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From the Editor

Women and the future



Painting by Ebtisam Elghblawi

We have long heard from the NGOs that educating girls is the key to raising the economic parameters and health of societies and countries. It would seem logical that if uneducated girls are seen to be an economic burden on families, that by educating and empowering them they will be an economic advantage. Educating girls may even equate to the improved health and well being of the planet itself. We need a balance between progress and preservation.

Several writers have recently equated the destruction of the planet and the current wars and unrest as being symptomatic of a global society out of gender balance. Not only are there 160 million girls/women 'missing from the planet' at this point of time there are still places where the education and empowerment of girls and women is seen as pointless and uneconomical.

A balanced perspective is vital to all systems be they natural, societal or even global.

Woman still tend to be the carers and nurturers in the family situation whether they are working or not; it is the nature of things. They also tend to nurture the general environment and other creatures of the planet, be they plant or animal.

With an earth torn to shreds by war and careless exploitation global society is suffering terribly on many fronts, particularly the reduced lives of women, children and men.

All the planetary systems tell us we are not in a healthy state. Finding the balance seems to be the immediate imperative.

This leads me to our first two articles, written by women from the MESA region. Dr Elghblawi has written on women's empowerment and efforts in the region to raise the status of women and girls, to enable them to bring their knowledge and talents to the betterment of their societies.

The second is from two young women in Pakistan, writing sensibly and practically on ways we can heal our environment. It will take an active effort by all countries to achieve our lost balance and health. This sort of work is vital as we need to actively restore and heal our planet and it should give us all hope that the young people of all genders are focusing on this urgent need.

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I am a (wo)man, but.. Mindful Solace; from empowerment to development

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'Educating girls is one of the most powerful tools for women's empowerment, and behind every successful woman is herself'

Introduction

There has been a Mennonite-economic-development-associates (MEDA) sponsored event accredited by the BC (Springboard trainer) under the Libyan women economic empowerment programme (LWEE) for Libyan women, which held the leadership training in Tripoli, October 2015, to explore the self potential and capability, self worth, and self development of Libyan women to enable constructive applicability to make effective efficient plans that suit her personally to take decisions and prosper. Its motto was 'you are a star, and you must go and shine'. It has tackled certain points in order to enable women self discovery of their potential and weakness to work on and self strengths to evolve.

Springboard is a leading personal and work development programme for both individuals and organisations. Catering to women at any age or stage in life and from all backgrounds, whether working or not working, it enables women to take more control over their lives by identifying the clear, practical and realistic steps that they need to take and by developing the skills and confidence to take them. Springboard is accredited by the British council.

It has involved as well some live examples of strong Libyan women who shared their stories, how they arrived at success

and the challenges they faced. They also shared their motivation, personal drive, and the knowledge and skills they acquired to evolve and give a meaning to their life.

This course has been running around the Arab world, in countries like Syria, Oman, Qatar and Saudi Arabia among other Arab countries including Libya.

I will try to highlight the main points in small themes I am thinking to help women combat obstacles in their lives, in order to make a denotation to their existence and self worth.

Defining empowerment

The term empowerment has different contexts of different application, arguably over-used term. It emphasises the idea of women as active agents in, rather than passive recipients of, development strategies. Examining the existing literature revealed its application for instance, in education, social work, psychology, feminism, and development. Empowerment takes into account the power of an idea (Oxaal and Baden, 1997). Drawing attention to the fact that the lives of poor and marginalised people, and the communities in which they live are shaped by political processes involving power, inequality and oppression (Oxaal and Baden, 1997).

Research in psychology affirms the definition of the empowerment conception as a healthy individual, who is self-contained, independent, and self-reliant, capable of asserting and influencing the surrounding environment, and operates according to principles of justice and fairness (Riger 1993).

Empowerment as well encompasses the social influence, political power, and legal rights. It is about one's belief in competency, efficacy and conformity to become involved in the social and political environment to apply control. In short, it's personal power with behaviour to control (Riger 1993).

Don't be afraid to be yourself

It is good to look professional, but it is even better to look like a real human being. That's where we start to connect and respond to the surroundings. So it is vital to express and identify your goals and yourself well and to tell what you want, like, and where to go and what you dislike and does not want.

Don't feel embarrassed

It is vital to engage with the audience, to give and take feedback to learn and innovate. Try to work on those aspects you feel weak in and you can seek support and help from similar women to be a motive to move forward and do well confidently.

The main five you should avoid as much as you can are the following. Don't compare yourself with others and aim always to strive for perfection and make your own best efforts to achieve your dreams and ambitions and don't blame others and take responsibility for your own actions always, and don't dwell in the past and don't critique others and avoid stating I am the only one as self-ego destroys in many occasions. Be humble and kind and caring even if the other party doesn't appreciate and value that kindness. Be yourself always.

Recognition for yourself- a woman has a name

Let people know about you and what are you good at to increase recognition and value. Women should overcome their phobias, build their confidence, and manage their stress by support from other influential empowered and role model women.

Women's educational attainment, employment status, and household economic status are the most important proxy measures of women's empowerment and recognition. Moreover, economic women's empowerment enables and strengthens her rights to access to economic reserves like jobs, fiscal services, property and land, assets, enhancing and scaling up her own skills and gaining a piece of knowledge needed for the market, by which she can have a control on her life and be a contributor to her society.

Shaping your life

People should participate in the decision and process to shape their life the way they wish it to be. Women should voice their needs and interests through a top-down approach. It is by in-

vesting in women's capabilities and capacities to exercise their own choices and wishes which would ultimately empower and recognize her as a valuable asset within her society which would contribute to its economical development. Having said that, this would ultimately create and shape a transformation in society.

Women's empowerment is also about liberating men from the false perception, values and ideology of women's oppression, coercion or discrimination and denial (Oxaal and Baden, 1997). In fact, empowerment has several different and inter-related aspects.

Use and abuse

Women in the third world had been suffering from use and abuse by their counterpart, men. In fact many men misinterpret even the Quran verses and religion and exerted their power on women to oppress her. Women should resist misuse and abuse and should access control over resources and bargain power (Oxaal and Baden, 1997).

It is essential to call for promoting and demanding a vision change within a society to create a healthy balanced community. This cannot be achieved unless all parties and the context of hierarchy such as political mobilisation, legal changes, consciousness raising and popular education is involved and integrated to bring up an effective positive change. In fact it involves multidisciplinary approaches and requisites, namely resources (finance, knowledge, and technology), acquisition of skills, skills training and leadership formation democratic processes in participation and taking into account conflicting interests to reach consensus, dialogue, partaking in policy and decision making and approaches for conflict resolution and control over resources. All of which would shape up the growing autonomy of women (Oxaal and Baden, 1997).

Give women microcredit and microenterprise

The microfinance and microcredits -providing grants to financial assistance to women through the establishment of special credit schemes is often considered to be a strong tool to encourage empowerment (Oxaal and Baden, 1997). It is as an individualistic definition of empowerment, where women build up their own resources. It can alleviate livelihoods, expand choices, and offer start-up funds for creative venture. Furthermore, providing additional services, like training, working through, is awareness-raising - and has been shown to boost women's direct control over resources.

Women in workplace and decision-making autonomy

Women usually lag behind and let the man do the whole work. Women's attitude towards autonomy is sometimes lacking due to certain factors such as the social norms and the cultural background.

The existing norms in many places dictate that girls and women have the main responsibility for the care of children, the elderly and the sick, as well as for running the household, which would undermine their chances for any opportunity for self

development and independence in order to secure incomes, and better working conditions (women's economic empowerment, 2012).

According to Elhuni 2012, in the developing countries women's participation rate in the workforce was reported to be 21.6 % compared to 48.2% in developed countries, and in Libyan. Women's numbers constitute nearly half (49.3%) of the whole community. In Libya for example, many think that women's main role should focus on house making and care giving and the trend consequently for women is to prioritize household amenities and family care and acknowledged only men for workforce. Thus the socio-cultural factors disempowering and prohibiting women especially if she comes from a conservative society which would impede women to go against the tide for her ambitions.

Moreover, women often face discrimination and persistent gender inequalities. Women usually in developing countries are treated differently than their brothers, and are lagging behind men in many domains. It has been found, that for each missing woman, there are many more women who fail to get an education, a job, or a political responsibility that they would have obtained if they had been men (Duflo, 2012).

It has been observed that fewer women are found in chief executive and economic areas. However women are found in vast numbers in lower-level positions, like public administration, political parties, trade unions and business (Oxaal and Baden, 1997). Another fact is, women tending not to speak in meetings, and many instances lacking knowledge about the problems faced by women in their constituencies which would impact negatively.

The status of women in any society is also one important determinant for any progress and development. There is a need to incorporate women's empowerment as part of self development and self confidence.

Women's empowerment should fulfill certain criteria like education, economic independence, well being, to have a say about themselves, choices, aspirations, and preferences as a human being and not wait for others to decide for them.

In many instances, women's lower social status challenges their decision-making autonomy on simple things, like the desired family size (reproductive rights and health), sexual behavior, family planning services, health care-seeking behavior and the amounts and types of food fed to children and themselves and amount of time to spend on child-rearing women empowerment and gender equality.

Therefore, the main as well as the direct measures of women's decision-making autonomy and proxy indicators are education, employment or household wealth status.

In Libya, male dominance remains more pronounced in the society, public and private spheres.

Understanding the relative importance of the various determinants of any society women empowering is the key factor to designing evidence-based effective programs to address women's empowerment (Duflo, 2012).

The women state vary by place of region, type of place of residence, household size, partner's educational attainment and employment status. Rural women, women with high household size, women whose partners were relatively less educated or with no education and those whose partners are unemployed.

Thus women should have a say about their life, ambitions, the simple measures and make a decision that they feel competent for and willing to have and they should say no to anything that they dislike without fear and oppression, and should make well informed decisions about their work, career, expenditures and family, to have access to secure jobs, earnings and social benefits.

Influential women - women walking the world

A list of famous influential women who changed the world. Including women's rights activists, female poets, musicians, politicians, humanitarians are the following:

Example of top 25 leading ladies: source s include (<http://content.time.com/time/specials/packages/complete/0,29569,2029774,00.html>)

- Jane Addams (1860-1935)
- Corazon Aquino (1933-2009)
- Rachel Carson (1907-1964)
- Coco Chanel (1883-1971)
- Julia Child (1912-2004)
- Hillary Clinton (1947-Present)
- Marie Curie (1867-1934)
- Aretha Franklin (1942-Present)
- Indira Gandhi (1917-1984)
- Estée Lauder (1908-2004)
- Margaret Mead (1901-1978)
- Golda Meir (1898-1978)
- Angela Merkel (1954-Present)
- Sandra Day O'Connor (1930-Present)
- Rosa Parks (1913-2005)
- Jiang Qing (1914-1991)
- Eleanor Roosevelt (1884-1962)
- Margaret Sanger (1879-1966)
- Gloria Steinem (1934-Present)
- Martha Stewart (1941-Present)
- Mother Teresa (1910-1997)
- Margaret Thatcher (1925-Present)
- Virginia Woolf (1882-1941)
- Tawakkul Karman
- Malala Yousafzai
- Nawal El Saadawi
- Shirin Ebadi
- Benazir Bhutto

Eight Millennium Development Goals (MDGs)

It mainly takes it as given that the equality between women and men is a desirable goal in itself, and policies should aim to achieve that goal. Moreover women's mental health is crucial to achieve MDGs number 5 if women are not oppressed by men, which would impact their development, and functionality. Therefore to empower women, this point should be tackled as well in order for women to develop and prosper.

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria, and other diseases
7. Ensure environmental sustainability
8. Develop a Global Partnership for Development

By empowering women, we promote equity, but also because they are necessary to accelerate development (empowerment-development relationship).

Policy action is still necessary to achieve equality between genders.

Young women who marry or have children typically drop out of school or college and are less likely to work and to be self independent or have a say in their life control. They tend to marry partners who are older than them to have a luminous life. All of these lead to a reduction in women's autonomy and capacities. It is a common fact to some extent in Libya as main women focus is just to get married at younger ages, and to be a mother. This could be explained due to the deeply rooted thought about marriage and stability for women.

Giving Women Hope by Expanding Their Opportunities

Parents generally speaking in the Arab world usually have lower aspirations for their daughters than for their sons, and female teenagers themselves have lower aspirations.

Many parents believed that educating girls is not necessary, since girls are only expected to marry and take care of their households which would create gender stereotyping and discrimination and low self esteem.

Thus women should be thought and encouraged to have a role in their society and identity for their valuable existence. The community and the society won't be functioning without women. Thus education is a must for women to learn about their worth and functionality.

Women and Property Rights

Many women are ignorant even for their simple and legal rights. Lack of legal knowledge and weak implementation ha-

bitually constrain the ability of women to exercise their rights (women's economic empowerment, 2012).

In many developing countries, women are very poorly protected in the case of family death, divorce, and stand to lose assets and the custody of their children. Even in some countries women are unable to obtain business loans without their husband's or father's co-signature (women's economic empowerment, 2012). In legal rights: women in many countries still lack independent rights to own land, manage property, conduct business, or even travel without their husband's consent (Duflo, 2012).

Land is not only a productive asset, it is also important as collateral for securing finance and credit (women's economic empowerment, 2012). Women retain ownership of their property rights within the marriage over a portion of the assets they bring into the household will be empowered and in control. They could even retain separate property rights over productive assets; particularly land (Duflo, 2012). Some women are not ready to surrender control to their husbands and its right without doubt. It has been observed in certain countries that women retain the property in control (Figure 1).

The life expectancy of women has increased by 20-25 years in developing countries over the past fifty years (World Bank 2011), while male life expectancy did not improve as much. Therefore, all measures and readings are in favour of women to be empowered (Duflo, 2012).

Women reshaping the actual world

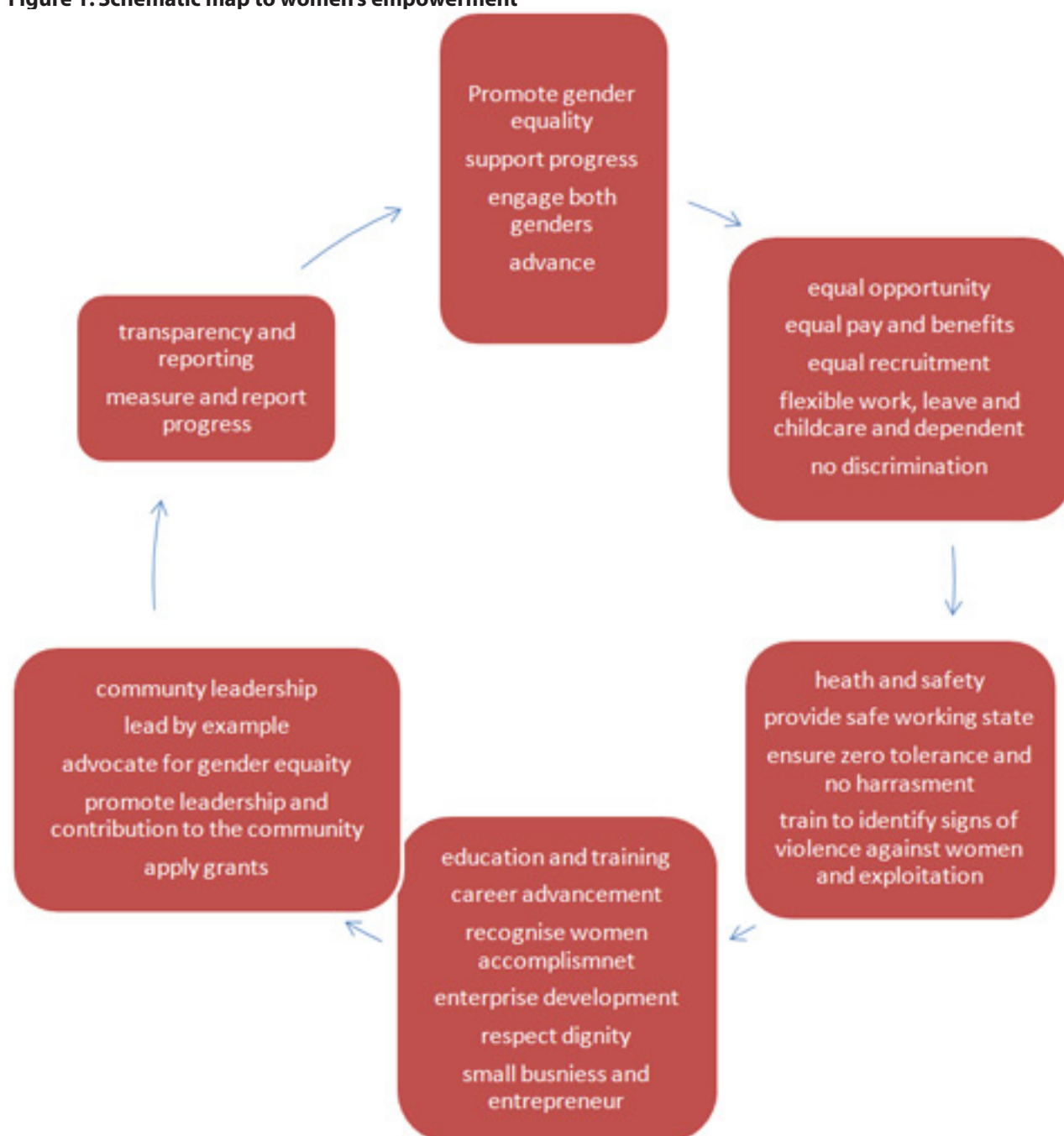
Recent research suggests that economical growth can be flourishing by reducing poverty and increasing opportunity, which can have a positive impact on gender equality (Duflo, 2012).

In the labor market, even in developed countries, women who are equally qualified continue to earn less than men at all levels of qualification. Legal rights, particularly property rights, of women remain different from those of men in many countries, even as economies grow. The disparity in earnings at all levels of qualification even in richer countries illustrates the persisting injustice against women.

Women are less likely to hold a position of power in some developing countries, where males dominate. If women are politically weak, they may find it difficult to influence actual decisions (Duflo, 2012). In other words, a world run by women would look decidedly different if women were equipped well with the sense of that. Women leaders do seem to better represent the needs of women (Duflo, 2012).

Broad "empowerment" of women could change outcomes, by for instance simple things, such as by improving their understanding of how to raise children, use contraception, and manage their homes. Thus women strongly can reshape the world to the best possible thriving environment (Figure 1).

Figure 1: Schematic map to women's empowerment



Women and leadership

Eventually, in any societies where there is a male preference, there is persisting bias against women. The widespread perception that women are not competent leaders is probably the strongest barrier to greater participation of women in policy making. Furthermore, women leaders are evaluated more negatively than male leaders even sometimes by her educated male peers.

Leadership role is always perceived typically a male role, and they tend to give lower performance marks to female leaders than to male leaders according to Duflo's, 2012 observation. They in fact are generally not feeling positive toward females in politics. Even a test was conducted and shown that there is a strong association between women and the domestic sphere. Another factor, it seems that there is a significant cultural barrier to recognizing women as competent policy makers.

The persistence of gender inequality is most starkly brought home in the phenomenon of "missing women", and thus hinders development (Duflo, 2012).

In the United Nation's 2005 report on the Millennium Development Goals (MDG), Kofi Annan, the Secretary General of the United Nations, writes: "The full participation of women to all levels of decision-making is a basic human right." Also he disputes that gender fairness is in fact a "prerequisite" to achieving the other MDGs.

It has been found that when the husband is progressive enough to allow his wife to seek employment, then this same progressive attitude may make him treat his children better (Duflo, 2012). Likewise, children might do better in countries or regions where women's political participation is greater because these places are otherwise more favorable environments. Thus, the first dimension of empowerment of women is education.

Conclusion and recommendations

Women must empower themselves. Achieving women's empowerment is not a "quick fix" (technical fix) issue. In fact, it is a long-term commitment from all development actors and sectors. Women's empowerment is about rights and equitable societies.

Yet, despite some progress in certain continents, women still continue to lag behind, confront discrimination, marginalization and exclusion. Doors for opportunities should be open to all equally without oppression, violence and discrimination. Thus women should raise their voice for their valuable existence.

Measures to be taken are to increase the quality of women in political participation by awareness raising, training programmes for female candidates. Also through effective leadership training to enable women to develop the necessary skills and to negotiate with development agencies and promote the formation of independent organizations, all of which can help women to examine the implementation of laws, to recognize allies, share knowledge, and explore new tools of promoting political partaking.

Women's economic participation and empowerment are fundamental to strengthening women's rights and enabling women to have control over their lives and exert influence in society. Women often face discrimination and persistent gender inequalities.

Women usually invest a higher proportion of their earnings in their families and communities than men. Most women have less personal autonomy, fewer resources at their disposal, and limited influence over the decision-making processes that shape their societies and their own lives. One motivation for women's empowerment is basic fairness and decency.

One fundamental investment is educating girls, which constitutes one of the core and the most powerful tools for women's empowerment. Education provides women with the right knowledge, skills and self-confidence they need to seek out economic opportunities.

Formal education system and school enrollment has become nearly universal for both boys and girls in Libya. However the propaganda of private schooling in the last few years and the high expenses would refrain from education for some families who cannot afford it. Thus encouraging free access to the primary and secondary schooling and removing high fees plus providing financial incentives for girls to attend school have proven to be effective for increasing girls' enrolment and completion rates. Also advising about postponing marriage at under ages and after finishing basic education at least will help in increasing women's chances of finishing education which will be their power in facing life and the community.

Another problem is gender stereotyping which is still exists even in some westernized countries and to combat it, it needs to treat both genders at youngster equally at home and school.

To conclude, women's empowerment and economic development are closely related; in fact empowerment is a multi-dimensional event, with women relatively empowered in some spheres but not in others. Further research might play a major role in identifying whether community or individual characteristics are better predictors of women's empowerment in their surroundings. Development alone cannot play a major role in driving down inequality between men and women; in the other direction, empowering women may benefit development, which in return will drive them to influence and contribute to the positive transformation of their societies and increase the appreciation of their role in development of the societies.

Strengthening the role of women should capture the momentum to make positive changes. In fact women participation in determining their future and aspiration is a non-negotiable right. Thus the pathways to women's autonomy and empowerment are education the foremost. Those shared values should be kept together to encourage each other.

The main protective factors for women to empower and boost their confidence, is education, permanent job, and having a kind, trustworthy intimate partner.

So never accept the definition of your life and ambitions from others, because it is your life. Define it yourself the way you like as no one knows about you and your potential better than yourself. You are the writer, director, producer, creator and publisher of your own life, so make it a rewarding experience.

To conclude, women need to make a positive impact and difference in their life and that of others. In short, when women and girls are empowered, the world is a more prosperous, healthy and peaceful place for everyone. It is about changing the vision how women and power are perceived.

References

- Duflo E 2012. Women Empowerment and Economic Development. *Journal of Economic Literature* 2012, 50(4), 1051-1079
- Oxaal Z and Baden S, 1997. Gender and empowerment: definitions, approaches and implications for policy. Briefing prepared for the Swedish International Development Cooperation Agency (Sida). © Institute of Development Studies, Brighton. ISBN: 1 85864 175 6
- Elhuni E, 2012. The impact of the 2011 Libyan revolution on the job aspirations of young urban Libyan women. Masters in Human Development and Food Security.
- <http://content.time.com/time/specials/packages/completelist/0,29569,2029774,00.html>
- United Nation's 2005 report on the Millennium Development Goals (MDG),
- The OECD DAC network on gender equality (gendernet). Women's economic empowerment, promoting pro-poor growth: the role of empowerment - © oecd 2012.
- Riger T. 1993. What's wrong with empowerment. *American journal of community psychology*. Vol 21, No 3.

Biosurfactants and their Potential Applications for Microbes and Mankind: An Overview

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Abstract

Biosurfactants are surface-active compounds synthesized by a wide array of microorganisms. They are “amphipathic” molecules having both hydrophobic and hydrophilic domains. These are capable of lowering the surface tension and the interfacial tension of the growth medium. Biosurfactants have different chemical structures; lipopeptides, glycolipids, neutral lipids and fatty acids. They are non-toxic biomolecules that are biodegradable. Biosurfactants also exhibit strong emulsification of hydrophobic compounds and form stable emulsions. The low water solubility of these hydrophobic compounds confines their accessibility to microorganisms, which is a potential problem for bioremediation of contaminated sites. Microbially produced surfactants enhance the bioavailability of these hydrophobic compounds for bioremediation. Therefore, biosurfactant-enhanced solubility of pollutants has potential applications in bioremediation. Not only are the biosurfactants useful in a variety of industrial processes, they are also of vital importance to the microbes in adhesion, emulsification, bioavailability, desorption and defence strategy.

Key words: Biosurfactant, Biodegradable, Bioremediation, Bioavailability, Surface tension, Surfactants, Specificity, Emulsification

Introduction

Surfactants are low molecular weight chemicals that change the properties of water and other fluids. They are amphiphilic compounds that reduce the surface tension and help formation of emulsions between different liquids (an emulsion is a homogeneous mixture of two liquids) [1] [2]. A good surfactant can lower surface tension (ST) of water from 72 to 35 mN/m and the interfacial tension (IT) water/hexadecane from 40 to 1 mN/m [3]. When surfactants wet a surface, the unwanted substance can be removed. Surfactants are a very important chemical compound which is used in a variety of product with very high volume because of its domestic and industrial applications [2] [4] [5] [6]. Despite all the advantages of surfactants its release into the environment can be a potential danger itself to the environment, being non-degradable and toxic in nature [7]. Currently, almost all the synthetic surfactants being produced are chemically derived from petroleum [8].

Properties of Biosurfactants

Microbial surface active agents (biosurfactants) are important biotechnological products, with a wide range of applications in many industries [9]. Their properties of interest are:

- (i) changing surface active phenomena, such as lowering of surface and interfacial tensions;
- (ii) wetting and penetrating actions;
- (iii) spreading;
- (iv) hydrophylicity and hydrophobicity actions;
- (v) microbial growth enhancement;
- (vi) metal sequestration; and
- (vii) Anti-microbial action.

Advantages of Biosurfactants

There are many advantages of biosurfactants if compared to their chemically synthesized counterparts [9]. Some of these are:

- *Biodegradability*;
- *Generally low toxicity*;
- *Biocompatibility and Digestibility*: It allows their application in cosmetics, pharmaceuticals and as functional food additives;
- *Availability of raw materials*: Biosurfactants can be produced from cheap raw materials which are available in large quantities; the carbon source may come from hydrocarbons, carbohydrates and/or lipids, which may be used separately or in combination with each other;
- *Acceptable Production Economics*: Depending upon application, biosurfactants can also be produced from industrial wastes and by-products and this is of particular interest for bulk production (e.g. for use in petroleum-related technologies);
- *Use in environmental control*: Biosurfactants can be efficiently used in handling industrial emulsions, control of oil spills, biodegradation and detoxification of industrial effluents and in bioremediation of contaminated soil;
- *Specificity*: Biosurfactants are complex organic molecules with specific functional groups and are often specific in their action (this would be of particular interest in detoxification of specific pollutants): de-emulsification of industrial emulsions, specific cosmetic, pharmaceutical, and food applications;
- *Effectiveness*: at extreme temperatures, pH and salinity. Most of the biosurfactants are high molecular-weight lipid complexes, which are normally produced under aerobic conditions. This is achievable in their ex situ production in aerated bioreactors.

Natural Surfactants vs. Artificial Surfactants

Natural surfactants are getting preference over the synthetic chemical surfactants with increasing awareness about the environment and growing significance of a sustainable society in harmony with the universal environment. Among the natural surfactants, biosurfactants are the most promising. Bearing in mind the important properties and a wide range of applications of biosurfactants, during recent years much more attention has been given to understand the biochemical properties and physiological role of different classes of biosurfactant on the producing microorganism as well as commercial application of biosurfactants. There are many useful biosurfactants consisting of anionic, cationic, neutral and amphoteric ranging from small fatty acids to large polymers. This wide range results in a broad spectrum of potential applications.

Classification of Biosurfactants:

Biosurfactants are classified into two categories by Rosenberg and Ron (1999) on the basis of their chemical structure and microbial origin [10]. These categories are:

1. High-mass surfactants including i) polymeric and ii) particulate surfactants;
2. Low-mass surfactants including i) glycolipids, ii) lipopeptides and iii) phospholipids,

High-Mass Surfactants:

i. Polymeric Biosurfactants

Polymeric biosurfactants are high molecular weight biopolymers, which exhibit properties like high viscosity, tensile strength and resistance to shear. The following are the examples of different classes of polymeric biosurfactants. The best studied polymeric biosurfactants are compiled from several well-known components such as emulsan, liposan, manno-protein, and other polysaccharide-protein complexes [2].

ii. Particulate Biosurfactants

Extracellular membrane vesicles partition hydrocarbons to form a microemulsion which plays an important role in alkane uptake by microbial cells [11] [12]. Vesicles of *Acinetobacter* sp. with a diameter of 20 to 50 nm and a buoyant density of 1.158 g/cm³ are composed of protein, phospholipid and lipopolysaccharide [13].

Low Mass Surfactants:

i. Glycolipids

These are the most common carbohydrate in combination with long chain aliphatic acid of hydroxyl aliphatic acid [14]. The glycolipid can be categorised as:

- *Rhamnolipids* (commonly produced by *Pseudomonas aeruginosa*);
- *Trehalolipids* (Trehalose lipids were subsequently isolated from *Rhodococcus erythropolis* by Ristau and Wagner (1983) [15]. They are commonly associated with *Actinomycetes*, *Mycobacterium*, *Nocardia* and *Corynebacterium*) [14];
- *Sophorolipids* (produced by different strains of Yeast and *Torulopsis bombicola* and *T. petrophilum*). Although sophorolipids can lower surface and interfacial tension, they are not effective emulsifying agents [16].

ii. Lipopeptides and Lipoprotein:

These consist of a large number of cyclic lipopeptides linked to a fatty acid including Dcapeptide antibiotics (gramicidins) and lipopeptide antibiotics (polymyxins) which possess remarkable surface-active properties [14]. Several bacteria are known to produce these antibiotic-like molecules particularly the cyclic lipopeptide surfactin. It is produced by *Bacillus subtilis* and is one of the most powerful and active biosurfactants [17]. It also possesses anti-bacterial, antiviral, anti-fungal, anti-mycoplasma and hemolytic activities.

iii. Fatty Acids, Phospholipids, and Neutral Lipids

Large quantities of fatty acid and phospholipid surfactants are produced by several bacteria and yeast during growth on n-alkanes [2] [18] [19] [20] [21].

Potential applications of Biosurfactants

Biosurfactants are one of the most important biotechnology products for industrial and medical applications due to their precise modes of action, low toxicity, relative ease of preparation and extensive applicability. Biosurfactants also play natural physiological roles in increasing bioavailability of hydrophobic molecules and can complex with heavy metals, promoting enhanced degradation of chemical contaminants. They can be used as emulsifiers, de-emulsifiers, wetting and foaming agents, functional food ingredients and as detergents in petroleum, petrochemicals, environmental management, agrochemicals, foods and beverages, cosmetics and pharmaceuticals, commercial laundry detergents and in the mining and metallurgical industries [1].

A. Significance and Role of Biosurfactants to Microbes

The most important question today about the biosurfactants is why the microbes produce these surfactants and what is the significance and role of biosurfactants to the microorganisms, which produce them. The various roles that a biosurfactant will have could be unique to the physiology and ecology of the producing microorganisms and it is impossible to draw any universal generalizations or to identify one or more functions that are evidently common to all microbial surfactants. Some of the properties of biosurfactants that are of some significance for microbes are as follows:

Advantages of Biosurfactants for Microbes:

I. Adhesion

The most significant role of microbial surfactants is documented for adhesion of the cells to the interfaces. Adhesion is a physiological mechanism for growth and survival of cells in the natural environments. A special case of adhesion is the growth of bacteria on water insoluble hydrocarbons and is one of the primary processes affecting bacterial transport, which determines the bacterial fate in the subsurface. Bacterial adhesion to abiotic surfaces is attributed to attractive interactions between bacteria and the medium. When surfactants are immersed in water, surfactant molecules cause a distortion of the local tetrahedral structure of water and the hydrogen bonds between water molecules are energetically disfavoured, resulting in a decrease in interactions between bacteria and the porous medium. The mass of bacteria eligible for desorption varies directly with the magnitude of the interaction reduction. Since the enzymes necessary for hydrocarbon oxidation are on the cell membrane, the microbe must come into contact with its substrate. The growth of the microbes on certain surfaces is influenced by the biosurfactant, which forms a conditioning film on an interface, thereby stimulating certain microorganisms to attach to the interface, while inhibiting the

attachment of others [22]. The microorganisms can use their biosurfactants to regulate their cell surface properties in order to attach or detach from surfaces according to need [10].

II. Emulsification

Many hydrocarbon degrading microorganisms produce extracellular emulsifying agents, the inference being that emulsification plays a role in growth on water immiscible substrates. There is correlation between emulsifier production and growth on hydrocarbons. The majority of

Acinetobacter strains produce high-molecular-mass bioemulsifiers. Emulsifier producing organisms were able to grow on water insoluble substrates while, the mutants, that do not produce emulsifier, grow poorly on hydrocarbons. For the growth of microbe on hydrocarbons, the interfacial surface area between water and oil can be a limiting factor and the evidence that emulsification is a natural process brought about by extracellular agents is indirect and there are certain conceptual difficulties in understanding how emulsification can provide an (evolutionary) advantage for the microorganism producing the emulsifier [23].

III. Bioavailability and Desorption

One of the major reasons for the prolonged persistence of high-molecular-weight hydrophobic compounds is their low water solubility, which increases their sorption to surfaces and limits their availability to biodegrading microorganisms. Biosurfactants can enhance growth on bound substrates by desorbing them from surfaces or by increasing their apparent water solubility. Surfactants that lower interfacial tension are particularly effective in mobilizing bound hydrophobic molecules and making them available for biodegradation. Much less is known about how polymeric biosurfactants increase the apparent solubility's of hydrophobic compounds. Recently, it has been demonstrated that Alasan (a polymeric biosurfactant) increases the apparent solubility's of PAHs 5 to 20-fold and thus significantly increases their rate of biodegradation [24][25].

In addition to adhesion, desorption also plays an important part in the natural growth of the microorganisms. After a certain period of growth, conditions become unfavourable for further development of microorganism e.g., toxin accumulation and impaired transport of necessary nutrients in crowded conditions. Desorption is advantageous at this stage for the cells and need arises for a new habitat. In fact mechanisms for detachment seem to be essential for all attached microorganisms in order to facilitate dispersal and colonization of new surfaces. One of the natural roles of an emulsifier/biosurfactant may be in regulating desorption of the producing strain from hydrophobic surfaces [26].

IV. Defence Strategy

According to Puchkov apart from two main natural roles suggested for surface-active compounds (increasing availability of hydrophobic substrates and regulating attachment and detachment to and from surfaces) the biosurfactants could be an evolutionary defence strategy of microbe as evidenced by

high mycoid activity of the MC secreted by *C. humicola*. Similar analogy can be made for the lipopeptides biosurfactant producing strains of *B. subtilis*. The lipopeptide (antibiotic) would have strong influence on the survival of *B. subtilis* in its natural habitat, the soil and the rhizosphere [27].

B. Advantages of Biosurfactants for Mankind:

The characteristics of microbial surfactants, which may be valuable for their commercialization, are as follows:

1. Biodegradability and Controlled Inactivation of Microbial Surfactants

Several chemically synthesized, commercially available surfactants (e.g., perfluorinated anionics) resist biodegradation and accumulate in nature causing ecological problems. Microbial surfactants like all natural products are susceptible to degradation by microorganisms in water and soil [28,29].

2. Selectivity for Specific Interfaces

Biological molecules have been found to show more specificity as compared to the chemically synthesized materials. Microbial surfactants show a specificity not seen in presently available commercial surfactants for example, specificity of emulsion towards a mixture of aliphatic and aromatic hydrocarbons [30, 31, 32].

3. Surface Modification

An emulsifying or dispersing agent not only causes a reduction in the average particle size but also changes the surface properties of the particle in a fundamental manner. Small quantities of a dispersant can dramatically alter the surface properties of a material such as surface charge, hydrophobicity and most interestingly pattern recognition based on the three dimensional structure of the adherent polymer [1].

4. Diversity of Microbial Surfactants

Microorganisms produce a wider range of surfactant molecules than are available through chemical synthesis. A broad spectrum of surfactants is required to satisfy the industrial demand. Almost every commercial application has a unique set of growth conditions that dictates the optimum type of surfactant formulation, a single isolate often generates chemical variations of the same surfactant, resulting in the production of a surfactant mixture with an associated characteristic surface [33, 34, 35]. Even small differences in the structure of a surfactant can have profound effects on its function and its potential industrial applications [36].

5. Toxicity

Surfactants are one of the major components (10-18%) of detergent and household cleaning products and are used in high volumes. Most of these end up in natural waters and consequently, their impact on the environment has been and continues to be, a worldwide concern. Scientific literature is full of the reports, which describe and discuss the toxic effects of surfactants [37,38]. The biological surfactants or biosurfactants

have an added advantage of being less toxic or nontoxic in comparison to the synthetic surfactants. This property makes them a better candidate for taking care of pollutants in the environment rather than a menace by itself [39].

C. Potential Applications of Biosurfactants for Mankind:

Surfactants are the most important class of industrial chemicals which are used widely in almost every sector of modern industry. Only within the US chemical industry the demand of surfactants has been increased by 300 % during the last decade [40]. At present, the worldwide production is more than three million tonnes per annum (at an estimated value of US \$4 billion) and is expected to be greater than over four million tonnes by the end of the century [41,42].

Because of low toxicity, biodegradable nature and diversity, biosurfactants have gained considerable interest in current years. Biosurfactants are used in many industrial applications like enhanced oil recovery, crude oil drilling, lubricants, surfactant-aided bioremediation of water-insoluble pollutants, health care and food processing [43,44,45,46,47,48,49]. The use of biosurfactants is also common in cosmetic and soap formulations, foods and both dermal and transdermal drug delivery systems [47].

1. Bioremediation by Biosurfactants

Bioremediation aims at providing economical treatments to reduce the concentration of individual or diverse environmental contaminants [50]. 0.08-0.4% of the total worldwide production of oil eventually reaches the sea and contaminates it [51]. In recent years many oil spill accidents have resulted in significant contamination of oceans and seashore environments. More than 105 tonnes of oil were released in the Gulf waters during the Gulf War in 1991 which was a threat to desalination plants and the coastal ecosystem of the Gulf [52].

Due to these incidents attempts were made to develop various chemicals procedures/techniques for combating oil pollution both at sea and along the shoreline. The degradation of hydrocarbons in the environment is due to the ability of biosurfactants to emulsify hydrocarbon-water mixtures. One of the most efficient methods for removing the presence of hydrocarbon-degrading microorganisms in seawater renders biodegradation pollutants [53] [54] [55]. Compared with the chemical surfactants most biosurfactants have lower possible toxicity and shorter persistence in the environment [56] [57]. The ability of a surfactant to enhance the biodegradation of slightly soluble organic compounds depends on the bioavailability of the compound [58].

Marine Bioremediation by Microbial surfactants:

Microorganisms capable of hydrocarbon degradation have often been isolated from marine environments [59]. An emulsifier produced by *Pseudomonas aeruginosa* SB30 was capable of dispersing oil into fine droplets and inferred that it may be useful in removing oil from contaminated beaches [60]. All of the studies related to marine bioremediation by

using biosurfactants are laboratory based and successful bioremediation of exposed marine open sites using biosurfactants remains a challenge.

i. Biosurfactants and Soil Bioremediation

The accumulation and persistence of toxic materials in water and soil represents a major problem today. Various organics are generated as byproducts from various industries (e.g. petroleum and petrochemical, pulp and paper, chemical industries etc.), which may be released into the environment, or are accidentally spilled. Aromatics and their chlorinated derivatives are of primary concern. These are difficult to biodegrade and are toxic. These chemicals are proven carcinogens, so their release to water and soil is prohibited. If, however, they do appear in industrial wastewaters, they must be treated and detoxified by utilizing a combination of methods (chemical, physical, and biological). Biological methods show many advantages, and many organics can be efficiently degraded by aerobic and anaerobic processes. While water treatment is relatively easy to perform, soil bioremediation is much more difficult and complex [61]. The first problem arises due to difficulties in treating soil, especially when pollution is distributed over a large area. Thus, removal of soil from a contaminated site becomes a costly undertaking, even though such ex situ treatment might be well established. This could be accomplished in two ways:

(i) Addition of nutrition to the soil in form of nitrogen, phosphorus and, if necessary, carbon compounds, which would allow the native microbial population to develop and augment, and thus provide more microorganisms for metabolism or co-metabolism of the pollutant in question.

(ii) Produce ex situ a microbial population which is adapted to the pollutant and is capable of metabolizing it efficiently, and then add this population, along with necessary nutrients, to the polluted soil. The added biomass would, under proper conditions, be able to survive in the soil and to further degrade objectionable organics. Both methods are applied whereby method (i) seems to be more popular, but the strategy depends upon the type of the pollutant, the environmental soil conditions, and the availability of the adapted culture.

Bioremediation of soil contaminated with organic chemicals is a viable alternative method for clean-up and remedy of hazardous waste sites. The main objective in this approach is to convert the parent toxicant product into a readily biodegradable one, which is harmless to human health and/or the environment. The biological remediation process can be performed

- i) In situ;
- ii) In a prepared bed; and
- iii) In a slurry reactor system.

In general, biodegradation of the hydrocarbons at any given site will depend upon:

- indigenous soil microbial population,
- hydrocarbon variety and concentration,

- soil structure,
- nutrient availability,
- Oxygen availability.

Soil microorganisms reported to degrade hydrocarbons under favourable conditions include *Pseudomonas*, *Flavobacterium*, *Achromobacter*, *Arthrobacter*, *Micrococcus* and *Acinetobacter*. Hydrocarbons with less than 10 carbon atoms tend to be relatively easy to degrade as long as the concentration is not too high to be toxic to the organisms. Benzene, xylene and toluene are examples of gasoline components that are easily degraded. Complex molecular structures, such as branched paraffins, olefins, or cyclic alkanes, are much more resistant to biodegradation. Soil structure, which is the form of assembly of the soil particles, determines the ability of that soil to transmit air, water, and nutrients to the zone of bioactivity. Another major controlling factor is the variety and balance of nutrients in the soil. Nitrogen and phosphorous are the most common additives. Biodegradation of hydrocarbons in soil can also be efficiently enhanced by addition or in situ production of biosurfactants. It was generally observed that the degradation time, and particularly the adaptation time, for microbes was shortened. Studies with chemical surfactants showed that the degradation of phenanthrene by an unidentified isolate could be increased by a nonionic surfactant based on ethylene glycol [61].

ii. Role of Microbial Surfactants in Bioremediation of Oil

Pollutants

Oil pollution is an environmental problem of increasing importance. Hydrocarbon-degrading microorganisms, adapted to grow and thrive in oil-containing environments, have an important role in the biological treatment of this pollution. One of the limiting factors in this process is the bioavailability of many fractions of the oil. The hydrocarbon-degrading microorganisms produce biosurfactants of diverse chemical nature and molecular size. These surface-active materials increase the surface area of hydrophobic water-insoluble substrates and increase their bioavailability, thereby enhancing the growth of bacteria and the rate of bioremediation. Oil-contamination of soil is a common problem and its physical treatment methods or remediation techniques can be difficult or economically not feasible. One of the most economically feasible methods includes in situ bioremediation by the use of microorganisms which is the partial simplification or complete destruction of the molecular structure of environmental pollutants. Numerous attempts have been made to successfully remediate the oil contaminated soil by using microbial inoculation and by biosurfactant treatment. The rhamnolipid biosurfactant produced by *P. aeruginosa* stimulates the uptake of hydrophobic compounds finally leading to its degradation. Study has shown that the bacteria are efficient biosurfactant producers in petroleum oil-contaminated soil which offers the advantage of a continuous supply of natural, nontoxic and biodegradable biosurfactants by bacteria at low cost for solubilizing the hydrophobic oil hydrocarbons prior to biodegradation [62].

2. Application of Biosurfactant in Petroleum Industry

Indigenous or injected biosurfactant-producing microorganisms are exploited in oil recovery in oil-producing wells. Microbial enhanced oil recovery (MEOR) is often implemented by direct injection of nutrients with microbes that are able to produce desired products for mobilization of oil, by injection of a consortium or specific microorganisms or by injection of the purified microbial products (e.g., biosurfactants). These processes are followed by reservoir re-pressurization, interfacial reduction of tension/oil viscosity and selective plugging of the most permeable zones to move the additional oil to the producing wells. Oil recovery was shown to be increased by 30-200 % with injection of biosurfactants, bacteria (e.g., *P. aeruginosa*, *X. campestris*, *B. licheniformis*) and nutrients [63]. However, application of MEOR requires thorough research on a case-by-case basis taking into account the physical-chemical conditions and soil and rock formation characteristics.

MEOR is a powerful technique to recover oil, especially from reservoirs with low permeability or crude oil with high viscosity, but the uncertainties on the results and costs are a major barrier to its widespread use. Oilfield emulsions are formed at various stages of petroleum exploration, production and oil recovery and processing, and represent one of the major problems for the petroleum industry, which requires a de-emulsification process in order to recover oil from these emulsions [64]. Biosurfactants have the potential to replace the use of chemical de-emulsifiers in situ, saving on transport of the oil emulsion and providing a more environmentally-friendly solution. Among the bacteria species, *Acinetobacter* and *Pseudomonas* species are the main de-emulsifiers in the mixed cultures [65]. The microorganisms exploit the dual hydrophobic/hydrophilic nature of biosurfactants or hydrophobic cell surfaces to disrupt the emulsions. Glycolipids (e.g., rhamnolipids), glycoproteins, phospholipids and polysaccharides are among the microbial tools to displace the emulsifiers from the oil-water interface [12]. Microbes and biosurfactants are in general readily biodegradable, which allows a cheap and easy removal of the de-emulsifier after this process.

3. Biosurfactants and oil storage tank cleaning:

Biosurfactants are also used for oil storage tank cleaning. Surfactants are used for reducing the viscosity of heavy oils which facilitates recovery, transportation and pipelining [66]. A glycolipid surfactant reduces the viscosity of heavy crude oil by 50%. This surfactant is produced by Gram-negative, rod-shaped bacterial isolate H13A [67]. These cleaning processes are economical and less hazardous to persons involved in the process compared to conventional processes [68]. This leads to less disposal of oily sludge in the natural environment and is an environmentally sound technology.

4. Biosurfactants in Medicinal and Therapeutic Industry:

Biosurfactants also have some medicinal and therapeutic applications. Some of these applications are as follows:

- Surfactin is one of the earliest known biosurfactants having various pharmacological applications such as inhibiting fibrin

clot formation and haemolysis [69]. It has also been reported to have an antitumor activity and anti-fungal properties [70]. Itokawa et al. (1994) have provided the details about the use of surfactin against human immunodeficiency virus 1 (HIV-1). Vollenbroich et al. proposed the use of surfactin in the virus safety enhancement of biotechnological and pharmaceutical products. The anti-viral action of surfactin is due to a physicochemical interaction between the membrane active surfactant and the virus lipid membrane [72].

- Thimon et al. (1995) described Iturin as an anti-fungal biosurfactant. It is a lipopeptide produced by *B. subtilis*, which affects the external structure and membrane structure of yeast cells [73].

- Naruse et al. (1990) provided the detail about the inhibitory effect of pumilacidin (surfactin analog) on herpes simplex virus 1 (HSV-1). They also reported the defence against gastric ulcers in vivo.

- Isoda et al. (1997) investigated the biological activities of microbial glycolipids of *C. Antarctica* T-34 and reported an induction of cell differentiation in the human promyelocytic leukemia cell line HL60 [75].

- The reports on antibiotic effects (Neu et al. 1990) and inhibition of HIV virus growth in white blood corpuscles have opened up new fields for their applications [22].

- Kosaric (1996) describes possible applications as emulsifying aids for drug transport to the infection site, for supplementing pulmonary surfactant and as adjuvants for vaccines. Respiration failure in premature infants is caused by a deficiency in pulmonary surfactant [9].

- With the bacterial cloning of the gene for the protein molecule of the surfactant, the fermentative production of this product for medical application is now possible [76].

- The succinoyl-trehalose lipid of *Rhodococcus erythropolis* has been reported to inhibit HSV and influenza virus [77].

- Biosurfactants have been found to inhibit the adhesion of pathogenic organisms to solid surfaces or to infection sites and have been shown to inhibit formation of biofilms on different surfaces, including polyvinyl wells and vinyl urethral catheters [78]. Pre-coating the catheters and medical devices by biosurfactant solution can have potential applications for treating.

5. Biosurfactants for agricultural use

The global concerns about pesticide pollution have encouraged the efforts to find alternative biological control technologies. Biosurfactants have potential for the biological control of zoospore plant pathogens [79]. For the hydrophilization of heavy soils to obtain good wetting ability and also to achieve equal distribution of fertilizers and pesticides in the soils Surface active agents are needed.

6. Biosurfactants use in mining

For the dispersion of inorganic minerals in mining and manufacturing processes biosurfactants may be used. Also for the stabilization of coal slurries to aid the transportation of coal Kao Chemical Corporation (Japan) used *Pseudomonas*, Co-

rynebacterium, *Nocardia*, *Arthrobacter*, *Bacillus* and *Alcaligenes* to produce biosurfactants. Biosurfactants were also tested for the solubilization of coal and partial solubilization was achieved [80].

7. Biosurfactants in the Cosmetic Industry

Multifunctional biosurfactants have several cosmetic applications because of their exceptional surface properties such as detergency, wetting, and emulsifying, solubilizing, dispersing and foaming effects [81] [82]. Biosurfactants are known to have advantages over synthetic surfactants such as low irritancy or anti-irritating effects, better moisturizing properties and compatibility with skin, therefore, are highly on demand [83]. The most widely used biosurfactant glycolipids in cosmetics are sphorolipids, rhamnolipids and mannosylerythritol lipids. Sphorolipids have good skin compatibility and excellent moisturizing properties, rhamnolipids are natural surfactants and emulsifiers that can replace petrochemical based surfactants used in most of the cosmetic products. They also have been used in acne pads, anti-dandruff, anti-wrinkle and anti-ageing products, deodorants, nail care products and toothpastes in several different formulations, because of their high surface and emulsifying activities [84]. Mannosylerythritol lipids are generally used in skin care formulations as the active ingredient to prevent skin roughness [85].

8. Biosurfactants use in the food industry

- Biosurfactants are used as emulsifiers for the processing of raw materials in the food industry;
- Surface active compounds are also used in bakery and meat products, where they influence the rheological characteristics of flour and the emulsification of partially broken fat tissue [70];
- In food industries worldwide, Lecithin and its derivatives are currently in use as emulsifier [86];
- Busscher et al. (1996) established that a biosurfactant produced by thermophilic dairy *Streptococcus* spp could be used for fouling control of heat exchanger plates in pasteurizers, as they retard the colonization of *S. thermophilus* responsible for fouling [87];
- Biosurfactants are also utilized as fat stabilizer and anti-spatting agents during cooking of oil and fats [88].
- In food processing the addition of rhamnolipid surfactants improve the texture and shelf-life of starch-containing products, modify rheological properties and stability of wheat dough [89]. L-Rhamnose is the precursor of high-quality flavour. Biosurfactants act as controlling consistency in bakery and ice cream formulation.

9. Biosurfactant as a Substitute of Synthetic Chemical Surfactant in Commercial Laundry Detergents

Almost all surfactants, an important component used in modern day commercial laundry detergents, are chemically synthesized and exert toxicity to fresh water living organisms. Furthermore, these components often produce undesirable effects. Therefore, growing public unrest about the environmental hazards and risks associated with chemical surfactants

has stimulated the search for eco-friendly, natural substitutes of chemical surfactants in laundry detergents. Crude CLP biosurfactants showed good emulsion formation capability with vegetable oils and demonstrated excellent compatibility and stability with commercial laundry detergents favouring their inclusion in laundry detergents formulations [90].

10. Other Applications of Biosurfactants

Other important commercial and industrial applications of microbial surfactants includes using biosurfactants in paper industry, textiles and ceramics industries and paint industries due to their enhanced mixing properties. These are also used as dewatering agents in pressing peat [90].

Conclusion

During the recent years there is an increasing environmental awareness and therefore, it might be reasonable to assume that microbial surfactants have a promising role to play in the years to come. Considering the importance of biosurfactants, there is an urgent need to gain a greater understanding of the physiology, genetics and biochemistry of biosurfactant-producing strains and to improve the process technology to reduce production costs for commercial level production of biosurfactants. Therefore, an extensive cooperation among different science disciplines is needed in order to fully characterize the biochemical properties of biosurfactant and exploration of their potential applications in different industrial sectors. Compared with chemical surfactants, the biosurfactants have the advantage of biodegradability and lower toxicity that make them more appropriate for replacing chemicals. There are several types of biosurfactants in market but no single biosurfactant is suitable for all potential applications. Chemically synthesized compounds are cheaper than the biosurfactants available in the market basically because biosurfactants have their high production costs and the lack in comprehensive toxicity testing. The cost of production of biosurfactants may be significantly reduced for selected applications such as using sterilized or pasteurized fermentation broth without any need for extraction, concentration or purification. The crude product may be used by oil industries and environmental bioremediation in many applications. Strategies like medium and downstream process-optimization may also have a positive impact on cost reduction. It is very alarming that large chemical companies seem not to be interested in research in these areas.

The usefulness of biosurfactants in bioremediation is however expected to gain more importance in the coming years. Their success in bioremediation will require precise targeting to the physical conditions and chemical nature of the pollutant affected areas. Encouraging results have been obtained for the use of biosurfactants in hydrocarbon pollution control in marine biotopes in closed systems (oil storage tanks) and, although many laboratory studies indicate potential for use in open environments, a lot remains to be demonstrated in pollution treatment in marine environments or coastal areas.

The usefulness of biosurfactants in other fields is promising. The progress is astonishing particularly in personal and

health care products, cosmetics and as therapeutic agents. Lipases had been used for the enzymatic synthesis of man-made surfactants and have given a whole new dimension to biosurfactant production. With increased efforts on developing improved application technologies, strain improvement and production processes, biosurfactants are expected to be among the most used and produced chemicals in the near future.

References

- [1] Cameotra, S. S., Makkar, K., and Mehta, S.K., Synthesis of Biosurfactants and Their Advantages to Microorganisms and Mankind. *Advan. Exper. Med. and Bio.* 672, 261-280, (2010).
- [2] Shoeb, E., Akhlaq, F., Badar, U., Akhter, J. and Imtiaz, S., Classification and Industrial Application of Biosurfactants, *SAVAP International*. 4(3), 243, (2013).
- [3] Mulligan, C.N., Environmental applications for biosurfactants. *Environ. Poll.* 133, 183-198, (2005).
- [4] Singh, A. et al. Surfactants in microbiology and biotechnology. Application aspects. *Biotechnol. Adv.*, 25, 99-121, (2007).
- [5] Develter, D.W.G. and Lauryssen, L.M.L., Properties and industrial applications of sophorolipids. *European J. Lipid Sci. and Technol.* 112, 628-638, (2010).
- [6] Franzetti, A. et al., Production and applications of trehalose lipid biosurfactants. *European J. Lipid Sci. Technol.* 112, 617-627, (2010).
- [7] Banat, I.M. et al., Potential commercial applications of microbial surfactants. *Appl. Microbiol. Biotechnol.* 53, 495-508, (2000).
- [8] Peypoux, F. et al., Recent trends in the biochemistry of surfactin. *Appl. Microbiol. Biotechnol.* 51, 553-563, (1999).
- [9] Kosaric, N., Biosurfactant in Industry, IUPAC, Pure and Appl. Chem. 64(11), 1731-1737, (1992).
- [10] Rosenberg, E. and Ron, E.Z., High- and low-molecular-mass microbial surfactants. *Appl. Microbiol. Biotechnol.*, 52, 154-162, (1999).
- [11] Monteiro, S.A. et al., Molecular and structural characterization of the biosurfactant produced by *Pseudomonas aeruginosa* DAUPE 614. *Chem. Phys. Lipids*, 147, 1-13, (2007).
- [12] Mukherjee, S., Das, P., and Sen, R., Towards commercial production of microbial surfactants. *Trends Biotechnol.* 24(11), 509-15, (2006).
- [13] Kappeli, O. and Finnerty, W.R., Partition of alkane by an extracellular vesicle derived from hexadecane-grown *Acinetobacter*. *J. Bacteriol.* 140, 707-712, (1979).
- [14] Singh, V., Biosurfactant - Isolation, Production, Purification and Significance, *International Journal of Scientific and Research Publications*, 2(7), (2008).
- [15] Ristau, E. and Wagner, F., Formation of novel anionic trehalose tetraesters from *Rhodococcus erythropolis* under growth-limiting conditions. *Biotechnol. Lett.*, 5, 95-100, (1983).
- [16] Cooper, D.G. and Paddock, D.A., Production of a biosurfactant from *Torulopsis bombicola*. *Appl. Environ. Microbiol.* 47, 173-176, (1984).
- [17] Ron, E.Z. and Rosenberg, E., Natural roles of biosurfactants. *Environ. Microbiol.* 3, 229-236, (2001).
- [18] Asselineau, C. and Asselineau, J., Trehalose containing glycolipids. *Prog. Chem. Fats Lipids* 16, 59-99, (1978).
- [19] Cooper, D.G., et al., Production of surface active lipids by *Corynebacterium lepus*. *Appl. Environ. Microbiol.* 37, 4-10, (1978).
- [20] Cirigliano, M.C. and Carman, G.M., Purification and characterization of liposan, a bioemulsifier from *Candida lipolytica*. *Appl. Environ. Microbiol.* 50, 846-850, (1985).
- [21] Robert, M. et al., Effect of the carbon source on biosurfactant production by *Pseudomonas aeruginosa* 44T. *Biotech. Lett.* 11, 871-874, (1989).
- [21] Neu, T., Significance of bacterial surface-active compounds in interaction of bacteria with interfaces. *Microbiol. Rev.* 60, 151-166, (1996).
- [22] Hua, Z., Chen, J., Lun, S. et al., Influence of biosurfactants produced by *Candida antarctica* on surface properties of microorganism and biodegradation of n-alkanes. *Water Res.* 37(17), 4143-4150, (2003).
- [23] Barkay, T., Navon-Venezia, S., Ron, E.Z. et al., Enhancement of solubilization and biodegradation of polyaromatic hydrocarbons by the bioemulsifier alasan. *Appl. Environ. Microbiol.* 65(6), 2697-2702, (1999).
- [24] Rosenberg E, Ron EZ., High- and low-molecular-mass microbial surfactants. *Appl. Microbiol. Biotechnol.* 52(2), 154-162, (1999).
- [25] Jordan, R.N., Nichols, E.P. and Cunningham, A.B., The role of (bio) surfactant sorption in promoting the bioavailability of nutrients localized at the solid-water interface. *Water Sci. Technol.* 39(7), 91-98, (1999).
- [26] Puchkov, E.O., Zahringer, U., Lindner, B. et al., The mycocidal, membrane-active complex of *Cryptococcus humicola* is a new type of cellobiose lipid with detergent features. *Biochimica et Biophysica Acta (BBA)-Biomembranes* 1558(2), 161-170, (2002).
- [27] Cooper, D. G., Biosurfactants. *Microbiol. Sci.* 3(5), 145-149, (1986).
- [28] Oberbremer, A., Muller-Hurtig, R. and Wagner, F., Effect of the addition of microbial surfactants on hydrocarbon degradation in a soil population in a stirred reactor. *Appl. Microbiol. Biotechnol.* 32(4), 485-489, (1990).
- [29] Rosenberg, E., Exploiting microbial growth on hydrocarbons-new markets. *Trends Biotechnol.* 11(10), 419-424, (1993).
- [30] Chayabutra, C., Wu, J. and Ju, L.K., Rhamnolipid production by *Pseudomonas aeruginosa* under denitrification: effects of limiting nutrients and carbon substrates. *Biotechnol. Bioeng.* 72(1), 25-33, (2001).
- [31] Wick, L.Y., de Munain, A. R., Springael, D. et al., Responses of *Mycobacterium* sp. LB501T to the low bioavailability of solid anthracene. *Appl. Microbiol. Biotechnol.* 58(3), 378-385, (2002).

- [32] Mulligan, C. N., Mahmoudides, G. and Gibbs, B. F., The influence of phosphate metabolism on biosurfactant production by *Pseudomonas aeruginosa*. *J. Biotechnol.* 12(3-4), 199-209, (1989).
- [33] Robert, M., Mercade, M., Bosch, M. et al., Effect of the carbon source on biosurfactant production by *Pseudomonas aeruginosa* 44Ti. *Biotechnol. Lett.* 11, 871-874, (1989).
- [34] Bodour, A. A., Drees, K. P. and Maier, R. M., Distribution of biosurfactant-producing bacteria in undisturbed and contaminated arid Southwestern soils. *Appl. Environ. Microbiol.* 69(6), 3280-3287, (2003).
- [35] Symmank, H., Franke, P., Saenger, W. et al., Modification of biologically active peptides: production of a novel lipohexapeptide after engineering of *Bacillus subtilis* surfactin synthetase. *Protein Eng.* 15(11), 913-921, (2002).
- [36] Poremba, K., Gunkel, W., Lang, S. et al., Marine biosurfactants, III. Toxicity testing with marine microorganisms and comparison with synthetic surfactants. *Z Naturforsch (C)*, 46(3-4), 210-216, (1991).
- [37] Kanga, S. A., Bonner, J. S., Page, C. A. et al., Solubilization of Naphthalene and Methyl-Substituted Naphthalenes from Crude Oil Using Biosurfactants. *Environ. Sci. Technol.* 31(2), 556-561, (1997).
- [38] Edwards, K. R., Lepo, J. E. and Lewis, M. A., Toxicity comparison of biosurfactants and synthetic surfactants used in oil spill remediation to two estuarine species. *Mar. Pollut. Bull.* 46(10), 1309-1316, (2003).
- [39] Greek, B. F., Detergent industry ponders product for new decade. *Chem. Eng. News*. 68, 37-38, (1990).
- [40] Greek, B. F., Sales of detergents growing despite recession. *Chem. Eng. News*. 69, 25-52, (1991).
- [41] Sarney, D. B. and Vulfson, E. N., Application of enzymes to the synthesis of surfactants. *Trends Biotechnol.* 13, 164-172, (1995).
- [42] Fiechter, A., Biosurfactants: moving towards industrial application. *Trends Biotechnol.* 10, 208-217, (1992).
- [43] Muller-Hurtig, R., Wagner, F., Blaszczyk, R. and Kosaric, N., Biosurfactants for environmental control. In: Kosaric N (ed) *Biosurfactants-production, properties and applications*. Surfactant science series, vol 48. Dekker, New York, pp 447-469, (1993).
- [44] Velikonja, J. and Kosaric, N., Biosurfactants in food applications. In: Kosaric N (ed) *Biosurfactants - production, properties and applications*. Dekker, New York, pp 419-446, (1993).
- [45] Finnerty, W.R., Biosurfactants in environmental biotechnology. *Curr. Opin. Biotechnol.* 5, 291-295, (1994).
- [46] Banat, I.M. and Desai, J.D., Microbial production of surfactants and their commercial potential. *Microbiol. Mol. Rev.* 61, 47-64, (1997).
- [47] Lin, S.C., Biosurfactants recent advances. *J. Chem. Tech. Biotechnol.* 66, 109-120, (1996).
- [48] Sullivan, E.R., Molecular genetics of biosurfactant production. *Curr. Opin. Biotechnol.* 9, 263-269, (1998).
- [49] Head, I.M., Bioremediation: towards a credible technology. *Microbiol.* 144, 599-608, (1998).
- [50] Bartha, R., Biotechnology of petroleum pollutant biodegradation. *Microbiol. Ecol.* 12, 155-172, (1986).
- [51] Pearce, F., What turns oil spill into a disaster. *New. Sci.* 1858, 11-13, (1993).
- [52] Atlas, R.M., Microbial hydrocarbon degradation. Bioremediation of oil spills. *J. Chem. Tech. Biotechnol.* 52, 149-156, (1991).
- [53] Leahy, J.G. and Colwell, R.R., Microbial degradation of hydrocarbons in the environment. *Microbiol. Rev.* 54, 305-315, (1990).
- [54] Gutnick, D.L. and Rosenberg, E., Oil tankers and pollution. A microbiological approach. *Annu. Rev. Microbiol.* 31, 379-396, (1997).
- [55] Georgiou, G., Lin, S.C. and Sharma, M., Surface active compounds from microorganisms. *Biotech.* 10, 60-65, (1992).
- [56] Zajic, J.E., Guignard, H. and Gerson, D.F., Properties and biodegradation of a bioemulsifier from *Corynebacterium hydrocarboclastus*. *Biotechnol. Bioeng.* 19, 1303-1320, (1977).
- [57] Begley, J., Croft, B. and Swannell, R.P.J., Current research into bioremediation of contaminated land. *Land Contam. Reclam.* 4, 199-208, (1996).
- [58] Brown, E.J. and Braddock, J.F., Sheen Screen, a miniaturized most probable number method for enumeration of oil degrading microorganisms. *Appl. Environ. Microbiol.* 56, 3895-3896, (1990).
- [59] Chakrabarty, A.M., Genetically manipulated microorganisms and their products in the oil service industries. *Tren. Biotechnol.* 3, 32-38, (1985).
- [60] Kosaric, N., Biosurfactants for Soil Bioremediation, *Food Technol. Biotechnol.* 39 (4), 295-304, (2001).
- [61] Eliora, Z.R. and Rosenberg, E., Biosurfactants and oil bioremediation, Elsevier Sci. Ltd., (2002).
- [62] Singh, S., Kang, S. H., Mulchandani, A. and Chen, W., Bioremediation: environmental clean-up through pathway engineering. *Curr. Opin. biotech.* 19(5), 437-44, (2008).
- [63] Manning, F.S. and Thompson, R.E. *Oilfield Processing of Petroleum*. Crude Oil: Penn-well Corporation, (1995).
- [64] Nadarajah, N., Singh, A. and Ward, O.P., De-emulsification of petroleum oil emulsion by a mixed bacterial culture. *Process Biochem.* 37(10), 1135-41, (2002).
- [65] Bertrand, J.C., Bonin, P., Goutex, M. and Mille, G., The potential application of biosurfactant in combating hydrocarbon pollution in marine environments. *Res. Microbiol.* 145, 53-56, (1994).
- [66] Finnerty, W.R. and Singer, M.E., Membranes of hydrocarbon-utilizing microorganisms. In: Ghosh BK (ed) *Organization of prokaryotic cell membranes*, vol 3. CRC Press, Boca Raton, Fla., pp 1-44, (1985).
- [67] Lillenberg, L., Hogstedt, B., Jarvholm, B. and Nilson, L., Health effects of tank cleaners. *Am. Ind. Hyg. Assoc. J.* 53, 375-380, (1992).

- [68] Bernheimer, A.W. and Avigard, L.S., Nature and properties of acytolytic agent produced by *B. subtilis*. *J. Gen. Microbiol.* 61, 361-369, (1970).
- [69] Vater, P.J., Lipopeptides in food applications. In: Kosaric N (ed) *Biosurfactants - production, properties and applications*. Dekker, New York, pp 419-446, (1986).
- [70] Itokawa, H., Miyashita, T., Morita, H., Takeya, K., Homma, T. and Oka, K., Structural and conformational studies of [Ile7] and [Leu7] surfactins from *Bacillus subtilis* natto. *Chemical and Pharmaceutical Bulletin*, 42, 604-607, (1994).
- [71] Vollenbroich, D., Özel, M., Vater, J., Kamp, R.M. and Pauli, G., Mechanism of inactivation of enveloped viruses by biosurfactant surfactin from *Bacillus subtilis*. *Biologicals*. 25, 289-297, (1997).
- [72] Thimon, L., Peypoux, F., Wallach, J. and Michel, G., Effect of the lipopeptide antibiotic iturin A, on morphology and membrane ultrastructure of yeast cells. *FEMS Microbiol. Lett.* 128, 101-106, (1995).
- [73] Isoda, H., Shinmoto, H., Kitamoto, D., Matsumura, M. and Nakahara, T., Differentiation of human promyelocytic leukaemia cell line HL60 by microbial extracellular glycolipids. *Lipids* 32, 263-271, (1997).
- [74] Lang, S. and Wullbrandt, D., Rhamnose lipids-biosynthesis, microbial production and application potential. *Appl. Microbiol. Biotech.* 51(1), 22-32, (1991).
- [75] Uchida, Y., Izume, M., and Ohtakara, A., Preparation of chitosan oligomers with purified chitosanase and its application. In G. Skjåk-Bræk, T. Anthonsen, and P. Sandford (Eds.), *Chitin and chitosan: Sources, chemistry, biochemistry, physical properties and applications* (pp. 373-382). London: Elsevier, (1989).
- [76] Reid, P.C., Holliday, N.P. and Smyth, T.J., Pulses in the eastern margin current and warmer water off the northwest European Shelf linked to North Sea ecosystem changes. *Mar. Ecol. Prog. Ser.* 215, 283-287, (2001).
- [77] Stanghellini, M.E., Kim, D.H., Ramussen, S.L. and Rorabaugh, P.A., Control of root rot of peppers caused by *Phytophthora capsici* with non-ionic surfactant. *Plant Dis.* 80, 1113-1116, (1996).
- [78] Polman, J.K., Miller, K.S., Stoner, D.L. and Brackenridg, C.R., Solubilization of bituminous and lignite coals by chemically and biologically synthesized surfactants. *J. Chem. Tech. Biotechnol.* 61, 11-17, (1994).
- [79] Kleckner, V. and Kosaric, N., Biosurfactants for cosmetics. In: *Biosurfactants: Production, Properties, Applications* (Kosaric, N., ed), Marcel Dekker, New York pp. 329-389, (1993).
- [80] Rieger, M.N., Surfactant chemistry and classification. In: *Surfactants in Cosmetics*, 2nd Ed (Rieger, M.N. and Rhein, L.D., eds). New York: Marcel Dekker, (1997).
- [81] Brown, M.J., Biosurfactants for cosmetic applications. *Int. J. Cosmet. Sci.* 13, 61-64, (1991).
- [82] Piljac, T. and Piljac, G., Use of rhamnolipids in wound healing, treating burn shock, atherosclerosis, organ transplants, depression, schizophrenia and cosmetics (European Patent 1 889 623). Paradigm Biomedical Inc, New York, (1999).
- [83] Masaru, K. et al., Skin care cosmetic and skin and agent for preventing skin roughness containing biosurfactants (World Patent 2007/060956). Toyo Boseki Kabu Shiki Kaisha and National Industrial Science and Technology, Osaka, Japan, (2007).
- [84] Bloomberg, G., Designing proteins as emulsifiers. *Lebensmittel technologie* 24. 130-131, (1991).
- [85] Busscher, H.J., Vanderkuijlbooi, M. and Van der Mei, H.C., Biosurfactants from thermophilic dairy Streptococci and their potential role in the fouling control of heat exchanger plates. *J. Ind. Microbiol.* 16, 15-2, (1996).
- [86] Kosaric, N., Biosurfactants and their application for soil bioremediation. *Food Technology and Biotechnology*, 39(4), 295-304, (2001).
- [87] Van Haesendonck, I.P.H. et al., Rhamnolipids in bakery products. W.O. 2004/040984, International application patent (PCT), (2004).
- [88] Banat, I.M., Makkar, R.S., Cameotra, S.S., Potential commercial applications of microbial surfactants, *Appl. Microbiol. Biotechnol.* 53, 495-508, (2000).
- [89] Rosenberg, E., Ron, E.Z., Surface active polymers from the Genus *Acinetobacter*. In: Kaplan DL (ed) *Biopolymers from renewable resources*. Springer, Berlin Heidelberg New York, pp 281-291, (1998).
- [90] Mulligan, C. and Cooper D.G., Pressate from peat dewatering as a substrate for bacterial growth. *Appl. Environ. Microbiol.* 50, 160-162 (1985).

Disclosure of Green Banking Issues in the Annual Reports: A Study on Bangladeshi Banks

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Abstract

These days, the concept of green banking is becoming popular in the financial sectors. This paper deals with the reporting on green banking issues by the banking companies in a developing country - Bangladesh. Through content analysis of the annual reports of ten sample banks, the research finds that Bangladeshi banks are reporting on green banking issues even in the absence of any specific reporting guideline. The nature of the language used for green banking reports was also analyzed through discourse analysis. It was found that after the introduction of the green banking program of Bangladesh Bank (the central bank of Bangladesh) in 2011, the banks started reporting on their green banking activities. The level of disclosure increased over the years up to 2013. The study concludes that though the banks started reporting on this issue, their reports lack consistency because of the absence of a standardized reporting guideline. They wanted to report that they are performing according to the suggestions of Bangladesh Bank. From this, it can be said that the banking companies consider the central bank as a powerful stakeholder. The banks mostly provided 'good news' in their reports. This kind of reporting helps the banks to gain greater legitimacy in the eyes of the regulator, Bangladesh Bank, and to the public.

Key words: Green banking, social and environmental reporting, content analysis, banks, Bangladesh.

Green Banking: An Introduction

Today's world is suffering from the problems arising from global warming, climate change and massive environmental pollution. In many ways, issues like massive industrialization, modernization and unplanned urbanization are treated as the main causes of these problems. It is said that because of this environmental pollution and climate change, human existence in this world is becoming threatened. Because of this environmental pollution the temperature of the world is increasing, world climate is changing, rainfall and crop production are being affected, and the livelihood of many marginal groups of people is being shaken.

It is important to mention here that over the years, the corporate houses all over the world are blamed as one of the contributors to climate change and global warming. At first, the manufacturing companies were mainly blamed for all this. But these days, even the service oriented organizations are being blamed for contributing negatively to climate change. In the operation of an organization, many activities are performed that can affect the environment. While performing their operating activities, they use electricity, fuel, gas, water, paper and others. Other than these, banking and other financial institutions are funding several organizations that are responsible for polluting the environment.

This paper deals with the issue of reporting on environmental responsibility from the banking companies' side. The main objective of this paper is to investigate the nature of disclosure of green banking issues in the annual reports of Bangladeshi banking companies.

In order to operate in a responsible manner, banks and other financial institutions must be aware of their environmental responsibilities. It is to be remembered that their activities must not create any harm to the environment directly or

Table 1: Definitions of Green Banking

Author(s)	Definition
Bahl (2012a: 27)	Green banking means promoting environment friendly practices and reducing your carbon footprint from your banking activities.
Meena (2013: 1182)	'Green banking' refers to the banking business conducted in such areas and in such a manner that helps the overall reduction of external carbon emission and internal carbon footprint.
Ahmed, Zayed and Harun (2013: 241)	Green banking is the term used by banks to make them much more responsible to the environment. The term green banking means developing inclusive banking strategies which will ensure sustainable economic development.

indirectly. For the purpose of creating this awareness, the concept 'green banking' came into existence. Meena (2013: 1181) sees green banking as an 'initiative for sustainable development'. Different authors have defined the term green banking in different manners. Some of these definitions are presented in Table 1.

If these definitions can be analyzed, it can be found that the issues like carbon emission/footprint and sustainability are the main themes in green banking. Here, it can be said that the term green banking came into existence because of the recent popular environmental discourses like sustainability, climate change, global warming, carbon emission and some others.

Green banking is an attempt to ensure that the banking activities do not contribute to environmental pollution. Many activities are suggested in order to ensure the achievement of the objectives of green banking.

For example, green banking encourages activities that ensure using less paper (Meena, 2013). This can be ensured by introducing online banking. Online banking ensures using less paper work and thus prevents wastage of paper. Another important activity is to introduce green banking products. Bahl (2012a: 27) gave some examples of green banking products like 'green mortgages', 'green loans', 'green credit cards', 'green saving accounts', 'green checking accounts', 'mobile banking' and others. Bahl (2012b) mentioned some strategies that the Indian banks have adopted in order to ensure green banking. These are: introducing green banking financial products, introducing paperless banking, creating energy consciousness, using mass transport and green building and promoting social responsibility services.

Meena (2013) identified four benefits of green banking. Firstly, as mentioned earlier, by ensuring less use of paper through introducing online and SMS banking services, green banking helps in reducing deforestation. Papers are products of woods and trees. Less deforestation ensures cooler weather and thus less contribution to global warming and climate change. Secondly, green banking helps in creating environmental awareness among employees and customers. Meena (2013) mentions that these awareness creation activities also help in building a positive image about the bank among the stakeholders. Thirdly, green banking attempts to ensure providing

loans at a lower rate. Green banking programs encourage setting up environmentally friendly businesses by providing the facility of lower interest rates of loans. Under a green banking program, the bank shall provide loans with lower interest rates in case of investment in 'fuel efficient vehicles, green building projects' and others. Fourthly, banks under green banking programs introduce environmental standards for lending. It compels the business houses to change their business activities in a manner that is environmentally friendly (Meena, 2013). Thus, negative impact on the environment is reduced.

Over the last few years, the issue of green banking gained popularity in some parts of the world. For example, articles like Bahl (2012a), Bahl (2012b), Bhardwaj and Malhotra (2013) and Meena (2013) highlighted the green banking practices in India. Papastergiou and Blanas (2011) investigated the green banking practices in Greece.

Ahmed, Zayed and Harun (2013) examined the factors that are responsible for the adoption of green banking practices by the commercial banks of Bangladesh. By conducting a survey among 300 bank employees and applying factor analysis, the research found that the main factors behind this adoption of green banking practices are 'policy guideline, loan demand, stakeholder pressure, and environmental interest, economic and legal factors' (Ahmed, Zayed and Harun, 2013: 241).

The issue of green banking has become a catchphrase in the Bangladeshi banking sector over the last three years. Bangladeshi banks are emphasizing on green banking mainly because of the encouragement and pressure from the central bank of Bangladesh - Bangladesh Bank (Ahmed, Zayed and Harun, 2013). In February 27, 2011, Bangladesh Bank issued a circular (BRPD Circular No. 2) where it asked the banks of Bangladesh to adopt a green banking policy in order to conserve and protect the environment. Later in July 22, 2012, Bangladesh Bank issued BRPD Circular Letter No. 07 that again contained several guidelines for the banks in terms of green banking. Finally, in September 11, 2013, Bangladesh Bank issued another GBC-SRD Circular Letter No. 05 titled 'Policy Guidelines for Green Banking' where detailed policy guidelines along with reporting guidelines are presented.

In these circulars, Bangladesh Bank highlighted the issue of climate change and its negative impact on the environment. Bangladesh Bank also mentioned the importance of low car-

Table 2: Phases of Implementation of Green Banking Program Suggested by Bangladesh Bank (Prepared from GBCSRD Circular Letter No. 05)

Phase 1 (Implementation deadline: June 30, 2014)	Phase 2 (Implementation deadline: December 31, 2014)	Phase 3 (Implementation deadline: June 30, 2015)
<ol style="list-style-type: none"> 1. Policy formulation and governance; 2. Incorporation of environmental risk. 3. Initiation of in-house environmental management. 4. Introduction of green finance. 5. Climate risk fund creation. 6. Introduction of green marketing. 7. Online banking. 8. Employee training, consumer awareness, green events. 9. Disclosure and reporting of green banking activities. 	<ol style="list-style-type: none"> 1. Sector specific environmental policies. 2. Green strategic planning. 3. Setting up green branches. 4. Improved in-house environment management. 5. Formulation of bank specific environmental risk management plan and guidelines. 6. Client education programs. 7. Disclosure and reporting of green banking activities. 	<ol style="list-style-type: none"> 1. Design and introduction of innovative products. 2. Reporting in standard format with external verification.

carbon industries for safeguarding the planet. The bank recognizes Bangladesh as one of the most vulnerable countries that is facing challenges because of climate change and global warming. That is why Bangladesh Bank called for the adoption of green banking policies by the banks of Bangladesh.

It is to be mentioned here that Bangladesh Bank asked the banks operating in Bangladesh to adopt the green banking programs in three phases. Table 2 describes these phases.

This table reveals that in all three phases, disclosure and reporting on green banking was emphasized. But it should also be noted that the deadline for the implementation of the first phase was June 30, 2014. It is to be mentioned here that over these three years, the deadlines changed.

In the first circular, Bangladesh Bank did not provide enough guideline on the reporting on green banking. But in terms of reporting, the banks of Bangladesh responded very quickly. They went for disclosure on this issue by creating their own format.

This paper deals with the reporting of green banking issues by the Bangladeshi banks. The main objective of this research is to investigate the nature of voluntary disclosure on green banking by the banks of Bangladesh from the year of 2011 to 2013. The study also investigates the nature of the language of this kind of disclosure. It is expected that from this analysis, the influence of Bangladesh Bank's proposed green banking guidelines on the corporate environmental disclosure will be identified.

The next section of this article reviews the prior research on social and environmental reporting practices in Bangladesh. After that the theoretical perspectives of this research is pre-

sented. The methodology of this research is presented, then the article presents the findings of this research.

Social and Environmental Reporting in Bangladesh: Prior Research

Hossain (2014) mentioned that the first article on social and environmental reporting practices in Bangladesh was Chowdhury and Chowdhury (1996). In this research it was identified that some companies started social and environmental reporting on a voluntary basis. Later Bala and Habib (1998), Belal (1999), Imam (2000), Belal (2001) and Hossain, Salat and Amin (2005) also examined the reporting on corporate social responsibility practices by the Bangladeshi companies. In these studies, it was found that at that time some companies were disclosing information on their social and environmental performances at a minimum scale. They were disclosing information on environmental issues, employees and some ethical issues. It is important to mention here that all of these studies focused both on social and environmental issues. The two earlier studies that concentrated only on corporate environmental reporting were by Khan and Hossain (2003) and Bala and Yusuf (2003). Both of these studies concluded that the level of environmental disclosure was minimum. Almost all of these studies concentrated on conducting a content analysis of the annual reports of Bangladeshi companies. These studies were relatively small scale and applied simple methodology (Hossain, 2014).

Later Belal and Owen (2007) and Islam and Deegan (2008) by conducting both content analysis and interview method, made an attempt to identify the corporate motives behind social responsibility reporting. It was found that pressure from parent companies and international buyers acted as some of the pressure groups behind corporate disclosure. Islam and Mathews (2009) and Islam and Islam (2011), by conducting

content analysis based case studies identified that negative media coverage can influence the level of corporate social and environmental disclosure.

Studies such as Khan, Halabi and Samy (2009), Sobhani, Amran and Zainuddin (2009) and Azim, Ahmed and Islam (2009) found that in comparison to the global context, the social and environmental disclosure level of Bangladeshi companies is low. Azim, Ahmed and Islam (2009) found that most of the disclosures are qualitative in nature. Belal and Cooper (2011) by conducting semi-structured interviews on NGO managers found that the main reasons for low level of disclosure are: 'scarce resources, profit focus, absence of legal requirements, lack of knowledge and awareness and the fear of negative publicity' (Hossain, 2014: 14).

Some studies that made an attempt to identify the determinants of corporate social responsibility reporting are: Rashid and Lodh (2008), Khan, Muttakin and Siddiqui (2013) and Muttakin and Khan (2014). Khan, Muttakin and Siddiqui (2013) found a positive significant relationship between corporate social disclosure and the variables like public ownership, board independence and presence of audit committee. According to the study of Muttakin and Khan (2014), corporate social disclosure has a positive significant relationship with 'export-oriented sector, firm size and types of industries' (Hossain, 2014: 16).

From this discussion it can be seen that most of the studies focused both on social and environmental issues combined. Very few studies investigated only environmental issues separately. Though according to Mathews (1997), in the studies based on Western economies, environmental issues got more focus than the social issues; the situation regarding Bangladesh was different. One of the recent studies that focused on only environmental issues is that of Belal et al (2010). This study investigates the environmental and climate change disclosures and conducted content analysis of annual reports and web sites of the companies. The findings of this study resemble those of the other studies regarding social and environmental reporting of Bangladeshi companies. It was found that the level of disclosure is low. Moreover, the sample companies in this study disclosed only the good news.

Very few studies were conducted on any particular business sector. Even then, the banking industry got some importance. Khan, Halabi and Samy (2009), Khan (2010) and Khan et al (2011) investigated social disclosure of the banking companies. Khan, Halabi and Samy (2009) concluded that 'the extent of CSR reporting of Bangladeshi companies is not satisfactory and the users expect more CSR disclosure' (Hossain, 2014: 13). The study conducted content analysis of the annual reports of the banking companies along with a perception survey among the users. Khan (2010), by applying multiple regression method investigated whether there is any influence of corporate governance components on CSR disclosures in the case of banking companies of Bangladesh. In this study the non-executive directors and the existence of foreign nationalities were identified as significant determinants. Khan et al (2011) examined the extent of corporate sustainability reporting of the commercial banks of Bangladesh. The extent of reporting

was measured according to the guidelines of Global Reporting Initiatives (GRI). It was found that though Bangladeshi commercial banks report on many social issues, the issues like product responsibility and human rights get less importance.

This study contributes to the literature of corporate social and environmental reporting of Bangladesh by highlighting a new issue - disclosure of green banking. Also, no prior research conducted a discourse analysis of the corporate narratives related to social and environmental issues. Another novelty of this study is that it considers the effect of a particular guideline from a powerful agency - the central bank - on the environmental disclosure by Bangladeshi banks.

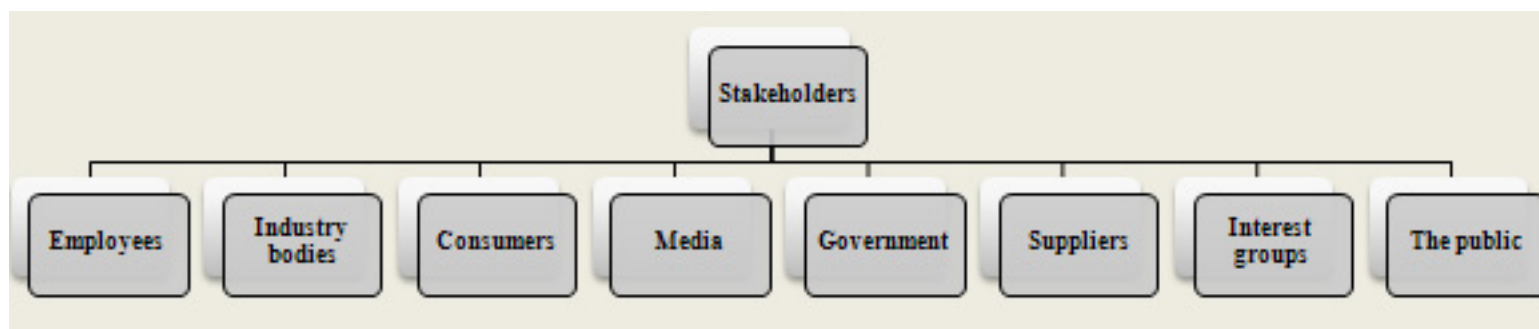
Theoretical Framework

This research focuses on the issue of corporate social and environmental reporting. Research on social and environmental accounting and reporting started in the early 1970s (Mathews, 1997). That means social and environmental accounting research, at this moment, has a history of more than 40 years (Hossain, 2014). Over the years the researchers have produced a huge amount of research on this topic. At the beginning, the researchers mostly concentrated on the social and environmental reporting practices of the companies in the developed economies, and at that time the companies in the developing and underdeveloped economies got less attention from the researchers' part (Islam, 2010 and Hossain, 2014). Mainly from the last decade, research on social and environmental reporting practices of the companies in developing and underdeveloped countries started getting researchers' attention.

Over the years, stakeholder theory and legitimacy theory remained as the most popular theories for the researchers in explaining the scenario of corporate social and environmental reporting practices. Both these theories explain the reason behind this kind of voluntary disclosures from the corporations' part.

Stakeholder theory states that corporations have to deal with a diverse range of stakeholders. In the past it was believed that organizations have to deal mostly with the shareholders as they are the main fund providers. This shareholder perspective has changed over the years. These days it is thought that other than the shareholders there are other stakeholders like employees, industry bodies, consumers, media, government, suppliers, interest groups and the public (Deegan and Unerman, 2006). It is believed that as a part of the society, business organizations 'can affect a society in many ways' (Alam, 2006: 208). Social and environmental activities of a business can affect several groups in the society both directly and indirectly. That is why it is important that businesses do not perform any activity that becomes harmful for this diverse range of stakeholders. Business and the society are interdependent. On one hand, society has to depend on business for the products and services. On the other hand, in order to survive, businesses have to deal with the society. It is the people in the society who purchase and consume the products of the business and thus the survival of the business is ensured. That is why business must act in a responsible manner so that the interest of the society (consisting of a diverse range of stakeholders) is

Figure 1: Stakeholder Groups (Deegan and Unerman, 2006)



upheld. In corporate social and environmental reporting literature, it is highlighted that the companies should not only act in a responsible manner, but also report on their activities to these stakeholders. That means the company should be accountable to the society.

Stakeholder theory has two branches: ethical branch and managerial branch. There is no doubt that it is difficult to maintain and uphold the interests of all the stakeholders mentioned above. Another issue is the power of the stakeholders. It is also true that all these stakeholders do not have similar power to influence the organizational activities. So, the question comes whether an organization should place equal importance on all these stakeholders or not. The ethical branch of stakeholder theory states that all these stakeholders have their rights and thus their rights should not be violated (Deegan and Unerman, 2006). In this case, from a reporting perspective, the management should try to fulfill the information needs of all these stakeholders in an efficient manner.

But the managerial branch of stakeholder theory states that corporate management is more likely to meet the needs of more powerful stakeholders first. That means, management may behave strategically and fulfill the needs of the more powerful stakeholders in a more efficient manner. Management may rank the stakeholders according to their power. In case of reporting, management may make an attempt to fulfill the information needs of mostly the powerful stakeholders.

Another important theory in corporate social and environmental accounting research is the legitimacy theory. It was mentioned earlier that in order to survive an organization has to deal with the society and with the people of the society. An organization cannot survive in the society without the approval of the people in the society or community. Here comes the issue of legitimacy. If the society does not consider the activities of the business organization as legitimate, the business cannot operate in the society. If the organization works against the interests and values of the society, its existence will be at stake. It is therefore important that the perception of the society about the organization remains good. In this respect:

"Legitimacy theory asserts that organizations continually seek to ensure that they are perceived as operating within the bounds and norms of their respective societies, that is they attempt to ensure that their activities are perceived by outside parties as being 'legitimate'". (Deegan and Unerman, 2006: 271)

Any wrongdoing from the part of the organization or any bad news about the organization can create a 'legitimacy gap' which may appear to be harmful to the organization. A legitimacy gap can even result in winding up of the company. A bad/wrong perception about the company can lead the consumers to boycott their products. So, in many ways, a legitimacy gap can appear as harmful for the existence of the company.

That is why the companies try to manage their impression in the eyes of the society. One of the tools for managing impression and maintaining legitimacy is corporate reporting. By reporting on their activities in a positive manner, companies can gain legitimacy for their activities.

Stakeholder theory and legitimacy theory interrelate in a way that at the end the activities of the company have to be legitimate in the eyes of the stakeholders who get affected by the affairs of the company.

These days, environmental issues have become a global concern. A wider range of stakeholders get affected by environmental pollution. If organizational activities harm the environment in any way, organizational legitimacy may be threatened and legitimacy gap may come into existence. The way to minimize the legitimacy gap is environmental reporting. If companies can create an image that their activities are environment-friendly, through environmental reporting, legitimacy is achieved.

Methodology

This research firstly applied content analysis method. Over the years, this method remained one of the most popular choices among the social and environmental accounting researchers. Content analysis can be defined as 'a careful, detailed, systematic examination and interpretation of a particular body of material in an effort to identify patterns, themes, biases and meanings' (Berg and Lune, 2012: 349). Here, in this research, the particular body of material that is analyzed is the annual reports of the banking companies of Bangladesh. Annual reports of the top ten banks (among total 30 banks listed in the Dhaka Stock Exchange) selected on the basis of the total assets in 2011, were taken for analysis. For each bank annual reports of 2011, 2012 and 2013 (three years, 30 annual reports in total) were selected. It was mentioned earlier that in the year 2011 Bangladesh Bank introduced the concept of green banking to the banking sector of Bangladesh. It is expected that

the banking companies that are bigger in size will try to go for more voluntary disclosure and continue to increase it over the years. Before this, many other researchers hypothesized that the firms that are bigger in size will go for greater voluntary disclosure (see Spicer, 1978; Patten, 1991; Gray, Javad, Power and Sinclair, 2001; Roberts, 1992; Prado-Lorenzo et al, 2009; Freedman and Jaggi, 2005). One common measure of firm size is total assets (Ousama, Fatima and Hafiz-Majdi, 2012). So, it can be said that the sample selection criteria is consistent with previous research on voluntary disclosure.

The annual reports were collected from the respected web-sites of the banks. Among the top ten banks on the basis of total assets in 2011, three did not have all three year's (2011

to 2013) annual reports in their web sites. As a result, 10 banks among the top 13 had to be selected as a sample.

After collecting the annual reports, these were examined in order to identify the several green banking issues that were disclosed. From 2011, all the sample banks started reporting under the heading of 'Green Banking'. So, the contents under this heading were analyzed. In 2013, through GBCSRD Circular Letter No.05 titled 'Policy Guidelines for Green Banking', Bangladesh Bank has clearly given the issues that need to be disclosed by the banks in respect of green banking. By keeping these issues in mind, the content analysis was conducted. It was seen that the sample banks, in general, have reported on the following sixteen issues:

Table 3: Disclosure Issues on Green Banking

Disclosure Issues on Green Banking

1. Energy efficiency/ savings,
2. Electricity Consumption/saving,
3. Gas/fuel consumption,
4. Water consumption/saving,
5. Paper consumption/saving,
6. Green Finance,
7. General statement on climate change and global warming,
8. Mentioning of carbon emission or footprint,
9. Climate change responsibility,
10. Climate change funds,
11. Establishment of green banking unit,
12. Establishment of green banking policy,
13. Green banking products,
14. Online/mobile/SMS banking,
15. Social awareness creation, and
16. Sector specific green banking policy.

The findings of the research present with the descriptive statistics that notifies the number of banks that presented these issues in the annual reports over this three-year time period.

After that, a qualitative discourse analysis of green banking related corporate narratives was conducted in order to find out the nature of language that was used. In discourse analysis language is considered as a social tool. Language is used for a purpose. A discourse analyst, through a close reading of the texts tries to identify the motives and methods of the text producers and also how the readers interpret that produced text (Baker and Ellece, 2011). This analysis is mainly qualitative in nature (Baker and Ellece, 2011). The next section of the article presents the findings of this research.

Findings and Analysis

Among the ten banks selected for analysis, one bank did not report on green banking issues in any of these three years (2011 to 2013) under consideration. As at the beginning Bangladesh Bank did not provide enough guidelines on reporting on green banking; this non-disclosure is not that surprising. All the other nine banks reported on green banking in each of these three years under consideration. It can be seen from Table 3 that on average, in 2011, these ten banks reported on around 7 issues (average is 7.4). In 2012, this average goes up to 9 (average 9.9) and in 2013 it increases again to 11 (average 11.8). So, it can be said that on average, the level of voluntary disclosure of green banking issues increased over these three years for these sample banks.

Table 5 gives an idea about the reporting on each of the issues. It shows how many banks have reported on each of these issues in each year from 2011 to 2013. It can be seen that other than the issue of "General statement on climate change and

Table 4: Average Number of Issues Reported in Each Year

Year	Average Number of Issues Reported
2011	7.4
2012	9.9
2013	11.8

Table 5: No. of Banks Reporting each of the Issues

Items	2011 (No. of Banks)	2012 (No. of Banks)	2013 (No. of Banks)
1. Energy efficiency/ savings	6	7	9
2. Electricity Consumption/saving	5	7	8
3. Gas/fuel consumption	4	5	7
4. Water consumption/saving	5	7	8
5. Paper consumption/saving	5	6	8
6. Green Finance	4	7	8
7. General statement on climate change and global warming	7	6	9
8. Mentioning of carbon emission or footprint	2	3	5
9. Climate change responsibility	5	5	7
10. Climate change funds	5	7	6
11. Establishment of green banking unit	4	7	8
12. Establishment of green banking policy	5	8	8
13. Green banking products	5	5	5
14. Online/mobile/SMS banking	6	8	9
15. Social awareness creation	5	7	8
16. Sector specific green banking policy	1	4	5

global warming" (No. 7), each of these issues were reported by more banks in each consecutive year. Although the issue of "General statement on climate change and global warming" had a drop in 2012, it increased again in 2013. So, it can be said that in each year, more banks reported on each of these issues.

Qualitative Discourse Analysis

This section of the article provides some examples of the nature of language that were used by the companies in reporting on green banking. In terms of presentation, materials were extracted directly from the annual reports and analyzed.

Definition of Green Banking

Some banks made an attempt to define green banking, according to their perception and idea. For example, Rupali Bank Limited defined green banking in the following manner:

(1) "Green banking is a simple word but its magnitude is wider covering social environment and economical aspects. Green bank is a bank that considers social and ecological factors with an aim to protect environment and conserve resources. Thus green bankers concern about sustainable development." [Annual Report of Rupali Bank, 2013, p. 150]

The highlighted text in the quotation was done by the authors. These highlighted words demand attention. Firstly, it can be seen that the issue of climate change was not mentioned in this definition. In the definitions given by the academicians (mentioned in the introduction section of this article), the issue of carbon emission and climate change got huge importance. Secondly, in this definition, all the aspects of Triple Bottom Line (TBL) - social, environmental and economic - got ample importance. Thirdly, they want to see green banking covering both the social and the environmental aspects (i.e., not the environmental aspects alone). Fourthly, the issue of sustainable development was highlighted here (similar to Ahmed, Zayed and Harun (2013)).

Another example can be presented here:

(2) "Green banking is to provide innovative green products to support the activities that are not harmful to environment and to help to conserve the environment. It aims to use the resources of a bank with responsibility avoiding spoilage and giving priority to environment and society. Green banking saves costs, minimizes the risk, enhance bank's reputations and contribute to the common good of environmental sustainability. It serves both commercial objectives of the bank as well as its corporate social responsibility". [Annual Report of Mercantile Bank Limited, 2011, p. 148].

In this highly descriptive definition both environment and society got importance. In comparison to the other definitions - (1) this definition is more focused on economic aspects like 'saving cost', 'resources', 'bank's reputation' and 'commercial aspects'.

In summary, it can be said that the definitions of green banking given by these banks lack consistency. Though the guidelines of Bangladesh Bank mostly emphasize on the environmental concerns, Banks have taken 'green banking' as a social and economic concern as well.

Energy Efficiency and Electricity, Gas, Water and Paper Saving

Use of energy needs burning the fossil fuel and as a result of this burning carbon is emitted in the air. Burning of fossil fuel contributes to global warming in a negative manner. Banks have emphasized on this issue in their reporting.

In some cases, banks have used a general statement on the efficient use of energy and water. For example, Southeast Bank Limited mentions:

(3) *"Bank is concentrating on its in-house green activities through the most effective utilization of resources (power, gas, fuel, water, paper etc.)."* [Annual Report of Southeast Bank, 2013, p. 109].

Though this kind of statement highlights the Bank's concern for energy and water saving, a detailed picture is not there. The use of the words like 'most effective utilization' may have a positive impact on the minds of the readers (stakeholders); this kind of reporting lacks completeness. Readers do not understand what kind of 'utilization' was in process.

Some of the reports were more detailed. The report of Islami Bank Bangladesh Limited reported:

(4) *"The bank advises the officials to adopt energy efficient practices. The officers try to ensure efficient use of gas, fuel and electricity with a view to reducing carbon emission. Energy efficient equipments like energy bulbs, less sound generators etc. are used in the offices. The bank also introduced the system of auto shutdown of the electrical equipments."* [Annual Report of Islami Bank Bangladesh Limited, 2013, p. 112]

In comparison to (3), this can be considered as more detailed. The actions taken (energy bulbs, less sound generator, auto shutdown) for energy saving is mentioned here. But again, this report can be referred to as incomplete in the sense that it did not mention whether these actions really resulted in energy saving or not. Again the word 'advises' demands greater interpretation. Advising does not mean that it is mandatory to follow these practices.

The report of Eastern Bank Limited contained the following information:

(5) *"While others talk big about energy conservation and using alternative energy, we are humble and action oriented. Four of EBL's branches and six ATMs are powered by solar energy. The bank has reduced electricity and paper use consumption by 33 percent and 40 percent respectively in 2011 compared to 2010. Some 40 cars of the bank have also been converted into CNG."* [Annual Report of Eastern Bank Limited, 2011, p. 107].

In comparison to (3) and (4), this can be considered as having greater detail. They mentioned the actions taken by the bank and also the results of these actions (reduction in consumption). One interesting aspect of this report (5) is that this bank wanted to compare their level of sincerity with that of the others in the market. It is said here that others only go for 'big talk' and are not action oriented. This statement indirectly gives an indication that the reports of other companies may be mere talk that lacks authenticity.

It can be seen from the discussion that the level/extent of reporting varied from bank to bank. The reporting lacks consistency because of the absence of detailed guidelines from Bangladesh Bank.

Green Finance and Sector Specific Green Banking Policy

Green finance refers to financing the projects that are environmentally friendly. In the Annual Report of Islami Bank Bangladesh Limited, a definition of green finance was presented:

(6) *"Green investment (finance) implies the financial services to the businesses and projects that help prevent deterioration of the environment as well as which are not harmful to the environment"* [Annual Report of Islami Bank Bangladesh Limited, 2013, p. 109].

In case of green financing issue, some banks have been very detailed in reporting. For example, Islami Bank Bangladesh Limited, in 2013, has presented the total scenario through a detailed table that contains information about the 'number of projects/clients', 'disbursement during 2013' and 'outstanding' amount. It can be seen from the table that the bank divided the green finance into two categories: direct green investment and indirect green investment. Under direct green investment they mentioned about their financing in projects like 'effluent treatment plants', 'non-conventional and alternative energy', 'environment friendly brick kiln', 'clean water supply projects' and 'recycling/reprocessing plants'. But under the heading of 'indirect green investment' they did not go for such detail. Because of this lack of detailing, 'indirect green investment' remains a confusing term for the readers.

Whereas, Southeast Bank presented their activities in a less detailed manner:

(7) *"Bank is one of the partners of Bangladesh Bank's refinance facilities for renewable energy generation and other environmentally beneficial projects like ETPs, energy efficient kilns and brick fields. In the year 2013 Bank provided refinancing facility to 7 Bio-Gas Projects and 137 Solar Home Systems amounting to total BDT 4.30 million"* [Annual Report of Southeast Bank, 2013, p. 109]

Here, though the total amount of green finance is mentioned, the exact amount given to each project is not determinable.

Some banks have reported on their specific policies related to financing in some particular sectors.

For example:

(8) *"Bank has inserted a mandatory clause for installing ETP for any Composite Textile, Dyeing units for availing of investment from EXIM Bank. Bank has disbursed Tk. 7.01 crore for installation of ETP and Tk. 1405.46 crore in projects having ETP in the year 2013".* [Annual Report of EXIM Bank, 2013, p. 39]

Again, the form and extent of reporting on this issue varied from bank to bank. The narratives ranged from a general and short description of the activities to detailed tables describing each of the green finance projects.

Climate Change, Carbon Emission and Climate Change Fund

It was mentioned earlier that the issue of climate change got immense importance in the definitions of green banking. Some banks showed their concerns related to climate change and global warming. Dutch-Bangla Bank Limited mentioned:

(9) *"The world has seen much focus on economic progress and mankind has made giant steps in its journey through time. The side effects of the development process have, however, also been equally enormous - loss of biodiversity, climatic change, environmental damage, etc."* [Annual Report of Dutch-Bangla Bank Limited, 2012, p.173]

Though this kind of narrative does not represent the activities of the banks, it shows their concern about the environment. The following statement (10) can be considered as one where the bank has linked the issue of climate change with their activities:

(10) *"Bank has approved Environmental and Climate Change Risk as part of existing Investment Risk Methodology (IRG) to assess a prospective customer and circulated sector wise check list for complying at the time of preparation/processing of relative investment proposal".* [Annual Report of EXIM Bank Limited, 2011, p.31-32].

Assessing the prospective customers and circulating sector wise checklist represents two activities that were performed in order to deal with the climate change issues. Some banks linked the issue of carbon emission with the mitigating activities that they adopt:

(11) *"The bank has a good number of products which are automated and time savings for the customers. Advanced technologies are being used to provide prompt and environment friendly customer services. The products include i-banking, m-cash, online banking, SMS banking, call center, ATM services and phone banking which help reduce carbon emission".* [Annual Report of Islami Bank Bangladesh Limited, 2013, p. 110].

In some annual reports, the issue of carbon emission was also linked with green finance:

(12) *"Financing low carbon technology represents a unique opportunity for banks to benefit from significant growth of the low carbon technology sector whilst demonstrating a positive contribution in tackling climate change. Many of the finance opportunities of the future will be driven by the investment demands of low carbon development. In other words, capital is needed to finance clean energy, less polluting cars and buildings, next generation public infrastructure, and many other green assets".* [Annual Report of Dutch-Bangla Bank Limited, 2012, p. 175].

It can be noticed from statements (11) and (12) that banks tried to link the issue of carbon emission with the issue of technology. That means, these banks believe that the use of proper technology can be a solution for reducing carbon footprints.

The issue of climate risk fund also been highlighted in these reports. In general, the banks that reported on climate risk funds mentioned the amount of money that is allocated for this fund. For example, Rupali Bank Limited mentioned:

(13) *"RBL has allotted Tk. 4220 million in the bank's budget of 2013 to perform green banking activities. RBL has involved CSR activities covering environmental, social, educational and cultural advancement. However the bank has participated by providing Tk. 15.31 million in CSR activities related to climate change fund".* [Annual Report of Rupali Bank, 2012, p.113]

Though this statement (13) covers the total amount of money allotted as the climate risk fund, the activities for which these funds were provided or used were not mentioned clearly. This can be found in the following example (14):

(14) *"IBBL has distributed Taka 52.00 million (for flood Tk. 7.00 million and Disaster, Health & Environment Tk. 45.00 million) in the year 2012 (which was Tk. 48.05 million in 2011) among the climate victims due to devastating flood, chilling cold, severe drought etc. in different parts of the country".* [Annual Report of Islami Bank Bangladesh Limited, 2012, p. 109].

Both examples - (13) and (14) - have some features that are different. Though both these statements disclose the total amount of money spent as a climate risk fund, example (14) gives a clearer picture by giving the breakdowns of the areas (flood, disaster, health, and environment) where these funds were utilized. Moreover, example (14) also gives a comparative picture of fund allocation in two consecutive years - 2011 and 2012. Example (13) declares the budget allocation for the forthcoming year - 2013.

Even here it is to be noticed that the disclosure pattern differed from bank to bank as there was an absence of proper format suggested by the regulating body like Bangladesh Bank.

Online/SMS/Mobile Banking

Bangladesh Bank encouraged the online/mobile/SMS banking mainly because of saving papers. As paper production requires cutting trees, it results in deforestation. Deforestation results in global warming. Some of the banks linked their reporting on online banking with paper saving. For instance:

(15) *"To reduce paper use, time, fuel consumption, MBL has introduced online banking, SMS banking and Mobile banking which are gaining popularity day by day. These are allowing customers to do banking transactions without coming to the bank physically. Expansion of ATM network is greatly reducing the need for check book and reducing consumption of security papers".* [Annual Report of Mercantile Bank Limited, 2013, p. 147]

(16) *"RBL is keen to emphasize on the easiest way to save environment by decreasing paper waste, reducing carbon emission, reducing printing costs and postal expenses".* [Annual Report of Rupali Bank Limited, 2012, p. 113]

Both of these statements highlight the issue of paper saving. The first statement (15) has a 'customer orientation' in the sense that it is focusing on the fact that because of online transaction, customers can avail easily. The second statement (16) has a 'strategic orientation' as it highlights that online banking is not only good for the environment but it is also a cost saver. Expenses related to paper, printing and mail posts are decreased through online banking. It needs to be mentioned here that though these banks are claiming that there is a decrease in paper use, none of them mentioned how much paper they have saved. The Bangladesh Bank circular GBCSRD Circular Letter No. 05 (issued in 2013) calls for mentioning the amount of paper use in the green banking reports.

Green Banking Unit and Green Banking Policy

As a requirement of Phase- I of the green banking program, Bangladesh Bank asked the banks to adopt green banking policy and establish a green banking unit/cell. Banks reported on this issue in their annual reports. For instance Dutch Bangla Bank reports:

(17) *"As directed by Bangladesh Bank, an independent dedicated team of Green Banking Cell has been working consisting of 06 (six) officials from related divisions led by Head of Credit Division who may contribute with the vested responsibilities in line with the principles towards implementation and reporting of green banking initiatives of the bank".* [Annual Report of Dutch-Bangla Bank Limited, 2012, p. 177].

(18) *"A comprehensive Green Banking Policy has formulated and approved by the Board of Directors in its 73rd meeting dated 19/06/2011. A high powered Green Banking Committee comprising the Directors of the Board of the bank has also been formed to determine/prepare banks environmental policy, strategies and program. Bank has also formed separate Green Banking Unit of Cell comprising all the Head of operational outlet assigning the responsibilities of designing, evaluating and administering related Green Banking issues of the bank".* [Annual Report of EXIM Bank Limited, 2011, p. 31]

It can be seen from the example that the banks have reported on introducing the green banking policy (18), the composition of green banking cell (17 & 18) and the tasks assigned to the green banking cell (17 & 18).

Awareness Creation - both inside and outside the organization

Banks also reported on their activities related to the creation of environmental awareness. In terms of awareness creation among employees, EXIM Bank reported:

(19) *"A set of general instruction already circulated to the employees for efficient use of electricity, water, paper and re-use of equipment"* [Annual Report of EXIM Bank Limited, 2011, p. 32].

This can be considered as an initiative inside the organization. Banks also reported on awareness creation outside the organization. Southeast Bank, in their report, emphasized on training and introduction of Green Banking awards:

(20) *"Bank has also concentrated on Green marketing, training and development. The bank has decided to introduce green awards to encourage individuals and organizations who are actively working to protect the environment and tackle the risks of climate change through green business, environment friendly operations, community investment and knowledge management".* [Annual Report of Southeast Bank Limited, 2013, p. 109].

Rupali Bank reported on their awareness creation activities as follows:

(21) *"RBL is using a slogan "Plant tree, Save the environment" in bank's letterhead and envelopes in raising green awareness among its shareholders and stakeholders... Tree plantation project is encouraged by the bank to raise awareness regarding green banking".* [Annual Report of Rupali Bank Limited, 2011, p. 96].

Discussion and Conclusion

The main objective of this research was to investigate the nature of disclosure of green banking in the annual reports of Bangladeshi banking companies. By analyzing the annual reports from 2011 to 2013 it was found that over the years, the level of disclosure increased. The form and extent of disclosure differed from company to company. On one hand, some of the banks have only presented a general statement that lacked specificity. On the other hand, some of the banks have provided detailed information with specific quantitative information.

It can be seen even without a proper guideline of reporting from the part of Bangladesh Bank, companies took initiatives to report on green banking in their own way. It can be said that as the banking sector is a relatively more regulated and competitive sector in Bangladeshi economy, they responded to this call for reporting from Bangladesh Bank. Though there were dissimilarities in the pattern and language of disclosure, most of these banks tried to disclose the issues that were identified by Bangladesh Bank as 'green banking activities'. Most of

these banks tried to disclose the issues that were identified by Bangladesh Bank as 'green banking activities'. So, it can be said that in this case, Bangladesh Bank was considered as a powerful stakeholder (as per the managerial branch of stakeholder theory). This disclosure initiative made them more efficient in the eyes of this powerful stakeholder - Bangladesh Bank (a powerful monitor of the Banking sector of Bangladesh). So, it can be expected that from 2014 onwards, the reporting will become more uniform as June 30, 2014 is the new deadline for implementing the first phase of the green banking program of Bangladesh Bank and in GBCSRD Circular Letter No. 05, they have provided a proper format for green banking reports.

Moreover, some banks have taken green banking as an impression management tool. They have mentioned in the reports their rankings in terms of their green banking performance. One of the banks, while defining green banking mentioned that green banking helps in enhancing corporate reputation (2). It can be seen from the examples in the qualitative discourse analysis section that these banks mostly highlighted good news. These mainly included their concern for the environment and their positive activities in order to conserve the environment and prevent environmental pollution. It can be said that these banks in fact tried to gain legitimacy from Bangladesh Bank and the society. The level of environmental pollution in Bangladesh is high. Moreover, it is one of the countries that are getting badly affected in terms of climate change and global warming. The issue of climate change is getting emphasized by the government. Moreover, media and environmental activists are also highlighting the negative effects of climate change. Climate change and global warming have become common buzzwords. In this situation, reporting on environmental performance can help the companies to manage impression and gain legitimacy.

Though institutions (like GRI) that are concerned with preparing guidelines on sustainability reporting have produced and disseminated the guidelines on this kind of reporting before, many prior researchers on corporate social and environmental reporting on Bangladesh found that the level/extent of this kind of disclosure is low (was discussed in details in the literature review). It can be said that the declaration of the guidelines from these international agencies did not get much response from the companies of Bangladesh. But when a local authority (Bangladesh Bank) proposed a green banking program, the banks responded towards the proposed activities as well as started reporting on those activities even without having proper reporting guidelines. From this, it can be argued that local authorities can act as better pressure groups in comparison to the international agencies. If the current status of corporate social and environmental reporting in Bangladesh needs to be improved, a monitoring agency like Securities and Exchange Commission (SEC) should come up with a proper and workable set of guidelines so that the whole corporate sector becomes serious about this issue.

References

- Ahmad, F., Zayed, N. M. and Harun, M. A. (2013). Factors behind the adoption of green banking by Bangladeshi commercial banks. *ASA University Review*, 7(2), 241-255.
- Alam, M. (2006). Stakeholder Theory. In Hoque, Z. (ed.). *Methodological issues in accounting research: Theories and methods* (pp. 207-222). London: Spiramus.
- Azim, M. I., Ahmed, S. and Islam, M. S. (2009). Corporate social reporting practice: evidence from listed companies in Bangladesh. *Journal of Asia-Pacific Business*, 10(2), 130-145.
- Bahl, S. (2012a). The role of green banking in sustainable development. *International Journal of Marketing, Financial Services & Management Research*, 1(2), 27-35.
- Bahl, S. (2012b). Green banking - the new strategic imperative. *Asian Journal of Research in Business Economics and Management*, 2(2), 176-185.
- Baker, P. and Ellece, S. (2011). *Key Terms in Discourse Analysis*. London: Continuum.
- Bala, S.K. and Habib, A. (1998). Financial Reporting to Employees: Bangladesh Case. *Dhaka University Journal of Business Studies*, 19(1), June, 215-236.
- Bala, S.K. and Yusuf, M.A. (2003). Corporate Environmental Reporting in Bangladesh: A Study of the Listed Public Limited Companies. *Dhaka University Journal of Business Studies*, XXVI(1), June, 31-45.
- Belal, A.R. (1999). Corporate Social Reporting in Bangladesh. *Social and Environmental Accounting*, 19(1), 8-12.
- Belal, A.R. (2001). A Study of Corporate Social Disclosures in Bangladesh. *Managerial Auditing Journal*, 16/5, pp. 274-289.
- Belal, A.R. and Cooper, S. (2011). The absence of corporate social responsibility reporting in Bangladesh. *Critical Perspectives on Accounting*, 22, 654-667.
- Belal, A. R. and Owen, D. L. (2007). The views of corporate managers on the current state of, and future prospects for, social reporting in Bangladesh: an engagement based study. *Accounting, Auditing & Accountability Journal*, 20(3), 472-494.
- Berg, B. L. and Lune, H. (2012). *Qualitative Research Methods for the Social Sciences* (8th edition). Boston: Pearson.
- Bhardwaj, B. R. and Malhotra, A. (2013). Green banking strategies: sustainability through corporate entrepreneurship. *Greener Journal of Business and Management Studies*, 3(4), 180-193.
- Chowdhury, A.I. and Chowdhury, A.K. (1996). Corporate Social Accounting: Do We Need It? *The Bangladesh Accountant*, April-June, 90-100.
- Deegan, C. and Unerman, J. (2006). *Financial Accounting Theory* (European edition). London: The Mc-Graw-Hill Companies.
- Freedman, M. and Jaggi, B. (2005). Global warming, commitment to the Kyoto protocol, and accounting disclosure by the largest global public firms from polluting industries. *The International Journal of Accounting*, 40, 215-232.

- Gray, R., Javad, M., Power, D. M. and Sinclair, C. D. (2001). Social and environmental disclosure and corporate characteristics: a research note and extension. *Journal of Business, Finance and Accounting*, 28(3-4), 327-356.
- Hossain, D. M. (2014). The Development of Social and Environmental Reporting Research on Bangladeshi Organizations: A Postcolonial Critique. *Middle East Journal of Business*, 9(4), 9-20.
- Hossain, D. M., Salat, A. and Amin, A. (2005). Voluntary Disclosure on Corporate Social Responsibility: A Study on the Annual Reports of Bangladeshi Companies. *The Bangladesh Accountant*, 47(20), 28-34.
- Imam, S. (2000). Corporate Social Performance reporting in Bangladesh. *Managerial Auditing Journal*, 15(3), 133-141.
- Islam, M. A. (2010). Social and environmental accounting research: major contributions and future directions for developing countries. *Journal of the Asia-Pacific Center for Environmental Accountability*, 16(2), 27-43.
- Islam, M. A. and Deegan, C. (2008). Motivations for an organisation within a developing country to report social responsibility information: evidence from Bangladesh. *Accounting, Auditing & Accountability Journal*, 21(6), 850-874.
- Islam, M. A. and Islam, M. A. (2011). Environmental incidents in a developing country and corporate environmental disclosures: A study of a multinational gas company. *Society and Business Review*, 6(3), 229-248.
- Islam, M. A. and Mathews, M. R. (2009). Grameen Bank's social performance disclosure: Responding to a negative assessment by Wall Street Journal in late 2001. *Asian Review of Accounting*, 17(2), 149 - 162.
- Khan, M. H., Halabi, A. K. and Samy, M. (2009). Corporate social responsibility reporting: a study of selected banking companies in Bangladesh. *Social Responsibility Journal*, 5(3), 344-357.
- Khan, M. H. (2010). The effect of corporate governance on corporate social responsibility (CSR) reporting: empirical evidence from private commercial banks of Bangladesh. *International Journal of Law and Management*, 52(2), 82-109.
- Khan, A. R. and Hossain, D. M. (2003). Environmental reporting as a corporate responsibility: A study on the annual reports of the manufacturing companies of Bangladesh. *The Bangladesh Accountant*, January-March.
- Khan, M. H., Islam, M. A., Fatima, J. K. and Ahmed, K. (2011). Corporate sustainability reporting of major commercial banks in line with GRI: Bangladeshi evidence. *Social Responsibility Journal*, 7(3), 347-362.
- Khan, A. R., Muttakin, M. B. and Siddiqui, J. (2013). Corporate Governance and Corporate Social Responsibility Disclosures: Evidence from an Emerging Economy. *Journal of Business Ethics*, 114, 207- 223.
- Mathews, M. R. (1997). Twenty-five years of social and environmental accounting research: Is There a silver jubilee to celebrate? *Accounting, Auditing & Accountability Journal*, 10(4), 481-531.
- Meena, R. (2013). Green banking as initiative for sustainable development. *Global Journal of Management and Business Studies*, 3(10), 1181-1186.
- Muttakin, M. B. and Khan, A. (2014). Determinants of corporate social disclosure: empirical evidence from Bangladesh. *Advances in Accounting, incorporating Advances in International Accounting*, <http://dx.doi.org/10.1016/j.adiac.2014.03.005>.
- Ousama, A. A., Fatima, A. and Hafiz-Majdi, A. R. (2012). Determinants of intellectual capital reporting: evidence from annual reports of Malaysian listed companies. *Journal of Accounting in Emerging Economies*, 2(2), 119-139.
- Patten, D. (1991). Exposure, legitimacy and social disclosure. *Journal of Accounting and Public Policy*, 10, 297-308.
- Prado-Lorenzo, J., Rodriguez-Dominguez, L., Gallego-Alvarez, I. and Garcia-Sanchez, I. (2009). Factors influencing the disclosure of greenhouse gas emissions in companies world-wide. *Management Decision*, 47(7), 1133-1157.
- Rashid, A. and Lodh, S. C. (2008). The influence of ownership structures and board practices on corporate social disclosures in Bangladesh. *Research in Accounting in Emerging Economies*, 8, 211-237.
- Roberts, R. (1992). Determinants of corporate social responsibility disclosure: an application of stakeholder theory. *Accounting, Organisations and Society*, 17(6), 595-612.
- Sobhani, F. A., Amran, A. and Zainuddin, Y. (2012). Sustainability disclosure in annual reports and websites: a study of the banking industry in Bangladesh. *Journal of Cleaner Production*, 23, 75-85.
- Spicer, B. (1978). Investors, corporate social performance and information disclosure: an empirical study. *The Accounting Review*, 53, 94-111.

Is Marxism Still Valid in Industrial Relations Theory?

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Abstract

All too often, scholars are posed with questions as to whether Marxism has any relationships with modern industrial relations theory. Many say yes, many say no. However, there is a crucial debate in the public domain about industrial relations theory and many try to portray it from different analytical tools. This short article will mediate on this issue whether Marxism is still valid in the current industrial relations theory.

Key words: Marxism, Industrial Relations Theory and Trade unions.

Introduction

"The philosophers have only interpreted the world in various ways but the real task is to alter it". Karl Marx

The industrial relations (IRs) or employment relation (ERs) theorists have not thus far reached a certain agreement to declare that this is the ultimate theory of industrial relations. Last couple of centuries there have been many academic and great scholars who saw industrial relations in a different perspective. They also tried to find the best theory of industrial relations, but thus far, it is most likely to see that there is not any universal theory of industrial relations that any potential industrial relations student can adopt. However, there is a significant amount of research growing and offering different methods of IR and ER and we can take scholars' guideline while studying industrial relation and employment relations.

As an approach of Marxism in industrial relations, a neo-Marxists interpretation of the industrial relations or labour process is crucial and it often conflicts with the contemporary scholars. There is strong debate whether Marxism is considered as an industrial relations theory. This short article, despite its own limitations, the extent to which will arrest some scholarly written debates on these issues. Thus, theoretically this qualitative analysis will discuss by developing a theoretical framework of the industrial relations theory first, and then incorporate the scholar's point whether Marxism is still valid in industrial relations theory.

The Core Ideas of Industrial Relations

The term "Industrial Relations" (IR) has come to be established into common use in Britain and America during the 1920s. Initially, to some extent, some started using IR theory incorporating with Personal Management (PM) and, since the 1980s, Human Resource Management (HRM). But, interestingly, these three have common traits in the practical field which is based on one single concept (management of people) and therefore, academic inquiries are essential in this field (see Edwards, 2009).

Again, to avoid confusion and academic debate, on some facets, scholars also use "term" Employment Relations (ER) instead of IR. Nevertheless, some scholars try to isolate IR and ER from a different perspective. In saying this, again, when I went through the scholarly written articles I strongly found notions of IR and ER theories and I tried to understand their basic and fundamental differences from an analytical observations.

Interestingly, IR, the extent to which it covers relationships between managers and employees is always determined by the economic activity. This relationship perhaps reveals a mutual understanding between managers and employees where economic benefits are the main agenda of both parties. But, scholars thus far have identified that IR theory excludes domestic and also the self-employed who work on their own account and therefore they are also accountable to maintain their own labour standards which shows the system of self-regulation or self-accountability.

Moreover, this concept originated partly from the International Labour Organization (ILO) and its European stakeholders where Civil law is more prominent than the Common law. Again, according to Edward (2009), the point is, however, when self-employed professionals deal with customers, the extent to which, it makes it extensively difficult to say whether such relationship determine the concept of "industrial relations", but again, for understanding, potential IR students can consider this as a part of industrial relations when there is a contractual agreement between a self-employed firm and its employees (see Edward, 2009; Eberhard, 2007; Kaufman, 2004).

Alternatively, scholars tried to portray the term "ER" from a different facet. In saying this, when potential IR or ER students try to isolate this both from each other, to some extent, ER theory itself focuses on: all forms of economic activity in which certainly all employees work under a certain authoritative role which emerges from the employers and therefore employees receive wages in return for their labour - this model represents a substantive issue of IR system where the procedural rule deals with conflicts between employer and employee (see Edward, 2009; Quinlan, 2004).

Again, by the nature of the world of work, scholars identified that the great majority of the population in modern times, of course, are employees rather than employers. Some scholars define IR theory as less effective rather than studying all forms of the employment relationship. But, the debate still grows and many say this is not to some extent a sufficient support that contemporary observers are trying to establish in which the IR theory is not valid anymore, rather scholars say it is indeed very hard to justify the concept and implications of IR in the current industrial studies by grasping the narrow concept from the economics or sociology of work (see Eberhard, 2007; Kaufman, 2004; Abbot, 2006).

However, whether I use the term 'employment relations' instead of "industrial relations," these both work on labour regulation and scholars say regulation comes from various sources (see Eberhard, 2007). But there is one common characteristic found in scholarly written articles: employment relations and

industrial relations deal with employer and employee and either individually or collectively for procedural rules or substantive rules as these are all directly engaged in the workplace (see Ross, 2008; Kaufman, 2010; Chidi & Okpala, 2012).

Kaufman (2010) saw industrial relations as the process of rule-making for the workplace Dunlop (1958) identified the actors of employment or industrial relations. Other scholars contributed in labour regulation such as Flanders (1965); social regulation of production by Cox (1971); Edwards (2005) saw the employment relationship as structured antagonism. Social regulation of market forces was described by Hyman (1995).

According to Bain and Clegg (1974) cited in Chidi and Okpala (2012), "a traditional approach to employment and industrial relations has been to regard it as the study of the rules governing employment, and the ways in which the rules are changed, interpreted and administered".

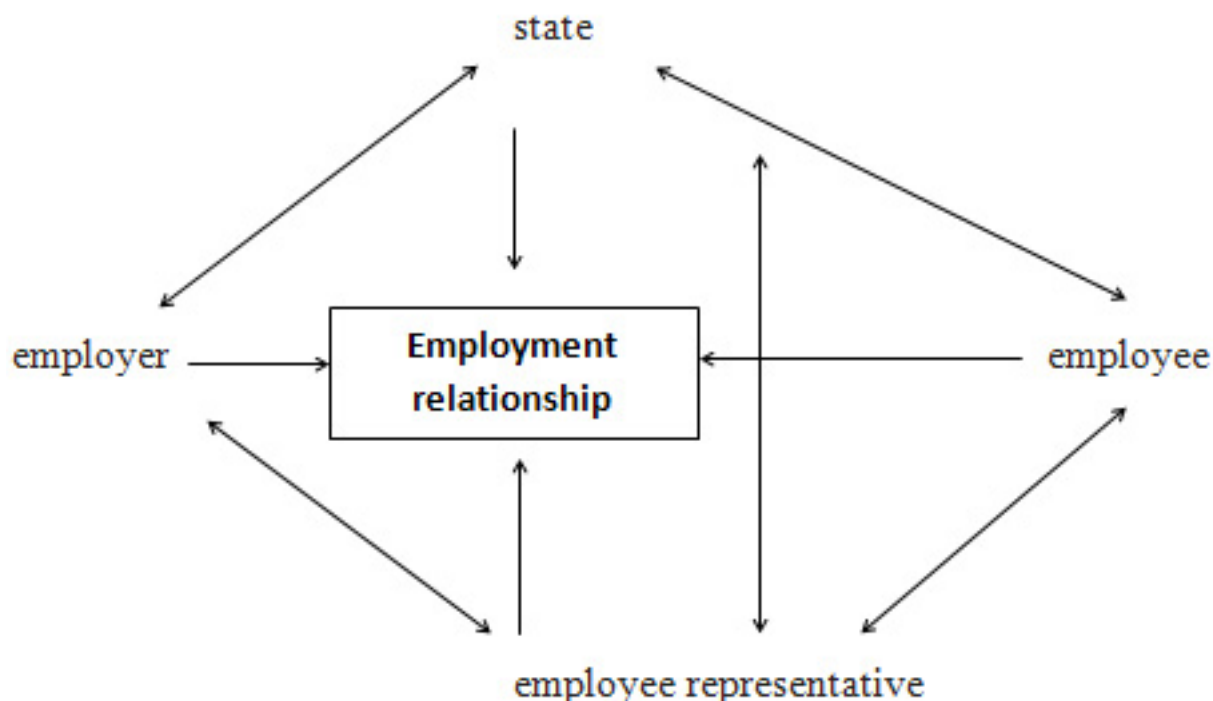
Again, Dunlop 1958; Edward (2009); Freeman (2007); Eberhard (2007); Kaufman (2004); Gunningham (2008); Jentsch (2004); Johnstone (2008); Flenders (1965); Quinlan (2004); Poole (2013); Kittel (1967); identified three major parties in the IR or ER system which are (a) state (b) employer and (c) trade union. In modern time, there are some crucial changes in IR or ER theories. The following model (Figure 1) represents the best employment relations.

The model shown in Figure 1 represents the most common structure of employment relations which was invented by Dunlop in 1958. However, the contemporary IR thinkers are offering different models of IR and ER than the traditional concept or models. However, to some extent, the major parties are identified in labour regulation by almost every scholar, which I have already mentioned about the three parties in the past. Some outsourcing and external regulation can be taken into consideration in order to analyse the IR and ER system in the different contexts, but as Dunlop identified major three actors in his (1958) IR theory, to some extent this is still valid, but other concepts are simultaneously considered by the international academics and scholars in this area.

According to Abbot (2006, p. 187):

"Work is fundamental to the human condition. It determines what we do for much of our waking lives and it preoccupies much of what we think about. It allows us to engage with other people and it helps us to define our sense of identity. It provides us with access to the material necessities of life, as well as to the advantages and achievements of civilisation. Its allocation, organisation, management and reward are therefore of no small importance. How these are undertaken in gainful employment tells us much about the views and values we hold as a society. What levels of unemployment are deemed tolerable, what manner of work is undertaken and how disputes between the two sides of industry are resolved, for example, are all matters about which we have opinions and which are often shaped by the prevailing cultural boundaries, economic circumstances and political understandings we hold towards our engagement with work".

Figure 1: The employment relationship hired from Edwards, P. (Ed.). (2009). *Industrial relations: theory and practice*.



Indeed, for the purpose of this discussion above, the nature of work has tremendously changed during the last one hundred years or so. The technological changes made the work of the world more challenging. People are now working in different ambiances and employment relations studies are now facing more challenges to develop an appropriate theory of ER or IR.

However, a large number of growing research is suggesting and focusing on the issue of industrial conflict and meditating on this issue to solve all the unresolved issues, but, to some extent, there are also substantial amounts of scholarly written articles which have caused confusion about the current and past IR and ER theories. In these processes, many scholars portrayed the IR and ER theory from different analytical lenses, however, it is identified that the industrial relations theory has done so with less uniformity and till now scholars are introducing different ideas of IR and ER theories according to the context ("budgetary/market, technological characteristics of the work place and work community and the locus and distribution of power in the larger society") (see Chidi and Okpala 2012; Bray et al., 2014).

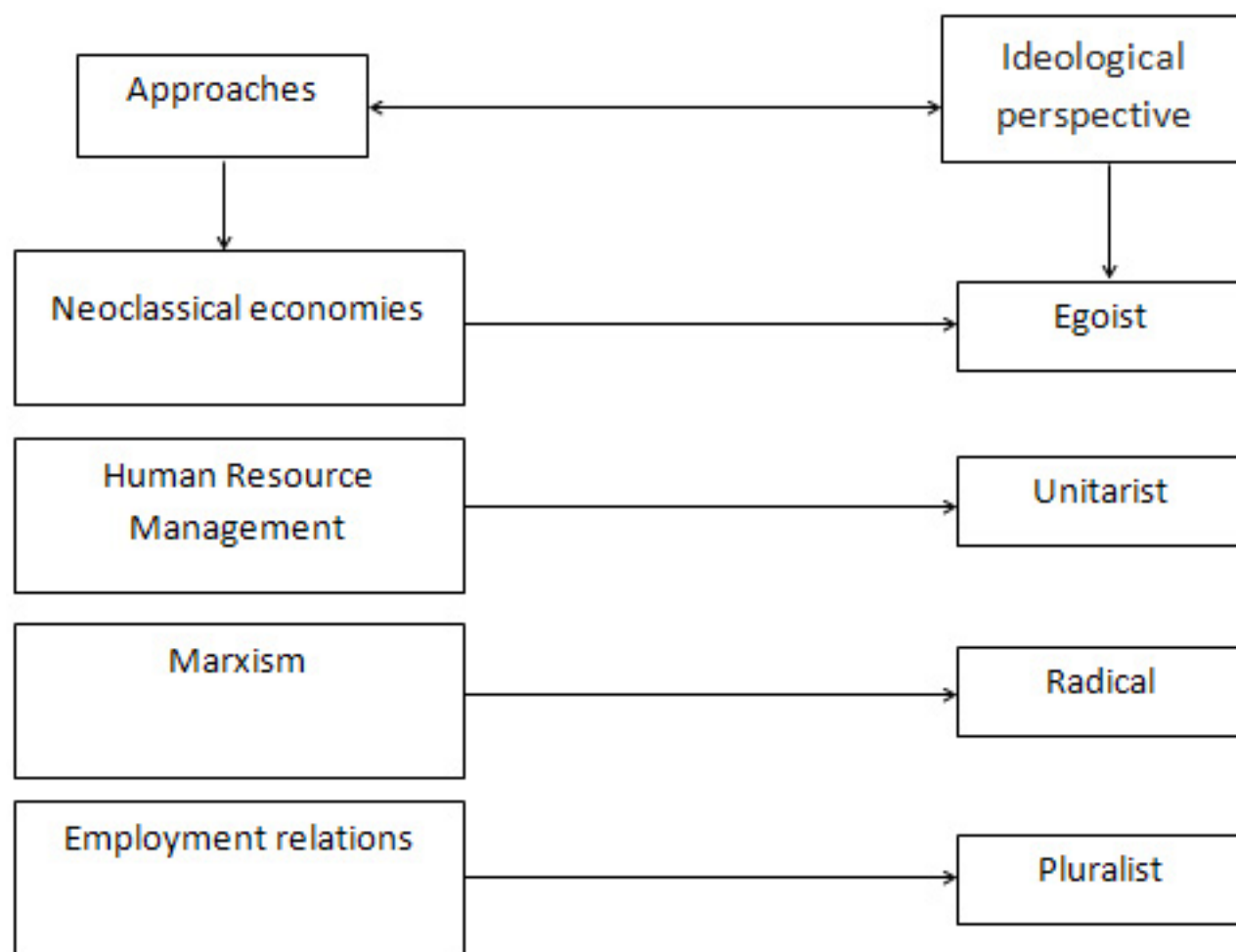
So, grounded situation is playing a big role over the creation of IR and ER theories. As a potential IR and ER researcher, I found, the extent to which, developing countries are suffering from various issues in labour or Occupational Health and Safety (OHS) mainly. Western or European countries have different labour issues in all aspects. So, labour issues in Common law countries and Civil law countries have a different situation. However, Socialist state also has a completely different philosophy in regards to control labour problems than the Common or Civil law states (Sisson & Marginson, 2001). In addition, industrial relations has different approaches.

Nevertheless, again, whether it is the Common law, Civil law or a Socialist law, one thing can be understood from a deeper perspective that labour is the most crucial part of their economy, so the state needs to learn how to develop a better labour institutions, thus, labour issues can be identified easily and these problems can solved by giving an equal effort both from academic and professional levels (see Vogel, 2006; Guzman & Meyer, 2010).

However, as many academic scholars have pointed out that there are distinct approaches in the employment relationship and these approaches are identified from different analytical tools and different intellectually written documents. As I mentioned the employment relation studies are bringing so many paradoxes and it is not an easy way to find which approach is being appropriate in which context. But, to some extent, as a potential researcher, it is my obligation to reveal how each of these approaches is related to the context. But to be very specific in this article, as I already mentioned that my analyses will be based on a specific issue which is (Marxism or Radicalism) and whether there is any connection with the current industrial relation studies or theories, thus my next analyses will be focusing on this particular issue rather than discussing the other approaches more elaborately in this article.

The following figure represents the most common approaches to the employment relationship.

Figure 2: alternative approaches adopted from Bray et al., (2014, p. 15)



Marxist Theory

According to Chidi and Okpala (2012); Abbot (2006); Kaufman (2004, 2010), Marxism, however, unambiguously appeared, more or less, to establish a general theory of society and social change with colossal implications for the analysis of industrial relations within the capitalist societies which does not or to some extent has not any affinities with the industrial relations theory. Interesting indeed! In saying so, again, scholars like Kaufman (2004) revealed something very significant for potential industrial relations students; point is, however, neither the notion of labour relations nor the term of industrial relations, belongs to the vocabulary of Karl Marx (see Kaufman, 2004).

As debate grows on, more theoretically offered an idea of such debate by Ogunbameru (2004) cited in Chidi and Okpala (2012), point, however, to some extent, the application of Marxian theory as it partly relates to industrial relations today derives from later Marxist scholars rather than directly from the composition of Karl Marx himself (see Chidi and Okpala, 2012).

Again, Kaufman (2010) pointed out that more or less during the 1870 -1920 the industrial relations term to some extent was originated within a limited number of works as a response to the worldwide "Labour Problems" (or "Social Question") because industrial development and industrial society emerged

at that time. Research identifies that there was a conflict between capitalism and socialism and these both had revolution at that time. Also, labour reform project met many obstacles and objections during that period. The world was divided into the ideas of orthodox classical and neoclassical economics.

According to Kaufman (2010, p. 76):

"The body of theory, largely imported from Britain but secondarily from France, was widely accepted, hence establishing it as "orthodox." The most widely accepted lesson of orthodox economics at this time was the principle of free trade; second on the list was Say's Law - the contention that a free-market system automatically returns to an equilibrium position of full employment. Free trade applied first and foremost to international exchange of goods between countries, but the principle was extended with only negligible qualification to domestic and factor markets, including, most importantly, labour markets."

Chidi and Okpala (2012) cited in Hyman (1975, p. 12) where he defines "industrial relations as the study of the processes of control over work relations and among these processes, those involving collective worker organisation and action are of particular concern".

Hayman known as an orthodox Marxist has given a strong notion of industrial relations theory - and put it this way - Hayman asserted that this is Dunlop and Flanders, who of them

are the giant industrial relations theorist thus far, but again, some scholars conceptualized the issue of industrial relations theory which has specially come from Dunlop (1958) and was limited to some extent, especially finding the actors and actor's role within the labour or employment regulation process. Hayman's main point, in saying this, put it this way again, it is almost impossible to come up with a complete industrial relations theory at a time rather it develops through an on-going process and maintenance and stability in performance in industrial regulation is a must (Chidi & Okpala, 2012; Hayman, 1975; Kaufman, 2004; Jentsch, 2004).

Again, Abbot (2006, p. 194) pointed out that:

"A Marxist frame of reference may seem redundant in view of the break-up of the Soviet Union, the collapse of communism in Eastern Europe and the decline of 'radical' thinking in the West. There are, however, a number of studies from this school of thought that remain influential. This is because they are based on vastly different assumptions about the nature and cause of workplace conflict, and second, because they act as valid critiques of the previous two frames of reference and their associated theories. Those arguing from a radical perspective draw principally from the work of Karl Marx (1950, 1967, 1978), who argued that capitalist societies were characterised by perpetual class struggle. This struggle is caused by inequalities in the distribution of wealth and the skewed ownership of the means of production. Wealth and property ownership, he observed, were highly concentrated in the hands of a small number of bourgeoisie (or capitalists), whilst the vast mass of the proletariat (or workers) lived in poverty and had nothing to sell but their labour."

In saying this, once again, I need to point Hayman's analyses in this issue, he asserted similarly as contemporary scholars saw the Marxist theory and blended into different shapes.

Chidi & Okpala (2012, p. 273) cited in Hayman (1975) in which he asserted that:

"The Marxist perspectives typify workplace relations as a reflection of the incidence of societal inequalities and the inevitable expression of this at the work place. To sum it up, Hyman further states that industrial relations is all about power, interests and conflict and that the economic, technological and political dynamics of the broader society inevitably shape the character of relations among industrial relations actors which he described as the political economy of industrial relations. Conflict is viewed as a disorder precursor to change and to resolve conflict means to change the imbalance and inequalities in society in terms of power and wealth. Trade unions are viewed as employee response to capitalism"

Then, again, as a potential researcher, to some extent, I cannot ignore saying what other scholars identified analogously, put this way, Marx's theory connected with how people relate to the most fundamental resource of all us, it means, again, through his observation, labour was treated as power of their own labour. The whole, in fact, between 1844 and 1883, a period of democratic nationalism, trade unionism and revolution was his main theme of writing. The labour is fundamental to Marx's theories. Basically, Marx, for the first time arrested a significant point in his theory, put this way - he argued that it

is simply human nature to transform nature, and he calls this process of transformation "labour" and the capacity to transform nature, 'labour power.'

However, to scholars like Kaufman (2004), the point is, he asserted that Marx's core institutions the extent to which it is fundamentally focusing on industrial relations-free labour markets and the factory system-where Kaufman found that the major components of Marx's analysis of industrial capitalism, and he was a keen observer, thus he addressed on labour issues extensively and mainly in trade unionism. But, many scholars say - his main focus was on classifying the distinct gaps between labour and capital. Scholars also pointed out that, he, to some extent, albeit his ideology was based on trade unionism, however, he could not show how trade unions can be a fruitful organization in terms of obtaining the ultimate success through the collective process in terms of wage discriminations and other labour issues.

But, however, the way he saw, it is not the actual nature of trade unions at present that we see around the world where trade unions in many Western and European countries are developed as an institution. Contrarily, in many developing countries, trade union has not yet been treated as a supportive force of changing the labour or OHS conditions as they have little collective bargaining scope and in some countries like Cambodia, China, Bangladesh and so on, where, to some extent, trade union leaders are brutally killed and tortured (see, Kaufman, 2004, 2010; Chidi & Okpala, 2012; Hayman, 1975; Abbot, 2006; Flanders, 1965; Brown et al, 2013; Marston, 2007; Munck, 2010; Islam & McPhail, 2011).

In saying this, many say, his main focus on trade unions show radicalism rather showing how they can collectively raise their concern about the exploitation. As we see now in many countries like the U.K, Australia, where the labour party represents the trade union and trade union has been treated as one of the crucial actors in the industrial relations system which is absent in the Marxist theory (see Kaufman, 2004; Balnave et al., 2009).

Concluding remarks

But in the case of Marxism it is especially incredible to realize that a few (only a few now), still believe that its promised golden age will yet arrive as capitalism drastically grasped the global market. Yet Marxism had the perfect opportunity to demonstrate its promised wonder and glory in the Soviet and Chinese experiments in which state-wide Marxist support was imposed and deviating opinions banned. What were the fruits of those experiments; this makes another debate which is inevitable.

Whatsoever, industrial relations system and market system have tremendously changed during the last one hundred years or so, thus many believe, Marx's theory has not yet demised indeed as we still see huge exploitations around the world especially where global capital drastically took control over the labour market. Developing nations are suffering from inadequate resources, thus, those developing nations compromising with the capitalist by offering abundant cheap labour

like Cambodia's and Bangladesh's garment industry where millions of poor and rural migrated workers are working with very low wages. Technological changes are the major concern for the labour at this moment as capitalists are investing in this field. So, to some extent, whether it is directly related to the Marx's theory of industrial relations, however, his labour theory still shows huge potential for further research in this area.

Finally, as I said, it is indeed almost impossible to bring all the analyses in this article as this area is quite enormous. However, for a potential researcher, it would be wise to consider in order to understand Marx's theory, whether it has any connection with the modern form of industrial relations theory by analysing further from his the political economy of industrial relations, labour process analysis, and the French regulation school. However, thus far, there very little support has been identified in scholarly written articles where Marxism has been considered as an industrial relations theory.

References

- Abbott, K. (2006). A review of employment relations theories and their application. *Problems and Perspectives in Management*, 1(2006), 187-199.
- Balnave, N., Brown, J., Maconachie, G., & Stone, R. (2009). *Employment relations in Australia*, 2nd edn, John Wiley & Sons, Australia Ltd.
- Bray, M., Waring, P., Cooper, R., & MacNeil, J. (2014). *Employment relations: theory and practice*, 3rd addition, McGraw-Hill, Sydney.
- Brown, D., Dehejia, R., & Robertson, R. (2013). *Regulations, Monitoring, and Working Conditions: Evidence from Better Factories Cambodia and Better Work Vietnam*. Working paper, Tufts University. http://users.nber.org/~rdehejia/papers/Brown_Dehejia_Robertson_RDW.pdf.
- Chidi, C. O., & Okpala, O. P. (2012). *Theoretical Approaches to Employment and Industrial Relations: A Comparison of Subsisting Orthodoxies*. INTECH Open Access Publisher.
- Cox, R. (1971). "Approaches to the Futurology of Industrial Relations." *Bulletin of the Institute of Labour Studies*, Vol. 8, NO. 8, pp. 139-64.
- Dunlop, J.T. (1958). *Industrial Relations Systems*. New York: Holt (title now owned by Cengage Learning)
- Eberhard, A. (2007). *Infrastructure Regulation in Developing Countries: an exploration of hybrid and transitional models*, Public-Private Infrastructure Advisory Facility, Working paper 4.
- Edwards, P. (Ed.). (2009). *Industrial relations: theory and practice*. John Wiley & Sons.
- Flanders, A. (1965). *Industrial Relations: What is Wrong with the System? An Essay on Its Theory and Future*. London: Faber & Farber.
- Freeman, R. B. (2007). Labor market institutions around the world (No. w13242). National Bureau of Economic Research.
- Gunningham, N. (2008). Occupational health and safety, worker participation and the mining industry in a changing world of work. *Economic and Industrial Democracy*, Vol. 29(3), 336-361.
- Guzman, A., & Meyer, T. L. (2010). *Explaining soft law*. Berkeley Program in Law & Economics.
- Hyman, R. (1995). "Industrial Relations in Theory and Practice." *European Journal of Industrial Relations*, Vol. 1, No. 1, pp. 17-46.
- Hyman, R. (1975). *Industrial Relations: A Marxist Introduction*. London: Macmillan.
- Islam, M.A., McPhail, K. (2011). Regulating for corporate human rights abuses: the emergence of corporate reporting on the ILO's human rights standards within the global garment manufacturing and retail industry. *Critical Perspectives on Accounting*, No. 22, pp. 790-810.
- Jentsch, W. M., (2004). Theoretical approach to industrial relations, in Kaufman, B. E., (eds), "Theoretical perspectives on work and the employment relationship," Cornell University Press.
- Johnstone, R. (2008). 'Harmonising Occupational Health and Safety Regulation in Australia: The First Review of the National OHS Review'.
- Kaufman, B. E. (2010). The theoretical foundation of industrial relations and its implications for labor economics and human resource management. *Industrial & Labor Relations Review*, 64(1), 74-108.
- Marston, A. (2007). *Labour monitoring in Cambodia's Garment Industry: Lesson for Africa*. Realizing Rights - The Ethical Globalization Initiative.
- Marx, K. (1956). *Capital*. Volume 1, Chapter 10. Progress Publishers, Moscow, USSR.
- Munck, R.P. (2010) "Globalization and the labour movement: challenges and responses," *Global Labour Journal*: Vol. 1: Iss. 2, p. 218-232.
- Ogunbameru, A. O. (2004). *Organisational Dynamics*. Ibadan: Spectrum Books Ltd,
- Quinlan, M. (2004). Regulatory responses to OHS problems posed by direct-hire temporary workers in Australia. *Journal of Occupational Health and Safety Australia and New Zealand*, Vol. 20(3), 241-254.
- Rose, E.D. (2008). *Employment Relations*. (3rd ed). London: Pearson Education Ltd.
- Sisson, K., & Marginson, P. (2001). "Soft Regulation": Travesty of the Real Thing Or New Dimension?. ESRC "One Europe or Several?" Programme, Sussex European Institute, University of Sussex.
- Vogel, D. (2006). *The private regulation of global corporate conduct*. Center for Responsible Business.

Comparing the Luxury Attitudes of Young Brazilian and Emirati Females

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Abstract

Luxury brands are affecting women all around the world and have become a discernible trend. There is substantial growth in research focusing on luxury, which is a reflection of what is seen in the actual market. However it is rare to find a study where there is a comparison between two countries as different as Brazil and the United Arab Emirates. Both countries are becoming well-known for their consumption of luxury. Brazil is still the leader in Latin America, and the United Arab Emirates is attracting an increasing amount of international investment related to luxury brands. The aim of this paper is to investigate and compare young Emirati females and Brazilian young females in relation to their attitudes toward luxury. We used a questionnaire with measures already tested in multiple countries. We find that young Emirati women are in general more disposed toward luxury than Brazilian women.

Key words: Young Consumers, Luxury, Branding, United Arab Emirates, Brazil

Introduction

Luxury brands are affecting women all around the world and have become a discernible trend among women and men. Moreover, luxury products like bags, jewelry, shoes, cars, and clothes are playing a huge role in a woman's life (Dittmar, Beattie, & Friese, 1995). Market research has predicted that the younger generation represents the most important segment that will influence the global luxury market over the next decade (Unity Marketing Inc., 2007). For some people the ownership of luxury brands is important as a means of facilitating friendships with others and achieving popularity (Ruffin, 2007; Wooten, 2006).

Consumption of luxury brands exists not only in affluent countries but also in less developed countries such as Brazil (Moses, 2000; Troiano, 1997). The country has the sixth largest GDP in the world and a population of around 200 million (L.E.K. Consulting, 2014). From 2000 to 2008 Brazil's luxury market growth was 35% (Strehlau, 2008). Analysts from Goldman Sachs even believe that Brazil will become part of the largest world economies before 2050 (Keston, 2007). Ever since the Brazilian economy emerged as a profitable market for international companies looking to expand their businesses, several luxury brands have taken the opportunity to open retail outlets and flagship stores in big cities such as São Paulo and Rio de Janeiro (Euromonitor, 2014). Recent studies predicted that by 2030, the richest Brazilians will

increase from 1% to 5% of the population, and the middle and upper-middle classes will increase from 36% to 56% of the population. Both demographic changes will drive consumption changes, in particular an increased interest in luxury and aspirational goods (L.E.K. Consulting, 2014). Despite the economic slowdown in 2013, luxury goods demand in Brazil remains resilient, with the area performing above expectations. The good performance and potential of the Brazilian market continues to attract further investment in high-end products (Euromonitor, 2014). Finally, the rise of female consumers is changing the demographic mix of Brazil's shoppers. More women in the workforce means households have more discretionary income. Women have gained increased financial independence and as a result have developed unique purchasing tastes. The health and beauty category, for instance, is expected to grow by about 12% annually from 2012 to 2017 (L.E.K. Consulting, 2014).

Consumers in the UAE have become more fashion oriented and more aware of luxury brands. The UAE has now been classified as an emerging economy and this and a host of other reasons have consequently increased the attention and awareness of the locals and non-locals to the shopping world and shopping experience (Faisal, Zuhdi, & Turkeya, 2014). The country has several regional and international luxury brands, which are keen to attract and sell their products to the citizens of the UAE, giving them a well-diversified portfolio, specifically targeted towards high-end customers. Although there has been such a rapid development of the luxury market, there is scant research on the marketing of luxury goods and/or the behaviour of luxury consumers (Ayoub et al., 2010; Belk, 1995; Dubois, Laurent, & Czellar, 2001; Gil, Kwon, Good, & Johnson, 2012; Kapferer, 1998; Phau & Prendergast, 2000; Prendergast & Wong, 2003; Vigneron & Johnson, 2004; Wiedmann, Hennigs, & Siebels, 2007) with particular reference to the UAE. The UAE has been listed among the best places worldwide for organizations to conduct business, and there are over 400 multinational brands present in Dubai alone (Balakrishnan, 2008). The country has become famous for being an exquisite destination for anyone who aspires to live in the luxury circuit. Statistics by UAE's Ministry of Economy showed that within the last decade, the country has more than doubled its GDP (IMF, 2009) and the economy has continued to see a positive trend in its economic growth rate, even with the recent global recession (Vel, Captain, Al-Abbas, & Hashemi, 2011).

The purpose of this research paper is to examine the various factors that influence UAE and Brazilian young female citizens in relation to their attitudes towards luxury brands. This research looks into the unique social influences affecting their perceptions of luxury products, as well as focuses on consumer behavior and the underlying motives that encourage UAE and Brazilian young female citizens to purchase luxury products.

Background about luxury

Luxury brands are those whose price and quality ratios are the highest in the market (Wiedmann, Hennigs, & Siebels, 2009), and those that range in luxurious services like elite hotels and first class airline tickets, and luxurious products like jewelry,

cars, furniture, clothes, shoes, bags and much more. "Luxury is the domain of culture and taste" (Kapferer & Bastien, 2009, p. 318).

Luxury is very interesting; it is both simple and complicated at the same time. To simplify the complications of luxury, a timeline of its history will be previewed. "Luxury was the visible result of hereditary social stratification (kings, priests and the nobility, versus the gentry and commoners)" (Kapferer & Bastien, 2009, p.313). The rich, then and now, tend to communicate their social advantage by buying and displaying their luxury goods. This was classified as "old luxury", which was also defined by "snobbish, class oriented exclusivity-goods and services that only a small segment of the population can afford or is willing to purchase" (Granot & Brashear, 2008, p. 991). However, in the eighteenth century, globalization has turned the table around; it created a materialistic and fluid society in which hierarchy and transcendent social stratification are destroyed. In other words, a democratic world or a classless society was created in which each one can have an even chance of succeeding through work. This is also called "new luxury" and "Populace-popular opulence", which "includes products for mass-market appeal to consumers across various income and social classes" (Granot & Brashear, 2008, p. 991). On the other hand, social stratification has not completely disappeared; human nature urges us to know where in society a person stands. Therefore, here comes the role of luxury in creating a democratic social hierarchy where a luxury brand is placed in a position of superiority with respect to its client (Kapferer & Bastien, 2009).

Luxury in definition varies a lot, and there is some confusion nowadays on what really makes a luxury product, brand, and company. As stated earlier, "Luxury brands are those whose price and quality ratios are the highest in the market" (Wiedmann et al., 2009, p. 2). It is further explained by Kapferer and Bastien (2009) that luxury is the expression of a taste, of a creative identity, of the intrinsic passion of a creator; luxury makes a bold statement, 'this is what I am', not 'that it depends'. The authors further reiterate that a luxury brand should tell a story of its own, whether it is real and historic, or invented from scratch. Moreover, "luxury is a key factor in differentiating a brand in a product category, as well as a central driver of consumer preference and usage" (Wiedmann et al., 2009, p. 1).

According to Husic and Cicic (2009), luxury goods are goods for which the simple use or display of a particular branded product gives prestige to the owner, apart from any other functional utility and (Phau & Prendergast, 2000, p. 123) luxury brands are those that "evoke exclusivity, they have a well-known brand identity, enjoy high brand awareness and perceived quality, and retain sales levels and customer loyalty". Phau, Teah, and Lee (2009) have identified luxury brands as those where ratio of functionality to price are low, while the ratio of intangible and situational utility to price is high. Based on these definitions, luxury items are high priced products with good quality that allow people to acknowledge their status and wealth to others. Other characteristics that classify luxury items with higher prices and exclusivity include the packaging, store locations, advertising methods and most importantly, the elite brand name (Husic & Cicic, 2009).

"Luxury goods buyers are typically looking for outstanding quality and image in the brands they favor, and are willing to pay the high price which signals the good's exclusivity" (Türk, Scholz, & Berresheim, 2012, p. 88). A dilemma exists as some believe that if a luxury brand gets over-diffused, it could lose its image and 'luxury' characteristics (Giacalone, 2006). One of the allures of luxury brands is exclusivity.

Research question

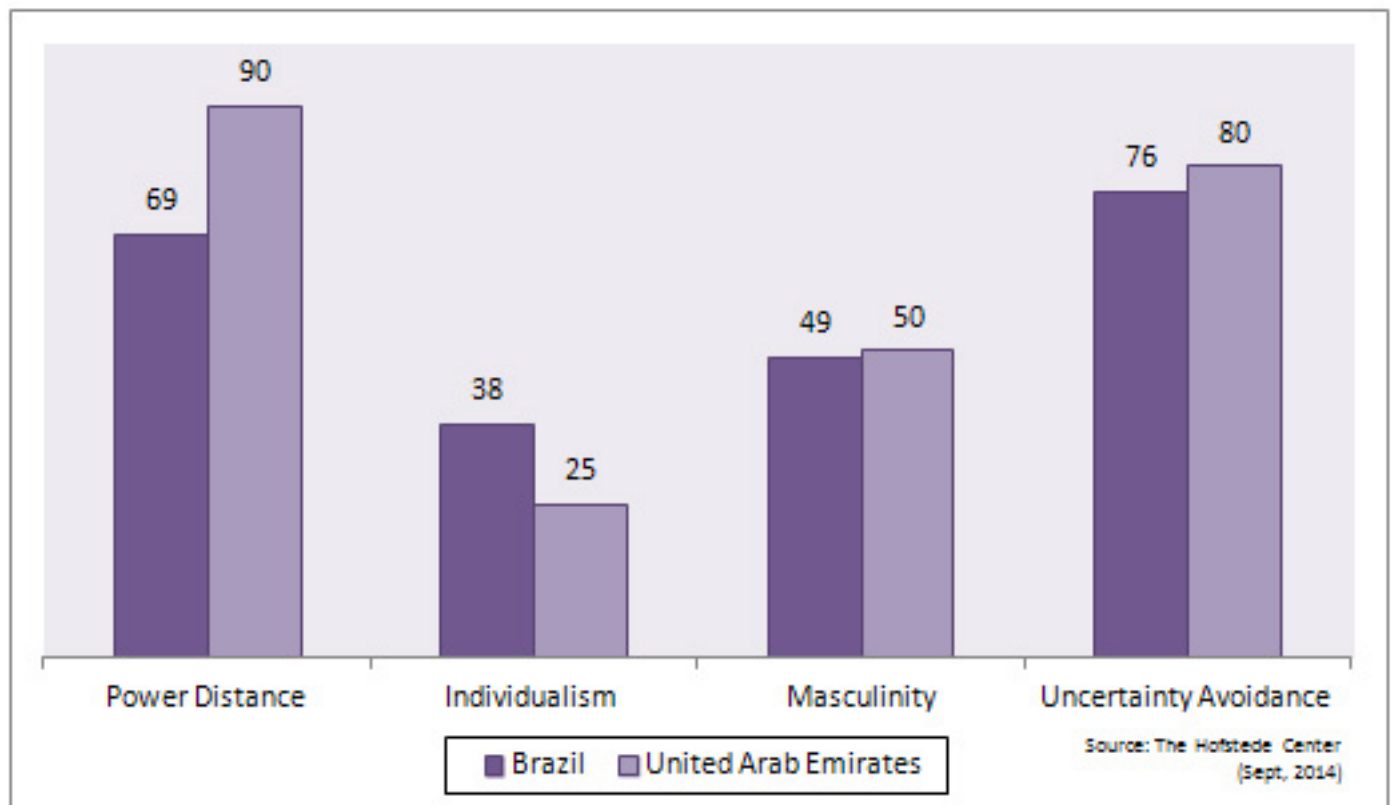
We used the four dimensional tool developed by Hofstede (1984) to compare these two nations. According to this author the differences among cultures can be understood by accounting for: individualism, power distance, uncertainty avoidance and masculinity. Considering the first of these four dimensions, both Brazil and the United Arab Emirates have a high level of acceptance of Power Distance, however the score is much higher for the Arab country. Power distance reflects the fact that both societies respect hierarchy and find it acceptable that more important people have benefits. Nonetheless, in the South American nation its score is marked by a respect for elders and the powerful bosses of industry and the fact that people there are seen as equals. In the Emirates there is an inherent difference between the powerful and the rest, a natural hierarchy not to be second-guessed. Also, neither country is individualistic, but Brazil, with a score of 38 for individualism, is much less collective than the United Arab Emirates, with a score of 25. The countries' scores in Masculinity are almost the same, 49 for Brazil and 50 for UAE, so both countries have an equal consideration for values such as com-

petition, success, caring for others and quality of life. Finally, both countries show high scores for uncertainty avoidance, which means people from these nations prefer strong institutions and rules that cast away most of the ambiguity of the present and the future (The Hofstede Centre, 2014). Scores can be viewed in Chart 1.

There has been substantial growth in designer clothing in the UAE as of the year 2013 due to the increase in tourists who come to Dubai on luxury shopping trips (Sophia, 2013). Emirati students are influenced by the globalization of the country and the many changes that have occurred in the UAE economy and culture. The UAE is attracting numerous luxury companies to establish their offices in the country. The country is fast becoming one of the major global hubs for luxury goods and services. People in the UAE are more aware of luxury brands and more interested and keen on obtaining them. The UAE's economy has emerged strongly in the last three to four years, which consequently increased the attention and the awareness of Emirati locals to the shopping world and shopping experience (The Hofstede Centre, 2014).

Salama (2008) states that UAE consumers rank as some of the world's biggest consumers of luxury brands. Moreover, Emirati local shoppers are the world's second biggest buyers of brands such as Gucci, which is at 31 percent, Chanel at 21 percent, while Giorgio Armani ranks the third at 19 percent.. According to The Nielsen Company (2008), three in five UAE consumers said people wear designer brands to project social status.

Chart 1: Scores for Brazil and Emirates Cultural Values - The Hofstede Centre



The survey also revealed untapped potential for luxury fashion brands in the UAE to expand their apparel businesses into other products such as mobile phones, laptops, flat-screen televisions, MP3 players and kitchen appliances. Besides, the survey found that 57 percent of shoppers would buy luxury branded mobile phones, compared with a global average of 34 percent, and 46 percent would buy fashion branded laptops, compared with a global average of 29 percent.

Our research question is: Do Emirati women have a more positive attitude toward luxury than Brazilian women?

Methodology

In Brazil our study used a self-report, paper and pencil survey instrument to collect data from university students in São Paulo state, Brazil, with approval from the university and students. The total sample consisted of 165 students; the majority between the ages of 18 and 24. For the purpose of this study we deleted the males from the sample given that our purpose here is to compare female university students in Brazil with female university students in United Arab Emirates. For that reason we used 76 Brazilian female respondents from our sample.

To be able to examine the attitudes of Emirati female students toward luxury items, we used the same survey instrument, but with an online approach using SurveyMonkey. The survey was distributed to 175 female students from various universities in the UAE, their age ranging, from 18 to 25 years old (or more).

Measures

For the purpose of this investigation we use two different settings of attitude toward luxury scale. Both of them were tested in multiple countries and we believe that by using two different author's scales we improved our chances of embracing differences in cultures and improving our conclusions as a result of this study

Attitude toward luxury concept: Attitudes represent a consumer's overall evaluations of an object such as a product/brand or store; it is a response involving general feelings of liking or favorability (American Marketing Association, 2007). We use a short version of the attitude toward luxury scale created by Dubois and Laurent (1994) that fits the scope of our research.

The Dubois and Laurent (1994) scale is the most well known scale for attitudes toward luxury and has been used in several studies such as Tidwell and Dubois (1996), Dubois, Czellar and Laurent (2005), Dubois, Laurent and Czellar (2001) and, Kim, Baik and Kwon (2002). According to Czellar (2007) who used this scale on her study in 2005, no Cronbach's alpha was reported because her particular study did not use a conventional domain sampling paradigm (Churchill, 1979), but focused more on content validity as advocated by Rossiter (2005). From this perspective, she justified that alpha coefficients are less informative than from the perspective of domain sampling. Sample of the items are "In general, luxury products are better

quality products;" "Luxury products make life more beautiful" anchored by "disagree- agree".

Attitude toward luxury brands: This scale is an adaptation of the scale created by Mitchell and Olson (1981) and it was used by Rios, Martínez, Moreno, and Soriano (2006). It is measured by the mean of four seven-point evaluative scales (good-bad, dislike very much-like very much, pleasant-unpleasant, poor quality-high quality). The original reported Cronbach's alpha was 0.88. Sample of the items are "What degrees do you like or dislike luxury brands?" anchored by "dislike very much - like very much" and "In my opinion luxury brands are" anchored by "good - bad."

Findings

A first analysis reveals that young Emirati women are better disposed toward luxury than Brazilian young women; this comparison can be viewed in Table 1. We divided 15 questions into six categories to compare more comprehensibly these groups. These categories were made by the co-authors based only on semantic similarities.

Interest in Luxury: Two items evaluate this aspect: 'I'm not interested in luxury' and 'I have less desire towards luxury brand products when mass quantities of people consume the same products as me'. The Emirati women show more interest in luxury by this measure. Their responses are statistically different from those of Brazilian women on both items; they express more interest in luxury and more interest in it being exclusive. To the first question Emirati achieved the lowest average, 2.4 against Brazil's 3.8, that is to say they do not agree to 'I'm not interested in luxury', while Brazilian women express indifference.

Disposition toward Luxury: This category considers three items: 'Luxury is really useless', 'To what degree do you like or dislike luxury brands? (dislike - like) and 'In my opinion luxury brands are...' (bad - good). Again Emirati hold the stronger disposition toward luxury, with better results for all the items. While Brazilians are indifferent to the expression that luxury could be useless (3.8), Emirati respondents showed disagreement with the phrase (2.2). Furthermore, Emirati women like luxury (5.6) and think luxury brands to be good (5.0), while Brazilians are indifferent to both considerations (4.0 and 3.8 respectively).

Luxury Knowledge: Luxury knowledge contains two items: 'I don't know much about luxury brands or products' and 'A fine replica (duplication) of a luxury brand is just as good'. The conclusion from this category is straightforward. Emirati female university students think they know more about luxury than do Brazilian female university students. For both items the means are statistically different, and while Emirati respondents disagreed in both cases, Brazilian disagreed only in the first item. Emirati's average was (2.1) for the first item and (2.5) in the second, showing strong disagreement, while Brazilians answered the first item with a mean of (3.2), that shows a lesser disagreement, and were indifferent as to the second statement, with a mean of (4.0).

Feelings toward Luxury: This group is comprised of three items: 'Luxury makes me dream', 'Luxury products make life more beautiful' and 'One buys luxury goods primarily for one's pleasure'. This class is not as clear as the three before it; still it seems as if Emirati women think more of luxury than Brazilians do. Emiratis think luxury products make life more beautiful (5.1) and are bought for personal pleasure (5.6), but do not agree with the allegation that it makes them dream (3.2). Meanwhile, Brazilians think life is more beautiful with luxury as well (4.8), but are indifferent to the other two remarks.

Luxury as Positive Expression: This group contains three items: 'Those who buy luxury products are refined people', 'The luxury products we buy reveal a little bit of who we are' and 'People who buy luxury products try to differentiate themselves from others'. Answers for these items, regardless of the origin of the respondents, show neither agreement nor disagreement with the postulate. Only for the last of them, intent of differentiation, do Emirati women agree (5.1), while Brazilians remain indifferent (3.8). The answers also diverge mildly from the midpoint in the case of the first item and, while Brazilians moderately disagree (3.6), Emirati respondents are rather indifferent but tending to the opposite opinion (4.3).

Luxury as Negative Expression: The last two items make this last category: 'When I wear a luxury item, I feel like I'm disguising myself with another personality' and 'People who buy luxury products seek to imitate the rich'. This is a group of apparent contradiction. Emirati respondents completely disagree with the first item (2.7) while maintaining a very mild agreement with the latter (4.5). Brazilians however think nothing of the feeling of disguising (3.8) and at the same time consider luxury a way to imitate the rich (3.5), though conservatively. Nevertheless, means are statistically different in both cases, suggesting the mean is lower for Emirati for the first item, and higher for the second one.

This analysis shows unmistakably that Emirati female university students hold a better opinion and relationship with luxury than those of Brazil origin, as noted on Table 1 (next page). Nonetheless, this data is comprised almost exclusively by women between the ages of 18 and 25, and it is also interesting to test if age has something to do with their relationship with luxury. While younger women could be more easily pushed into craving for luxury products, older ones could be resetting their preferences to favor more expensive and exclusive products as well. Therefore, we divided our data into four groups, Brazilian and Emirati women of 21 or fewer years of age, and Brazilian and Emirati women of 22 or more years of age. The comparison between these age groups can be found on Tables 2, for Brazilian females, and 3, for Emiratis.

We believed we could make some deeper analysis by separating females older and younger than 21 years old. Below there are our findings for Emirati and Brazilian women.

Interest in Luxury -

Emirati: younger women, as expected, show higher interest in luxury (2.1 against 3.0) and also greater concern on exclusiveness (4.9 against 4.5).

Brazilian: incredibly, younger women's mean for no interest in luxury is higher than that of the older Brazilians (4.0 against 3.6), however, this difference is not statistically significant. Neither is the difference between younger and older women for the exclusiveness item (4.1 and 3.9 respectively), so luxury interest does not seem to change in Brazil with age.

Disposition toward Luxury-

Emirati: again, younger women like luxury brands the most (5.9 against 5.0) and express a greater disagreement with it being useless (1.8 against 2.9).

Surprisingly, there is no statistically significant difference in how they see luxury brands, good or bad; both age groups consider them to be good. Summing up, younger female university students from the Emirates show a better disposition toward luxury brands and products than the elder.

Brazilian: in this country no mean is statistically different when separated by age group.

Nevertheless, older women have a worse image of luxury's usability and whether or not they are good, but somehow they dislike them less than the younger women.

Luxury Knowledge-

Emirati: both means reflect that young women are more knowledgeable than the elder ones, yet only one of them is statistically different across age groups. Younger women say they know more about luxury than elder women do (1.8 versus 2.6).

Brazilian: for the third time Brazilian respondents confirm they do not change with age, both answers cannot be said to be statistically different. Furthermore, the means change little, for knowledge they are 3.1 for younger and 3.3 for elder and for exclusiveness 4.0 and 3.8 respectively.

Feelings toward Luxury-

Emirati: this categorization shows an important difference in the beauty luxury contributes to life, younger women obtaining a mean of 5.6 against the rather indifferent 4.3 obtained by older respondents. The difference is not statistically significant on both other items, even though for the item of buying luxury for one's own pleasure it is not a small difference, the higher mean obtained by the younger women again (5.8 versus 5.3). All in all it appears younger girls have the edge in this category too.

Brazilian: there is no statistically significant difference in this tier either. Regardless, the scores are higher for younger Brazilian women in all three cases. Younger women's mean of 5.1 compares positively against the 4.6 of their older peers in beauty added to their life; the results are 4.5 against 3.9 in considering luxury as being primarily for private pleasure and finally 3.8 versus 3.6 in luxury being dream inducing.

Luxury as a Positive Expression-

Emirati: younger and older women believe luxury is differentiating, but there is no statistically valid difference between

Table 1. Means for each item - Emirati versus Brazilian females

Category	Item	Country	N	Mean	T Test for different means	
					t	Sig.
i. Interest in Luxury	I have less desire towards luxury brand products when mass quantities of people consume the same products as me	Emirati	175	4.78	3.091	0.002
		Brazil	76	4.03		
	I'm not interested in luxury	Emirati	175	2.41	-6.33	0.000
		Brazil	76	3.83		
ii. Disposition Toward Luxury	Luxury is really useless	Emirati	175	2.22	-6.282	0.000
		Brazil	77	3.84		
	To what degree do you like or dislike luxury brands?	Emirati	175	5.61	6.369	0.000
		Brazil	77	4.01		
	In my opinion luxury brands are	Emirati	175	5.02	5.005	0.000
		Brazil	77	3.78		
iii. Luxury Knowledge	I don't know much about luxury brands or products	Emirati	175	2.07	-4.642	0.000
		Brazil	77	3.17		
	A fine replica (duplication) of a luxury brand is just as good	Emirati	175	2.53	-5.313	0.000
		Brazil	76	3.96		
iv. Feelings Toward Luxury	Luxury allows me to dream bigger	Emirati	175	3.19	-2.085	0.038
		Brazil	77	3.73		
	Luxury products make life more beautiful	Emirati	175	5.11	1.221	0.224
		Brazil	76	4.86		
	One buys luxury goods primarily for one's pleasure	Emirati	175	5.59	5.86	0.000
		Brazil	76	4.28		
v. Luxury as Positive Expression	Those who buy luxury products are refined people	Emirati	175	4.34	2.779	0.006
		Brazil	76	3.61		
	The luxury products we buy reveal a little bit of who we are	Emirati	175	4.46	1.103	0.272
		Brazil	77	4.21		
	People who buy luxury products try to differentiate themselves from others	Emirati	175	5.07	4.917	0.000
		Brazil	77	3.78		
vi. Luxury as Negative Expression	When I wear a luxury item, I feel like I'm disguising myself with another personality	Emirati	175	2.75	-3.882	0.000
		Brazil	76	3.80		
	People who buy luxury products seek to imitate the rich	Emirati	175	4.50	3.662	0.000
		Brazil	77	3.49		

Table 2: Means for each item - Emirati females, younger (<21) versus older (>21)

Category	Item	Age Group	N	Mean	T Test for different means	
					t	Sig.
i. Interest in Luxury	I have less desire towards luxury brand products when mass quantities of people consume the same products as me	≤21	110	4.94	1.732	0.086
		>21	65	4.51		
	I'm not interested in luxury	≤21	110	2.08	-3.806	0.000
		>21	65	2.95		
ii. Disposition Toward Luxury	Luxury is really useless	≤21	110	1.84	-4.5	0.000
		>21	65	2.86		
	To what degree do you like or dislike luxury brands?	≤21	110	5.95	4.236	0.000
		>21	65	5.05		
	In my opinion luxury brands are	≤21	110	4.95	-1.099	0.274
		>21	65	5.15		
iii. Luxury Knowledge	I don't know much about luxury brands or products	≤21	110	1.78	-3.454	0.001
		>21	65	2.57		
	A fine replica (duplication) of a luxury brand is just as good	≤21	110	2.34	-1.776	0.078
		>21	65	2.86		
iv. Feelings Toward Luxury	Luxury allows me to dream bigger	≤21	110	3.15	-0.305	0.761
		>21	65	3.25		
	Luxury products make life more beautiful	≤21	110	5.61	5.003	0.000
		>21	65	4.26		
	One buys luxury goods primarily for one's pleasure	≤21	110	5.75	1.902	0.059
		>21	65	5.31		
v. Luxury as Positive Expression	Those who buy luxury products are refined people	≤21	110	4.55	2.583	0.011
		>21	65	4.00		
	The luxury products we buy reveal a little bit of who we are	≤21	110	4.54	0.899	0.371
		>21	65	4.32		
	People who buy luxury products try to differentiate themselves from others	≤21	110	5.25	1.758	0.082
		>21	65	4.78		
vi. Luxury as Negative Expression	When I wear a luxury item, I feel like I'm disguising myself with another personality	≤21	110	2.55	-1.837	0.068
		>21	65	3.09		
	People who buy luxury products seek to imitate the rich	≤21	110	4.72	2.148	0.034
		>21	65	4.12		

Table 3: Means for each item - Brazilian females, younger (<21) versus older (>21)

Category	Item	Age Group	N	Mean	T Test for different means	
					t	Sig.
i. Interest in Luxury	I have less desire towards luxury brand products when mass quantities of people consume the same products as me	≤21	45	4.09	0.347	0.730
		>21	31	3.94		
	I'm not interested in luxury	≤21	44	3.98	0.805	0.423
		>21	32	3.63		
ii. Disposition Toward Luxury	Luxury is really useless	≤21	45	3.82	-0.109	0.913
		>21	32	3.88		
	To what degree do you like or dislike luxury brands?	≤21	45	4.13	0.627	0.533
		>21	32	3.84		
	In my opinion luxury brands are	≤21	45	3.69	-0.459	0.647
		>21	32	3.91		
iii. Luxury Knowledge	I don't know much about luxury brands or products	≤21	45	3.11	-0.322	0.748
		>21	32	3.25		
	A fine replica (duplication) of a luxury brand is just as good	≤21	44	4.05	0.415	0.679
		>21	32	3.84		
iv. Feelings Toward Luxury	Luxury allows me to dream bigger	≤21	45	3.84	0.6	0.550
		>21	32	3.56		
	Luxury products make life more beautiful	≤21	44	5.07	1.703	0.093
		>21	32	4.56		
	One buys luxury goods primarily for one's pleasure	≤21	45	4.53	1.505	0.137
		>21	31	3.90		
v. Luxury as Positive Expression	Those who buy luxury products are refined people	≤21	45	3.29	-1.512	0.136
		>21	31	4.06		
	The luxury products we buy reveal a little bit of who we are	≤21	45	3.96	-1.513	0.135
		>21	32	4.56		
	People who buy luxury products try to differentiate themselves from others	≤21	45	3.44	-1.705	0.092
		>21	32	4.25		
vi. Luxury as Negative Expression	When I wear a luxury item, I feel like I'm disguising myself with another personality	≤21	45	3.84	0.207	0.837
		>21	31	3.74		
	People who buy luxury products seek to imitate the rich	≤21	45	3.27	-1.103	0.274
		>21	32	3.81		

them at 5% confidence. Both age groups are in mild agreement with the idea that the luxury consumed reveals something about the buyer, with means of 4.5 for the younger and 4.3 for the older women; but no statistical difference between them. Finally, an expected result, younger women think luxury is more for refined people than older women do (4.5 and 4.0 respectively), still, none of them believes this too strongly. Overall this category does not show strong change with age, maybe even no change at all in general feelings.

Brazilian: Brazilians show no statistically significant difference once again. What is more interesting is that the scores are actually higher for the older group for this category. Furthermore, at the 10% level we could say that younger respondents disagree with the statement that luxury serves as a way of differentiating oneself more than older Brazilians do. Even though slightly, it looks as if older women see luxury as a way to express themselves a little more.

Luxury as Negative Expression-

Emirati: younger respondents see luxury as a way to imitate the rich (4.7), while older ones do not agree, nor disagree, with that statement (4.1). Neither feels like in disguise when using luxury products, yet at the 10% level younger women disagree a little more with the statement (2.5 versus 3.1). Emirati female university students do not see luxury as a negative expression, but age seems to make their responses a little more moderate.

Brazilian: no statistically significant difference in this category, even at the 10% level. Means for feeling of disguising are almost the same; 3.8 the younger group and 3.7 the older one, and what is more, both showing indifference to the question. Younger respondents do seem to show a little more disagreement with the idea that luxury serves as a way to imitate the rich (3.3 against 3.8) but again, there is no statistically significant difference.

Conclusions and further research

Overall, it appears as if age does not influence attitudes toward luxury the same way for Emirati and Brazilian young females. While Emirati female university students present a tendency toward more conservative answers when growing older, Brazilians do not change their view with age. Although, when comparing both countries; Emirati respondents are better predisposed toward luxury products and brands at any age. This may be because they see more of them (luxury products) than the Brazilians or maybe because their culture welcomes luxury more. Regardless, this does not explain the difference in the evolution of this disposition. Possibly Brazilians have relatively low exposure to luxury when compared with Emirati, which could be the reason they change so little with age, or maybe there is something cultural that makes their opinions mature earlier than those of Emirati women; either way it has important marketing implications. The above hypothetical statements can be used for future research projects.

The perceptions that luxury may serve as a negative expression should not be incentivized by luxury companies, which should emphasize luxury as positive expression of one's per-

sonality. Consequently, negative perceptions should not be encouraged, while those for positive expression need to be spurred. It is a bad signal that young women consider those who consume luxury products to be disguising themselves, or trying to pass as something they are not. Indifference is not good either if one is trying to promote luxury, consumers should see luxury as a positive way of expression. These findings from our research should therefore be very helpful to luxury brand manufacturers.

The luxury market used to be all about cars, watches, and home furnishings. Nowadays, luxury is about the experience. Consumers will buy the product if the experience exceeds their expectations. It used to be all about materials; but the new luxury is all about the experience. There is even a new phenomenon called "Luxflation"; and according to an article by Goff (2007) published in the Washington Times, the concept of "Luxflation" is what the majority of consumers are looking for when it comes to the purchase of luxury products and services. When it comes to products shoppers prefer products that are unique and better in quality, it is human nature to seek the best. For example, Goff (2007) mentioned that products used to be very standard like a cup of coffee, an ice cream or a chocolate but now when one purchases these type of products one can customize it by adding sugar, flavors or cream, in fact some establishments offers a great variety of different ingredients to choose from and change enabling the consumer to customize it. That's what drives consumers to purchase products, products that are different. Our research did not look into the phenomena of customization and mass-customization in luxury purchase. This angle would be a very interesting topic for future studies.

Furthermore, Emirates is a 'World bank designated high income country' and Brazil 'World bank designated Upper Middle Income' with pockets of extreme poverty and in a continent with extreme poverty. Disposable income and 'national prejudice' (e.g. the stigma of being seen to wear luxury items among the poor and underprivileged who cannot afford basic items), surely plays a part (World Bank, 2015). There is also a trend against those who purchase 'luxury items' as being easily deceived and victims of mass marketing. It really depends on what social demographic you speak with and the level of education of the individual; both issues should be more investigated in the future.

Future research could also include other demographic groups e.g. including the male gender and doing a cross comparison for example between Emirati male consumer and Brazilian male consumer, and further comparing all four demographic groups. Further in later research other age groups can be investigated for example between consumers of the two nations. More measures should be included in order to have a more complete view of what is happening in each country. Finally the study could become global and encompass more than 6-8 nations.

References

- American Marketing Association. (2007). Dictionary of Marketing Terms. Retrieved Oct, 5, 2007, from http://www.marketing-power.com/_layouts/Dictionary.aspx
- Ayoub, A., Abdulla, A., Anwahi, A., Khoory, R., Michael, I., & Gil, L. A. (2010). An investigation on the attitudes toward luxury among female Emirati students. Paper presented at the Proceedings of the Academy of International Business Middle East and North Africa, Dubai, U.A. E.
- Balakrishnan, M. S. (2008). Dubai-a star in the east: a case study in strategic destination branding. *Journal of Place Management and Development*, 1(1), 62-91.
- Belk, R. W. (1995). Collecting as Luxury Consumption: Effects on Individuals and Households. *Journal of Economic Psychology*, 16(3), 477-490.
- Churchill, G. A. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research*, 16(1), 64-73.
- Czellar, S. (2007, June, 30). [Personal communication].
- Dittmar, H., Beattie, J., & Friese, S. (1995). Gender identity and material symbols: Objects and decision considerations in impulse purchases. *Journal of Economic Psychology*, 16(3), 491-511.
- Dubois, B., Czellar, S., & Laurent, G. (2005). Consumer segments based on attitudes toward luxury: Empirical evidence from twenty countries. *Marketing Letters*, 16(2), 115-128.
- Dubois, B., & Laurent, G. (1994). Attitudes towards the concept of luxury: An exploratory analysis. In J. A. Cote & S. M. Leong (Eds.), *Asia Pacific Advances in Consumer Research* (Vol. 1, pp. 273-278). Provo, UT: Association for Consumer Research.
- Dubois, B., Laurent, G., & Czellar, S. (2001). Consumer rapport to luxury: Analyzing complex and ambivalent attitudes (pp. 1-56). Jouy-en-Josas, France: Consumer Research Working Paper n°736.
- Euromonitor. (2014). Luxury goods in Brazil. <http://www.euromonitor.com/luxury-goods-in-brazil/report>.
- Faisal, M., Zuhdi, M., & Turkeya, S. A. B. (2014). A study on the perceptions and attitudes of luxury among female Emirati students. Zayed University.
- Giactalone, j. A. (2006). The market for luxury goods: the case of the Comité Colbert. *Southern Business Review*, 32(1), 33-40.
- Gil, L. A., Kwon, K.-N., Good, L. K., & Johnson, L. W. (2012). Impact of self on attitudes toward luxury brands among teens. *Journal of Business Research*, 65(10), 1425-1433.
- Goff, K. G. (2007, September 30). 'Luxflation' for all: costly small indulgences, mass-market luxury brands. *Washington Times*. Retrieved from <http://www.washingtontimes.com/news/2007/sep/30/luxflation-for-all/?page=all>
- Granot, E., & Brashear, T. (2008). From luxury to populace: inconspicuous consumption as described by female consumers. *Psychology*, 14(1&2), 41-51.
- Hofstede, G. (1984). *Culture's consequences: international differences in work-related values*. Thousand Oaks, CA: Sage.
- Husic, M., & Cicic, M. (2009). Luxury consumption factors. *Journal of Fashion Marketing and Management*, 13(2), 231-245.
- IMF. (2009). *World Economic Outlook*. <http://www.imf.org/external/ns/cs.aspx?id=28>
- Kapferer, J.-N. (1998). Why are we seduced by luxury brands? *Journal of Brand Management*, 6(1), 44-49.
- Kapferer, J.-N., & Bastien, V. (2009). The specificity of luxury management: turning marketing upside down. *Journal of Brand Management*, 16(5), 311-322.
- Keston, J. (2007). Another BRIC in economic wall - The arrival of developing countries. Retrieved Jan, 21, 2008, from http://localtechwire.com/business/local_tech_wire/opinion/story/1867292/
- Kim, J., Baik, M., & Kwon, J. (2002). A comparison of Korean, Japanese and Chinese consumers' perceptions of the luxury product. *International Journal of Digital Management*, 2.
- L.E.K. Consulting. (2014). Spotlight on Brazil: understanding the Brazilian consumer. http://www.lek.com/sites/default/files/0114_LEK_BrazilSpotlight_final%28v3%29.pdf: L.E.K. Consulting.
- Mitchell, A. A., & Olson, J. C. (1981). Are product attribute beliefs the only mediator of advertising effects on brand attitudes? *Journal of Marketing Research*, 18, 318-332.
- Moses, E. (2000). *The \$ 100 billion allowance- accessing the global teen market*. New York: John Wiley & Sons Inc.
- Phau, I., & Prendergast, G. (2000). Consuming luxury brands: The relevance of the "rarity principle". *Journal of Brand Management*, 8(2), 122-138.
- Phau, I., Teah, M., & Lee, A. (2009). Targeting buyers of counterfeits of luxury brands: a study on attitudes of Singaporean consumers. *Journal of Targeting, Measurement and Analysis for Marketing*, 17(1), 3-15.
- Prendergast, G., & Wong, C. (2003). Parental influence on the purchase of luxury brands of infant apparel: an exploratory study in Hong Kong. *Journal of Consumer Marketing*, 20(2/3), 157-169.
- Rios, F., Martínez, T., Moreno, F., & Soriano, P. (2006). Improving attitudes toward brands with environmental associations: an experimental approach. *Journal of Consumer Marketing*, 23(1), 26-33.
- Rossiter, J. (2005). Reminder: a horse is a horse. *International Journal of Research in Marketing*, 22(1), 23-25.
- Ruffin, J. (2007). Luxuries are things you wouldn't buy if no one saw you use them. Retrieved Sept, 14, 2007, from <http://www.newsobserver.com/690/story/539390.html>
- Salama, V. (2008, October 20). UAE loves luxury. *The National*. Retrieved from <http://www.thenational.ae/business/retail/uae-loves-luxury>
- Sophia, M. (2013, December 16). UAE ranked world's 11th biggest clothing importer. *Gulf Business*.

Strehlau, S. (2008). *Marketing do luxo* (1 ed. Vol. 1). São Paulo/SP: Cengage Learning.

The Hofstede Centre. (2014). Country comparison. Retrieved September 9th, 2014 <http://geert-hofstede.com/arab-emirates.html>

The Nielsen Company. (2008). Nielsen global luxury brands survey.

Tidwell, P., & Dubois, B. (1996). A Cross-Cultural Comparison of Attitudes Toward the Luxury Concept in Australia and France. In R. Belk & R. Groves (Eds.), *Asia Pacific Advances in Consumer Research* (Vol. 2, pp. 31-35). Provo, UT: Association for Consumer Research.

Troiano, J. (1997). Brazilian teenagers go global - Sharing values and brands. *Marketing and Research Today*, 25(3), 149.

Türk, B., Scholz, M., & Berresheim, P. (2012). Measuring service quality in online luxury goods retailing. *Journal of Electronic Commerce Research*, 13(1).

Unity Marketing Inc. (2007, Apr, 1). Generations of luxury: What 'Young Affluents' want and what it means to luxury marketers. from <http://www.marketresearch.com/map/prod/1489810.html>

Vel, K. P., Captain, A., Al-Abbas, R., & Hashemi, B. A. (2011). Luxury buying in the United Arab Emirates. *Journal of Business and Behavioural Sciences*, 23(3), 145-160.

Vigneron, F., & Johnson, L. W. (2004). Measuring perceptions of brand luxury. *Journal of Brand Management*, 11(6), 484-506.

Wiedmann, K.-P., Hennigs, N., & Siebels, A. (2007). Measuring consumers' luxury value perception: A cross-cultural framework. *Academy of Marketing Science Review*, 7, 1-21.

Wiedmann, K.-P., Hennigs, N., & Siebels, A. (2009). Value-based segmentation of luxury consumption behavior. *Psychology and Marketing*, 26(7), 625-651.

Wooten, D. B. (2006). From labeling possessions to possessing labels: Ridicule and socialization among adolescents. *Journal of Consumer Research*, 33(2), 188-198.

Frost and Sullivan analysis of Iran's Pharmaceutical Sector and Energy Sector

www.frost.com

Iran's Pharmaceutical Sector to become a Pharma Power-house Post Sanction Era - Biotechnology Sector to Have Lucrative Opportunities

Dubai, U.A.E. - 24th December, 2015 - With annual consumption of 30 billion units of various generic medicines, Iran, the second-biggest consumer of generics in the Asian continent spent over USD 4.5 billion on drugs in 2015. While per capita consumption of generic drugs is three times higher than average per capita consumption in the world, biological medicines and drugs for special diseases suffers from limited access. Cardiovascular, Anti-Cancer & chemotherapy drugs, MAB, pain relievers & Hydrocortisones, Anti infections, Plasma products & Recombinants as well as Diabetes control over 55% of the total sales market. Solid dose (Tablet & Capsules) and injection forms control 42% and 38% of total sales market, respectively.

To import new technologies and know-how, boost R&D, launch new products, and develop world class manufacturing plants, the first private Industrial Pharmaceutical City is under implementation. The city being developed on 176 hectares of land is located 65km from Tehran. With over USD 2 billion of investment, the industrial city will be a destination for incubators, research and development centres, a central lab, chemical and biotechnology medicines producers, APIs, medical equipment, storage, and maintenance and distribution facilities. The city would be the hub for about 100 innovative and high-technology based large, medium and small sized companies. The aim is to attract foreign investors to produce bio drugs, medical devices, stents or laboratory diagnostic kits or pharmaceutical packaging material such as Aluminium foils, PVC, Special cardboard packing boxes, and tubes for Ointment and creams, etc. All foreign investors will benefit from tax exemption as well as incentive plans to export products.

Key core competencies such as expertise, skilled labour, low cost of production, infrastructures and most importantly, a strategic geographical and political location have made Iran a potential export hub in the region. During the post sanction era, through partnerships with international companies the country will utilise this opportunity to help itself successfully transition into non-oil economy, Ali stated.

International Pharma companies can find lucrative opportunities either through joint ventures or direct investment, Ali said. Despite Iran facing an embargo that has limited its international and trade relationships, many well-known companies like Novo Nordisk, Sanofi, Novartis, etc. have been active in this market, which indicates that the Pharma industry in Iran is a profitable business. In addition Novo Nordisk and Novartis have officially announced their plans to directly invest in the market.

Ali Mirmohammad, Senior Consultant and Business Development Manager - Iran, Frost & Sullivan, said "In post-sanction era, Iran's pharmaceutical sector is one that could benefit significantly from foreign investment. Producing bio-similar products and APIs, renovation of obsolete physical structures, importing new technologies and high-tech machinery and adapting to high-level GMP standards are the main opportunities that it could gain once sanctions are lifted".

While the pharmaceutical market in most of Iran's neighbouring countries depends on import, Iran is the largest manufacturer of generic chemical drugs across the Middle East & North Africa. With a total installed capacity of 50 billion units per annum, Iran is the hub for 120 local manufacturers of finished products, 55 producers of chemical APIs and more than 46 distributors. Iran is not only a market of 79 million people, its strategic location in the Middle East and political relationships with Iraq, Afghanistan, Syria, Lebanon, and Yemen as well as CIS countries, also enable it to easily target many Muslim countries. According to Iran vision 2025, it is expected that export of medicines would increase from USD 180 million (FY2015) to over USD 1.5 billion in the next 10 years.

Lack of local manufacturing plants in the GCC, Azerbaijan, Armenia, Turkmenistan, Kyrgyzstan, Tajikistan, Iraq, Afghanistan, Syria, and Lebanon, Yemen as well as East, West and Central countries in the African continent is a good opportunity for Iran to target these markets through partnerships with international companies.

"To renovate the industry and convert it into an export hub, Iran aims to attract foreign investment into the Pharma industry in order to bring its technology capabilities up-to-date, re-construct its GMP structure and improve the quality of APIs, finished products and packaging," Ali added.

The average age of pharmaceutical companies in Iran is over 38 years old, which means Iran needs to renovate its facilities and equipment. Although Iran's pharmaceutical industry has the benefit of expertise and effective understanding of technologies, it suffers significantly from poor GMP structure. As far as international GMP is concerned less than 5% of all manufacturing facilities in Iran comply with international standards. Moreover, lack of appropriate GMP structure along with using low quality APIs has negatively impacted the quality of finished products. Lower R&D expenditure is another key restraint in this sector. Generally, less than one percent of total pharmaceutical turnover in Iran goes into R&D. Besides R&D, inadequate marketing, as well as inappropriate distribution systems are two other key restraints. While intensive sanctions slowed down the pace of renovation and investments, in the post sanction era, Iran looks forward to importing new technologies and high-tech machinery and equipment as well as know-how from western countries in order to revive the industry.

In 2015, imports supplied about 33% of total pharmaceutical sales market in Iran, 80% of which were biosimilars, recombinants, plasma products, insulin, vaccines and oncology drugs. In the past 10 years, Iran has gradually experienced progress in the biotechnology sector. However, due to low investments as a result of sanctions the country still depends on imports for many strategic products.

To localise biotechnology products and balance the pharmaceutical trade over the next 5 years, the Government plans to support the private sector to increase the share of local production from the current 67% to 75%. According to the Strategic Plan for the Ministry of Industry, Mine & Trade, the total installed pharmaceutical capacity is expected to increase from 50 billion units to 60 billion units by the end of 2025. Whilst the setting up new generation of generic drugs is feasible, developing bio-similar finished products as well as APIs are two investment priorities. The Government aims to support the private sector's investment in Bio APIs, herbal medicines, Anti-Cancer drugs, Recombinant, Mono Clonal Antibodies, Peptides, Thalassaemia drugs, Insulin, vaccines, Diagnostic Kits, and Materials used in Radiography, X-Ray, CT Scan, and MRI, to reduce the country's dependency on imports.

Iran Drifts to Non-Oil Based Sectors, Mining Sector to get Impetus, non-petrochemical Manufacturing Exports are expected to touch USD 60 billion by 2025, notes Frost & Sullivan

Dubai, U.A.E. 24th December 2015 - With a fall in oil prices, the Iranian Government's attention has drifted away from an oil-based economy. The Government's approach is to boost the mining sector within the next five years in the 6th Development Plan. Over 68 diverse minerals and 27+ billion tonnes of explored reserves as well as 57 billion tonnes of potential reserves have placed Iran among the world's top 15 mining countries. However, such potential is not adequately positioned in the economy. Currently, the mining sector accounts for less than 1% of total GDP and relevant downstream industries do not exceed 5%.

Iran plans to boost investment in exploration, mechanised exploitation, as well as mid-stream and down-stream projects to enhance sustainable development. The target is to increase the mining sector's current GDP share from less than 1% to more than 2%, and relevant downstream industries from 5% to 20% within next ten years (2015-2025). This requires mining and relevant industries to grow at 10-12% per annum.

The boom in the mining sector will help the Iranian Government reduce the unemployment rate and raise non-oil revenues significantly. The Iran 2025 Outlook initiative calls for greater domestic value-adding activities with the aim to reduce the amount of raw minerals exported from the country. This programme is expected to require significant imported technology and participation of foreign partners, said Ali Mir-mohammad, Senior Consultant and Business Development Manager - Iran, Frost & Sullivan.

In the post-sanction era, the country has charted a strategic 10-year plan to boost mining exports to USD 6 billion from USD 1.5 billion in 2015. These mainly include new reserves of raw materials whose processing in-country is not feasible. Furthermore, all manufacturing exports (excluding petrochemical products) are expected to increase from USD 15 billion to USD 60 billion by the end of 2025, if all barriers are lifted.

Iran intends to attract over USD 20 billion of foreign investment in mining and downstream industries once the sanctions are lifted, said the Deputy Minister and Chairman of the Executive Board of Iranian Mines & Mining Industries Development & Renovation (IMIDRO), Mehdi Karbasian at the International Mining And Resources Conference (IMARC) Australia. IMIDRO is the state-owned holding mining company that governs and allocates budgets, makes policies and owns the largest strategic mining companies in Iran.

IMIDRO has welcomed foreign investors and technology providers to complete over USD 29 billion investment projects, USD 9 billion of which currently are under implementation. IMIDRO is strongly looking for new explorations up to nearly 300,000 square kilometers to supply required materials for downstream projects, said Salman Nasr, the International Relations officer of IMIDRO. Exploration of new reserves in copper and poly-metals, phosphate, nickel, raw material for aluminium production, iron ore and precious and semi-precious stones are key investment priorities in the country.

To encourage foreign investments, IMIDRO has set up initiatives such as providing right of exploitation of mines up to 25 years and some incentives like tax exemptions. Establishing more free investment zones is another policy, which is followed by IMIDRO, Ali noted.

Moreover, a mining Special Economic Zone is under construction to serve the metals and minerals industries. Two million tonnes of aluminium, 10 million tonnes of crude steel, one million tonnes of magnesium, and 1.6 million tonnes of alumina are the major investment opportunities in this economic zone. New investments in graphite electrodes, titanium slag and ilmenite concentrate, calcined petroleum coke, coal washing, aluminum alloy ingots, alumina from bauxite, iron-ore concentrate and pellet, alloy steel, hot-rolled steel and cold plate, magnesium lithium alloy, and coal powder are some key mid-stream opportunities in Iran.

Besides the above investment opportunities, the Government is also keen on partnership of the private sector with foreign companies for cost reduction strategies for iron-ore exploitation, renovating obsolete technologies and increasing safety levels, optimising train loading and unloading operations as well as engineering and consultancy in exploration and exploitation of newly discovered reserves. Privatisation and developing mining industries in less developed regions across the country is another key policy in the 6th Development Plan.

Ms. Homa Gousheh, chairwoman of the Association of Banking & Credit Investment Consultants, remarks, Project financing is a key constraint in Iran which has currently halted many proposed investments, especially in metals and minerals sector in the country. To boost investments, fueling foreign resources into the country is vital. Iran supports foreign investment against expropriation or nationalisation under the Foreign Investment Promotion and Protection Act (FIPPA) and also allows investors to transfer the principal and interests of foreign capital or any portion of the capital remaining in the country abroad post deduction of taxes, duties, and legal reserves.

While sanctions still not lifted, Iran has received huge interest on its mining projects from 16 mining companies across the globe like Rio Tinto and BHP Billiton. Despite instabilities in the business environment due to the current political and economic situation, Iran remains a lucrative market not just because of its vast hydrocarbon resource base, but also because of its desire to become the region's top technological and economic power house.

As a conclusion, Iran's mining industry value chain requires new investments of approximately USD 60 billion. To strengthen its strategic position in the region, Iran needs to diversify the economy from oil and gas and enhance economic growth as well as sustainable development through alternate resources like mineral reserves. Empowering downstream industries to reduce the amount of raw material export is a key success factor that can boost the non-oil based economy in the country. It is the time for Iran's Mines and Mining Industries to present capabilities, potential and investment opportunities as fast as possible in order to compensate for its decade of deprivation in the global market. Iran has got many opportunities for investors and metallurgical companies such as cheap energy, skilled educated manpower, plenty of Iron ore mines as raw material supply, and a huge domestic market demand. Beside these factors strategic geographical location and huge export potentials makes it an attractive and unique market in MENA and worldwide.

How to take part in an interview session: introducing 10 simple but practical guidelines

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Abstract

Students in different disciplines might need to take part in an interview during their educational period and/or after their graduation. Most interview sessions take place when applying for a new job or embarking on a post-graduate program such as a PhD. The aim of the present article is to provide some practical guidelines which might be useful when taking part in such interview sessions.

Key words: Interview session, taking part, practical guidelines

Introduction

Students in different disciplines might need to take part in an interview during their educational period and/or after their graduation. Most interview sessions take place when applying for a new job or embarking on a post-graduate program such as a PhD.

Taking part in an interview needs some earlier preparation and some skills during the interview session. The aim of the present article therefore, is to provide some practical guidelines which might be useful in taking part in such interview sessions.

Practical guidelines

1. In order to take part in any interview sessions you should prepare and/or update your curriculum vitae.
2. You may need to slightly change or revise your curriculum vitae to better cover the areas which might be important for the new job or to be selected for the post-graduate program.
3. Preparing and/or updating your curriculum vitae might have another advantage as you usually do need to talk about yourself for a few minutes at the beginning of the interview session.
4. In order to avoid any kinds of unnecessary stress arrive a little earlier. Be calm while waiting and it is wise to take a book or an article for reading before going to the interview room.
5. When entering the interview room remember that the first contact is very important. Therefore, try to be calm and reasonable.

6. During the interview session be honest and rather quick in responding to the questions. Do not over-estimate or under-estimate yourself.
7. Keep eye contact with all interviewers and talk as loud as needed so that everyone can hear you. Show your interest in the job or in the post-graduate program. Tell the interviewers why they should select you and what qualities you can bring to the position.
8. Although the last contact might not be as important as the first, you should end your interview session warmly and wisely.
9. After finishing the interview you should think positively and wait for the outcome to be announced. Just make sure that you know exactly when and how the outcome will be announced.
10. Do not get disappointed however if the outcome would be negative. At the very least you gained some experience, so based on this experience make yourself ready for the next interview.

Conclusion

Taking part in an interview needs some earlier preparation and some skills during the interview session. The present article provides its reader with ten simple but practical guidelines which might be useful in taking part in an interview session. However, if you need further advice, you could read the articles in the list of following "further reading".

Further reading

Harolds J. Tips for a physician in getting the right job, part XVII: after the interview. Clin Nucl Med. 2014; 39(12):1039-40.

Harolds JA. Tips for a physician in getting the right job, part XI: important things to do for an interview. Clin Nucl Med. 2014; 39(6):531-3.

Harolds JA. Tips for a physician in getting the right job, part x: preparation and appearance. Clin Nucl Med. 2014; 39(5):437-9.

Harolds JA. Tips for a physician in getting the right job, part II: the curriculum vitae, cover letter, and personal statement. Clin Nucl Med. 2013; 38(9):721-3.

Rezaeian, M. How to prepare and update your curriculum vitae. Middle East J Business. 2013; 8(4) :22-23.

Harolds J, Wood BP. Job interviewing skills for radiologists. J Am Coll Radiol. 2006; 3(12):940-4.

Zimmermann PG. Job interviews: tips and techniques. Accid Emerg Nurs. 1997; 5(4):189-92.

Dasher H. Interviewing 101: a preparation primer. Hosp Pharm. 1985; 20(7):489, 493.

Implementation of a wireless sensor network in irrigation system

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Abstract

Agriculture is the foundation of each nation's economy and we all realize that there is a strong relation between agribusiness development and economic wealth. The modern era of technology brings more advantage to the agriculture sector. Contemporary advances in the improvement of remote sensor network systems offer new patterns of accuracy in agriculture. In this paper we propose structural design for implementation of remote sensor networks in irrigation system frameworks on the premise of simulation technique. Wireless sensor hubs are set in distinctive fields and in this paper we are working on eight types of scenario. In the initial two sections 25 sensor nodes are set in a matrix way and irregular with 1 sink separately and performing a simulation. In the third and fourth scenarios we placed 25 sensor nodes in grid manner and randomly, respectively, however with 2 sinks. Again in the fifth and sixth parts we take a shot at 50 sensor hubs framework and arbitrarily with 1 sink. In the last two sections we placed 50 sensor nodes grid and random respectively, however with 2 sinks. Through this process we get real time information from sensor hubs and transmit it into a sink based station to get temperature and soil moisture. Data is monitored by the base station if the point of confinement crosses, alert messages report to the server. The motor will be automatically begin and stop through these alarm messages.

Key words: Wireless sensor network, agriculture, Simulation, Irrigation, Nodes

Introduction

The framework is bolstered by the waters of the Indus River and its tributaries. The remarkable components of the systems are three noteworthy stockpiling stores, specifically, Tarbela and The watering system of Pakistan is the biggest brought together watering system framework on the planet, serving 34.5 million sections of area, Chashma on River Indus and Mangla on River Jhelum. Full complete length of primary waterways alone is 58,500km. Water courses contain another 1,6201,00 Kms. Distraction of stream water into off taking channels is made through floods, which are gated preoccupation weirs and an arrangement of connection waterways, is made through barrages, which are gated preoccupation weirs and a system of linked canals. The principle trenches thus convey water to branch waterways, distributaries, and minors.

Scattering of water from a watercourse is affected through a period plan or "warabandi" under which every homestead gets water for a predetermined period once per week. Farming assumes a key part in the economy of all nations throughout the globe giving crude material to businesses and satisfying the expanding needs of hugely developing populace weight. A few issues are foreseen as dependable like high cost of creation, expansion, destitution, farming risk, inadequate access to finance, lack of accessibility of inputs and most critically environmental change putting immense risk on water accessibility, which is a pre wellspring of a watering system in agribusiness sector. Quickly developing innovation of remote sensor systems is a favorable position for the farming area. Cutting edge progress in the improvement of WSN offers new patterns like the exactness of agribusiness. Computerization of watering system frameworks can possibly give most extreme water use effectiveness by observing soil dampness and other product parameters at an ideal level. Innovative headways must be utilized to furnish agriculturists with devices and assets to make cultivating more manageable.

Literature Review

In this paper we research several issues and challenges regarding agricultural systems. Ranchers visit their rural fields intermittently to check soil dampness level and taking into account prerequisite water is pumped by engines to flood particular fields. Agriculturalists need to sit tight for a certain period before exchanging off engine with the goal that water is permitted to stream in an adequate amount into respective fields. On the other hand we analyze watering system techniques depending on agriculturist's experience, soil properties and natural conditions that are influenced by changes in ecological conditions.

The watering system administration framework isolates temperature, air moistness and soil dampness values from every parcel and checks it against their characterized limit values. If the edge qualities are crossed it actuates an alarming unit and communicates specific information by means of LAN.

Through our studies we discover loss of soil fertility and misuse of water assets in farming creation a wise watering system framework in view of remote sensor systems and fuzzy control is required.

The remote sensor system with fuzzy control framework in the intelligent water-sparing irrigating system framework, understood to be remote on-line monitoring and controlling hubs, utilizing the arrangement of multiple hops network protocol to communicate and have the feature of self-organizing low power consumption and high reliability fuzzy rationale tool stash for displaying and investigating of the framework, and exhibiting the relationship between framework data and yield, has made the control framework very experimental.

In order to monitor horticultural environments for various factors such as humidity and moisture along with other factors, remote monitoring systems using wireless protocol requires for agriculture to have been utilized to build the yield of plants by checking the ecological conditions and parameters, hence giving the vital data to the ranchers.

The proposed system is mainly developed for the betterment of farmers. The use of wireless sensor network over the wired one helps for deploying it in any type of environment for monitoring, making it flexible and robust.

Pakistan Agriculture Challenges and Issues

The future of Pakistan's agribusiness relies upon the eventual future of its irrigation and drainage system, which currently confronts significant issues. Expanding water sorting and salinity, overexploitation of fresh groundwater, low efficiency in delivering and use, equitable distribution, unreliable delivery and insufficient cost recovery are some of these problems. These problems however are only symptoms of a deeper problem. Nowadays, agriculture needs tools and technology to improve the efficiency and quality of production and reduce the ecological effect on the yield. The wireless sensor network in agriculture may bring a fundamental contribution to precision agriculture.

Wireless Sensor Network

WSN is a remote framework comprising of spatially circulated self-sufficient gadgets using a sensor to agreeable physical or natural conditions, for example, temperature, sound, vibration, weight, movement or poisons, at distinctive areas.

The progression of remote sensor systems was initially inspired by military application, for example, combat zone reconnaissance. Be that as it may, remote sensor systems are presently utilized as a part of numerous regular citizen application territories, including environment and living space, observing, social insurance applications, home computerization and activity control.

LEACH Protocol

It is a grouping based convention that uses randomized turn of neighborhood bunch base stations (cluster heads) to convey the essentialness load among the sensors in the system information conglomeration, lessens measure of data to be sent to base station; expansive diminishment in vitality dispersal as calculation is much less expensive than correspondence can accomplish as much as a variable of 8 in decrease in vitality disseminating contrasted and traditional steering convention ordinary conventions may not be ideal for static sensor systems - direct transmission, least transmission vitality MTE, multi-jump steering, and static clustering.

MAC Protocol for WSN

Medium access convention is proposed for remote LAN that have been upgraded for most extreme throughput and least postponement, while the low vitality utilization has been left as an optional necessity, there are the huge chances of vitality reserve funds at the MAC layer.

The four wellsprings of vitality waste are crashes, control parcel, overhead, listening to a transmission bound to another person. The most fundamental wellspring of vitality reserve funds in a sensor system is to keep away from unmoving tuning in. One approach to evade unmoving listening is to utilize the TDMA convention, yet different convention arrangements have been proposed in this bearing.

Methodology

In this paper we propose architecture for implementation of wireless sensor networks in irrigation systems on the basis of simulation. We will perform simulation for wireless sensor network (WSN) for two different architectures to analyze its behavior of WSN using Leach Routing Protocols. We will be using Constant Bit Rate (UDP) based traffic speaking sensors and then will compare their results with each other. There are following simulation designs and their parameters.

End to End Delay

Throughput

Energy Consumption

Simulation design and Configuration

Eight different topologies architecture for WSN

1. 25 sensor nodes placed in Grid pattern with 1 Base Station placed at the center.
2. 25 sensor nodes placed in random pattern with 1 Base Station placed at the center.
3. 25 sensor nodes placed in Grid pattern with 2 Base Station placed near opposite corners.
4. 25 sensor nodes placed in random pattern with 2 Base Station placed near opposite corners.
5. 50 sensor nodes placed in Grid pattern with 1 Base Station placed at the center.
6. 50 sensor nodes placed in random pattern with 1 Base Station placed at the center.
7. 50 sensor nodes placed in Grid pattern with 2 Base Station placed near opposite corners.
8. 50 sensor nodes placed in random pattern with 2 Base Station placed near opposite corners.

Simulation Parameters

Parameters	Value
Simulator	NS-2.35
Routing Protocol Used	Leach
Simulation Time	100sec
Traffic Type	CBR
Size of Packets	512bytes
Mac	802.11
No. of sensors	25,50
No. of Base station	1,2

MANNASIM FRAMEWORKFOR NS2

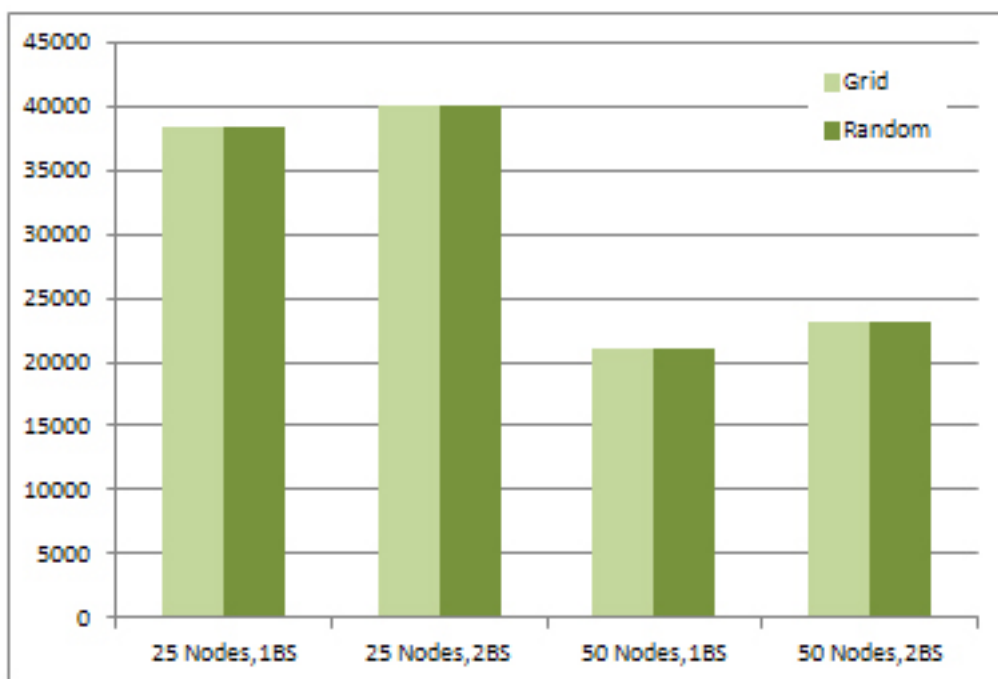
The Mannasim structure is a module for WSN reproduction in light of the system test system (NS-2). Mannasim augments NS-2 presenting new modules for outline, improvement and investigation of diverse WSN applications.

SCRIPT GENERATOR TOOL

The script Generator apparatus is a front-end for TCL reenactment scripts simple creation .SGT comes packaged with Mannasim. Framework composed in unadulterated java making it stage autonomous.

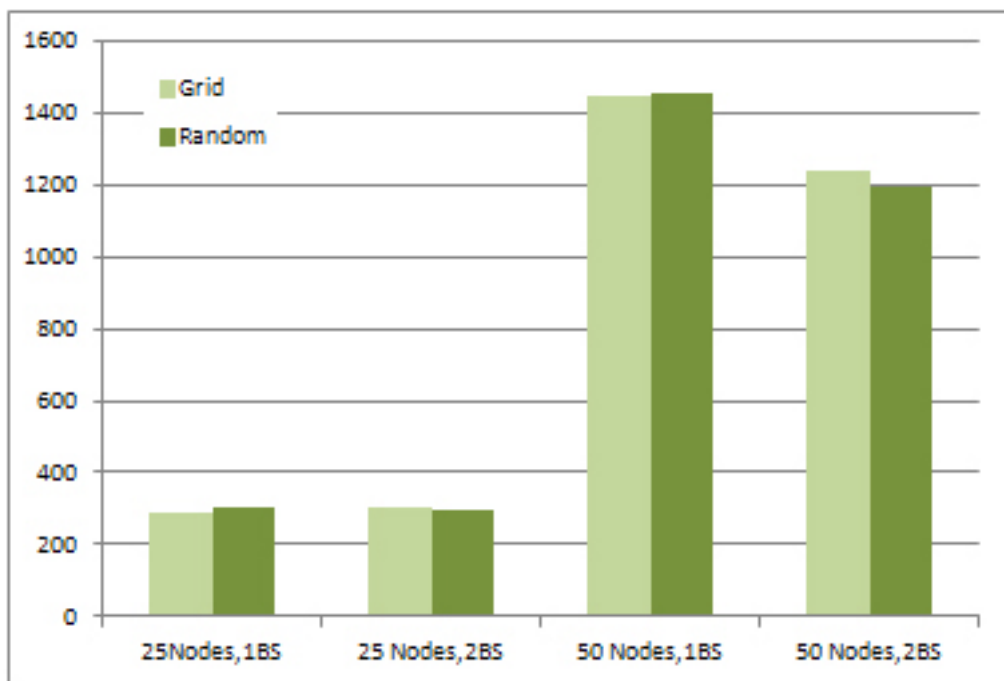
Simulation Graphs

THROUGHPUT ANALYSIS



In this analysis report we get data for 25 node 1 base stations approximately around 38316.5Kbps for both grid and random. On the other hand with 2 BS we also get the same amount of value for both it is calculated 40076Kbps.

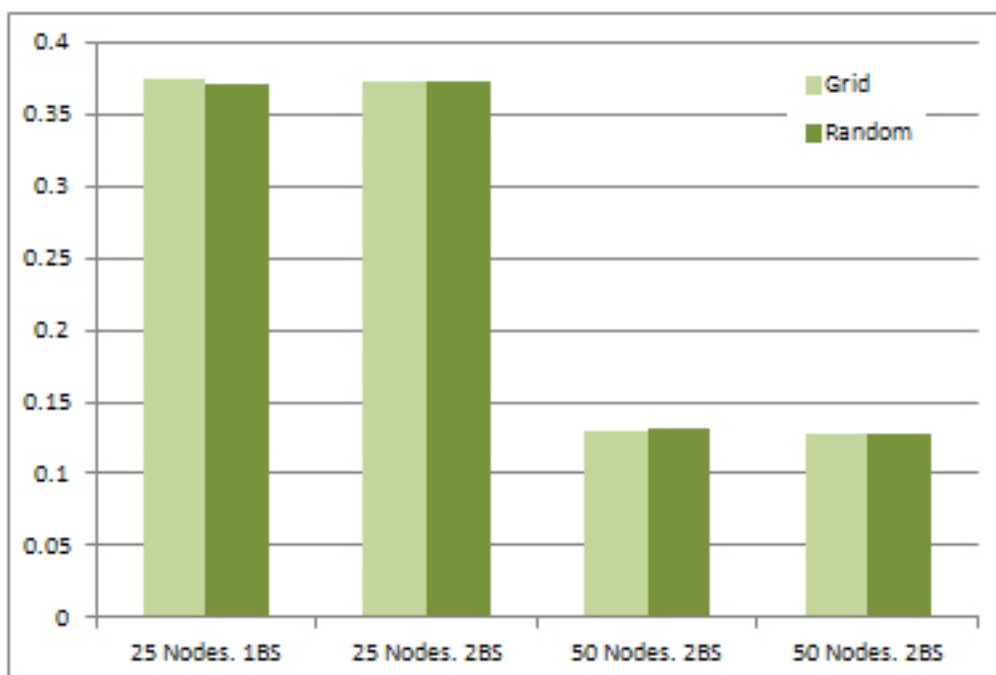
On the other side of the coin is that for 50 nodes 1 Bs and 50 nodes 2 Bs 21094.63672Kbps and 23109Kbps respectively.

END TO END DELAY

In this analysis report we get data for 25 node 1 base stations approximately around 288.3405647millisecond and with 2 Bs306.2807259millisecond respectively for both grid and random. The other side of the coin is that for 50 nodes 1 Bs around 1447.426051milliseconds for grid and random separately. However, 50 nodes 2Bs get value near about 1228.75milliseconds and 1193.64milliseconds for grid and random respectively.

ENERGY CONSUMPTION ANALYSIS

In this investigation report we get information for 25 hub 1 base stations roughly around 0.37415joules and with 2 Bs 0.3727joules individually for both network and irregular. For analyzing 50 hubs with 1 Bs 0.13044 joulesfor grid and random respectively. On the other hand, 50 hubs 2 Bs get quality close around 0.1276joules for network and arbitrary separately.



Conclusion

Crop watering system control is the most important concern in the space of farming. Lack of water all around is additionally underscoring the need of frameworks that control the harvest watering system as well as give the clever approach to give water in the required amount. By monitoring soil moisture and temperature one can make efficient use of water resources and also in achieving high yields. Though the study was performed on eight different scenarios of wireless sensor network, we identify that the throughput for grid and random sensor arrangement was more or less the same. However we identify that on increasing number of sensors to double throughput decreases to almost half.

There was not a very high variation in end to end delay for grid and random WSN arrangement, but grid arrangement has shown up marginally better in end to end delay compared to random arrangement. However the average values differ significantly; we found that by increasing the number of base stations the average end to end delay was slightly higher for grid arrangement. By increasing the number of sensor nodes the average end to end delay increased to almost four times. We identify that by increasing the number of nodes, the energy consumption was reduced significantly. Energy consumption graphs show that almost three times less energy was consumed if we increase the number of nodes. Implementation of this automatic irrigation system will be best suited for deployment.

References

- [1] M.Zennaro, A.Bagula, H.Ntareme, G.Inggs and S.Scott, On the relevance of open wireless sensors for NGN, in proceedings of innovations for Digital inclusions 2009(ITU-T Kaleidoscope),2009.
- [2]http://www.sciencevision.org.pk/BackIssues/Vol7/Vol-7No34/Vol7No3&4_4_Efficient_Sustainable_IBShaikh.pdf.
- [3] Dr.Chenyang Lu Slides on ""Berkeley Motes and TinyOS," Washington University in St.Louis,USA.
- [4] W.Ye and j.Heidemmann:Medium access control in wireless sensor networks, Norwell,MA,USA: Kluwer Academic Publishers,PP.73-91,2004.
- [5] Tian He, Sudha Krishnamurthy, John A. stankovic, TarekAbdelzaher, LiqianLuo, RaduStoleru, TingYan, LinGu ,pages 270-283.ACM press,2004.
- [6] M. Quratulain,(2014), Agro-tech in Malaysia and Literature Review Knowledge Sharing from Agro-Technology Using Nations,IJSERvol 5

Successful Conversion of a Cost Center to a Profit Center: A Case Study of a United Arab Emirates Company's Experience¹

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Introduction

Traditionally, organizations create sub-units (SBUs), often arranged by activities, functions, or geography, to achieve various strategic objectives that align with the corporate strategy (Samli and Shaw, 2002). These sub-units, known as responsibility centres, serve as a simple way to analyse and monitor the effectiveness of a segment of a complex business. Importantly, developing the right type of responsibility centre in an organization can be an effective motivator for managers that drives long term, sustainable results for an organization (Govindarajan, 1994). However, a one dimensional viewpoint of organisations can divide these responsibility centres into strict cost and revenue centres. What organisations fail to realize is that cost centres may have revenue potential and can be transformed into profit centers.

This paper examines the case of a United Arab Emirates (UAE) based company which successfully transformed a cost center into a profit center and explores the experiences of actors who were intimately connected with the conversion process. Since conversion of cost centers into profit centers does not always lead to positive results and may in fact cannibalize on the efficiency of internal processes, the main purposes of this paper are to tease out key factors which resulted in the successful implementation of a cost center being converted into a profit center; and to what extent this is a special or more general case. Specifically, this paper explores the experiences of the actors who were intimately connected with the conversion process, and provides insights across five key processes: i) establishing the corporate structure that might aid the conversion; ii) obtaining employee buy-in through the process; iii) transitioning employees in the process; iv) redefining the corporate environment; and v) performance management. The remainder

of this paper is organized as follows. Section 2 discusses the theoretical background. Section 3 presents the case methodology for action research. Section 4 presents the case analysis, and Section 5 presents a brief conclusion with insights that guide future research on cost center conversion.

Theoretical Background

The theoretical underpinnings of the case are divided into responsibility and profit centers; responsibility centers was assumed to be the necessary condition for profit centers as is demonstrated by the UAE case.

Responsibility Centers

In order to achieve their strategic objectives, businesses can subdivide and assign objectives to sub-units whereby unit objectives end up contributing to overall corporate strategy. A responsibility center is an organizational unit which is responsible for a specific set of usually related activities or functions. A company, thus, becomes a collection of responsibility centres with its strategic goals translated into objectives and assigned to responsibility centres. Responsibility centers are believed to be a cost effective mechanism which exposes management efficiency and provides information for the decision making process (Atiah, 1988). They also lend themselves to subjective and objective evaluation of operational and financial performance (Jensen 1998).

Responsibility centers are normally classified as cost centers, revenue centers, profit centers and investment centers. Managers of cost centers are primarily held responsible for costs or expense. Revenue Centers hold managers responsible for generating revenues and are best illustrated by a sales depart-

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ment where the manager does not have authority to set prices in order to affect volume. Profit centers managers are responsible for profit which is a measure of the difference between revenues and costs.

Research has shown that businesses use responsibility centers for several reasons. Managers believe that subunit managers are usually more highly motivated when they can exercise greater individual initiative. Thus responsibility centres can serve as powerful motivators (Neal and Lynn, 1995). As business segments compete among themselves for allocation of corporate resources (inputs) for their future growth, corporations need a measure of effectiveness. Responsibility centers serve as a simple way to analyse and monitor the effectiveness of a segment of a complex business (Al-shomaly, 1993). They help sharpen focus of managers by defining and assigning responsibilities. They also create a pool of experienced management talent by aiding management development and learning. It should be noted that benefits of the use of responsibility centers can only be achieved if sufficient autonomy is provided to the subunit together with goals that are congruent with the goal of the parent business.

Profit Centers

Revenue and expense centers are particularly susceptible to control and performance measurement issues making it difficult to determine their effectiveness and efficiency. In both revenue and expense centers control tends to be one dimensional which means that either output or input is not measured or cannot be translated into comparable terms. For example, in an expense center with a responsibility to advise and service, it is almost impossible to quantify much less evaluate the output. In a typical revenue center output is measured in monetary terms but there is no formal attempt to relate input to output. The lack of a clear relationship between input and output in these cases can also result in goal incongruity. This problem is especially serious for larger businesses where it is difficult for senior management to possibly know much less evaluate all staff activities. One dimensional nature of revenue and expense centers and the significance of profits in an organisational context have made profit centers more popular. The concept of profit centers originated in the late 1970s and early 1980s when contribution of individual units to corporate profitability started attracting attention resulting in elimination of many organisational units at a much faster pace. Although more recent research on prevalence of profit centers is scant, a survey conducted in the late 1970s, of 684 manufacturing companies, found that 83% firms had two or more profit or investment centers. Another survey of 1000 Fortune 500 companies in 1994 found that 93% of companies used two or more profit centers (Govindarajan, 1994).

Advantages and Disadvantages of Profit Centers

Profit centers in general hold several advantages over cost and revenue centers. Since unit managers are responsible for both cost and revenue, in the absence of head office approvals, more decisions are made at a unit level resulting in quicker decision making. Profit-centers enhance employee morale, initiative, and professionalism (Merchant, 1989). It plays an educational role by bringing managers into closer contact

with the overall profit objectives of the company. They serve as a training ground and provides opportunities for managers to exercise and display their initiative and imagination. Ready information on unit profitability alerts head office earlier and facilitates quicker remedial actions and inter and intra-company comparison (Andreas, 2002).

It is generally believed that the use of profit centers is limited by circumstances. While it is true, organisation can improvise to reap the benefits of profit centers as compared to cost and revenue centers, non-profit organisations are also using the concept of profit centers to enhance controls and performance issues. Profit centers do not have a precise structure and, depending on control environment, can be organised in different ways and can be classified into autonomous, quasi, pseudo or micro profit centers. Autonomous Profit Centers are treated as separate autonomous units, usually without the ability to raise funds but, with the freedom to set selling price, choose supply sources and serve internal and external customers. Although, ideally, profit centers should be autonomous, organisations tend to lose the advantages of economies of scale and synergy.

Autonomous profit centers may also adversely affect overall strategic directions of an organisations and sacrifice uniformity. Thus, management may opt to place constraints on the degree of autonomy in a profit center. These responsibility centers are called Quasi Profit Centers. As distinguished from Quasi Profit Centers, Pseudo Profit Centers capture the advantages of profit centers in an environment where profit centers seemingly, are not possible. They are typically suited for situations when a meaningful estimate of either revenue or cost is difficult. Micro-Profit center is a technique where large responsibility centres are converted into much smaller profit centers. Depending on the viability and circumstances a micro-profit centre can be autonomous, quasi or pseudo profit center.

Profit centers come with their own set of problems and some companies, including Banc One Corp., Weyerhaeuser Co. and Kimberly-Clark Corp., have tried and abandoned some of their profit centers for various reasons (Alter, 1995). It is argued that since decentralisation relates to the degree of autonomy that a department has for decision making it is possible for a department to be centralized and still be a profit centre. However, establishment of a profit center usually accompanies a drive for decentralisation. Profit centers, thus, usually share problems associated with decentralisation which include loss of control at corporate level and quality of strategic management decisions.

Profit centers facilitate independence and inter-departmental comparison; rivalry within departments may increase resulting in friction, duplication of activities, zero-sum gamesmanship and tendency among departments to avoid information sharing (Alter, 1995). It has been noted that profit center managers tend to get engaged in short term profitability objectives rather than long term profitability. Thus expenses which benefit organisations in the long run, like research and development, training and maintenance, may not receive due consideration. While unit managers have an incentive to increase unit profitability there are no systems which can ensure that

unit optimisation also results in optimising corporate profitability. The Unit may end up making decisions which benefit units at the expense of the overall organisation.

Despite these limitations, profit centers remain an attractive and preferred responsibility center. Organisations often fail to realize that cost centres have revenue potential and can be transformed into profit centres. This paper examines the case of a United Arab Emirates (UAE) based company which successfully transformed a cost center into a profit center. Accordingly, the next section discusses the background of the Company that is analysed.

Company background

Company X was first founded in 2002, in the United Arab Emirates, as a Public Joint Stock Company. With an investment portfolio valued at approximately USD 70 billion, the organisation has diverse investments in 13 industries. Initially, each of these investments had dedicated departmental units managing them (e.g., the real estate unit to managed property investments). Many of these units had grown so far in capacity over time that they had branched out to separate sister organisations for more effective management. As of 2014, the organisation has a total of 16 departmental units including foundational units such as Legal and Compliance, Human Resources, Enterprise Solutions and IT, etc. Total employment in the head office alone was 1,000.

In 2002, when Company X was first founded, their purchases were easily managed by a five man procurement team. The Procurement Department was used for purchases of equipment and services to be used by other departments, as well as internally. The Procurement department was also responsible for competitive bidding, sourcing, and contracting. As the organisation grew and branched into various industries, the Procurement Department also expanded and branched into sub-sections based on which department they were serving. They were eventually renamed as Corporate Support Services (CSS).

An expansion of the services led the CSS to become ultimately responsible for establishing and providing the physical foundation for the organisation and its departments. The services provided by CSS had a set schedule consistent through all the departments within the organisation and involved very little involvement from the internal department itself because many of the core services were provided at an agreed companywide standard and did not have room for customisation from department to department, beyond quantity adjustments according to each department's size.

These standard internal services included the provision of:

- Furniture, maintenance, relocation, restructuring, and fit-outs
- Kitchen services (including food, guest hospitality, kitchen equipment and machinery)
- Logistic services (warehousing, inventory management, storage and packaging)

- Maintenance of all current services, premises, and equipment

Services that had more leeway in terms of departmental customisation included:

- Guest reception and meeting services
- Travel (guest and employee parking and driver services)
- Partially, inventory and logistic services.

The initial idea for shared services occurred to the Department's director in 2009 when, one of Company X's sister companies had requested assistance in creating a similar internal services format for their organisation. The director had also noticed that in the past many of Company X's subsidiaries and partnering companies have requested advice on the suppliers used, pricing expectations and negotiations, necessary contacts, and purchasing. Based on these external forces, the Director embarked on a project to convert CSS from a cost centre to a profit centre, by leveraging the use of its services to external organisations.

The Conversion Process

Figure 1 highlights the work processes that were adopted by the CSS before conversion..

The services were performed through informal channels, made more prominent due to a lack of help desk and work log in systems. Each department would communicate their service request to their department assistant, who would then directly phone or email the service coordinator in charge within the CSS. These requests were not recorded formally and had no tracking system for either parties. Timelines were provided through word of mouth and the requesting department's assistant would have to follow up on the progress of the service accordingly. The service coordinator would then seek the approvals necessary from their manager, and enlist the appropriate third party channel. In case of an additional product, the coordinator would go through appropriate procurement and Local Purchase Order (LPO) procedures to acquire the requested product. In case of an additional service, the coordinator would enlist a third party service provider or one of the organisation's own service providers (depending on the request). The coordinator would then monitor the service deployment and then request feedback via set email template. This email template required the requesting department's assistant to fill out details such as satisfaction with the timing, quality of service provided, quality of communication with the coordinator, etc. Performance of the coordinators and services were mainly monitored through this feedback process as well as the manager's own monitoring of his employees. As a cost centre, the CSS department did not make any profit from the provision of these services. Company X budgeted these costs every year for each of its department based on projections of capacity and usage. Therefore, CSS's services fell as a budgeted cost within each department, including itself.

Figure 2 (page 62) highlights the work processes that were adopted by CSS upon conversion.

Figure 1: Initial Work Process

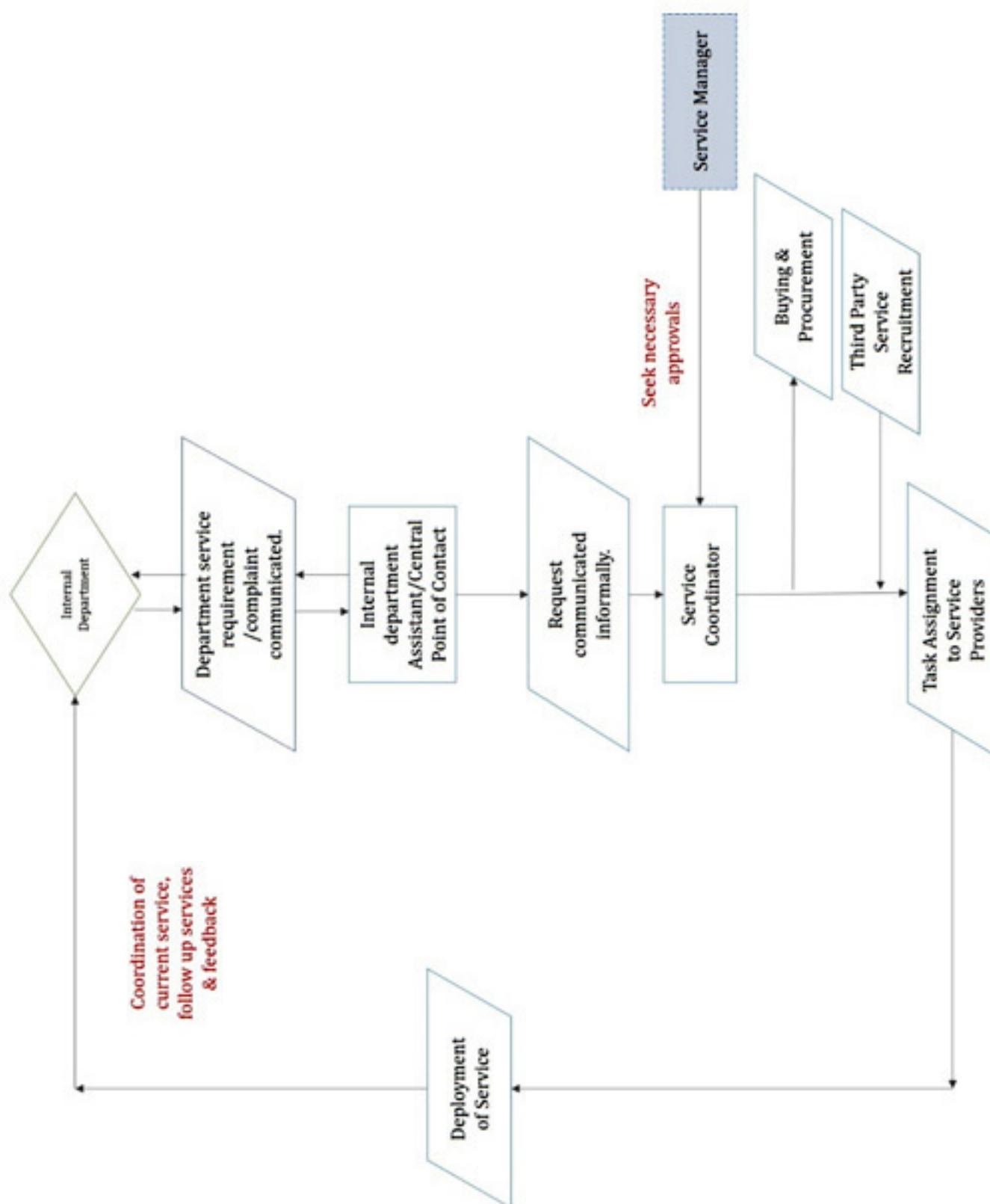
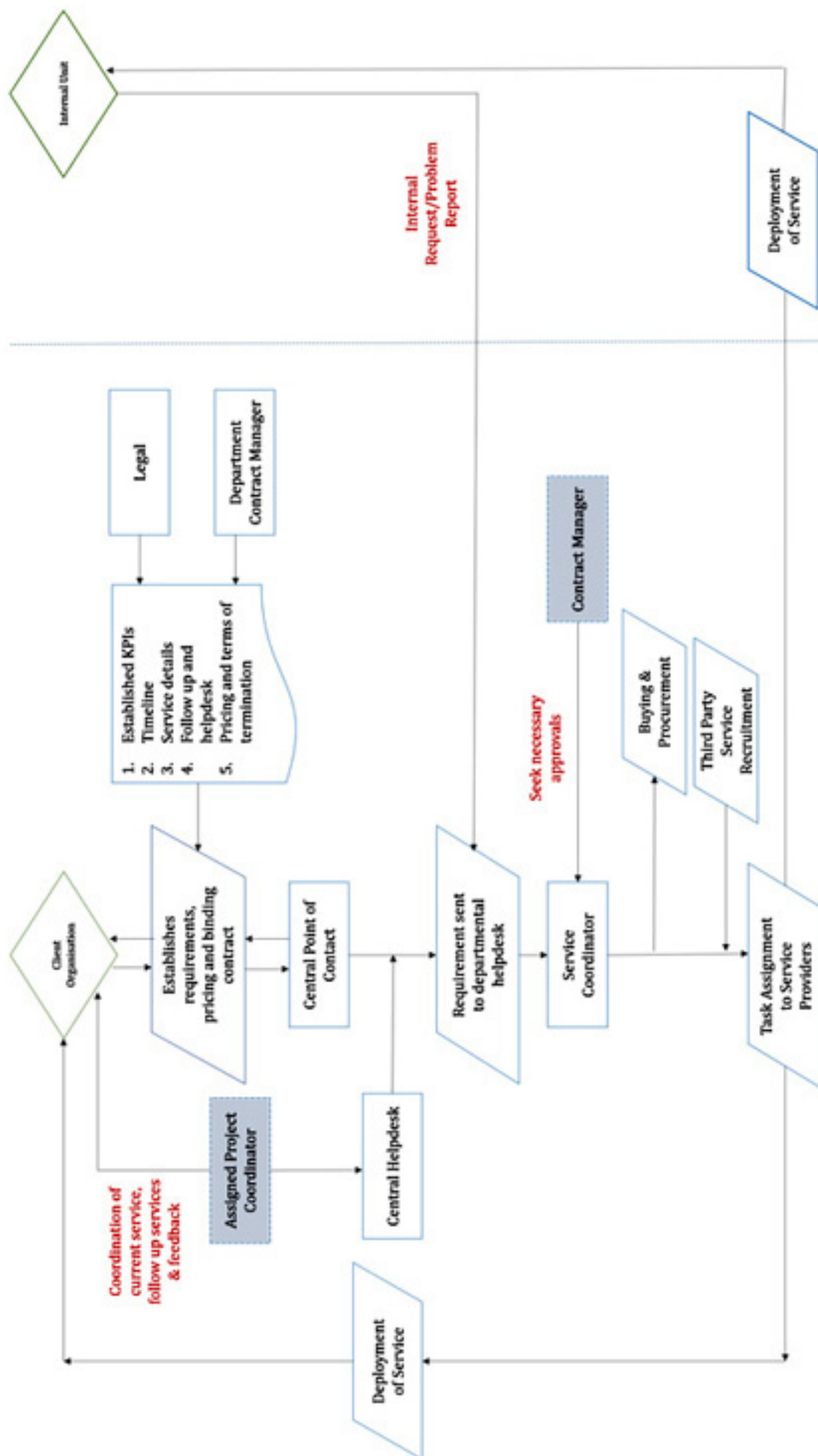


Figure 2: Conversion Work Process



External Organisations

When a new client organisation is acquired, the sales team who are in primary contact with the representatives from the client organisation gather all relevant information. This information includes the service requirements of the organisation, budgetary constraints, timeline requirements, and floor plans and modification requirements.

The client organisation is provided monitoring KPI's, a rate card for all the services, helpdesk and maintenance terms, and a timeline for service completion prior to the creation of the service contract. These are usually pre-established based on prior experience and existing contracts with third party suppliers; and needs minor modification when presented to the client organisation.

Once the contract has been signed, all service requirements are logged on to the departmental helpdesk, who is responsible for assigning each of the services to the relevant coordinators. Based on the services, the department had teams of five to seven service providers who were managed by a team coordinator. The coordinator is then responsible for any scheduling site visits, purchasing, training, and/or recruitment that need to be done. Any changes or addition to the service or project extensions require approval from the primary contract manager, both internally and within the client organisation.

In the event that maintenance of a service clause is included within the contract, the service is considered on-going. A project coordinator is assigned to the client organisation to monitor and maintain the current services. Any issues or additional services that may arise, must be requested through the central helpdesk.

Profit is earned by two primary methods. First, prices included a mark-up. Individual services were all charged to the external organisations with a 10% mark-up on the original third party contracting price with the CSS department. In addition, a management fee was added to certain grouped services which required constant monitoring and handling. Secondly, costs were minimised due to pre-existing processes, use of excess capacity, and mass contracting. Through relationships maintained with various contracting/service companies that eased communication of requirements; standardised bidding processes; and competitive pricing, CSS was able to reduce overall transaction costs usually associated with the services offered. This is further discussed in detail in the upcoming sections.

Internal Organisations

Unlike client organisations, the internal process is much less complicated. As CSS is already a part of Company X; it already has a predetermined set of responsibilities that it must follow in relation to its services. For any additional service requests or issues, internal units must contact the CSS help desk, who will then log in the request and inform the relevant service coordinator accordingly. It then goes through a similar process of seeking approvals and sourcing, before the deployment and maintenance of service. For internal organisations, the department maintained the old structure of having costs budgeted for by department. It did not make any profit from the provi-

sion of services. However, the Director did mention that in the future, CSS may look to branch out as an independent sister organisation upon which they will be contracting their services for a profit, not dissimilar to external organisations. However, this decision is circumstantial and depends on the direction the organisation may choose to go in the future.

The Case Study

Data for the case was primarily collected through semi-structured telephonic/online interviews and email exchanges consisting of open and closed ended questions. Since one of the authors was directly involved in the implementation process, personal observations were also used. During the interviews/emails efforts were made to focus on the critical elements of the implementation process.

Interviews were held with internal and external customers as well as the employees involved in the conversion process of the department. Twenty of the department's employees were interviewed, of whom 16 were present from the very beginning of the conversion process and played a participative hand. These employees range from coordinators, to junior and senior officers, help desk, and assistant managers. Seven internal customers were interviewed, each from a different organisational department. Each is an assistant or coordinator in his/her department and thus directly responsible for coordinating services provided by the CSS in their respective units. Five separate external organisations were also interviewed to provide insight into the service. From each organisation, a minimum of three or more officers were interviewed who were or are directly involved in the provision and coordination of services. The respondents were chosen because they were directly involved in the process and were familiar with both before and after situations. The open-ended nature of the semi-structured interview questions assisted authors in teasing out details and personal account of the actors from their unique vintage points. Interviews also made it possible for the authors to follow up and focus on interesting leads, modify line of enquiry and investigate further if underlying motives were detected.

Themes Identified

Our analysis of interviews and email responses of individuals involved in the implementation process yielded five identifiable steps in the process of converting the cost center to a profit center. The five process steps are as follows:

1. Identification of Opportunity and Change Champion
2. Establishing a viable corporate structure for the profit center;
3. Process reengineering;
4. Managing employee transition and buy-in;
5. Redefining the corporate environment; and
6. Restructuring performance measurement mechanisms.

The following is a discussion of each of the steps in the processes. Each section provides insights and best practices on how each step was managed in order to achieve success.

Step 1: Identification of Opportunity and Change Champion

The initial idea for shared services occurred to the Department's Director in 2009 when one of the sister companies of Company X had requested assistance in creating a similar internal services format be applied to their organisation. He had also noticed that in the past many of Company X's subsidiaries and partnering companies have requested advice on the suppliers used, pricing expectations and negotiations, necessary contacts, and purchasing. He took a leading role in crystallising the idea and selling it to management. He also put together a team of individuals who were receptive to his idea and greatly assisted in later implementation. To no-one's surprise the Director later became Chairman of the new Corporate Services entity.

Step 2: Establishing a viable entity

Initial challenges arose as the idea of a profit oriented CSS took hold. The very first challenge was the status of the new entity. While the unit provided services internally under the CSS department, extending services to external customers could not be possible under the current structure. CSS had to operate as a separate entity in order to facilitate the transition.

Company X opposed hosting it directly under the same organization, since it clashed with its core business. The organisation's primary purpose was ownership and investment in new or existing businesses in various fields that held profit potential, and did not conduct any of the operations associated with it on its own. Therefore, Company X offered to have the new setup under a 100% owned, and already existing sister organization that dealt with real estate and business property management, Company Y. In 2011, this became a reality and the Director of CSS became the chairman of Company Y.

Company Y turned out to be a good choice to host the new corporate services unit. Firstly, it was comparatively newer with only six months existence. Secondly, it specialised in leasing commercial properties. By and large, CSS and Company Y's target markets were the same: organisations that were looking to move and settle into new offices. Thirdly, Company Y was able to leverage the CSS services as a strong and unique competitive advantage by offering to bundle these services with the sold property. It would also now be able to reach a new target market of organisations that already had existing property, but were looking to outsource the management of the property itself.

A detailed business plan was prepared under which among other things, included a package deal system, where organisations could purchase services individually or as a silver, gold, or platinum package. Based on the existing service/supply contracts that Company X had with external suppliers, Company Y was able to create a rate card to offer to potential customers. The rates varied according to the package chosen. For instance, individual services were provided at a 10% mark-up, whereas in the platinum package, certain services were provided on market rate but with an additional management fee added to the total bill.

Step 3: Process Reengineering

As a start-up organisation, Company Y had limited reach and very little experience. In addition, the concept of one-window shared services on the scale they were offering was revolutionary to the market. Shared services were mostly being offered as only one or two contract based related services (e.g. Equipment Maintenance and Office Supplies) with minimum to no management. Outsourcing almost all office services, which were considered part of basic infrastructure of a company, was rare.

Thus, Company Y not only had to reach out to new customers but also create a market for the services they were offering. Company Y decided to leverage its strongest asset: its relationship with its parent organisation, Company X.

- **Creating Awareness:** A large scale six month company road show was launched to reach out to all the subsidiaries of Company X, as well as all internal departments. Such road shows targeted the decision influencers and upper management. Decision influencers were assistants or coordinators who were responsible for creating proposals and suggesting business solutions. In short, they were gateways. Upper management, such as departmental directors or vice presidents were often also business owners or investors and thus, potential customers.

- **Message Reinforcement:** A drawback of the whole campaign was that the road show only happened once. Company Y did not invest in message reinforcement, so a lot of the information shared was forgotten or disregarded over time. In addition, any new employees joining the organisation were unaware of the new procedures and often frustrated when dealing with the department. This is especially true because the processes adopted by the converted department were very different from the norms in other organisations.

- **Finding a Competitive Advantage:** Company Y's bundling services were not competitively priced and targeted medium to large organizations. Many questioned why anyone would want to purchase a service bundle from Company Y when the very same could be done internally. Thus, Company Y added an additional segment to their road show highlighting the following arguments in support of their offerings:

- As part of Company X, they highlighted the "Who better to know you than your family" attitude. They had existing intimate knowledge of how each sister company functioned; were familiar with the settings and floor plan of the organisations; and also knew many of the employees working in each organisation through mutual or direct contact. This made them knowledgeable of exactly what each organisation needed without having to spend months collecting data, gathering floor plans, or conducting lengthy meetings about every detail of the set up.

- Company Y also made projections of possible savings from the decrease of transaction costs. For instance, if a company were looking to hire cleaning staff to maintain the premises. Transaction costs of this requirement would include:

1. Position advertisement creation and publishing
2. Interviewing and selection process
3. Contract creation
4. Document and clearance processing of the selected candidates
5. Equipment, tools, and uniform provision for the service
6. Monitoring process (hiring a supervisor, installing clock card system)
7. Payroll processing
8. Cost of replacements (if the staff has a sick day)

While individually, the rates charged may look higher, Company Y reasoned that the savings in transaction costs would offset this expense, since they would be managing and bearing all the processes/costs for each transaction. For Company Y, they were able to minimise their costs by maximising efficiency and using the excess capacity they already had. For instance, costs (1) and (5) were minimised due to relationships maintained with various contracting/service companies that can ease communication of requirements; standardised bidding processes, and competitive pricing. Costs (3), (4), and (7) were standardised due to regularity of occurrence. Costs (2), (6) and (8) are again minimised due to availability of back-ups and specialised staff hired for specific services that can work along various shared service contracts rather than just one.

c. By outsourcing their office services through Company Y, organisations would be able to focus on their core business. Instead of wasting time and resources in administrative jargon, these efforts could be redirected towards more production efficiency. Company Y offered to take full responsibility of the management and maintenance of the service provided.

Step 4: Managing Employee Transition and Buy-in

One of the foremost changes that had to be dealt with was transitioning employees from serving internally to providing services across multiple external organisations. The key to maintaining cost effectiveness and efficiency in the start-up phase was to use the same capacity of employees CSS currently had to serve more organisations. This meant that employees would face an increased workload. Foreseeing this problem, the company employed the following strategies to ensure a smooth transition:

- **Communication:** Communicating the vision and venture of extending shared services in the initial stages. This ensured that the employees knew and were prepared for the changes that were likely to happen.
- **Direct Involvement:** Getting the employees involved in the process. The Director and his team held meetings with each of the employees to gather their input on the rate card, job scheduling and timeline management, contracting, potential challenges, and so on. Employees were referred to as specialists in each of the service processes. They were also involved in creating the processes for service deployment. Representative employees from each service team were also included in the roadshow to answer questions and present each service

in detail. This not only created a sense of entitlement, but also of ownership where employees felt personally vested in the project.

- **Training:** Training employees in time and people management and customer service was also a key link to change management. When working for the internal organisation, the Director noticed that most staff members could complete their daily tasks within the first four hours of the work day since office services was not a labour intensive job and often varied on a day to day basis. Employees were accustomed to their work loads and often spaced out their tasks to a comfortable pace over a period of nine hours. Training was mandatory in order to break that habit without having the employees feel pressured.

- **Incentives:** Promoting employees, both by pay and title were also motivating factors to make staff members accept the change. Staff were selected based on performance and how much increase in work load they were likely to handle. This promotion came with an understanding that job responsibilities would also increase.

Yet, despite all these measures taken, employees still faced a large amount of stress borne from multiple reasons. The first and foremost was the increased workload. While training had been provided in time and customer management, employees saw this as only an additional burden to their work schedules. The conversion also meant employees had the added responsibility of managing multiple timelines, as each customer had a different service routine assigned to it based on its requirements.

Secondly, employees were required to adapt to very different organisational settings. Internally, employees followed a strict routine of services that they had become accustomed to providing efficiently at the right time and place. Shifts in service standards also indicated process change. Employees were trained in new software and certain procedures were put into place to make service delivery much more efficient. Despite being given prior knowledge of these process changes, many employees reverted to the old way of doing things as they found the new methods time consuming and frustratingly complex. Employees had also grown accustomed to the colleagues they worked with in each serviced department and thus shared a good personal rapport with all internal customers. However, sourcing to external customers meant adjusting to different and multiple organisational needs, as well as working with new people they were mostly unfamiliar with, except on a professional basis.

Thirdly, employees experienced a significant shift in management style. Before the conversion, management style of the department had been laid back, as time and service delivery pressures had not been so stringent. With new external customers in place, management had to pay more attention to monitoring performance and putting deadlines in place, in order to maintain service standards. Performance measures were no longer qualitative and based on supervisory observation. Employees now had to focus on numbers, which not only tracked their own performance but also the performance of the department itself.

Employees experienced the highest amount of frustration during the transitioning phase of each implemented change. One of the instances would be when management decided to route all inquiries through the helpdesk rather than contacting the employee responsible directly. During this process of switching, employees were left with an added task of informing all their current customers of the change, changing their contact address and business cards, and often having to deal with customers complaining about the new lengthier and more impersonal process. What added to the frustration were multiple attempts to change a single process. Management involved described this as a trial and error method, where the organisation was learning from its mistakes and adapting its processes accordingly. They reasoned that due to its unique offering, management did not have sufficient benchmarks to guide them through the conversion process. This constant change irked many of the employees who constantly had to relearn their jobs and often adapt the situation to any errors they may face in the process in order to avoid having it affect any customers. In addition to frustration and stress, employees also experienced a loss of enthusiasm and scepticism in the entire conversion from cost to profit centre.

While eventually, the organisation was able to transition its employees successfully into the process change, it was not without hardship. Due to the inconsistencies in certain processes and fast paced change in operations, employees were not able to manage performance expectations as efficiently as management anticipated initially. It took nearly a year, longer than projected by management, for employees to adjust to the change. This negatively affected performance in terms of how quickly and effectively a service was delivered, though not significantly.

Step 5: Redefining the Environment

Coping with Expansion

As the number of external customers grew, management of both internal and external services simultaneously became difficult. To avoid loss of efficiency, it was crucial to expand the work team. Company Y calculated which of its services were most requested and how much increase in work load it was going to see for upcoming contracted projects. For services that were more popular, such as hospitality services, Company Y decided not only to recruit more employees but also to divide the team into two parts. One part would serve internally within Company X, while the other would serve external customers/organisations. For services like Logistics, the same format was maintained as earlier. This avoided cannibalisation where focus on the more profitable external customers decreased the quality and efficiency being delivered to internal customers.

This avoided having to prioritise between internal and external customers, and keep focus on the task itself. Another strategy included hiring personnel from outside the organisation who had experience in service industry rather than training individuals from within the organisation itself.

Managing Suppliers and Logistics

Since company X already had long term purchase contracts with established suppliers, company Y decided to leverage its position by continuing to use the same contracts and all procurement processes were routed through Company X. It was later found that this arrangement may not be possible because of accounting issues that arose. This meant that new contracts would have to be re-established under Company Y. This was a major threat primarily because creating new contracts meant re-tendering and re-negotiating rates with all existing suppliers. This was not only time consuming but also meant that there was a possibility that suppliers would not be willing to contract for the same rates. There was a possibility of loss in profit, since company Y had by then already signed service contracts with many customer organisations.

In order to tackle this problem, Company Y requested a six month waiver within which it could continue to use Company X for procurement. Within these four months, the team went through a rigorous mass retendering process. To make the process easier and faster, it requested the involvement of Company X's procurement department for bigger suppliers, whose total purchases by the company amassed over AED 350,000 per month.

In addition to retendering, Company Y made sure to get the same or better rates by having negotiations through employees who had strong and long term relationships with existing suppliers. This meant having the internal team also involved. While intensive, the re-contracting process was completed successfully with significant backing from Company X.

However, a primary drawback experienced during this re-contracting process was reluctance from the suppliers themselves. This was especially the case for suppliers who were local or small to medium sized companies. An initial problem faced with suppliers was the additional logistics. When dealing with internal customers alone, suppliers only had one order and one route to fulfil. However, with the addition of multiple customers, all under Company Y, suppliers also had to restructure their logistics to adjust to the sudden mass of new orders and different timelines. While larger companies had the capacity to cope with these changes, smaller scale suppliers suffered.

Company Y had to again switch five of its suppliers due to errors and backlog experienced due to the supplier's lack of capacity to fulfil orders. This was critical as it directly affected Company Y's service to its external and internal customers, and meant that they would have to deal with dissatisfaction and complaints. This was a similar case during Company Y's retendering and re-contracting process. Participating in a tender was not only time consuming, but also involved a lot of complicated documentation, attendance in meetings, and presentation creation. A common complaint from smaller, local suppliers was that they were unable to complete the RFP/RFQ issued by Company Y due to its complexity. Small proprietorships simply did not have the resources or education to complete the tender. They felt that Company Y should have assigned them a representative to explain and guide them through the process. In addition, they also expressed frustration and betrayal over

being retendered. As companies who had been supplying to the organisation for many years, they did not understand the necessity of retendering or switching suppliers for the exact same products/services.

Adjusting to Consumer Demands

One of the most common customer complaints that the team received was the lack of a point of contact within the premises itself. Internally, the department had a coordinator for each of the services in order to monitor and maintain the quality of service provided. This coordinator was also responsible for reporting and taking immediate action against any issues that may arise. A lack of coordinator in the customer organisation's premises meant that the quality of service and speed of follow up/maintenance was not up to par to the internal services. Again, Company Y evaluated the additional costs of having a full time coordinator in place for each customer organisation. It set a range based on the quantity of services provided and the total monetary worth of the contract. For instance, organisations that had the platinum package were given full time coordinators to liaise with the core team. For customers that were on the lower side of the range, frequent site visits were scheduled based on the type of service provided and the attention it required.

One of the mistakes that Company Y made during transition was not keeping their leads and contacts confidential from their customers. After a few years, external customers became extremely familiar with the suppliers and contractors and were able to directly contact suppliers and negotiate better rates. The Company lost approximately three customers because of this.

Step 6: Restructuring Performance Measurement Mechanisms

Prior to conversion, a key change in performance measures was the switch from qualitative to quantitative measures upon conversion. Initially, the CSS department's measure was on the quality of the service provided. This was determined by a short survey, embedded into an email template, which was sent out to internal customers upon completion of service. In addition to this, performance was also monitored by the manager in charge of the service team and adjustments were made accordingly. This was largely possible due to the small interpersonal nature of the team, as well as low task load wherein the only customers were those within the organisation.

Post conversion, performance was measured on two distinct levels; at the individual and corporate levels.

Individual Level

More quantitative measures were put in place in order to monitor and track employee performance. While, management's focus on an individual level was still on the quality of the service provided, the expansion in customer base and team size meant that more rigid controls needed to be put in place. This was done through the use of Company's Y's pre-existing helpdesk, which was created to take in calls for property requests.

Thus, this helpdesk was simply expanded to also take in service requests. In addition, it was further automated to record the details of each request which were directly correlated to measures of performance. Examples of these details included type of job, date requested, officer in charge of service provision, and date completed. This was then benchmarked against established KPIs; for instance, the date of start and completion would be mapped against service timeline. Calls were also monitored by an automated switchboard system, called ARC, to track the number of requests/complaints, the number of calls dropped or unanswered, and the duration of each call.

However, a major challenge they faced when this helpdesk was put in place was, again, change management. Customers were used to contacting the officer in charge directly for any services they may want, and found the helpdesk process tedious, time consuming, and impersonal. The team handled this issue by persevering and employees were asked to politely reroute any customers who called them directly to the helpdesk. The key was to get customers accustomed to using the helpdesk. As mentioned previously, employees initially did tend to revert back to old methods of handling customer inquiries because of their reluctance to change. However, connecting performance measures to the information logs in the helpdesk system meant that the employees' performance measurement were dependant on their adherence to the formal system of handling inquiries. The employees were educated on how the helpdesk worked in order to drive home this point, and were also shown how rerouting their calls through a helpdesk would reduce their workload and stress.

Corporate Level

At the corporate level, there was a sharper focus on profitability and cost reduction. This reflected on the management team's processes, when designing service packages for their customers and conducting negotiations. In addition, the procurement templates, evaluation matrices, and standardised negotiation procedures set in place for employees to use with supplier, were designed to keep costs minimal without compromising the standards of quality set for each service. Individual employees, however, were not measured by their profit potential, but with their service potential. This was because management believed that the profitability of shared services were largely dependent on the quality and efficiency with which service was provided, especially at the initial stage where they were trying to establish a corporate image for themselves. This strategy was especially relevant since Company Y's high end pricing strategy ensured that customer organisations contracted were more concerned with qualitative value of services than with costs.

Conclusion

Not all cases of transformation from a cost center to a profit center become viable or proceed smoothly. In this particular case the initiative was largely successful. We identified several themes that this successful transformation entailed and lessons that can be learned. We found that turning a cost center into a profit center is largely a matter of establishing a clear status for the new profit center based on a clear plan, getting the buy-in from both internal and external customers, a readi-

ness to revise processes, policies, and structures to align with the changes, redefining the new environment and a willingness to put new performance management systems in place.

In regards to establishing a suitable corporate structure, it is important that organisations are clear about the objective and the type of new structure required of the center once the conversion is fully implemented. Establishing a viable and recognisable status for the new profit center imparts legitimacy in the eyes of both internal managers and employees and external suppliers and customers. The creation of a detailed strategic business plan that includes restructuring for the proposed profit center might also demonstrate a reasonable growth goal and thus be expected to be important to the process of establishing the appropriate corporate structure. Also what might be important is aligning all processes to the new strategy and structure.

Process reengineering at the United Emirates focused on three key aspects: creating awareness, message reinforcement, and identifying a competitive advantage. Awareness was created through a six month road show to reach out to potential clients. Message reinforcement occurred as the road show took the form of a one-time blitz. Accordingly, smaller marketing efforts were undertaken to continue the message after the road show. Finding a competitive advantage required the organization to look internally at its key strengths and externally to market opportunities.

Employees also required some guidance in transitioning from a cost center to a profit center. It was considered important that patience is exercised so employees could acclimatize to the new environment and performance management systems. This process is facilitated if employees are involved earlier in the process and any changes to their workload and working environment should be communicated earlier. Reorganisation also led to a comprehensive review (i.e. "lessons learned") of the implementation at regular intervals, seeking to identify what works and what has not worked. An effective strategy to obtain employee buy-in was to identify a champion to disseminate information to the internal teams as to how and why employees should operate in a profit center.

Redefining the corporate environment was also a key process. Corporate leaders had to explain how the new set-up will redefine relationships with suppliers. Organisation would identify distinctive competencies, based on service and price just like other independent businesses. A strategy for attracting new external customers was developed by being grounded in competences and available resources. Metrics were established to measure results.

This all suggests that organisations must be aware of their cost structure which allows them to develop value pricing for both internal and external customers. It further suggests that organisations should establish benchmarks for costs and performance and should go beyond profitability. Current financial and operational systems should also be evaluated in terms of integration with the new environment. Lastly, profit center performance measures should include qualitative metrics, such as customer satisfaction rate and employee engagement

scores, which recognize that external factors may influence good performance. All cost and revenue to profit transformation proponents need to be aware that, in most cases, they will be continually required to prove the value of profit centers to both internal and external customers.

References

- Al-shomaly, Ibrahim. (2013). Performance Evaluation and Responsibility Accounting. *Journal of Management Research* 5(1): 291-301.
- Alter, Allan E. (1995). The Profit Center Paradox. *Computerworld* 29 (17): 101.
- Andreas P. (2002). Profit Center management. Transparenz schaffen, Erfolg steigern, Mitarbeiter motivieren. Hanser Fachbuchverlag,
- Atiah, Suleiman. (1988). The role of the responsibility accounting system in measuring the efficiency and effectiveness of the management. *Public Administration Review* 57, 57-92.
- Bhatia, M. L. (1983). Motivational Value of Profit Centres: Myth and Reality. *Cost and Management*, 57(6): 31
- Cooper, D.R. and Schindler, P.S. (2006). *Business Research Methods*. 9th ed., Irwin/McGraw-Hill, New York, NY.
- Cooper R. and Slagmulder, R. (1998). Micro-profit Centers. *Management Accounting*, 79(12): 16
- Govindarajan V. (1994). Profit Centre Measurement; An Empirical Survey. The Amos Tuck School of Business Administration, Dartmouth College.
- Jensen, M. (1998). Divisional Performance Measurement. In *Foundations of Organizational Strategy*, by Michael C. Jensen, 345-361. Cambridge: Harvard University Press
- Kaplan, R. S., Atkinson A. A. (1998). *Advanced Management Accounting*. Third Edition, Prentice Hall, NJ
- Merchant, A., Stede, K.W. (2003). *Management Control Systems: Performance Measurement. Evaluation and Incentives*, Prentice Hall, England, 2003
- Merchant K.A. (1989). *Rewarding Results: Motivating Profit Center Manager*. Harvard Business School Press P xvi, 272 Boston
- Neal, James G., and Lynn S. (1995). Responsibility Center Management and the University Library. *The Bottom Line*. 8(4): 17-20.
- Robert N. Anthony & Govindarajan V. (2007). *Management Control Systems*, 12th edition, McGraw Hill Irwin
- Samli, A. Coskun, and Eric H. Shaw. (2002). Achieving Managerial Synergism: Balancing Strategic Business Units and Profit Centers. *Journal of Market - Focused Management* 5(1): 59-73.
- Yin, R. K. (1994). *Case study research: Design and methods*. SAGE Publications, Thousand Oaks.