) m/s and the width of the ceiling = \( L \).

\[
\text{Induced Emf} = BLv
\]

\[
\text{Induced Current} = \frac{BLv}{R}
\]

\( R \): resistance of the roof + resistance on the sides.
Power of the Engine wasted by the induced current = $BLv \times BLv / R$

$$= B^2 L^2 v^2 / R$$

As a specific example let us take $B = 5.2 \times 10^{-5} \text{T}$
$L = 3 \text{m}$
$v = 12 \text{ m/s} = 43.2 \text{km/hr}$

[The above value of speed has been taken in a defensive way to account for slow moving trains]

Induced Emf = $BLv = 5.2 \times 10^{-5} \times 3 \times 12 \text{ V} = 1.872 \times 10^{-3} \text{ V} = 1.872 \text{ mV}$

A 10 cm wide strip is considered cross-wise on the ceiling as shown in Figure I. We take the thickness of the material of the roof to be 0.5 cm.

Resistivity $\rho \approx 10^8 \text{ SI units}$
Resistance, $R = \rho l / A$

$$= 10^8 \times (3+2.5+2.5) / (0.1 \times 0.005) \text{ } \Omega$$
$$= 1.6 \times 10^4 \Omega$$

Induced current, $i = BLv / R = 1.872 \times 10^{-3} / 1.6 \times 10^4 \text{ A} = 11.7 \text{ A}$

Power wasted by the engine on the 10 wide strip cell

$$= 11.7^2 \times 1.872 \times 10^{-3} \text{ watt}$$
$$= 0.2562 \text{ W}$$

If the thickness of the material is considered to be 1 mm, we have

$$R = \rho l / A$$

$$= 10^8 \times (3+2.5+2.5) / (0.1 \times 0.001) \text{ } \Omega$$
$$= 8 \times 10^4 \Omega$$

Induced emf remains the same:

Emf = $BLv = 1.872 \times 10^{-3} \text{ V}$

Induced Current = $1.872 \times 10^{-3} / 8 \times 10^{-4} \text{ A}$

$$= 2.34 \text{ A}$$

If the thickness of the material is taken to be 0.5 mm the current should be 1.17A

Not a negligible amount!

Can we run a device with it? Well, the resistance of the device will in all probability be sufficiently large to reduce the current by a considerable amount. But we don’t need to go that far. The induced emf acting through the gadget and the connecting wires will oppose the driving induced emf of the strip cell on the roof. One may think of using wires [and the gadget] shielded from magnetic effects to get the advantage of running some device. It would be convenient to add up the voltages of several strip cells by using some suitable circuit arrangement.

A better idea would be to collect the charge with a capacitor by connecting it to the ends of a strip cell of voltage $= 1.872 \times 10^{-3} \text{ V}$ and cell resistance $= 8 \times 10^{-4} \Omega$.

Suppose I use a 1F capacitor. The time constant for the C-R circuit, $\tau = CR = 1 \times 8 \times 10^{-4} \text{ s}$ is negligibly small.

Charge accumulating on the capacitor $= 1 \times 1.872 \times 10^{-3} \text{ C}$

$$= 1.872 \text{ milli-C}$$

If a 10 farad capacitor [Ex: http://www.youtube.com/watch?v=_wBkHyb8zkchttp://www.youtube.com/watch?v=_wBkHyb8zkc] is used then the fully charged capacitor will contain $18.72 \text{ milli}$
coulombs. About 63%\(=1-e^{-1}\) of this amount will accumulate in the time \(\tau=CR\) which will is an extremely small interval of time. This charge may be transferred to some object and accumulated for future use in the particle accelerators. If we arrange thousand transfers in an hour, 18.72 coulombs will be obtained from a single strip-cell circuit, in an hour’s time. The cost of running the gadget working out the transfers has to be compared against the economic benefit obtained from the charge procure

**ALTERNATIVE-TECHNIQUE:**
Now let us considering detaching the 1F capacitor from the Strip Cell after the capacitor has been fully charged, remembering that the time constant for the arrangement was very small. We connect the charged capacitor in series with a high voltage, 1\(\mu\)F capacitor and a 10,000 ohm resistor and start a discharging process. The effective value of capacitance is approximately 1\(\mu\)F and the time constant \(\tau=CR=10^{-6}\times10,000=10^{-2}\) seconds which is reasonably small.

\[
\text{FIGURE II}
\]

Now,
\[Q = Q_0e^{-\frac{t}{CR}}\]
Where \(Q_0=1.872\text{ milli-C}\)

Net capacitance \(C\approx10^{-6}\text{F}\) and \(R=10,000\text{Ohms}\)

\[
i = \frac{dQ}{dt} = -Q_0 \frac{1}{CR} e^{-\frac{t}{CR}}
\]

Magnitude of the instantaneous current

\[
i = Q_0 \frac{1}{CR} e^{-\frac{t}{CR}}
\]

Average value of current in a period of 1 second:

\[
<i> = Q_0 \frac{1}{CR} \int_0^1 e^{-\frac{t}{CR}} dt
\]

\[
<i> = Q_0[1-e^{\frac{-1}{CR}}]
\]
\[ <i> = Q_0 [1 - e^{-10^5 \times 10,000}] \]

Or
\[ <i> = Q_0 [1 - e^{-100}] \]

Therefore an average of 1.872 mA would flow through the 10,000 ohm resister in 1 second. The average value of potential drop across this resistor would be 18 volts. If a 100,000 ohm resistor was used the potential drop across it would be about 187 volts but the time constant of the C-R circuit would increase to about 0.1 second. Such a value for the time constant would not be an impediment for our work. One should understand that the average value of the current is quite high if one considers the period \( t = CR \). But it spreads out in an interval of one second. 

**OCEAN WAVES**

Just think of an ocean wave moving at 10 m/s carrying a 3 m long conductor with it. The magnetic field of the earth is of course there and we take it to be approximately \( 10^{-5} \) T. Now, \( E = BLv = 10^{-5} \times 3 \times 10 = 3 \times 10^{-4} \) volts = 0.3 millivolt. The ocean surface can be the source of such innumerable millivolt sources. And the kinetic energy of the wave itself is the source of energy here. We tapping the ocean’s energy the kinetic energy of the waves with the help of the earth’s magnetic field. Cells of the said type may be used in combination to produce higher voltages to be used directly for different purposes. This can go a long way in resolving the power problem. Water of flowing rivers could be used for similar purposes.

Calculations:

Let’s consider a 3 m aluminum wire of cross-section = \( 1 \text{ cm}^2 = 10^{-4} \text{ m}^2 \)

Specific resistivity for aluminum = \( 2.82 \times 10^{-8} \Omega \text{m} \).

Resistance = \( R = \rho \frac{L}{A} = 2.82 \times 10^{-8} \times \frac{3}{10^{-4}} \Omega = 8.46 \times 10^{-4} \Omega \)

\[ = 2.82 \times 10^{-8} \times \frac{3}{10^{-4}} \Omega = 8.46 \times 10^{-4} \Omega \]

\[ = 0.846 \text{ milli-ohm} \]

CS of the rod = \( 10^{-4} \text{ m}^2 \).

Length of each aluminum rod = 3 m

Volume of each rod = \( 3 \times 10^{-4} \text{ m}^3 \)

Density of Aluminum = 2700 kg/m²

Weight of the block = \( 3 \times 10^{-3} \times 2700 \text{ kg} \)

\[ = 0.51 \text{ kg} \]

One could always embed 10000 ,3 m aluminum rods in a larger wooden block [or in several such blocks] so that the effective density is less than sea water. If the voltages are
added up by some suitable circuit arrangement we get thirty volt source. The internal resistance would be quite low if we consider the specific resistance for aluminum. And the cost of aluminum is less as compared to other metals like copper or silver. Cost of installation won’t be very large if one considers the ultimate gain of having a 30 volt source.

One could also think of a capacitor arrangement to collect the charge and store it for future use in particle accelerators, cyclotrons, and similar devices.

**AIRPLANES**
Airplanes have much higher speed than trains or other types of surface transport. The induced emf may be used for running gadgets or for storing charge for future use in particle accelerators.

**CONCLUSION**
The earth’s magnetic field may be used in tapping energy fruitfully from other sources to the best advantage of human beings. Its universal availability at no cost is an important factor to reckon with.

**ACKNOWLEDGMENT**
I owe my indebtedness to the authors whose works have kept alive in me an earnest desire and willingness to explore different areas of physics and physics related subjects. I take this occasion as an opportunity to thank Dr. Tanja Likso, Head of Department for Climate Monitoring at Meteorological and Hydrological Services, Zagreb, Croatia, for her financial contributions that have favored the publication. My gratitude goes to the EJER Editor for allowing concessions in the publication charges. I also thank all journals and their editors who have published my works previously —this has been a continuous source of motivation for me.

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[3] University of Texas, Magnetic Shielding, Online retrieved from: http://farside.ph.utexas.edu/teaching/jk1/lectures/node52.html
IMPACT OF GOVERNMENT SECTORIAL EXPENDITURE ON THE ECONOMIC GROWTH OF NIGERIA

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Abstract
Government expenditures remain the bedrock of Nigeria’s economic growth. Hence the need to critically evaluate the impact of expenditures’ some priority sectors on the economic growth. A Cochrane-Orcutt and ECM method was adopted to measure the long run effect of selected macroeconomic variables economic growth. The result shows that expenditure on telecommunication, Defence and security, Education and Health Sector have made positive impact on Nigeria’s economic growth. But transportation and agricultural expenditures have impacted negatively in the economic growth in Nigeria. The conclusion therefore is that the level of government expenditures for transportation and agricultural development is still not adequate to build the much need capacity in the sectors to impact positively to economic growth.

Keywords: Error correction model, Education, Cochrane-Orcutt, telecommunication, Economic Growth, Government expenditure, Health

Introduction
The relationship between government expenditure and economic growth has continued to generate series of controversies among scholars in economic literature. The nature of the impact is inclusive. Some authors believe that the impact of government expenditure on economic growth is negative or insignificant (Akpan 2005, Folster and Henrekson 1999, Laudau 1983), others believed that the impact is positive and significant (Korman and Brahmasrene, 2007, Donald and Shuaglin 1983). On the other hand some others believe that government expenditures on does not exert any impact on economic growth (Gupta et al; 2002). Economic growth is an essential ingredient for sustainable development. Economic growth brings about a better standard of living of the people and this most a time is brought about by improvement in availability of infrastructures, access to food, health, housing, education. These sectors are very important in stimulating the economic activities as well as addressing the nation’s human developmental and thereby bring about sustainable development. Government expenditure on health and education raise the productivity of labour and increases the growth of national output. Education is one of the important factors that determines the quality of labour and is considered an independent factor of production that is indispensable to achieve high and sustainable economic growth rate (Harshorn, 1985). Government expenditure on health could lead to economic growth in the sense that human capital is essential to growth. A healthy population is the wealth of a nation. Healthy labour force enhances productivity and promotes economic growth. Expenditure on infrastructure such as transportation and communication brings about reduction in production costs, which surely increase private sectors investment and profitability of firms and thereby fostering economic growth. Good health promotes productivity. Expenditure on defence is a necessity for safe guarding and protecting the nation from outside and internal aggressions, while agriculture expenditure promotes food production, a basic necessity for human existence. This paper investigates the long run effect of government expenditure on some key...
sectors on the economic growth of Nigeria. The objective being to see the extent to which the opinion that government expenditure does not lead to significant growth in the economy can be validated using Nigerian data.

**Literature Review**

It is of paramount important to critically examine the linkage between government expenditure and economic growth. In the Keynesian model, increase in government expenditure (on infrastructures) leads to higher economic growth. Contrary to this view, the neo-classical growth models argue that government fiscal policy does not have any effect on the growth of national output. However, it has been argued that government fiscal policy (intervention) helps to improve failure that might arise from the inefficiencies of the market. The studies of Barro and Sala (1992), Easterly W, Rebelo (1993) and Brons De Grel (1999) emphasized that government activity influences the direction of economic growth. Similarly, Dar and Amir (2002) pointed out that in the endogenous growth models, fiscal policy is very crucial in predicting future economic growth. Many researchers have attempted to examine the effect of government expenditure on economic growth. For instance, Laudau (1983) examined the effect of government (consumption) expenditure on economic growth for a sample of 96 countries, and discovered a negative effect. Komain and Brahmasrene (2007) examined the association between government expenditures and economic growth in Thailand, by employing the Granger causality test. The results revealed that government expenditures and economic growth are not co-integrated. Moreover, the results indicated a unidirectional relationship, as causality runs from government expenditures to growth. Lastly, the results illustrated a significant positive effect of government spending on economic growth. Olugbenga and Owoye (2007) investigated the relationships between government expenditure and economic growth for a group of 30 countries during the period 1970-2005. The regression results showed the existence of a long-run relationship between government expenditure and economic growth. In addition, the authors observed a unidirectional causality from government expenditure to growth for 16 out of the countries, thus supporting the Keynesian hypothesis. However, causality runs from economic growth to government expenditure in 10 out of the countries, confirming the Wagner’s law. Finally, the authors found the existence of feedback relationship between government expenditure and economic growth for a group of four countries.

Studying the relationship between government expenditure and economic growth for a sample of wealthy countries for 1970-95 periods, using various econometric approaches, the authors submitted that more meaningful (robust) results are generated, as econometric problems are addressed. In India, Ranjan and Sharma (2008) examined the effect of government development expenditure on economic growth during the period 1950-2007. They discovered a significant positive impact of government expenditure on economic growth. They also reported the existence of co integration among the variables. Al-Yousif (2000) indicated that government spending has a positive relationship with economic growth in Saudi Arabia. On his part, Ram (1986) studied the linkage between government expenditure and economic growth for a group of 115 countries during the period 1950-1980. The author used both cross section, time series data in his analysis, and confirmed a positive influence of government expenditure on economic growth. Cooray (2009) used an econometric model that takes government expenditure and quality of governance into consideration, in a cross-sectional study that includes 71 countries. The results
revealed that both the size and quality of the government are associated with economic growth. Abu and Abu (2003) employed multivariate co-integration and variance decomposition approach to examine the causal relationship between government expenditures and economic growth for Egypt, Israel, and Syria. In the bivariate framework, the authors observed a bi-directional (feedback) and long run negative relationships between government spending and economic growth. Moreover, the causality test within the trivariate framework (that include share of government, civilian expenditures in GDP, military burden, and economic growth) illustrated that military burden has a negative impact on economic growth in all the countries. Furthermore, civilian government expenditures have positive effect on economic growth for both Israel and Egypt. Li, Younis and Hsu (2008) examined the causal relationship between GDP and public expenditure for the US data during the period 1947-2002. The causality results revealed that total government expenditure causes growth of GDP. On the other hand, growth of GDP does not cause expansion of government expenditure. Moreover, the estimation results indicated that public expenditure raises the US economic growth. The authors concluded that, judging from the causality test Keynesian hypothesis exerts more influence than the Wagner’s law in US. Loizides and Vamvoukas (2005) employed the trivariate causality test to examine the relationship between government expenditure and economic growth, using data set on Greece, United Kingdom and Ireland. The authors found that government size granger causes economic growth in all the countries they studied. The finding was true for Ireland and the United Kingdom both in the long run and short run. The results also indicated that economic growth granger causes public expenditure for Greece and United Kingdom, when inflation is included. Gregoriou and Ghosh (2007) used the heterogeneous panel data to investigate the impact of government expenditure on economic growth. The authors employed the GMM technique, and discovered that countries with large government expenditure tend to experience higher growth, but the effect varies from one country to another. In Saudi Arabia, Abdullah (2000) analyzed the relationship between government expenditure and economic growth. The author reported that the size of government is very important in the performance of economy. He advised that government should increase its spending on infrastructure, social and economic activities. In addition, government should encourage and support the private sector to accelerate economic growth.

Donald and Shuanglin (1993) investigated the differential effects of various forms of expenditures on economic growth for a sample of 58 countries. Their findings indicated that government expenditures on education and defence have positive influence on economic growth, while expenditure on welfare has insignificant negative impact on economic growth. Niloy, Emranhul and Osborn (2003) used a disaggregated approach to investigate the impact of public expenditure on economic growth for 30 developing countries in 1970s and 1980s. The authors confirmed that government capital expenditure in GDP has a significant positive association with economic growth, but the share of government current expenditure in GDP was shown to be insignificant in explaining economic growth. At the sectoral level, government investment and expenditure on education are the only variables that had significant effect on economic growth, especially when budget constraint and omitted variables are included. Erkin (1988) examined the relationship between government expenditure and economic growth, by proposing a new framework for New Zealand. The empirical results showed that higher government expenditure does not
hurt consumption, but instead raises private investment that in turn accelerates economic growth.

Mitchell (2005) argued that the American government expenditure has grown too much in the last couple of years and has contributed to the negative growth. The author suggested that government should cut its spending, particularly on projects/programmes that generate least benefits or impose highest costs. In Sweden, Peter (2003) examined the effects of government expenditure on economic growth during 1960-2001 periods. The author emphasized that government spends too much and it might slowdown economic growth. Devarajan, Snoop and Zou (1996) studied the relationship between the composition of government expenditure and economic growth for a group of developing countries. The regression results illustrated that capital expenditure has a significant negative association with growth of real GDP per capita. However, the results showed that recurrent expenditure is positively related to real GDP per capita.

In Nigeria, many authors have also attempted to examine government expenditure-economic growth relationship. For example, Oyinlola (1993) examined the relationship between the Nigeria’s defence sector and economic development, and reported a positive impact of defence expenditure on economic growth. Fajingbesi and Odusola (1999) empirically investigated the relationship between government expenditure and economic growth in Nigeria. The econometric results indicated that real government capital expenditure has a significant positive influence on real output. However, the results showed that real government recurrent expenditure affects growth only by little. Also, study by Ogiogo (1995) revealed a long-term relationship between government expenditure and economic growth. Moreover, the author’s findings showed that recurrent expenditure exerts more influence than capital expenditure on growth. Akpan (2005) used a disaggregated approach to determine the components (that include capital, recurrent, administrative, economic service, social and community service, and transfers) of government expenditure that enhances growth, and those that do not. The author concluded that there was no significant association between most components of government expenditure and economic growth in Nigeria. This study is an improvement on other studies on economic growth-government expenditure relationship in Nigeria for two reasons. Firstly, it considers government expenditure on defence as an important variable that affects economic growth.

**Methodology**

The Cochrane-Orcutt Method was adopted in analyzing the relationship and Error Correction Model (ECM) for the endogenous variable (GDP) estimated by OLS based on co integrating Vector Autoregressive model. The reason and justification for choosing this method is based on the unique nature of the data and assumptions properties that is best linear unbiased estimate (BLUE).

**Model Specification**

To establish the impact of Government sectorial expenditure on economic growth, the model is specified as follows;

\[ GDP = \alpha_0 + \alpha_1 TCM + \alpha_2 DCI + \alpha_3 TE + \alpha_4 ES + \alpha_5 AP + \alpha_6 HS + \epsilon_i \]  

Where: \( GDP \) - Gross domestic product;
\[ \Delta GDP_t = \beta_1 + \beta_2 \sum_{i=1}^{n} GDP_{t-i} + \beta_3 \sum_{i=1}^{n} TCM_{t-i} + \beta_4 \sum_{i=1}^{n} DCI_{t-i} + \beta_5 \sum_{i=1}^{n} ES_{t-i} + \beta_6 \sum_{i=1}^{n} HS_{t-i} + \beta_8 \sum_{i=1}^{n} AP_{t-i} + \delta_1 \text{VAR}(1) + \varepsilon_t \]

**Empirical Results**

**Table 1:** Cochrane-Orcutt Method AR(2) converged after 5 iterations

<table>
<thead>
<tr>
<th>Regressor</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>T-Ratio[Prob]</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCM</td>
<td>8.9143</td>
<td>1.6021</td>
<td>5.5643[.000]</td>
</tr>
<tr>
<td>DCI</td>
<td>252.3377</td>
<td>43.0874</td>
<td>5.8564[.000]</td>
</tr>
<tr>
<td>AP</td>
<td>-68.6607</td>
<td>10.1077</td>
<td>-6.7929[.000]</td>
</tr>
<tr>
<td>TE</td>
<td>-20.9784</td>
<td>22.9674</td>
<td>-.9134[.369]</td>
</tr>
<tr>
<td>ES</td>
<td>184.2148</td>
<td>25.3926</td>
<td>7.2547[.000]</td>
</tr>
<tr>
<td>HS</td>
<td>41.2967</td>
<td>21.5889</td>
<td>1.9129[.066]</td>
</tr>
<tr>
<td>C</td>
<td>-63245.8</td>
<td>611785.1</td>
<td>-.10338[.918]</td>
</tr>
</tbody>
</table>

| R-Squared | .99009 | R-Bar-Squared | .98678 |
| S.E. of Regression | 772132.9 | F-stat. F(8, 24) | 299.5933[.000] |
| Mean of Dependent Variable | 4854185 | S.D. of Dependent Variable | 6625546 |
| Residual Sum of Squares | 1.43E+13 | Equation Log-likelihood | -488.9486 |
| Akaike Info. Criterion | -497.9486 | Schwarz Bayesian Criterion | -504.9476 |
| DW-statistic | 2.0940 | |

Source: Microfit 4.0 Result Output

From the above results, we infer that Agriculture, Defence, and Education expenditures are statistically significant at 5% level while Health and Transportation sector expenditures are not significant at 5% level. However the joint effect of all the exogenous variables is statistically significant at 5% level. On the average the independent variables can explain 98% of the Gross domestic Product (economic growth).

The analysis also reveals that there is no presence of first order serial autocorrelation. However, the regression estimate shows that agricultural and transportation sector expenditures are negatively related to economic growth in Nigeria while Telecommunication, Defence and security, Education and Health Sector are directly related to the GDP. It also means that their impact is positive, which implies that a unit increase
in expenditures in these sectors will bring about 89.1%, 25.2%, 18.4% and 41.2% correspondent increase in economic growth. But transportation and agricultural expenditures are impacting negatively on the economic growth of Nigeria with 68.9% and 20.9% decrease. Also the analysis shows that there is no presence of multicolinearity and model is fitted at 99.9%.

**Table 2:** ECM for variable GDP estimated by OLS based on cointegrating VAR (2)

Dependent variable is dGDP
33 observations used for estimation from 1979 to 2011

<table>
<thead>
<tr>
<th>Regressor</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>T-Ratio [Prob]</th>
</tr>
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<td>dGDP1</td>
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<td>.11299</td>
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<tr>
<td>dTCM1</td>
<td>1.8129</td>
<td>.94491</td>
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List of additional temporary variables created:
- \( dGDP = GDP-GDP(-1) \)
- \( dGDP1 = (GDP(-1)-GDP(-2)) \)
- \( dTCM1 = (TCM(-1)-TCM(-2)) \)
- \( dDCI1 = (DCI(-1)-DCI(-2)) \)
- \( dAP1 = (AP(-1)-AP(-2)) \)
- \( dTC1 = (TC(-1)-TC(-2)) \)
- \( dES1 = (ES(-1)-ES(-2)) \)
- \( dHS1 = (HS(-1)-HS(-2)) \)

\[ ecm1 = -.1283E-6*GDP -.1964E-6*TCM + .3301E-4*DCI -.8374E-5*AP + .3058E-4*TC - .1080E-3*ES + .1462E-3*HS; \]

\[ ecm2 = .1822E-7*GDP -.1888E-6*TCM + .4873E-5*DCI + .4344E-4*AP -.6878E-5*TC + .4703E-5*ES -.4906E-4*HS; \]

\[ ecm3 = -.3035E-7*GDP + .2216E-6*TCM + .6113E-4*DCI -.4286E-5*AP + .1599E-4*TC -.3797E-4*ES + .2288E-4*HS; \]

\[ ecm4 = -.3659E-6*GDP + .1155E-5*TCM -.2573E-4*DCI + .2685E-4*AP -.5300E-7*TC -.1341E-4*ES + .1433E-3*HS; \]

\[ ecm5 = .1053E-6*GDP -.4268E-6*TCM + .1197E-3*DCI -.5067E-4*AP -.1696E-4*TC -.2947E-6*ES -.4473E-4*HS; \]

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The empirical result estimation of VAR models which typically presented multivariate autoregressive equations in which the variable is regressed on its past values of the other variables in the system reveal that TCM, ES and AP are not statistically significant to GDP while HS, TC and DCI are statistically significant in the long run. The carry over effect are felt on the GDP exerted by the telecommunication, education and agricultural sectors in Nigeria.

Conclusion
We can conclude from the results that government expenditure should spend more on health sector, education, Telecommunication and security since they are significant and have positive impact on the economic growth of the nation. Spending on agriculture and transportation sector based on the empirical findings has negatively influence the economy but agricultural sector significantly impact on economic growth while the transportation sector does not impact significantly. The carry over effect of the telecommunication and agricultural sector by error correction model indicate that communication is significant and positively impacting on the economic growth but the agricultural impacted negatively and they are not statistically significant. Finally, allocation of public funds can now be checked and attention needs to be given to crucial sectors such as Health, security, Education and Agriculture. This is evidence that these sectors can bring about economic growth in the long run.

Recommendations
On the basis of the results obtained, the following recommendations are made:
1. Allocation of government spending needs to be based on the level of need and the versatility of individual sector of economy in Nigeria.
2. In as much as government is trying her best to see that education is better funded to promote economic growth in Nigeria, the impact of this funding is not felt as result of mismanagement and poor implementation. One of the reasons could be due to the fact that the money spent on education is not translated to economic gains in the domestic economy but has evidence of impacting on the economy through technical know-how and expertise. The gains are being transferred to other economies in the form of brain drain, which is a reduction in the level of GDP.
3. Higher government expenditure on transport and communication should be continually encouraged to create an enabling environment.
for businesses to strive through provision of basic infrastructure the will reduce cost of production.

References


[http://ssrn.com/abstract=998262]


Appendix 1

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<tr>
<th>YEAR</th>
<th>TCM</th>
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TCM - Total Communication expenditure. DCI - Defence expenditure, HS - Health expenditure, AP - Agriculture expenditure, ES - Education expenditure and TE - Transportation expenditure.
EFFECTIVENESS OF FISCAL POLICY IN ECONOMIC GROWTH:  
THE CASE OF ZIMBABWE.

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Great Zimbabwe University Box 1235, Masvingo, Zimbabwe  
Email: simonmunongo@gmail.com  

Abstract  
The study investigates the effectiveness of fiscal policy in spurring economic growth in Zimbabwe. Annual data covering 1980-2010 were utilized. Unit roots of the series were examined using the Augmented Dickey-Fuller technique after which the cointegration test was conducted using the Johansen Approach. Error-correction models were estimated to take care of short-run dynamics. The results indicate that government consumption expenditure and income tax positively impacted on economic growth during the period of coverage but capital expenditure by government has a negative effect and a long-run relationship exists between them as confirmed by the cointegration test.  
Keywords: Fiscal Policy and Cointegration  

Introduction  
Over the last decade in Zimbabwe, interventionist macroeconomic policies have been dominant. However the growth impact of fiscal policy still remains unclear to policy makers in the economy. Most of the studies on fiscal policy effectiveness paid more attention on developed economies and the inclusion of developing countries in case of cross-country studies were mainly to generate enough degrees of freedom in the course of statistical analysis (Aregbeyen, 2007).  

The intent of fiscal policy is essentially to stimulate economic and social development by pursuing a policy stance that ensures a sense of balance between taxation, expenditure and borrowing that is consistent with sustainable growth (Ocran 2009). The major question however has been has fiscal policy been used to achieve economic growth this in Zimbabwe in view of the fact that the extent to which fiscal policy affect economic growth continue to attract theoretical and empirical debate especially in developing countries. In recent years Zimbabwe has given fiscal policy the biggest role in economic stimulus given the multi- currency regime which has limited the role of monetary policy.  

The purpose of the paper is to examine the effectiveness of fiscal policy instruments in Zimbabwe on economic growth as the major target variable in the period 1980-2010. The fiscal policy variables considered in the study include
government gross fixed capital formation, tax expenditure and government consumption expenditure.

The rest of the paper is structured as follows. Section two provides a brief review of the evolution of fiscal policy stance over the study period in Zimbabwe. Previous studies of relevance to the study are discussed in Section three. The methodology adopted for the estimation and data issues are considered in Section four. In chapter five we show the study findings and conclusions.

**Fiscal policy in Zimbabwe**

The Zimbabwean government in the 1980s to 1990s widely used financial budgetary support from International Monetary Fund, World Bank and other commercial lenders. The over reliance on external borrowings to finance the national budget led to the accumulation of huge debt obligations, and in 1999, the country defaulted on its payment obligations and was labelled not credit worthy. This led to the withdrawal of financial assistance by international organisation. The Zimbabwean government then resorted to domestic borrowing, resulting in domestic debt stock progressively increasing over the years (MEFMI report 2001).

Lack of macroeconomic policy implementation credibility, inconsistent policy formulation and high inflation levels, the maturity structure of domestic debt became concentrated towards the shorter end of the market (RBZ report 2002)

The first fiscal policy announcement in Zimbabwe 1980 saw the government making a commitment of fiscal soundness, targeting a reduction in the rate of growth of net current expenditure to levels below 7% in real terms or 1% below that of Gross Domestic Product (GDP) per annum. This was meant to reduce the budget deficit and allows sustainable fiscal policy management in the 1980s.

In the early 1990s the government of Zimbabwe adopted the liberalisation policies under the Economic Structural Adjustment Programme (ESAP). The ESAP policy sought to achieve fiscal deficit reduction. Budget deficit as a proportion of GDP was to reduce by 2% annually from 10% to a target of 5% by 1995. In addition, Government targeted to reduce tax ratio from 35% of GDP to about 33% by the end of the reform period, while at the same time introducing cost recovery measures to boost non-tax revenues. Measures proposed to reduce budget deficit involved postponement of
capital expenditure, reduction of civil service wage bill from 16.5% of GDP to 12.9% of GDP, removal of subsidies (which stood at 3.7% of GDP) and enhancement of revenue collection efficiency by 1995. Tax reforms targeted dispersion of tax rates, strengthening of tax administration and reduction of tax burden on export and import sectors (RBZ report 2000).

A severe economic crisis beset the country towards the end of 1997, following the suspension of balance of payments support by the IMF. The suspension of balance of payment support led to 50% depreciation of the Zimbabwe dollar in November 1997. The economic turmoil continued in Zimbabwe till 2008 before the introduction of the multicurrency regime which have relatively stabilised the economy. During the period 1997-2008 and the post 2008 era the government of Zimbabwe heavily relied on fiscal policy to achieve economic stabilisation.

Therefore in this study we want to establish whether fiscal policy was successful in Zimbabwe in achieving economic growth and stabilisation in Zimbabwe.

**Literature review**

Since the days of Keynes the father of macroeconomic interventionist policies after the great depression the body of knowledge on the effectiveness of fiscal policy have grown over time. Now the major research question has been on the conditions that improve the effectiveness of fiscal policy intervention on economic growth and recent years have seen a revival of the debate about the role of fiscal policy in stimulating economic activity.

The theoretical underpinning for this study is basically endogenous growth theory, which advocates the stimulation of level and growth rate of per capita output through within the model using policies like fiscal (e.g. government spending). More specifically, models of the growth effects of fiscal policy are usually built on the basis of Barro (1990) framework and subsequently Barro and Sala-i-Martin (1992, 1995). This study draws inspiration from these studies by employing a Cobb-Douglas production function in which government expenditure enters as input.

For the Keynesians, fiscal policy refers to the manipulation of taxes and public spending to influence aggregate demand. In Africa Sikiru et al (2010) investigated the impact of fiscal policy on economic growth in Nigeria. Annual data covering 1977 – 2009 were utilized. Unit roots of the series were examined using the
Augmented Dickey-Fuller technique after which the cointegration test was conducted using the Engle-Granger Approach. Error-correction models were estimated to take care of short-run dynamics. Over all, the results indicate that productive expenditure positively impacted on economic growth during the period of coverage and a long-run relationship exists between them as confirmed by the cointegration test. The paper recommends improvement in government expenditure on health, education and economic services, as components of productive expenditure, to boost economic growth.

Mansouri (2008) studied the relationship between fiscal policy and economic growth in Egypt, Morocco and Tunisia. The spans of data for each country are: 1970-2002 for Morocco, 1972-2002 for Tunisia and 1975-2002 for Egypt. The empirical results showed that 1 percent increase in public spending raised the real GDP by 1.26 percent in Morocco, 1.15 percent in Tunisia and 0.56 percent in Egypt. The results also indicated existence of long-run relationships for all the three countries.

Though there is vast literature on effectiveness of fiscal policy in developed countries evidence from developing countries is still limited thus we seek to extent the debate to Zimbabwe.

Methodology

The models we are going to use follow the leads of Sikiru et al (2010) in a similar study on Nigeria. The model specification is:

\[\ln GDP_t = \beta_0 + \beta_1 \ln GCE_t + \beta_2 \ln DYT_t + \beta_3 GKE_t + \varepsilon_t\]

Where \(\ln GDP_t\) is Log of Real Gross Domestic Product, \(\ln GCE_t\) is the Log of Government Consumption Expenditure. In \(GKE_t\) is the government consumption expenditure and \(\ln DYT_t\) is the Direct Income Tax. \(\varepsilon_t\) is a white noise error term.

Econometric techniques to be employed include unit root test and cointegration tests. Many economic and financial time series exhibit trending behaviour or non-stationary in the mean. Leading examples are asset prices, exchange rates and the levels of macroeconomic aggregates like real GDP. Unit root tests can be used to determine if trending data should be first differenced or regressed on deterministic functions of time to render the data stationary. Moreover, economic and finance theory often suggests the existence of long-run equilibrium relationships among non-stationary time series variables. Thus, we intend to adopt
Augmented Dickey-Fuller (ADF) Technique to verify the unit root property of the series. If these variables are I(1), then cointegration techniques can be used to model these long-run relations. Hence, pre-testing for unit roots is often a first step in the cointegration modelling discussed. Thus to avoid spurious regression we are going to test for cointegration using the Angle-Granger method.

Results and conclusions

Table 1 Unit Root Results

<table>
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<th>Variable</th>
<th>ADF statistic</th>
<th>P-value</th>
<th>Order of integration</th>
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<tr>
<td>Log GDP</td>
<td>-3.066</td>
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<td>I(1)</td>
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<td>Log GKE</td>
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<td>I(1)</td>
</tr>
<tr>
<td>Log GVTEXP</td>
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<td>I(1)</td>
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<td>0.002</td>
<td>I(1)</td>
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Note: all variables are significant at 5%

Source: Author’s computer calculations.

Table 1 above shows that the variables are stationary after first difference hence are integrated of order 1

Table 2 Johansen Cointegration Results

<table>
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<tr>
<th>Eigenvalue</th>
<th>Likelihood Ratio</th>
<th>5% critical value</th>
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<td>1.399097</td>
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"(**)" denote rejection of hypothesis at 5% (1%) significance level

Source: Author’s computer calculations.

Table 2 above shows the cointegration regression results. Using the Johansen procedure we find out that there is on cointegrating equation shown below:

\[ Log(GDP) = -9.359 - 0.214 \log(GKE) + 0.159 \log(GVTEXP) + 0.066 \log(TAX) \]
The equation shows that government capital expenditure is negatively related to Gross Domestic Product which shows inefficiencies in government investments in Zimbabwe. Government expenditure positively affects GDP thus fiscal stimulus increase growth. Also taxation positively affects GDP. The results show that a one percent increase in government consumption expenditure increases economic growth by 15.9 percent.

**Table 3 Error Correction Model Estimated Using VAR**

**Dependent Variable Log GDP**

<table>
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<th>Standard error</th>
<th>t-ratio</th>
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<td>0.12256</td>
<td>-1.9567</td>
</tr>
<tr>
<td>Log GKE</td>
<td>-5.18***</td>
<td>0.20139</td>
<td>-2.57183</td>
</tr>
<tr>
<td>Log GVTEXP</td>
<td>0.608**</td>
<td>0.38165</td>
<td>1.59188</td>
</tr>
<tr>
<td>Log TAX</td>
<td>0.05**</td>
<td>0.19283</td>
<td>0.25789</td>
</tr>
<tr>
<td>ECT</td>
<td>0.179***</td>
<td>0.0728</td>
<td>2.46673</td>
</tr>
</tbody>
</table>

**(***) shows 5%(1%) level of significance

S.D dependent variable 0.1304
Adjusted R-squared 0.896
Log-likelihood 24.13

Table 3 shows error correction which is the short run speed of adjustment an error correction value of 0.179 shows a fast short-run speed of adjustment back to the long run equilibrium in the variables.

**References**


8. Reserve Bank of Zimbabwe, “Annual reports, Quarterly Economic and Statistical Review”, various issues