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From the Editor's Desk

It is my pleasure to bring to you this issue of the East West Journal of Business and Social Studies (EWJBSS). In this issue, we have been able to publish five research articles. Our primary objective is to nurture young researchers. EWJBSS is also happy to note that both our authors and readers have expanded beyond our campus. In future, we plan to expand our editorial board to make this a journal of South Asia.

We have been regularly publishing the journal for the past five years. For this reason, we remain grateful to the East West University Center for Research and Training (EWUCRT) for its logistic and secretarial support. I am also grateful to our style editor Shafiqur Rahman of the Department of English, EWU, for taking pain of reading the manuscripts meticulously and making the articles more reader friendly. In this connection, I will fail in my duty if I do not acknowledge our anonymous referees who have given their time and effort to ensure that the quality is maintained. EWJBSS is truly grateful to them for their cooperation.

The diversity of the articles published in this volume is also encouraging for us and for our readers. Tahmina Islam and Jiban Kumar Pal provided a glimpse into the conflicts and challenges faced by working women in their family life while Md. Moududur Rahman and Sadia Tasneem illustrated the difference in income and employment status of urban and rural women in Khulna. At the same time, Mohammad Omar Faruk discussed applicability of loan securitization to deal with non-performing loans in Bangladeshi Commercial Banks, and Jashim Uddin and Sheheli Parvin examined the impact of country image on supply performance. Finally, Sanchita Chakrovorty and A.K. Enamul Haque analyzed the urban land market and its relationship with water-logging in order to develop a strategy for urban infrastructure development.

EWUCRT gratefully acknowledges partial support from the University Grants Commission of Bangladesh and the World Bank through their Academic Innovation Fund under the sub-project "Knowledge Transfer and Capacity Development of Academic Staff" to publish this particular issue of the journal.

Professor A.K. Enamul Haque, Ph.D.
Editor

Conflicts and Challenges Faced by Employed Women in Family Life: A Study on Sylhet City

Tahmina Islam* and Jiban Kumar Pal**

Abstract

The contributors of every human civilization are both men and women. No success or development is possible without the participation of the women. Now-a-days, women are increasingly participating in outdoor activities. This is a good sign for society and for the women themselves. This study is based on primary and secondary data and the researchers tried to identify the conflicts and challenges, which are being faced by women employee in family life and the nature of such conflicts. This is an exploratory study to examine the problems of employee women in family life. Quantitative method has been used for the study and the data has been collected through questionnaire survey and secondary sources. The study has been conducted by selecting 51 samples from the women employees in Sylhet city. The findings of the study illustrate that, the education rate is higher among women employees and they get married at a later age than usual (average age 25.43). The women employees in Sylhet city like other cities of Bangladesh face many problems due to job. Support from the family is very important for their functioning. Though women employees are independent economically but they face various problems within family and society. They have to bear most of the workloads both in office and in family. Therefore, further study on the concerned fields is very essential to get the real picture of the present trends.

Key words: women employment, gender issues.

Introduction

Women are found in a large number in the work force today. The great industrial revolution and the consequent industrialization opened up doors of employment for women. Women started availing themselves of the

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employment countries including Bangladesh. Adult women are no longer associated solely with the role of 'homemaker' especially in the urban areas. Millions of women married and single, with and without children are working outside the home. In Bangladesh about half of the population is women. Most of the women of our country are engaged in domestic work. From our social perspective their domestic work is considered to be inferior to that of men. A full and absolute participation in every sphere of life, including decision making, is vital to elimination of discrimination against women and improvement of their socio-economic status. Women's empowerment and freedom of women have become a common term in every corner of the globe at present. In general, most of the people's attitude is not favorable toward employment of women. They wish to see women to work at home, give birth and rear children and take care of other members of the family. So, employed women face many problems from family, society and their working area including eve teasing. Women empowerment is the pre-condition of development in society and family. Employment of women is not a new concept in Bangladesh but it is more prevalent in the urban areas. Participation of women and their awareness in working sector is increasing. Most of the women living in urban areas are employed due to urbanization and industrialization. In Sylhet city, many women are employed in government and non- government organizations like other towns/cities. But they have to face barriers from family and society due to employment. This study was conducted to find out the kinds of problem they face and how these problems may be solved. This study targets married and unmarried employed women in Sylhet city and examines their experiences regarding work-family conflict.

Bangladesh has been trying to extend support to women as they constitute nearly half of its population and half of the potentials. The constitution of Bangladesh guarantees certain rights and privileges for women. These are articulated in Article 27, 28(i, ii, iii, and iv), and Article 29(i) of the constitution of Bangladesh. These articles include provisions for ensuring women's rights, empowerment and participation in the labor-force. In addition to fulfilling the constitutional obligations, the government took several measures to uphold women's interests. These include enactment of various women-related laws and ratification of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). The government also announced National Policy for the Advancement of Women and National Action Plan (Women Policy-2011). Particular emphasis has

also been given on women in the Fifth Five-year Plan and in the Poverty Reduction Strategy Paper (PRSP).

Literature Review

A number of books, articles and reports have been reviewed here, which are relevant to the study that we have conducted. A literature review referring to different journals and studies conducted by different researchers has been added to this study to show relevance of the work. In a study conducted in Pakistan, work-family conflict, job satisfaction, and turnover intention have been explored extensively among female university teachers. Having a supportive supervisor and jobs with flexible time are negatively related to all the parameters of work- life conflict. Bad supervisor's role during hard time is highly positively related to demands at work and peer assistance is highly negatively correlated to work overload and restricted work hours which means peer assistance can reduce demands at work but has no significant impact on reducing time conflict, mental distress and work overload. When there is more household expense i.e. money requirement and children (regardless of their number) are also present then all 4 parameters show more work- life conflict. Whereas, family size and husband's income are negatively related to demands at work, time conflict and mental distress show the same trend. As the number of family members increases and there are more earning hands in the family, so there will be a reduction in work life conflict. However, this is likely to result in work overload for women and there will still be more burdens on them to manage all the work. An increase in husband's income is likely to lower the mental distress and time conflict faced by women because they will be at ease with having an additional earning support for the family in the form of their husbands (Shakil & Muhammad, 2011).

Working women's occupation or income influence their present role and status. They can help their families to have a better life. So, the attitude of their husbands and other family members towards them has changed for the better. Working women have gained control over their income and decision making in family and society (Moin, 1998).

Working women have to encounter a number of problems. Major difficulties come from their families. Women have to seek permission from male family members for going out to work. They do not have any choice about their job. Thus an indifferent attitude develops among women about their career. Similarly, at workplace they are treated as 'women', as if they do not have

adequate skills to do a job like a man. Male colleagues do not cooperate and subordinates do not like to accept them as a boss. Women are considered as mentally weak, inexperienced, unskilled, physically unfit, delicate and submissive. So they are not capable of decisions making, policy making and visiting field offices alone. Some other problems such as lack of separate rest rooms, prayer rooms, separate canteens and inadequate transportation facilities make their job harder (Islam, 1997).

The way families organize their working and family lives are one of the most important issues to consider in this Year of the Family. While at one level, how families make these arrangements is a private matter, these decisions are influenced by and, in turn, affect many public spheres of life - health care, education, transport, leisure, social security provision and the law. Present and future trends in family and work life depend on how we as a society make decisions about the way individuals - as employees, family members, careers of the young, elderly and ill and contributors to community activities - will participate in these dimensions of life as a whole. In families of the not-so-long-ago 1960s, wives and children were thought to remain on the domestic doorstep while the breadwinner went to his workplace. While this scenario never applied to all, it was the way for the majority of families, particularly those with young children. In 1961 women comprised only 25 per cent of the labor force; the participation rate of married women aged 25-34, the child bearing years, was 17 per cent. The pattern was very different in the 1990s. In 1991, women comprised 42 per cent of the labor force; married women's participation rate for the age category 25-34 had leaped to 61 per cent, AIFS 1993, Wolcott, 1994.

According to Muslima (2005), women empowerment begins at home. In work place participation of women plays an important role in our economic development. She found out that sincerity and honesty of women is very high in working sector. Although they are respected at their work place for sincerity and honesty but they are sexually harassed by men as their attitude towards women has not changed (Muslima, 2005).

In every society, women tend to spend far more hours in unpaid work than men do. This unpaid work constrains women's choices about whether or not they can participate in the labor market, for how much time, and how far from home. These issues have long been at the core of discussions about gender equality. In industrialized countries, these patterns are clearly visible in the lower labor force participation rates and higher part-time employment

rates of women with young children. In developing countries, there has been less research or policy dialogue on the relationship between workers, family responsibilities and paid work. But it is clear that for many women, lack of public and private supports for family responsibilities means that the informal economy may offer only paid work that provides enough flexibility, autonomy, and geographic proximity to home to allow them to combine paid economic activity with family responsibilities. The situation has been changing gradually (Cassirer & Addati, 2007).

Mahtab (2007) said that women have to face varieties of problems in diverse occupations. She stated that women are working mostly at the bottom of the hierarchy. Her study found that gender discrimination and sexual harassment at work place are two major problems that every working woman faces in Bangladesh. Institutional culture is male dominated and it restrains women to participate in decision making. In addition, supportive mechanism among women is also lacking. There is no congenial atmosphere for women to work together as a group for common interest. The study identified another constraint faced by professional women which is the “maternal wall.” Career opportunities become limited for them after having children. Low paid working women suffer from health hazards due to stressful and unhealthy working environment. Career women also experience health problems. This is due to stress from overload, work-family-conflict, child rearing, etc. All these adversities lead women to lower level of performance, poor satisfaction with job and life, which ultimately affect their career prospects (Mahtab, 2007).

Objectives of the Study

The main objectives of the study are to know the challenges and conflicts employed women have to face in family life due to employment. Some specific objectives are given below:

1. to know the socio-economic and demographic information of employed women and their families;
2. to understand the types of problem they have with family due to employment;
3. to know the nature of conflicts which they have in family;
4. to explore the types of challenges they face;
5. to identify the role in decision making in family and society;
6. to find out their suggestions as to how these problems may be solved.

Rationality of the Study

In Bangladesh about half of the population is women (population census-2011). They already have proved that without their participation, sustainable development cannot be achieved for our people. In modern societies, women engaged in job outside of home having a good salary are more respected than women without a job. In terms of power dynamics, women clearly gain some degree of power within the family by earning their own income. Preoccupation of women with jobs outside of home has its adverse consequences on the maintenance and continuation of the family traditions and religious customs. Working women have contributed much to the economic betterment of their families as such. At the same time, the inability of working women to spare enough time for their children has often resulted in emotional and psychological problems. Working women face various problems in family life. This study has explored the real conflicts and challenges of women and the problem they face in family and society.

Operational Definitions of Concepts Used in the Study

Women: In the Oxford Advanced Learners Dictionary, an adult female human being is termed as women. In this study females above 25 years of age would be considered as women.

Employed Women: In this study, employed women means all women who work in renowned and recognized government and non-government organizations (school, college, university, medical sector, bank, law, police, administration, association etc.) and they would have at least a bachelor's degree and would earn a minimum of 5,000 taka monthly.

Conflict: Conflict is the deliberate attempt to oppose, resist or coerce the will of others. Conflict usually arises out of a clash of interests. In this research, conflict means resistance to the interest of employed women imposed by their family members, relatives, colleagues and others.

Challenges: In this study familial challenges refer to the challenges due to employment in family. The married employed women face various challenges in family, office and other places.

Sylhet City: Sylhet city is one of the six divisional headquarters in Bangladesh. It is divided into 27 wards and these wards constitute the city corporation area. It is situated in the northern part of Bangladesh. It is surrounded by the Sunamganj district on the West, Moulovibazar and Habiganj districts on the

South and by India on the North. In this study Sylhet city means all areas of Sylhet City Corporation.

Methodology

This is an exploratory study done with the support of quantitative data. This study mainly worked with quantitative primary data. The data collected from primary sources were entirely based on interviews of fifty-one respondents. All areas of Sylhet City Corporation were covered in this study. All the employed women in schools, colleges, universities, hospitals, banks, and other government and non- government organizations were considered as the population of the study. The researchers purposively selected 51 samples and collected information from each of them. Actually the researchers purposively selected 51 samples from 21, 22, and 23 wards among 27 wards under Sylhet City Corporation. As there was no specific data or survey on educated women employees of Sylhet city, so the researchers collected data from those wards which were close to their residence. Data were collected during September-October 2012. Interviews were taken by the researchers. Interview protocol was pre-tested and carefully constructed so that it did not have any physical, psychological and social affects against the participants. The collected data were processed through editing, coding, tabulating and classifying based on its characteristics. Later the processed data were analyzed by using simple statistical tools (i.e. percentage) in light of the objectives of the study. The researchers used secondary sources of data like books, journals and articles for analyzing the real situation and better understanding of the research problem.

Major Findings of the Study

Demographic information of the respondents

The majority of the respondents (43.14%) belonged to the age group of 30-35 years, 17.65% of the respondents belonged to the age group of 25-30 years, 21.61% belonged to the age group of 35-40 years, 13.72% belonged to the age group of 40-45 years and 3.88% belonged to the age group of 45-50 years. The average age of the women employees is 33.90 years. Most of the employed women's age level is 30-35 in Sylhet city. Education is the backbone of a nation. Women's education is essential for development of nations. From the collected data it was found that 35.3% of the women employees were graduates, 62.7% women employees were post- graduates and 1.9% of them had a diploma. In Sylhet city, rate of education is increasing day by day.

Due to rapid growth of industrialization, joint family patterns have diminished and now there are mostly nuclear families. About 66.7 % of the households were found to be nuclear families. From this study it was found that 33.3% of the respondents were from joint families. The family as a basic social institution has been undergoing change. Modern family radically differs from that of the traditional ones. Most of the women employees in Sylhet city were found to have nuclear families. Bangladesh is a multi-religious country. Mainly four kinds of religions are prevalent in this country. According to the data collected, about 66.7 % of the respondents were Muslims and about 33.3% were Sanatan/Hindus. So, it was found that, religion did not have much influence on having a job. In Sylhet city most of the women employees were Muslims while a significant number of Hindu women also work.

Profession, income and expenditure of respondents

Most of the women like to work outside of home alongside their household work. In the modern age, women employees work in various sectors and make contributions to achieving national goals. According to the collected data, 9.81 % of the respondents were lawyers, 15.69% were bankers, 21.57% were NGO workers, 9.81% were school teachers, 11.76% were college teachers, 7.84% were university teachers, 11.76% were administrators, and 11.76% were doctors. In Sylhet city 25.49% of the respondents were found to earn a monthly income of 20000-25000 taka. About 27.5 % of the respondents were found to spend 18000-23000 taka per month.

Marriage age, husband's profession, head of family and number of children of respondents

From the collected data it was found that 25.5% of the women employees got married between ages 19-23, 35.3% of the respondent's marriage ages were 23-27 years, and 39.2% of the respondent's marriage ages were 27-31 years. The age of marriage of the employed women is increasing. The average age of marriage of employed women was 25.43 years. Employed women who have higher education tend to get married at a later stage. They want to establish themselves in their careers. According to this study, most of the employed women got married between 27-31 years. Among their husbands, 33.33% were found to be administrators, 3.92% were lawyers, 19.60% were businessmen, 29.41% were teachers, 3.92% were engineers, 7.84% were doctors and 1.96% were police officers. The societal nature of Bangladesh is

patriarchal. According to the data collected about heads of the family, 80.3% of the respondents had their husbands as head of the family while 11.8% had the father-in-law, 2.0% had the mother-in-law, 2.0% had the wife, and 3.9% had other persons as head of the family. In Bangladesh, most of the families are controlled by the husband. According to the data collected, about 46.4 % of the women employees had 1 child, 43.9 % had 2 children, 7.3 % had 3 children, 2.4 % had 4 children and 19.6% had no children. Most of the employed women with higher education were found to have only one child.

Who encourages the respondents to take the job?

According to the data collected, about 45.1% of the married women employees took jobs by their own effort, while 21.6% were encouraged by husbands, 29.5% by parents, 1.9% by fathers and mothers in law and 1.9% are encouraged by other persons for having a job.

Cooperation of husband in household work

This study revealed that, 78.8% of the women employees were able to have time for familial work while 21.2% of them could not manage to. In modern societies, employed women have to play a dual role and most of their time is spent for their jobs. From this study, it was found that most of the women get time for their household work. It is the positive side of women empowerment in our country. Employed women can have time for their household work after their work outside of home. Cooperation of husbands of working women in household work is remarkable. Research revealed that about 17.5 % husbands of employee women helped in child rearing, 37.5 % of them helped in household work, 20.0 % husbands helped their wives in outside work and 25.0 % of them helped in doing all these work together.. From the study it was found that husbands of 78.4 % of the respondents cooperated in household work while husbands of 21.6 % of the respondents did not. In modern age cooperative tendency has increased between husband and wife. Such tendency has reduced the stress of employed women.

Problems created in family due to job

Most of the respondents thought that problems were created because of their jobs. 23.9 % of the respondents expressed fear that their jobs might hamper mental development of their children, 19.6 % faced problems in balancing job and household work, 8.7% mentioned insecurity problems, 47.8 % mentioned difficult problems and 9.8 % said that they had no problems at all.

About 90.2 % of the respondents were found to have problems in family life because of their jobs. Pre –occupation of women with jobs outside of home has its adverse consequences on maintenance and continuation of family traditions and religious customs. Employed parents are no longer able to give cultural training to their children in family traditions and religious practices.

Impact on conjugal life

From this study it was found that, 11.8 % of the respondents have adverse impact on conjugal life and 88.2 % have no impact on conjugal life. In this study, most of the employed women have no negative impact on their conjugal life due to jobs. Most of the employed women are well educated and so they can manage everything properly and motivate their husband easily. It is the positive side of women empowerment.

Issues of conflict in conjugal life

In this study, it was found that, 70.6% of the respondents had different sorts of conjugal conflicts. Among them, 16.7% stated that the issues concerned child- rearing matters, 41.6 % stated that causes of conflicts were household matters, 13.9 % said that they were unable to express their opinion freely and 11.1 % said that their husbands never had enough time for family. Again 16.7 % of the respondents had different issues in this case while 29.4 % said that they did not have any marital conflicts in their lives. In this study, it was found that, 70.6% of the respondents had conjugal conflicts due to issues regarding children, familial matters, expressing opinions, having time for family etc. In this study, most of the employed women were found to face conjugal conflicts for familial matters. It should also be noted that most of the respondents were found to have played positive roles in solving marital problems by their own efforts.

Opportunity for expressing opinion for decision making in family and office

In modern societies, women can express their opinions freely in case of important decision making in family. In this study, 86.3 % of the respondents said that they take part in decision making in the family. This reflects women's status in family and society. About 68.6% of the respondents were given opportunity for expressing their opinions for decision making in the office. About 23.6% of the respondents were given importance sometimes and 7.8% were found to have no importance at all. When women are able to

employ their own creativity in decision making in office, it tends to increase their status at work place.

Some other challenges faced by employed women

Working women face challenges in their conjugal life due to their jobs. From the study it was found that 45.1% of the respondents got jobs by their own efforts but 17.6% stated that in some cases their husbands and parents in law did not like their jobs. Though the ratio is low but still 19.6% of the respondents had shared that they often got pressure from their husbands and parents –in-law for leaving their job. In most of the cases it was found that children of employed women were deprived of proper care. Another interesting finding from the study showed that 11.8% could not help their own parents as they wished. In most cases their husbands and mothers-in-law did not allow them to do so. Also 13.7% of the respondents opined that they could not participate in social programs of their office because of family restrictions.

Some major recommendations

It was evident from the study that women employees faced a lot of challenges in their family life because of their jobs. This affects their performance and efficiency levels. In the long run, it wastes away national resources and potentials. In order to utilize full potentials of women employees, certain measures should be taken. The following recommendations are put forward to reduce problems, conflicts and challenges and to create a congenial atmosphere for women employees in their families:

1. As employed women remain busy and cannot have enough time for their children, so initiatives may be taken (both by the Government and by the NGOs') to develop day care facilities in every working station which might ensure better childcare and reduce tension of working mothers.
2. Initiatives should be taken to raise social awareness to reduce “double burden” of the working women. Men should be encouraged from childhood to share household work with women. Family education is important in this regard.
3. The role of family members should be widened to support employed women. Especially husbands and parents-in-law should be more cooperative and empathetic towards women employees.

4. Working women should be allowed to participate in decision making in the family. Husbands of working women can initiate this. Their husbands should also be open- minded and have a significant level of tolerance. Husbands should also have respect for their wives and make sure that their wives have equal contribution to decision making.

Conclusions

It may be said that an ever increasing number of women are entering into employment. The processes of modernization, industrialization, urbanization and globalization have provided new opportunities for women to become wage-earners, salaried professionals and individual entrepreneurs. This new trend has added greater momentum to the processes of social change which have been taking place in society. But they have to face various problems in their family and society. In spite of the contributions these working women make in case of family and society through financial support and decision making, their children are often deprived of proper care and affection as they are sometimes unable to have enough time for family. Support from the family of working women is very important for their proper functioning at work. The study reveals that women who work outside are in a disadvantageous position as compared to their male colleagues. Employment of women outside of home has contributed much to the economic betterment of the family. At the same time, inability of employed women to spare enough time for their children has often resulted in emotional and psychological problems. In the study, most of the women employees takes part in decision making in family and office but still a fair number of educated working women cannot take part in decision making process in family. Patriarchy can be one of the important factors behind it. Though the cooperation rate of husband is high in this study but still employed women have to face various sorts of challenges every step in their daily life. They take double burden in office as well as at home. Sometimes they are frequently ordered to give up the job. These pressures come from their husbands and from in-laws which make their situation more miserable. Though most of the husbands are cooperative but still a portion of them are unwilling to give enough time for their family. A major part of women employees feel that they face conflicts in different issues like child raring, maintaining households, freedom of expression etc. They share some recommendations to overcome conflicts in family life also. The other notable issue found in the research is that in some cases women employee cannot contribute in her own paternal family financially because their husbands and in-laws do not allow them to do so.

If conflicts and challenges faced by working women in family life are reduced, they can be expected to perform better. As women are increasingly becoming involved in employment outside of home, men will have an opportunity to become more involved in activities regarding childcare. In terms of power dynamics, women clearly gain some degree of power within the family when they have their own incomes. This study has also revealed that when a woman provides sole financial support for her family, even a low-end occupation will have a positive effect on her self-esteem. In the modern societies, women engaged in jobs outside of home and having good salaries are more respected than women who are unemployed. As far as women are concerned, their self-esteem and power within the family is deemed to increase as they move outside the home and function as productive wage earners. Lastly the researchers think that the women policy should be implemented as soon as possible to minimize the challenges and conflicts of women employees which will help them to contribute in national economy. The research was based on Sylhet city only which does not represent the whole picture of women employees of Bangladesh so further researches should be carried on this issue to identify the barriers and conflicts of women employees.

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Employment and Income Status of Disadvantaged Women-A Comparative Analysis between Some Selected Urban and Rural Areas of Khulna District

Md. Moududur Rahman* and Sadia Tasneem**

Abstract

This study mainly discusses a comparative analysis between status of urban and rural disadvantaged women. For surviving the livelihood women work in both area works hard. Moreover, their income depends on seasonal variation and rural women also suffer from uncertainty of income. The study is based on empirical data collected through household survey and personal interviews with disadvantaged women of village Shiromoni and Rupsha slum and its adjacent area under Khulna district. This analysis looks into the condition of such women and the present GO and NGO programs toward their economic improvement. Thus, to achieve better social structure, the Government and its development partners need to re-orient their programs and implement an effective affirmative action for the disadvantaged women.

Key words: disadvantaged women, empowerment.

Introduction

In today's world women and their empowerment is one of the burning issues. But still now women in many parts of the world are confined to less remunerative jobs, especially the disadvantaged women. In many developing countries, female-headed households are the poorest of the poor households. Various micro studies indicate that the 'hard-core' poor are largely women and they face social barriers in accessing economic assets (skill, property, credit etc.). It is much harder for women to overcome poverty. In Bangladesh the share of women in the total economically active population are 39% indicating a lower economic participation by women (fifth five year plan).

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Women have extensive workloads with dual responsibility for farm and household production. Not only women are the poorest of the poor but also they are disproportionately represented among the poor. Female-headed households earn 40% less income than male-headed households. (Hamid,1995). But they are the most suffers in the family due to the socio-economic environment. Under the male dominated structure, women's needs are counted as secondary in comparison to the needs of the male members of the family, as well as in society. As a result, their access becomes very limited in institutional facilities. This paper shows the structure of the income and employment of disadvantaged women. In this analysis, income, expenditure, savings, and occupations pattern etc are shown. Next section shows objectives, review of literature, methodology, analysis, findings and conclusion.

Objectives

The main objective of this paper is to make a comparison between the income and employment pattern of the urban and rural disadvantaged women. To obtain main objectives there are given supportive objectives:

- To explore the income and expenditure pattern of the disadvantaged women of the study area. Here the types of occupation are shown on which they are dependent.
- To show the relationship between income and savings that is whether it is positive or negative.

Literature Review

Chaudhury and Shamim identified the employment status defined in terms of the self-employed and employees. This article represents the basic attempts to test the validity of the proposition that the quality of employment in Bangladesh has deteriorated for the women (Chowdhury and Shamim, 1994). Hamid's identification of the importance of gender as a crucial parameter in social and economic analysis was complementary to, rather than competitive with, the variables of class, ownership, occupation, income and family status. Here he examines the socio-economic profile of female headed households to highlight the disparities between male headed households and those headed or managed by women. (Hamid, 1995). Shamim identified that the impact of NGO programs has been somewhat positive on female beneficiaries,

but wide gender gaps still remain in many areas (Shamim, 1996). Kabir et al. observed the impact of development projects on women's socio-economic and demographic behavior. They found that the disadvantaged women participated in various development projects of different organizations in order to maintain their family as well as to alleviate poverty with their income (Kabir, Ahmed and Khan, 2000). Parvin highlighted the occupation pattern of poor working women and their income level according to their occupation pattern and identified some critical issue thereof in relating to their occupation and income pattern (Parvin, 2003). Slee identifies that women of poor families are particularly disadvantaged and cannot participate in or fully benefit from development efforts. Due to natural calamities and economic reasons, men tend to migrate, leaving behind their families. Women have to bear the burden of poverty in a discriminatory situation (Slee, 2004). Hossain said that over the last three decades micro credit has gained enormous success in reducing poverty on a global scale. This paper empirically examines and analyzes the role of microfinance institutions in promoting rural livelihoods in the country (Hossain et. al., 2004). Sheheli found that overall 36% women have increased income from income generating activities during the last three years. Overall 74% of the rural women faced medium constraints to participate in income generating activities. Five major areas are identified essential to improve existing livelihood situation, which are credit facilities, working opportunity, food availability, education and shelter (Sheheli, 2012).

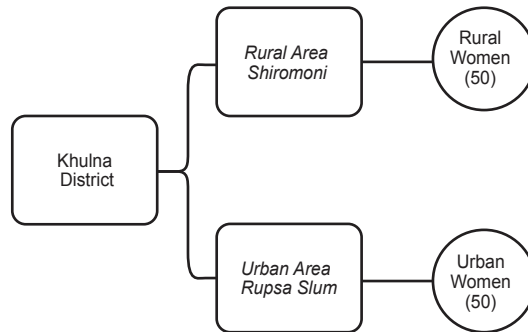
Research Design and Methodology

Research type and design

This job has done best by both the qualitative and quantitative approach of research. This is a quantitative analysis because this will apply the statistical tools like Correlation analysis, Regression, F test as well as analytical statistics for analyzing the variables and their relationship. After fixing the objectives of the study a questionnaire is prepared and both open-ended and close-ended questions are included.

Sample design

To compare between urban and rural disadvantaged women, Shiromoni and Rupsha are selected and 100 disadvantaged women from the study areas, using random sampling method is adopted.

Figure 1: Sampling**Data collection**

Two types of data (primary and secondary) are collected for performing this research work.

Primary data collection

Sample household survey is conducted using structured questionnaire that also included mostly open-ended questions.

Secondary sources of data

For conducting the study, secondary data are collected from different sources. Such as:

- Journals and papers relevant to the study are collected from NGO's, Khulna University Central Library, papers and publications from the internet.
- Household surveys of Bangladesh Bureau of statistics and rural surveys conducted by BIDS, annual report of various organizations relevant to this study.

Data interpretation and analysis

The findings have been portrayed and arranged by dint of the various tables, charts, graphs and maps. For analyzing the data some tools have been used and these are discussed below

Regression analysis

Regression model has been used to analyze the relation between expenditure and income in both rural and urban women.

Correlation analysis

The correlation coefficient has been used to measure the relationship between income and savings of the disadvantaged women. It is a quantitative analysis.

Weighted mean index

The overall satisfaction level of the disadvantaged women on the policies taken by the GO and NGOs have been measured by the Weighted Mean Index (WMI) by using 5- point scale and it shows the degree of their satisfaction.

The formula of WMI is:

$$WMI = \frac{w_1f_1+w_2f_2+\dots+w_nf_n}{f_1+f_2+\dots+f_n} = \frac{\sum w_i f_i}{\sum f_i} \quad (1)$$

Where, WMI = Weighted Mean Index

W_i = Assigned weight for a particular class under satisfaction scale

f_i = Corresponding frequency of that class

Table 1: Five point scale

Scale				
1= strongly dissatisfied	2= dissatisfied	3= moderately satisfied	4= satisfied	5= strongly satisfied
0- below 1	1- below 2	2- below 3	3- below 4	4- below 5

Analysis of the Study

Urban area analysis

Income is one of the superlative indicators to measure the economic status of any household. The following critical analysis of households' activities has been done for finding out the effect on socioeconomic status.

Income and expenditure and saving pattern of urban households

In order to earn their livelihood the disadvantaged women have engaged in various types of income generating activities. Different ranges of income and expenditure of various households' categories are given below.

Table 2: Monthly income range of the different urban households

Households (HH)	Monthly income ranges in Taka (Frequency)					Total
	Below 1000	1000-1500	1501-2000	2001-2500	Above 2500	
Type-A	2	3	4	3	1	13
Type-B	3	2	3	4	2	14
Type-C	1	4	2	2		9
Type-D	1	2	3	5	3	14
Total	7	11	12	14	6	50

Source: Field Survey, 2014

Type-A= Widow headed HH, Type-B= Abandoned headed HH, Type-C= Divorced headed HH, Type-D= Separated headed HH

This table shows the monthly lowest income range of widow headed households (type-A) in rural area is Tk less than 1000 and the majority of them belong to the income between Tk 1501 to Tk 2000 per month. Majority of abandoned headed households (type-B) belong to the lowest monthly income range. Divorced headed households' (type-C), monthly income do not exceed Tk 2500 and the majority of the separated headed households' (type-D) income ranges varied between Tk 1500 and Tk 2500. It is a wide-ranging pen-picture of the surveyed women in urban area.

Table 3: Monthly expenditure of the different urban households

Households (HH)	Monthly income ranges in Taka (Frequency)					Total
	Below 1000	1001-1500	1501-2000	2001-2500	Above 2500	
Type-A	-	6	3	2	2	13
Type-B	2	3	4	5	-	14
Type-C	-	3	1	4	1	9
Type-D	-	4	4	4	2	14
Total	2	16	12	15	5	50

Source: Field survey, 2014

Type-A= Widow headed HH, Type-B= Abandoned headed HH, Type-C= Divorced headed HH, Type-D= Separated headed HH

For describing the expenditure pattern of the respondents express various expenditures on food, cloth, medical, education, transport, fuel, electricity and others are considered. In table 3 the majority of households type-A's expenditure varies between Tk 1000-1500. Households' type-B's average monthly expenditure is between Tk 1500-2500. Most of the women of households' type-C spend above 1000. The majority of household's type-D spends between Tk 1500-2500.

Table 4: Monthly savings of the different urban households

Households (HH)	Monthly saving ranges in Taka (Frequency)					Total
	00-50	51-100	101-200	201-300	300+	
Type-A	7	5	-	1	-	13
Type-B	4	8	2	-	-	14
Type-C	8	1	-	-	-	9
Type-D	5	8	-	-	1	14
Total	24	22	2	1	1	50

Source: Field survey, 2014

Table 4 implies that most of the households have very small amount of savings. Here about 50% households' savings is between 00-50 Tk. Though their expenditure is higher than their income but they save a small amount because it is related with loan repayment. Here 44% people's saving range is within Tk 51-100. Very few of those households have monthly savings above Tk 100.

Regression analysis between income and expenditure of urban households

In this regression analysis R represents 0.416 i.e., 42% degree of association among the variables. The R^2 (coefficient of determination) indicates value of 0.173 i.e., about 17% is explained by the model. The variation of the expenditure amount of the urban household is explained 17% by the variation in the income amount of that household. (see Annex A)

Hypothesis, H_0 : Expenditure depends on income

Here,

F^* = Calculated value of F and

F_{tab} = Tabulated value of F

Here the calculated value of F ratio is used to judge the overall significance of the results. The calculated F ratio is compared with the theoretical F

values with $v_1 = K-1 = 2-1 = 1$ and $v_2 = N- K = 50 - 2 = 48$ degrees of freedom (at 5% significance level).

Where, K = No of parameters and

N = No of samples

In this model from F-tables we find that the tabulated value of $F = 4.08$ at 5% level of significance and the calculated value of F is 10.031 at 3% level of significance. In this model $F^* > F_{tab}$.

This estimation proves that the regression model is significant. Some accept the hypothesis and we accept that the income (X) is a significant explanatory factor of the variation in expenditure (Y) in urban households. (see Annex B)

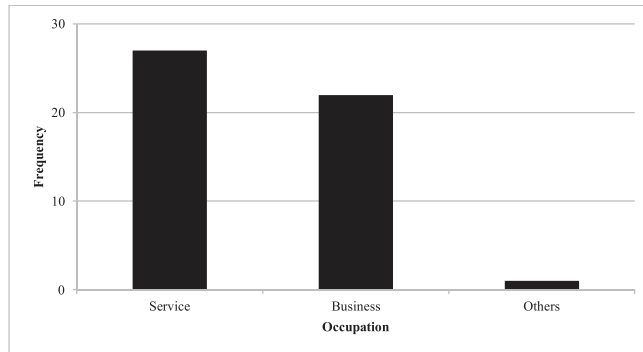
Correlation between income and savings of the urban households

There is correlation between the urban women household income and savings and the Pearson's correlation coefficient is 0.34 i.e., 34% at 5% level of significance in 2 tailed tests. It is known that the range of correlation coefficient is between $+1$ to -1 . In this test the value of correlation indicates that there is a low degree of positive correlation between the two variables income and savings i.e., income influence at degree of rising savings. (see Annex C)

Occupation of the surveyed urban households

From the survey result, it is found that in urban area most the respondents are now working in various shrimp industries adjacent to the Rupsha River. Side by side they are also related with some domestic work, canteen work, sewing, sweeping, water carrying etc. Some are also related with various informal business activities such as vegetable selling, selling of rice cakes, shop keeping, fish vending, ash vending etc.

Figure 2: Occupations of the surveyed urban household members

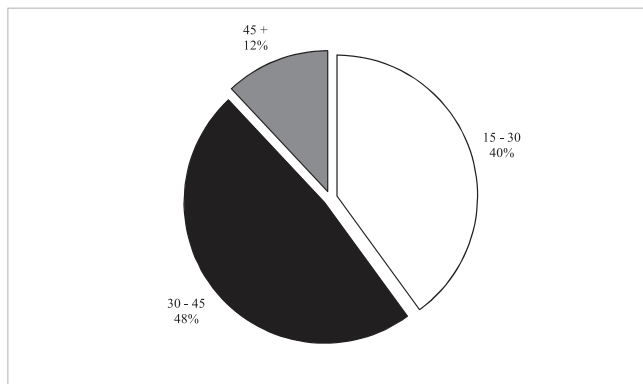


This figure explains that about 54% surveyed urban women are related with various services and about 44% are related to bussiness.

Age of the urban women

From the questionnaire interview it is found that in urban area, there is no one below 15 years of age among the disadvantaged women.

Figure 3: Age of the surveyed urban household members

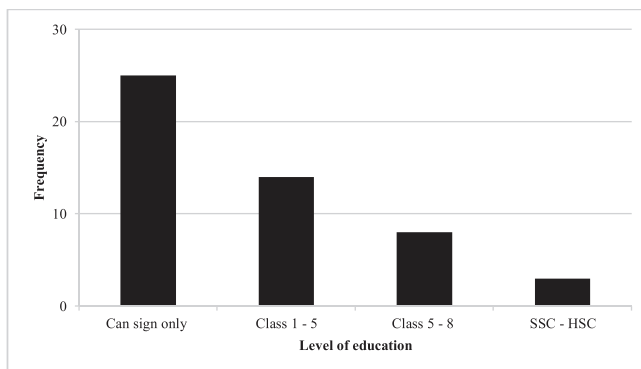


Results show that the highest number of women is between 30 to 45 years indicating middle aged women are more disadvantaged. About 40% women are between 15 to 30 years of age and the rest of respondents are above 45 years old.

Educational qualification of the urban respondents

Generally, disadvantaged women are not highly or well educated.

Figure 4: Educational qualifications of the surveyed urban household members

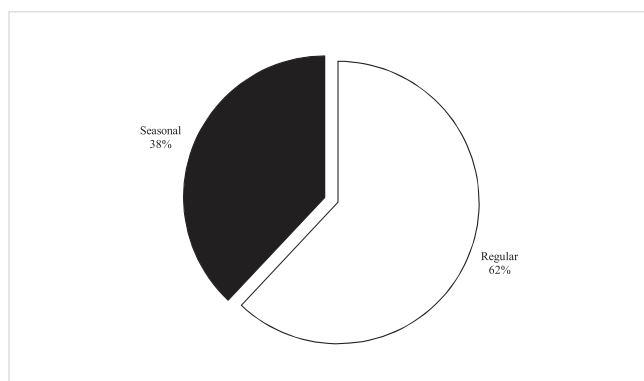


In the study area about 6% completes education at the level of S.S.C. or above S.S.C., 16% respondents are found to have completed at the level of class five to eight, 28% at the level of class one to five, and the rest of the respondents can only sign. Illiteracy is the main cause of poverty of the disadvantaged women.

Nature of work of the urban respondents

Shrimp processing is seasonal work and a major part of the women is related with this industry. Some work like informal sector business, domestic work, factory work, canteen work, sewing, water carrying, vegetable selling, are regular work.

Figure 5: Nature of work of the surveyed urban households

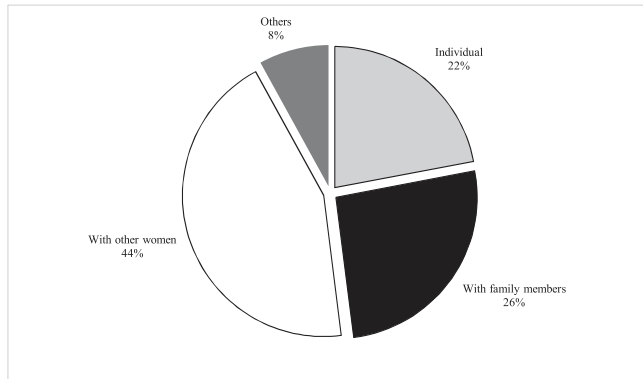


This figure shows 38% women work seasonally and about 62% women work regularly.

Working pattern of the surveyed urban women

The disadvantaged women who are involved in various activities work to maintain their family with their low income.

Figure 6: Working pattern of the surveyed urban households

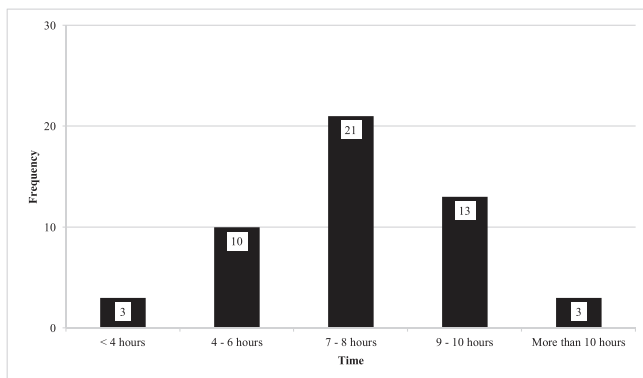


In this study, about 22% women worked individually, 26% with their family member, 44% with other women and 8% with others.

Time spent for the work of the surveyed urban women

In Urban area, about 42% female works 8 hour because most of them are related to shrimp industry. But in other works they do not maintain such standard time. In some cases they have to spend more than 8 hours. About 20% workers work between 4-6 hours daily.

Figure 7: Urban women spends time for the work



Sources of loan of the surveyed households and amount (Tk)

Table 5 implies the micro-credit facilities of the studied households. Among the various NGO's BRAC, ASA and Grameen Bank are the established ones as micro-credit providing organizations. Various societies also provide small-scale loans with little interest. GOs also provide micro credits.

Table 5: Sources of loan and amount (TK)

Loan take from	Range of loan					Total
	Below 2500	2501-4000	4001-5000	5001-7000	7000+	
NGOs	-	-	7	8	5	20
Cooperative Society	3	1	-	-	-	4
GOs	2	2	4	-	-	8
Total	5	3	11	8	5	32

Source: Field survey, 2014

Most of the disadvantaged women take the amount of Tk 4001-5000. NGOs covered 70% of the total micro-credit while the GOs and Society covered discretely 15%.

Rural area analysis

Income and expenditure and saving patterns of rural households

In order to earn their livelihood the disadvantaged women have engaged in various types of income generating activities. Different ranges of income and expenditure of various households' categories are following.

Table 6: Monthly income range of the different rural households

Households (HH)	Monthly income ranges in Taka (Frequency)					Total
	Below 1000	1001-1500	1501-2000	2001-2500	Above 2500	
Type-A	4	7	-	-	1	11
Type-B	8	2	3	2	1	16
Type-C	3	3	1	5	-	9
Type-D	2	1	2	3	2	14
Total	17	13	6	10	4	50

Source: Field survey, 2014

The table states that the monthly average income range of widow headed households (type-A) in rural area belong to income between Tk 1000 and Tk 1500 per month. Majority of abandoned headed households (type-B) belong

to the lowest monthly income range. Divorced headed households' (type-C), monthly income did not exceed Tk 2500 and the separated households' (type-D) income ranges varied between Tk 1000 and Tk 2500. It is a wide-ranging pen-picture of the surveyed women in rural area.

Table 7: Monthly expenditure of the different rural households

Households (HH)	Monthly expenditure ranges in Taka (Frequency)					Total
	Below 1000	1001-1500	1501-2000	2001-2500	Above 2500	
Type-A	4	1	3	2	1	11
Type-B	5	2	3	5	1	16
Type-C	1	4	2	2	1	9
Type-D	2	3	2	7	-	14
Total	12	10	10	14	3	50

Source: Field survey, 2014

Table 7 expresses the different classes of households of the disadvantaged women. Here the majority of households type-A's expenditure is below Tk 1000. Most of the women of households type-C spend between Tk 1000-1500. The majority of household's type-D spend between Tk 2000-2500. So here we see that the expenditure pattern of different types of households varies due to their income variation.

Table 8: Monthly savings of the different rural households

Households (HH)	Monthly saving ranges in Taka (Frequency)					Total
	00-50	51-100	101-200	201-300	300+	
Type-A	10	7	-	-	-	17
Type-B	13	2	-	-	1	16
Type-C	5	1	1	-	-	7
Type-D	8	1	-	1	-	10
Total	36	11	1	1	1	50

Source: Field survey, 2014

This table shows that most of the rural households have low savings. Here about 72% households' savings are between 00-50 Tk. Most of the households' expenditure is higher than their income. Nevertheless they have some savings because it is needed for the member of various organizations and also related with loan repayment. Here 22% women's saving range is within Tk 51-100.

Regression analysis between income and expenditure of rural households

Here R represents 0.176 i.e., 18% degree of association among the variables. (see Annex D)

Here F test is use to judge the overall significance of the results.

Hypothesis, H_0 : Expenditure depends on income.

In this model from F-tables we find that the tabulated value of $F = 4.08$ at 5% level of significance and the calculated value of F is 1.533. In this model $F^* < F_{tab}$. This estimation proves that the regression model is insignificant. Some reject the hypothesis and we accept that the income (X) is an insignificant explanatory factor of the variation in expenditure (Y) in urban households. (see Annex E)

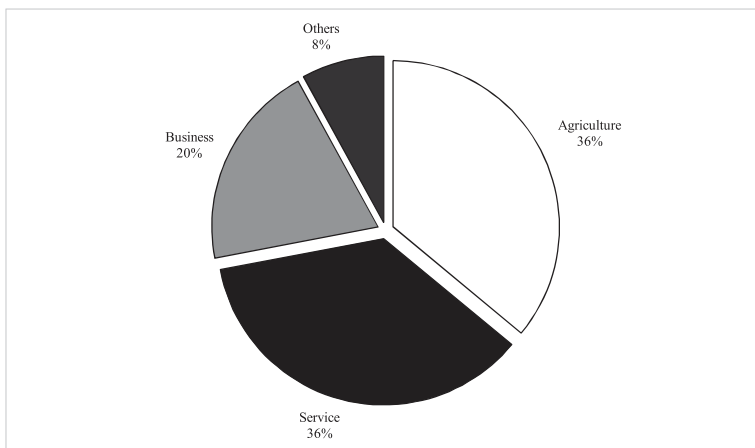
Correlation between income and savings of the rural households

There is a correlation between the rural women household income and savings and the Pearson's correlation coefficient is 0.216 i.e., 22% at 5% level of significance in 2 tailed tests. It is known that the range of correlation coefficient is between +1 to -1. In this test the value of correlation indicates that there is a low degree of a positive correlation between the two variables income and savings i.e., income influence at degree of rising savings. (see annex F)

Occupations of the surveyed rural household members

From the survey results, it is found that in rural area the respondents are now working in various agricultural activities and jute industries. Side by side they also related with domestic work, sewing, vegetable growing, livestock raising, brick breaking etc. Some are also related with various business activities such as vegetable selling, shop keeping, fish vending, etc.

Figure 8: Occupations of the surveyed rural household members

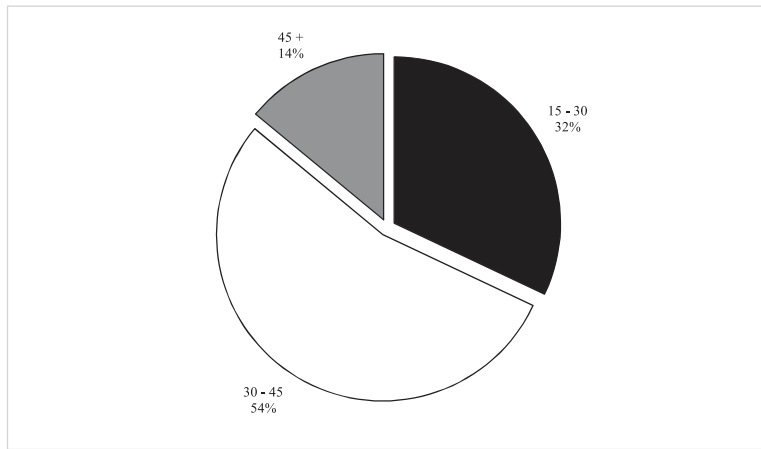


This figure explains that about 36% surveyed rural women are related with various agriculture and also 36% related with service. About 20% are related with various informal business activities.

Age of the respondents

We also see that some of the women are less than thirty years and they try to earn their livelihood from various income generating activities.

Figure 9: Age of the surveyed rural household members

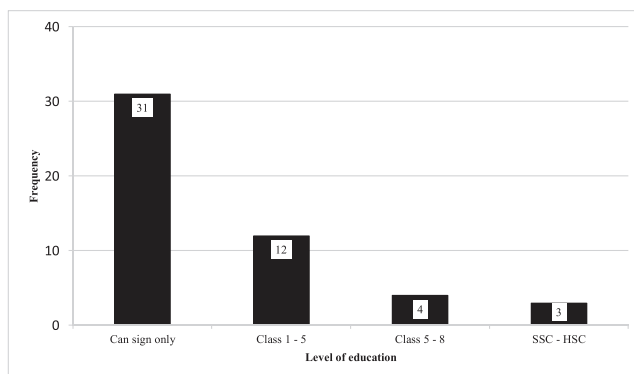


In Rural area the study results show that more than 50% women are between 30 and 45 years. About 32% women are between 15 and 30 years old.

Educational qualification of the rural respondents

Generally, disadvantaged women are not highly or well educated. . Illiteracy is the main cause of poverty of the disadvantaged women.

Figure 10: Educational qualifications of surveyed rural household members

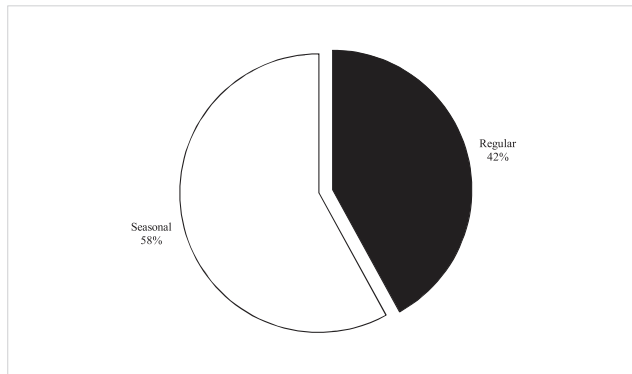


In the study area about 6% completes education at the level of S.S.C or above S.S.C, 16% respondents are found to have completed at the level of class five to eight, 28% at the level of class one to five, and the rest of the respondent can only sign.

Nature of work of the rural respondents

In Rural area, 58% women have worked seasonally. Some work like fertilizing and liming, dyke construction, weed removing from gher, and feed making are seasonal work. About 42% female worked regularly. Some work like sewing, domestic work, vegetable growing, fish vending, winnowing etc are also found.

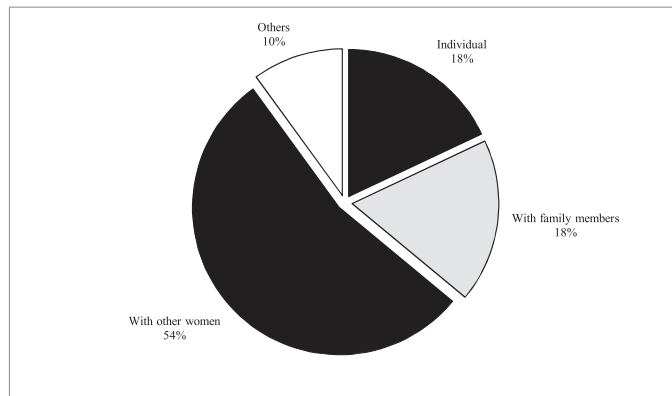
Figure 11: Nature of work of the surveyed rural households



Working pattern of the surveyed rural women

The disadvantaged women are involved in various activities to maintain their family from their low income. In this study, about 22% women worked individually, 26% with their family members, 44% with other women and 8% with others.

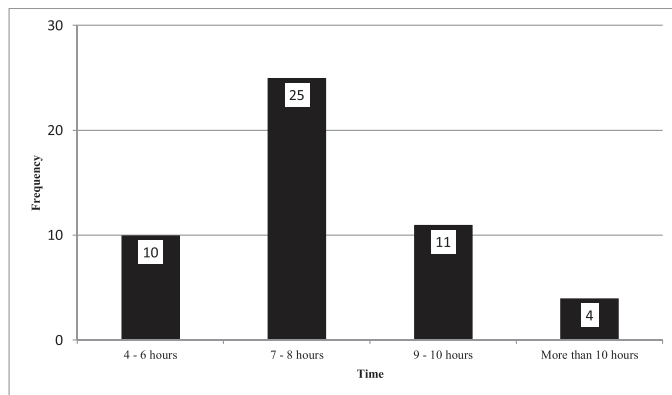
Figure 12: Working pattern of the surveyed rural households



Time spent for the work of the surveyed rural women

In Rural area, about 50% female works 8 hour because most of them are agriculture and jute mill workers. In various business activities they spend more time than standard labor hour. About 30% workers work more than 8 hours.

Figure 13: Rural women spends time for the work



Sources of loan and amount

Among the various NGOs, BRAC, ASA and Grameen Bank are the established ones as micro-credit providing organizations.

Table 9: Sources of loan and amount (in taka)

Loan take from	Range of loan					Total
	Below 2500	2501-4000	4001-5000	5001-7000	7000+	
NGOs	-	4	7	3	8	22
Society	6	1	-	-	-	7
GOs	-	3	4	3	-	10
Total	6	8	11	6	8	39

Source: Field survey, 2014

Most of the disadvantaged women take the amount of Tk 4001-5000. NGOs covered 60% of the total micro-credit while the GOs and Society covered discretely 40%. Various society also provide small-scale loan with low interest. GOs also provide micro credit for developing the poor with only 5% interest rate.

Satisfaction level of the disadvantaged women for GO and NGOs activities

Satisfaction level of the disadvantaged women in urban area

The overall satisfaction level of the disadvantaged women on the policies taken by the government and non-government organization has been measured by the Weighted Mean Index (WMI) using 5- point scale and it shows the degree of their satisfaction. The formula of WMI given in (1), WMI is calculated as 1.96. It implies that most of the urban disadvantaged women are dissatisfied with the policies taken by the government and non-government organization.

Satisfaction level of the disadvantaged women in rural area

The overall satisfaction level of the disadvantaged women on the policies taken by the government and non-government organization has been measured by the Weighted Mean Index (WMI) using 5-point scale and it shows the degree of their satisfaction, WMI is calculated as 2.15. It implies that most of the rural disadvantaged women are moderately satisfied with the policies taken by the government and non-government organization.

Comparison between rural and urban disadvantaged women

In this study it is found that there are some dissimilarities and similarities between the employment and income status of the disadvantaged women. In urban area due to more employment opportunities than rural area the picture is somewhat different from that of the rural area. The following are the main differences between them.

Table 10: Dissimilarities between rural and urban disadvantaged women

Urban Women	Women Rural
Income	
Income of the majority of the urban households is between 1500-2500,.	The income of most of the rural households varies between 1000-1500
So the income of the rural disadvantaged women is much lower than that of the urban women.	
Expenditure	
Most of the urban households spend more than 2000 Tk because the livelihood cost is high in urban area.	The expenditure in rural area is much higher than income. The rural households' expenditure is greater than 2000 Tk
The urban households earn more and also spend more but in rural area the households earn less and spend more. The regression analysis between income and expenditure shows that in urban area there is expenditure of the households depending on their income but in rural area the statistical analysis shows that expenditure is an insignificant explanatory factor due to the variation in income	
Occupation	
In urban area it is found that most of the women are related with service and also do some businesses work.	Agriculture is the main occupation of rural households; side by side they are also related with some service related work.
The main reason for such occupational differences is that the urban area is industry based but the studied rural area is agro based.	
Nature of work	
About 62% urban women work regularly	About 42% rural women work regularly.
So the seasonal work is more proportionate in rural women than in urban women.	
Government initiative	
It is found that rural women get various government support such as VGD card, old age allowance, widow allowance, training , credit facilities with low interest etc.	On the other hand urban women get only training and small scale loan with low interest.
Satisfaction level of the households	
Rural women are dissatisfied about their work and income but moderately satisfied with the policies taken by the government to support them for their improvement.	Most of the urban women are dissatisfied about the policies because the government does not support properly their improvement but they are not so dissatisfied about their work.

However there are some similarities between these two areas. These are –

1. In both areas middle aged women are more disadvantaged and related with various activities for their livelihood.
2. In case of education most of the women in both areas are illiterate i.e., they can sign only.
3. The women in the study areas spend 8 or more than 8 hours for their work and work with other women.
4. The sources of loan in both areas are the same because most of them take loans from different NGOs.
5. In both areas women are in vulnerable condition due to low financial capital. They are always victims of the vicious circle of poverty. There is an absence of proper implementation of micro-credit scheme. In both areas saving practices are low with the studied disadvantaged women. Very few of them saved a little amount of money monthly.

Findings

1. Income is a significant factor of the variation in expenditure in rural households but it is insignificant in urban area.
2. Most of disadvantaged women families spend more than their income but it is more in rural area than in urban area.
3. There is a low degree of positive relation between the two variables income and savings i.e., income is influenced by rising savings in both urban and rural areas.
4. Mainly middle aged women are more disadvantaged and they work hard for earning their livelihood.
5. In urban area most the respondents are now working in various shrimp industries adjacent to the Rupsha River and most of the rural women are related with agricultural activities and work seasonally.
6. Indebtedness is higher among women heads than men heads. Higher incidence of borrowing by women heads meet a crisis such as death, accident, theft, disability, etc., and payment of dowry for a daughter's marriage suggests women's greater vulnerability than male heads.

7. Disadvantaged women households are always victims of the vicious circle of poverty.
8. In both areas saving practices are low with the studied disadvantaged women. Very few of them saved a little amount of money monthly.
9. Most of the women in urban area are related with service and their livelihood pattern is more stable than rural area.

Concluding Remark

This study covers the overall socio economic status of some selected urban and rural areas in Khulna district. It becomes clear from various data and information that the employment and income pattern of the disadvantaged women in the study areas still remain in a measurable condition. Disadvantaged women of the study areas are involved in such work as requires low level of skill and low capital. Again employment opportunities in rural areas are less than in urban areas. The rural disadvantaged women are more victims of vicious circle of poverty. Special attention should be paid towards employment generation for disadvantaged women, the promotion of women entrepreneurs as well as the removal of restrictions on women's employment and economic opportunities. It is clear that the goals of development cannot be achieved without tackling the problem of feminization of poverty. This paper helps to explore the further study of the improvement of disadvantaged women.

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Appendix

Annex A: Regression between urban household income and expenditure

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.416	.173	.156	1.004

a Predictors: (Constant), monthly income of the respondent

Annex B: Analysis of variance table for the regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.112	1	10.112	10.031	0.003
	Residual	48.388	48	1.008		
	Total	58.500	49			

Annex C: Correlation between income and savings of urban women

		monthly income of the urban women	savings per month
monthly income	Pearson Correlation	1	0.343
	Sig. (2-tailed)	.	0.015
	N	50	50
savings per month	Pearson Correlation	0.343	1
	Sig. (2-tailed)	0.015	.
	N	50	50

Correlation is significant at the 0.05 level (2-tailed).

Annex D: Regression between rural household income and expenditure

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.176	.031	.011	1.347

a Predictors: (Constant), monthly income of the respondent

Annex E: Analysis of variance table for the regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.782	1	2.782	1.533	0.222
	Residual	87.138	48	1.815		
	Total	89.920	49			

Annex F: Correlation between income and savings

		monthly income	savings per month
monthly income	Pearson Correlation	1	0.216
	Sig. (2-tailed)	.	0.132
	N	50	50
savings per month	Pearson Correlation	0.216	1
	Sig. (2-tailed)	0.132	.
	N	50	50

Correlation is significant at the 0.05 level (2-tailed).

Applicability of Loan Securitization for Solving Non-Performing Loans' Problems in Bangladeshi Commercial Bank

Mohammad Omar Faruk*

Abstract

Non-performing loan (NPL) is one of the most influential factors for lowering the overall performance of any bank or financial institution which immediately impacts on overall activities of a bank including liquidity, stability and profitability. The securitization is, an innovative financial product, being used in many developed and developing countries as a better solution for the NPL problem. This paper lays out a proposal of how asset securitization against the NPL of a bank can be introduced in Bangladesh. This securitization can introduce a new financial market in the economy where the writing off of bad loans just stops the NPL. The paper also shows the securitization model and the problems & the prospects of implementing NPL in Bangladesh.

Key words: NPL securitization, securitization, asset securitization in Bangladesh, ABS, default loan.

Introduction

A non-performing loan (NPL) is a loan that is in default or close to be default. It is argued that the NPL is one of the major causes of the economic stagnation problems. It is also viewed as an obverse mirror image of an ailing unprofitable enterprise (Muniappan, 2002). The NPL is being a major concern for bankers because if NPL are kept existing and continuously rolled over, the resources are locked up in unprofitable sectors; thus, hindering the economic growth and impairing the economic efficiency (Cargill et al., 2004). The writing off of NPL as a bad loan will not be a logical solution as it is just a way of removing the loan from the balance sheet. Securitization refers to conversion of cash flows into marketable securities. It is a process through which illiquid assets are packaged, converted into tradable securities and sold to third party investors.

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Securitization has arrived in a developing country like India much faster than expected. Securitization may help Indian Banks reduce their regulatory, and sometimes economic and capital requirements (Irala & Chaitanya, 2004).

Securitization was first introduced to U.S. mortgage markets in the 1970s. The market for mortgage-backed securities was boosted by the government agencies that endorsed these securities. In 1985, securitization techniques that had been developed in the mortgage market were initially applied to a class of non-mortgage assets - car loans (Vink & Thibeault, 2008). Since then, the securitization market has grown to become one of the most prominent fixed income sectors in the U.S. and in fact one of the fastest evolving sectors around the world. Securitization can be found both in developed and in emerging countries (Standard & Poor's, 2006).

Securitization is a structured finance process (Purker, 2004) which involves pooling and repackaging of cash flow producing financial assets into securities that are then sold to investors (Savarwal, 2005). All assets can be securitized as long as they are associated with cash flow which can be called asset-backed securities (ABS). Securitization, in its most basic form, is a method of selling assets. Rather than selling those assets "whole", the assets are combined into a pool, and then that pool is split into shares, then these shares are sold to investors¹.

It was not until late 1999 that securitization of non-performing loans became a reality. On 25th November, 1999, Morgan Stanley Dean Witter (MSDW) launched and priced a JPY 21.0 billion issue of floating rate structured notes for an Special Purpose Vehicle (SPV) called International Credit Recovery - Japan One Ltd., a Cayman Islands-domiciled company. This was the first time a capital markets solution had been applied to the problem of non-and-sub-performing loans.²

¹ Published in http://www.indialawjournal.com/volume3/issue_2/article_by_vrinda.html, retrieved on October 30, 2014.

² Non-Performing Loans Securitization, <http://vinodkothari.com/npls/> retrieved on January 4, 2016.

Process of Securitization:³

Firstly, assets are originated by a company, and funded on that company's balance sheet. This company is normally referred to as the "Originator".

Secondly, once a suitably large portfolio of assets has been originated, the assets are analyzed as a portfolio, and then sold or assigned to a third party which is normally a special purpose vehicle company (an "SPV") formed for the specific purpose of funding the assets. The SPV is sometimes owned by a trust, or even, on occasions, by the Originator.

Thirdly, administration of the assets is then sub-contracted back to the Originator by the SPV.

Fourthly, the SPV issues tradable "securities" to fund the purchase of the assets. The performance of these securities is directly linked to the performance of the assets - and there is no recourse (other than in the event of breach of contract) back to the Originator.

Fifthly, investors purchase the securities, because they are satisfied (normally by relying upon a rating) that the securities will be paid in full and on time from the cash flows available in the asset pool. A considerable amount of time is spent considering the different likely performances of the asset pool, and the implications of defaults by borrowers on the corresponding performance of the securities. The proceeds upon the sale of the securities are used to pay the Originator.

Sixthly, the SPV agrees to pay any surpluses which arise during its funding of the assets back to the Originator - which means that the Originator, for all practical purposes, retains its existing relationships with the borrowers and all of the economics of funding the assets (ie: the Originator continues to administer the portfolio, and continues to receive the economic benefits (profits) of owning the assets).

Finally, as cash flows arise on the assets, these are used by the SPV to repay funds to the investors in the securities.

Moreover, Cowan (2003) described the securitization process in American Securitization Forum (ASF). He said that to initiate a securitization, a company must first create what is called a special purpose vehicle (SPV) in

³ The *process of securitization* is adopted from: <http://vinodkothari.com/nicolle/> retrieved on January 4, 2016.

the parlance of securitization. The SPV is legally separate from the company, or the holder of the assets. Typically a company sells its assets to the SPV. The payment streams generated by the assets can then be repackaged to back an issue of bonds. Or, the SPV can transfer the assets to a trust, which becomes the nominal issuer. In both cases, the bonds are exchanged with an underwriter for cash. The underwriter then sells the securities to investors. Unlike other bonds, securities backed by mortgages usually pay both interest and a portion of the investor's principal on a monthly basis.

A special purpose vehicle or special purpose entity is a legal entity which has been set up for a specific, limited purpose by another entity, the sponsoring firm. An SPV can take the form of a corporation, trust, partnership, or a limited liability company. The SPV may be a subsidiary of the sponsoring firm, or it may be an "orphan" SPV, one that is not consolidated with the sponsoring firm for tax, accounting, or legal purposes (or may be consolidated for some purposes but not others). Most commonly in securitization, the SPV takes the legal form of a trust Gorton & Souleles (2005).

The Role of Securitization is illustrated by Cowan (2003):

1. *Less Expensive, More Broadly Available Credit:* Financial institutions that realize the full value of their loans immediately can turn around and re-deploy that capital in the form of a new loan. This is often the most efficient way to raise new funds in the capital markets and the savings are passed on to the borrowers.
2. *More Options for Investors:* Higher-rated securitized instruments generally offer higher yields than similar sovereign government issues.
3. *Flexibility for the Originator:* Without securitization, a bank making a home loan usually would hold that loan on its books, recognizing that revenues as payments are made over time. The more efficient option is to pool similar loans together, as discussed above, and enter into a securitization transaction.
4. *Improve ROA:* Originators realize another benefit from securitization as the transfer of the asset to an SPV removes it from the firm's balance sheet. This can help the originator improve certain measures of financial performance such as return-on-assets (ROA).

5. *Lower the firm's financing costs:* The segregation of assets that takes place in a securitization can also effectively lower the firm's financing costs. This occurs when the securities issued by the SPV carry a lower overall interest rate than the originating firm pays on its debt.
6. *Maintaining the stability of the financial system:* The securitization market can, as noted, increase competition in the capital market and the supply of credit, but there are risks implicit in securitization that need to be addressed. Every investment involves risk and like every other investment a balance must be found between the risk and reward.

Furthermore, securitization transfers the risk of catastrophic loss from the originator to the investors, limiting the potential loss of the originator to the retained interest or credit enhancements.

Irala & Chaitanya (2004) illustrated securitization as a tools for increasing liquidity, transferring risk, generating revenue, increasing firm's ROA and ROE, reducing intermediation costs and promoting the savings.

Securitization has evolved from its tentative beginning in the late 1970s to a vital funding source with an estimated outstanding amount of \$10.24 trillion in the United States and \$2.25 trillion in Europe as of the 2nd quarter of 2008. In 2007, ABS issuance amounted to \$3.455 trillion in the US and \$652 billion in Europe⁴.

In Bangladesh, NPL was not securitized before by any commercial banks, only some financial institutions issued security on receivables. Even none of the commercial banks was motivated on securitization of NPL as the integrated initiatives were not taken by banks, financial institutions and governments. But this can give a better solution to the NPL problems (Pennacchi, 1988) as well as introduction of new financial market in the economy rather than writing off the NPL from balance sheet. Securitization reflects innovation in the financial markets at its best. Pooling assets and using the cash flows to back securities allows originators to unlock the value of illiquid assets and provide consumers lower borrowing costs at the same time (Cowan, 2003). This research paper suggests the securitization as a

⁴ Compiled from <http://en.wikipedia.org/wiki/Securitization>, retrieved on October 30, 2014.

solution for NPL problems which is widely used in some of the developed and developing countries (IFC, 2004) like USA, China, Japan, Korea, UK, India, Pakistan, Brazil, Singapore, etc. The main theme is issuing the securities against the loan where different entities will be involved in supporting the securitization process. The process of NPL securitization is illustrated in this paper by the help of a conceptual or hypothetical model. This report shows the process of securitization and suggests some factors to be considered for the securitization. The report also shows the applicability of securitization process in Bangladeshi commercial banks as a solution of NPL problems.

Literature Review

Sivakumar (2001) opines, "Asset securitization has some fundamental advantages for banks. They would help under capitalized banks to restore partially or fully their ratios without having to access the financial markets, either for Tier-I or Tier-II capital or, for that matter, even budgetary funds. Internationally, insurance companies have been the biggest buyers of securitized instruments.

Fabozzi & Kothari (2007) studied that securitization as a financial instrument has had an extremely significant impact on the world's financial system. First, by integrating capital markets and the uses of resources - such as mortgage originators, finance companies, governments, etc. - it has strengthened the trend towards disintermediation. Having been able to mitigate agency costs, it has made lending more efficient; evidence of this can be observed in the mortgage markets. By permitting firms to originate and hold assets off the balance sheet, it has generated much higher levels of leverage and, though arguably, greater economies of scale. Combination of securitization techniques with credit derivatives and risk transfer devices continues to develop innovative methods of transforming risk into a commodity and allow various market participants to tap into sectors which were otherwise not open to them.

Pennacchi (1988) suggests a plan to resolve the banks' NPLs; securitization can be the good solution to improve the health condition of the banks' financial statement. He also proposes that mixing the performing and NPL to issue the securities can achieve a desirable risk profile of bundled loans to be sold to the investors as ABS. Herr and Miyazaki (1999) shows a solution of NPL of Japan by transferring the distressed debt into securities and therefore achieve a positive balance sheet effect. A link between the Japanese government's reluctance to solve the bad loan problem and the economic slowdown were identified.

Purker (2004) found that securitization is a method by which the predictable cash flows are drawn from receivables as the basis for issuing debt; it is also a process of producing securities or investment instruments for the investors, which are supported by specific assets. Chen (2004) did a study on securitization of NPL of China where examination of the legal and economic framework concerning securitization of NPL results in a call for government participation via policy adjustments and debt restructuring plans, which are crucial for successful large scale securitization. Securitization also has a direct positive impact on the quantity of loans supplied by banks. Loutskina (2010), Loutskina & Strahan (2009) find that securitization reduces banks' holdings of liquid securities and increases their lending ability.

Very little studies have been done in Bangladesh about asset securitization. Siddiqueet al, (2006) studied on asset securitization in a limited way, they emphasized more theoretical framework of asset securitization and although they raised so many practical issues in their study, they didn't study the impact of securitization on commercial banks in Bangladesh even though they did not focus on NPL or provide any model for the securitization of NPL.

Khan & Uddin, (n.d.) said that Asset securitization is an alternative in handling NPLs. They also presents a brief picture of the link between sources of funding and end uses of funding, the problem of NPLs in the banking sector of Bangladesh, a proposal of how asset securitization can be introduced in Bangladesh is also given and the benefits of introducing asset securitization, especially for banks and non-bank finance companies is discussed.

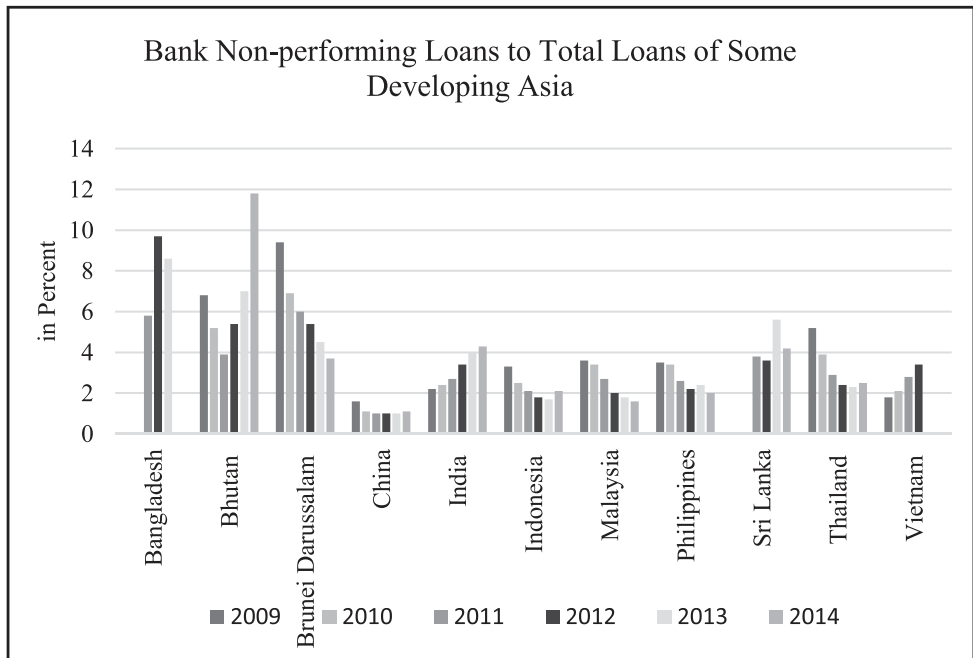
Methodology

The paper proposes a securitization model by analyzing the feasibility of NPL securitization with the help of recent NPL data. The status of NPL in Bangladesh is shown with the help different ratios. This research paper is an exploratory research with an objective to explore the applicability of NPL securitization in commercial banks where the findings are non-statistical and descriptive with prudent analysis. This paper theoretically proposes a model of securitization and the parties involved with it. It also describes applicability of securitization and its benefits for Bangladesh. The paper concentrates on the review of scholar research papers to propose a NPL securitization model in the context of Bangladesh economy.

The study also points out the role of different bodies, such as government, banks, financial institutions, rating agencies, intermediaries, insurance companies, underwriters, trustee, and investors in the securitization process. This research paper is based on the secondary data which is collected from the Bangladesh Banks, Schedule Bank Statistics, Bank Performance 2010, IMF Global Stability Report 2015, some articles, journals and publications.

Status of NPL

Figure 1: NPL in some developing asian countries



Source: Global Financial Stability Report, April 2015, International Monetary Fund (IMF)

Table 1: NPL ratios by type of banks operating in Bangladesh (in percent)

Bank types	2006	2007	2008	2009	2010	2011	2012	2013	2014 (June)
State Owned Commercial banks (SCBs)	22.9	29.9	25.4	21.4	15.7	11.3	23.9	19.8	23.2
Development Financial Institutions (DFIs)	33.7	28.6	25.5	25.9	24.2	24.6	26.8	26.8	33.1
Private Commercial banks (PCBs)	5.5	5	4.4	3.9	3.2	2.9	4.6	4.5	5.7
Foreign Commercial banks (FCBs)	0.8	1.4	1.9	2.3	3	3	3.5	5.5	6.2
Total	13.2	13.2	10.8	9.2	7.3	6.1	10	8.9	10.8

Source: Bangladesh Bank Annual Report 2013-14, Chapter-5, Banking Sector Performance

Securitization of NPL

Securitization in Bangladesh

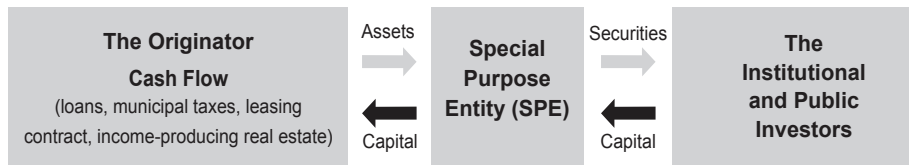
In Bangladesh, Industrial Promotion and Development Company (IPDC), United Leasing Company (ULC), Industrial Development and Leasing Company (IDLC), and Bangladesh Rural Advancement Committee (BRAC) issued asset backed securitization. This was the inauguration of new era in the financial sectors of Bangladesh by launching new ideas, products and market opportunities in the financial market. In November 2004, IPDC launched the first asset backed securitization in Bangladesh, where Investment Corporation of Bangladesh (ICB) was a trustee for the special purpose entity (SPE).

The IPDC issued Tk. 359 million worth zero coupon bonds against debt receivables of IPDC. Dhaka Bank, Jamuna Bank, Mutual Trust Bank, Southeast Bank and International Leasing and Financial Services Limited invested in the asset-backed securitized bonds of IPDC in private placement arrangement. The some others financial institutions were motivated to issue securities against assets, like in 2005 IDLC issued Tk. 190 million worth asset backed securities which were zero coupon bonds and ULC issued Tk. 400 million worth asset backed zero coupon bonds in 2005 through private placement. BRAC, only NGO and world’s first micro-credit securitization, issued securities against micro-credits and that was extended to low income individuals. But any commercial banks or foreign banks did issue neither any asset backed securities nor securitization of NPL in Bangladesh. At present Tk. 1500 million asset backed securities are issued in Bangladesh which are privately placed among financial institutions. The credit rating agencies were not involvement in these processes as the securities were floated through only private placement arrangement among the financial institutions.

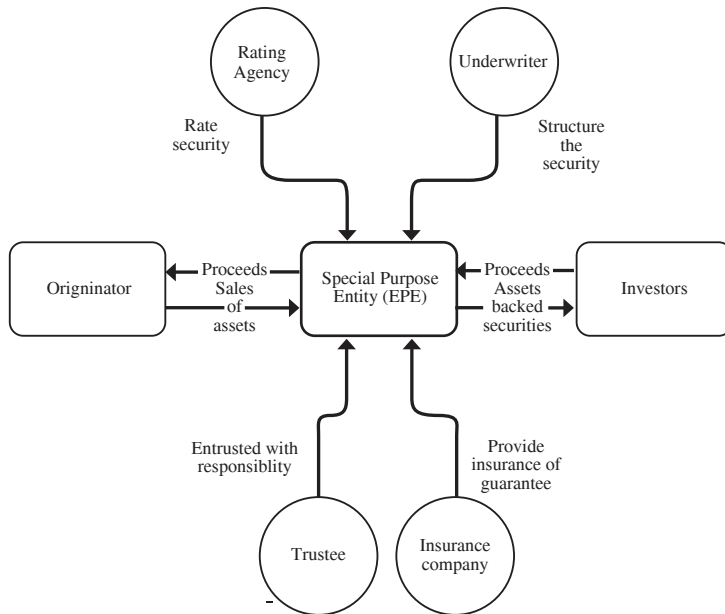
Different entities involved with loan securitization process

Following organized bodies will facilitate the securitization process:

Figure 2: The structure of a securitization transaction



Source: Khan and Uddin (2012) and Khan, Hassan and Islam (2009)

Figure 3: Components of loan securitization process

Source: Comptroller's Handbook November 1997, Asset Securitization

Originator, an entity who provides loans and the origin party of the securitization process, will sell the loan to **Special Purpose Entity (SPE)** which is legally separated from the holder of the assets. The SPE serves to collect the assets which are then repackaged into securities, but the originator is still considered as the sponsor of the pool. **Trustee** is entrusted with responsibility for reaching certain key decisions that may arise during the life of the transaction, holding security over the securitized assets and control over cash flows. **Credit Enhancement**, a method of protecting investors in the event that cash flows from the underlying assets are insufficient to pay the interest and principal due for the security in a timely manner, is used to improve the credit rating, pricing and marketability of the security. **Rating Agencies** evaluate the credit quality of the transactions or NPL where **Underwriter** is responsible for advising about the structure of the security, pricing strategy and marketing it to investors. **Investors** of securitization are insurance companies, mutual funds, money managers, banks, pension funds and individuals. **Insurance Company** provides the insurance or guarantee the investors about the credibility of the SPE that ensure the ability of repayment of the investment.

Proposed NPL securitization model

This paper proposes that the commercial banks sell their NPL to a SPE, here the bank could mix any proportion of performing and non-performing loans based on the market demand and sell it to the SPE, then the SPE will issue ABS against the loans. A group of banks can also establish SPE with a small amount of money. Sometimes bank may realize some losses, as a result of selling the loans less than the value or loaned amount and the loss would create a tax-shield, which is backed by collaterals.

Figure 4: Sell of Loan to SPE

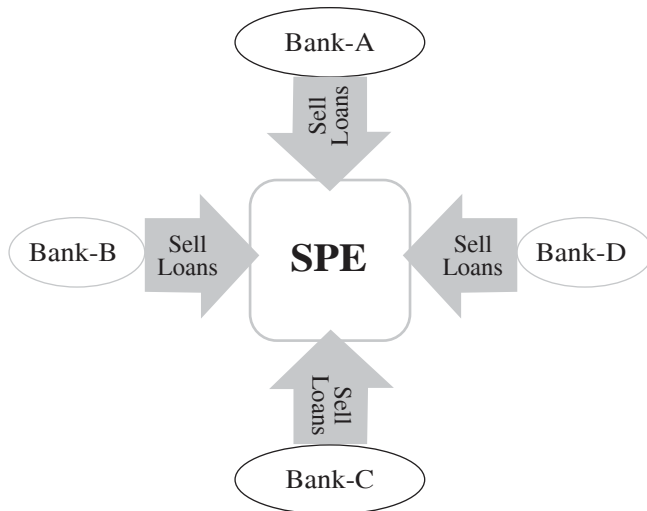


Figure 5: Loan Securitization Process



Source: Khan and Uddin (2012)

An easy example, the book value of the loans of “Future Bank Limited” is Tk. 1000 but the probability of recovery of loan is very low. But the loan has collaterals of estimated fair market value (FMV) of Tk. 600, now the bank sells the loans at fair value to SPE. The bank will recognize a tax-deductible loss of Tk. 400 when the bank will sell the loans and the loans (Tk. 1000) will be removed from the balance sheet of the bank. By this process the SPE will purchase the loan from bank A, B, C, and D, then combining all of the loans SPE will issue the securities backed by asset/collateral which can generate cash.

As the securities are backed by assets or collaterals so the investors will be interested to invest in the securities. The underwriters will design the securities, set the number of securities and price the securities as per the market value.

Prospects and Problems of NPL Securitization

Prospects of NPL securitization in Bangladesh

The above visual graph and the discussion about the status of NPL in Bangladesh gives the idea about the current situation of NPL, though some improved policy and writing off of NPL has improved the health of balance sheet but the banks should focus on the alternative methods of their investment. Securitization of NPLs is one of the widely used methods for NPLs to improve the bad condition of the banks. In 2009 there were Tk. 224.8 billion non-performing loans (NPLs) in Bangladesh combining all types of banks where the State Owned Commercial Banks (SCB) has the highest amount of NPL comparing with others types of banks. Now the securitization can be a solution to reduce the amount of NPLs of banks. The banks can sell their NPLs to SPE to recover the amount of money and remove the amount of NPLs from the balance sheet so that the banks can improve the health of balance sheet. The SPE can issue the zero coupon bonds against the NPL and the collaterals of the NPL. The use of zero-coupon bonds would compensate for the questionable timing of the cash flow obtained from the sale of the properties or loans. Here the government could support the ABS program as it is essential through providing insurance to the ABS program as a contingent credit enhancement and the SPE can meet the credit requirements of the investors.

The securitization of NPL can be an opportunity to solve the NPL problems of banks as well as to improve the financial market of Bangladesh as securitization will collect the investment and the loan will be recovered later. Some of the business organization can be improved and the investors can have the access to invest, credit rating agencies will rate the securities, underwriters will design the securities, the others banks or the government can facilitate in credit enhancement etc. So the securitization of NPL can be the best solution of reducing the NPL of the banks and creating some business opportunities in the financial market. As the securitization of NPL is new in Bangladesh so the inauguration of banks and the support of the government can provide the new dimension in the financial market of the Bangladesh. So this study shows the prospect of securitization in Bangladesh and some of the success and failure factors of securitization that should be critically handled to make a successful securitization market for NPLs in Bangladesh. There should be an integrated policy among the SEC, government, banks, financial institutions rating agencies, intermediaries and investors, etc to make a successful NPL securitization in Bangladesh.

The legal framework should be made and that should be flexible to issue the securities; then the prospects of NPL securitization can be achieved by maximizing the goals of securitization.

Problems of securitization in Bangladesh

There are some identical problems of NPL securitization in Bangladesh. They are as under:

Loan classification system is very complex in Bangladesh (Bangladesh Bank, 2006) as there are different classifications for different types of loans so sometimes it makes problems for following the rules to classify the NPL. Therefore, it is a problem to make policy for securitization.

In Bangladesh, as NPL securitization was not done before, so there is an ambiguity about the process and possible return from the securitization. Sometimes this new financial product may not be suitable on the basis of country's financial position and economic policy. The government financial policy can be contradictory with the securitization.

As sometimes the collaterals of a loan have some complexity with the ownership, so sale of collateral to the SPE may not be such an easy job, even the value of the collateral is a major factor. If all banks sell the NPLs to the SPE then the NPLs may be undervalued because of more supply of NPL or assets, similarly the more supply of NPL securities can lower the value of the securities if the demand does not rise with the supply.

In Bangladesh only a few rating agencies are operating which are insufficient to support the NPL securitization, so the government should take the initiatives to increase number of rating agencies, and the standard rating system should be introduced, like S&P and Moody, and the rating should be transparent.

Conclusion

The banks are carrying high amount of NPL for the many years of the banking history of Bangladesh and writing off of NPL from the balance sheet is going to be a traditional way of solving the NPL problems. But writing off the balance sheet is not the good solution of the NPL problems for the banks because this will not recover the loan. Despite the attractiveness of the securitization in Bangladesh, no banks are adopting securitization for solving the NPL problems. The securitization can give the best solution to the NPLs as it can give a new financial market, improve growth of the investment and growth of the financial market.

To make a successful securitization the banks have to take the initiative and the government has to give full support to introduce the NPL securitization in Bangladesh. While doing the securitization the entity involved with the securitization process should be careful about concentrating on the success factors and avoiding the failure factors of the securitization process. In order to promote future securitization in Bangladesh, it is necessary to improve the current intermediary services of securitization, to update the legal framework for the securitization and to disclose the information of securitization to the investors.

There is a potential market for the NPL securitization in Bangladesh, even the government can take some initiatives to introduce the securitization in some different sectors to promote the securitization in Bangladesh. For example, like housing finance companies can issue mortgage based securitization, credit card companies can securitize credit card receivables, micro finance companies (BRAC, ASA) can securitize micro credits, ministry of communication can securitize toll receivables of different infrastructures, the remittance receiving financial institutions can issue the securities of future cash flows from remittances. All these securitization will definitely promote the securitization market in Bangladesh and ensure the progress in financial sector reforms and a higher growth of the economy.

The existing old Act should be updated with the current market situations and the attractive policy can encourage the banks to go for the securitization. Bangladesh Bank should give a policy guideline for issuance of ABS so that commercial banks can issue NPL securitization. A stable bond market should be created to give a platform for the better securitization market in Bangladesh. New international standard credit rating agencies should be established for the development of a successful securitization market.

After the detailed analysis this paper concludes that the securitization of NPLs in Bangladesh is feasible and the Bangladeshi commercial banks can go for the NPL securitization process as it gives different benefits for the banks like sale of NPL, removing NPL from balance sheet, tax benefits, and introducing new financial market. At least some of the private commercial banks can test a small amount of NPL securitization as they have strong reputation and human expertise. If the institutions are fully developed and legal system can quickly attract the banks to adopt the NPL securitization then it will be true that the securitization of NPLs will be an initiative tool for solving NPL problems of Bangladeshi Commercial Banks.

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Appendix

Appendix A: NPL in Some Developing Asian Countries (in %)

Table 3. Bank Nonperforming Loans to Total Loans in Some Developing Asia						
Developing Asia	2009	2010	2011	2012	2013	2014
Bangladesh	-	-	5.8	9.7	8.6	-
Bhutan	6.8	5.2	3.9	5.4	7	11.8
Brunei Darussalam	9.4	6.9	6	5.4	4.5	3.7
China	1.6	1.1	1	1	1	1.1
India	2.2	2.4	2.7	3.4	4	4.3
Indonesia	3.3	2.5	2.1	1.8	1.7	2.1
Malaysia	3.6	3.4	2.7	2	1.8	1.6
Philippines	3.5	3.4	2.6	2.2	2.4	2
Sri Lanka	-	-	3.8	3.6	5.6	4.2
Thailand	5.2	3.9	2.9	2.4	2.3	2.5
Vietnam	1.8	2.1	2.8	3.4	-	-
Source: Global Financial Stability Report, April 2015, International Monetary Fund (IMF)						

Impact of Overall Country Image and Product Country Image on International Supplier Performance

Jashim Uddin* and Shehely Parvin**

Abstract

Extant COO studies have not yet investigated impact of multiple COO cues on supplier performance from the perspective of B2B buyers. Purchasing managers' international procurement decisions are likely to be based on multiple country criteria. This study seeks to understand the relative impact of overall country image and product country image on international suppliers' performance from B2B perspective. Data were collected using a web-based structured questionnaire. Conceptual model was developed with the constructs taken from the extant COO literature. Structural equation modeling was used as the data analysis technique. Statistical analysis found that overall country image is a valid second order construct. Study results show that overall country image influences product country image and higher product country image leads to higher international supplier performance. This study revealed that superior supplier image directly depends on product country image but indirectly depends on country's development level.

Key words: country image, product-country image, supplier performance, intermediate goods, B2B, COO relevance, purchasing managers.

Introduction

It is well established in the academic literature that country of origin (COO) influences consumers' product evaluations and purchase decisions (Balabanis & Diamantopoulos, 2011; Demirbag, Sahadev, & Mellahi, 2010). It is also evident that the overwhelming majority of published COO studies have investigated consumers as users of COO information, with few studies considering business-to-business (B2B) buyers' perceptions of COO (Andersen & Chao, 2003).

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From a broad understanding of the COO literature, there is currently a disconnect between traditional COO research and consumers' actual purchase behavior, perhaps explained by a research focus on consumers and the implicit assumption that consumers are free to exercise their COO preferences. In reality, consumers' choices are heavily constrained by the purchasing and procurement policies of retailers and purchasing/procurement managers. Such decisions fall squarely in the B2B domain — an area which has been almost ignored in the COO literature. Thus, while COO researchers focus on consumers' decision making, it can be argued that focusing on the B2B purchasing/procurement setting can provide greater insight.

Globalization has seen a change in production, highlighted by Ferdows (1997), who introduced the term 'Made in the world (MIW)' to describe the emerging geographical dispersion of production locations. Many products are no longer produced in one country; multinational organizations exploit value creation opportunities by using a globally scattered supply chain. Apple's iPhone is a case in point. Complete assembling of iPhones is done in China by Foxconn (a Taiwanese contract manufacturer) and later imported by Apple, USA at a factory gate price of \$194.04 (Gereffi & Lee, 2012). The total value adding input for iPhone4 is significantly dispersed around the globe as presented in Table 1.

Table 1: Sourcing countries by input price for Apple iPhone4

Country Name	Input price
USA	\$24.63
China	\$6.54 (only assembling; Gereffi & Lee, 2012)
South Korea	\$80.05 (display panels and memory chips; Keller 2010)
Japan	\$0.70
Germany	\$16.08
France	\$3.25
Rest of the world	\$62.79
Total (Factory gate price)	\$194.04

Source: OECD (2011, P. 40)

It is evident that the origin labeling statement(s) of the iPhone 4 do not enable a final user to be accurately informed about the whole COO story from the product to the package. Surprisingly, however, COO research is almost silent about the MIW concept. This paper seeks to add to the COO literature by investigating relative impact of multiple country facets on evaluations of international supplier performance. A further contribution is its focus on the important role of B2B buyers.

Perceptions of a country's image are typically complex (Cialdini, 2001, p. 7). According to (Martin & Eroglu, 1993, p. 193) country image can be described "as the total of all descriptive, inferential and informational beliefs one has about a particular country". In simple terms, quality, price, people, culture, economy, technology, politics, competence, interaction and feelings all contribute to the ways in which one can perceive a country. The short-cuts and abstractions of total country image together create a rounding-off effect for more detailed, in-depth information. The rounding off effect eliminates individual differences in and between people, organizations. This rounding off is widely accepted in the COO literature, but consumers' origin related knowledge is very limited (Liefeld, 1993; Samiee, Shimp, & Sharma, 2005, p. 392; Usunier, 2011). B2B buyers are commonly considered as 'better informed', 'policy-driven and rationalized' and have 'familiarity and experience' (Samiee, 1994) with supplier country. Recognition of country information is expected to be more accurate by B2B buyers because of their direct dealings and availability of the latest industry information. Quite surprisingly, B2B buyers as the most relevant group of respondents regarding contemporary international trade practices and country associations received insignificant attention in COO research.

In connection with this insignificant attention to B2B buyers, this paper seeks to investigate impact of country image on international supplier performance. Using multiple dimensions of country image in one study is unusual (Papadopoulos & Heslop, 2003, p. 425; Pappu, Quester, & Cooksey, 2007, p. 725) even in consumer centric studies and not tested before in B2B domain. This study also seeks to examine the direction of influence between COO constructs as according to 'flexible model' developed by Knight and Calantone (2000), another issue never investigated from B2B context. It is expected that the findings of this study will add value to existing COO literature by exploring these two issues not tested earlier from B2B buyers' perspective. Therefore, specific research question of this study are, i) Is there any impact of overall country image and product country image on international supplier performance? ii) Between the two country image constructs, which one plays more significant role on supplier performance according to the assessments of B2B buyers? iii) Do the dependent relationship of product country image on overall country image is statistically significant?

This paper is structured as follows. First the COO literature is discussed from B2B perspective and provides evidence of its significance compared to

consumer based studies. This section is followed by an outline of the conceptual framework and method used in this study. The results section is next, followed by discussion and implications and the final section discusses the study’s limitations and avenues for possible future research.

Country-of-origin (COO) Literature from the B2B Perspective

The dearth of COO focused B2B studies is well evidenced by the information presented in the Table 2. In one of the two major meta-analyses in the COO field, Peterson and Jolibert (1995, p. 891) reported that statistically significant COO effect size is 0.14 as a perception of purchase intention for consumer products and 0.32 for industrial products. In the other meta-analysis, Verlegh and Steenkamp (1999, pp. 536-537) found that the COO effect size is not significantly less for industrial products than for consumer products.

Table 2: Representation of B2B samples in extant COO research

Study source	B2B representation
Literature Review 1965-1997 (Al-Sulaiti & Baker, 1998, pp. 179-199)	18 studies out of 99 presented in the appendix
Literature Review 2000-2010 (Magnusson & Westjohn, 2011, p. 303)	Only 6 studies (out of 114 reviewed) including COO in service
Maiden literature review on COO studies from industrial buyers’ perspective (Andersen & Chao, 2003, p. 341)	Only 20 studies in B2B area (recognizing 200-300 COO studies in consumer behavior area)

Among the B2B based COO studies, Nagashima (1970) is the most prominent as the first of its kind to consider the industrial buyer as the subject for COO study. Nagashima (1970) studied the perception of the ‘Made in’ image for products originating from the US, Japan, Germany, England and France. The study considered several factors of perceived differences, such as price and value, service and engineering, advertising and reputation, design and style and consumer profile. At the time of this study Japanese business people considered ‘Made in Japan’ as inexpensive, common and functional and associated Japanese products with poor workmanship. In comparison, US business buyers considered Japanese products to be inexpensive, technically advanced, mass-produced and globally distributed. Reporting the perceptual change in the ‘Made in’ image after eight years, (Nagashima, 1977) reported Japanese products were no longer considered inexpensive and unreliable.

Most noticeably, Japanese products were considered reliable and as reasonably priced as German products. Japanese products moved ahead of US products regarding workmanship but still fell behind German, English and French products. Significant improvements were found for Japanese products in the areas of technical advancement, mass production, and world-wide distribution. It is important to note that (Nagashima, 1970, 1977) are two important studies providing evidence of the dynamic nature of COO perception, which is a rare focus, despite its relevance to practice, in the COO literature.

White and Cundiff (1978) tested the psychological influence of price and country of manufacture on purchasing managers' perception of product quality. Their results showed that country of manufacture (COM) and perceived quality had a statistically significant relationship ($p < .01$) for all three products. The relationship between price and perceived quality was not statistically significant ($p > .05$) for all the products. The interaction effect between price and country of manufacture had no statistically significant relationship ($p > .05$) for the two product categories.

Ghymn (1983) used discriminant analysis to investigate the purchasing behavior of US import managers and revealed major determinants of their import decisions. He used two categories of variables, namely, product-oriented and service-oriented. All statistically significant contributors to the group differences were ranked according to a beta coefficient value that appears as price ($\beta = .691$), timely delivery ($\beta = .637$), dependability for long-term supply ($\beta = .504$), transportation cost ($\beta = .422$), quality ($\beta = .384$), brand recognition ($\beta = .351$) and ordering/ shipping procedure ($\beta = .247$). Using regression analysis, Kraft and Chung (1993) examined Korean purchasing agents' perceptions about US and Japanese products. In all three product categories (raw materials, finished materials, equipment and machinery), US product offer factors are rated significantly lower than Japan and most specifically on product quality and product information. Regression analysis results show that no significant predictors were identified for the dependent variable (percentage of imports) for Japan. Conversely, significant predictor variables were found for purchases from the US in all three product categories. In the case of percentage of raw materials imported from US (adjusted $R^2 = .10$), exporter reputation is the only significant ($\beta = .39$) predictor. Customer orientation ($\beta = .58$) and product quality ($\beta = .61$) were significant predictors of finished material imports from the US (adjusted $R^2 = .42$). Regarding equipment and machinery imports

(adjusted $R^2 = .30$), customer orientation ($\beta = .70$) and product information ($\beta = -.43$) were identified as significant predictors. It is important to note that in all three regression equations, factors related to exporter characteristics played a major predictive role.

By using multiple COO cues three studies (Chetty, Dzever, & Quester, 1999; Dzever & Quester, 1999; Quester, Dzever, & Chetty, 2000) examined the effect of COD and COA on the quality perceptions of purchasing agents in Australia and New Zealand. Chetty et al. (1999) found that COD and COA for machine tools and component parts from developed countries were ranked around an average score of 4; with newly industrialized countries around 3; and newly industrializing countries around 2.5 on a scale of 5. All the reported differences are significant at $p < .05$ level. According to (Dzever & Quester, 1999), quality perceptions were directly influenced by both COD and COA in a consistent fashion. Their results further indicated that most of the developed countries were highly ranked for both COD and COA in terms of the technology used, training provided and ease of operation/maintenance under both the categories of equipment and component parts. The majority of the newly industrialized and newly industrializing countries were ranked highly in terms of the space utilized under both the product categories and dimensions. In comparing the samples for both countries, Quester et al. (2000) reported that quality perceptions were directly affected by source country information for both Australian and New Zealand samples and the results were identical in terms of COD and COA. Moreover, the rankings for established industrialized countries were consistently higher than for their newly industrialized or newly industrializing counterparts. The results for correlation coefficients between each country and for each of the four quality indicator variables for machine tools showed similar significant correlations for both countries for technology, training and ease of operation/maintenance with regard to developed nations for COD and COA. However, significant correlations were identified for developing countries' COD and COA in terms of space utilized (for ease of installation or warehousing) from Australian, but not from New Zealand samples.

In addition to the range of published empirical studies, some insightful studies have used personal interview data and, among them, two (Knight, Gao, Garrett, & Deans, 2008; Knight, Holdsworth, & Mather, 2007) are related to food products sourcing. Summarizing the inputs collected from 17

European informants, Knight et al. (2007) reported that quality in relation to price is the major concern; a country's price consciousness differentiates price-quality judgment. Cleanliness, a country's reputation for microbiological problems, regulation and external certification, reputation of government and corporate intermediaries are some major components in forming trust in relation to a supply source. Varied perceptions regarding the importance of COO are detected among the respondents. Product-specific country image is an accepted criterion for product sourcing as it is in consumer purchase decisions. In the other study conducted in China, Knight et al. (2008) reported price as the most frequently mentioned determinant; more particularly, value generated was more important than low cost, or better quality with lower price was more important. Imported food products carry higher social status and there is widespread mistrust in the Chinese production process. In particular, low social trust in China means that Chinese consumers rely on brand origin when assessing imported products as superior to locally manufactured products.

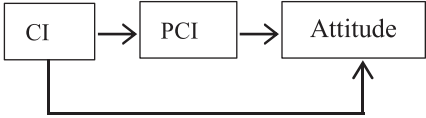
Another interview-based study specifically focused on sourcing from low cost emerging economies (Oke, Maltz, & Christiansen, 2009), found that cost was the primary driver of global sourcing for B2B buyers, and cost reduction was the key consideration for choosing suppliers from developing countries. More generally, these findings give weight to the view that the estimates of the impact of COO require multiple country aspects to capture the specific significance of different country cues.

The country-related abstraction is very multidimensional and widely conceived (natural landscape, climate, competence, people, political situations, country description, product evaluation, geo-cultural, socio-economy, conative component, people personality, product beliefs, economic, technological) as reported by Roth and Diamantopoulos (2009, p. 727) in the recent literature review on country image construct. In setting the basic COO domain from more wider view point the same study (Roth & Diamantopoulos, 2009, p. 727) identified three definitional domains named as country image, product-country image, and country-related product image. Another definitional domain is suggested by Heslop and Papadopoulos (1993, p. 61) through an eight country consumer survey; their COO definition is two dimensional, also incorporating product and country. Pappu et al. (2007) termed these two dimensions as "macro" and "micro" country image, where micro country image is related to specific product categories.

In addition, it has been observed that considering both dimensions in one study is unusual (Papadopoulos & Heslop, 2003, p. 425; Pappu et al., 2007, p. 725) in extant COO studies. Therefore, the current study includes two dimensions (macro and micro) of COO in capturing country aspects, a conceptual setting never comprehended in B2B-centric COO studies. These two dimensions are more popularly known as overall country image (CI) and product-country image (PCI). The CI or macro country image is associated with the development level of a country that is evidenced by the sub dimensions (economic, technological, and government) used in Pappu et al. (2007). In COO studies, it is well evidenced that B2B buyers clearly distinguished product quality image of developed and developing countries (Ahmed, d'Astous, & El Adraoui, 1994; Chetty et al., 1999; Dzever & Quester, 1999; Quester et al., 2000). In addition, PCI has been evidenced as an important predictor of product quality in specific product categories (Knight et al., 2008; Knight et al., 2007). Regarding CI, clear distinction between developed and developing countries is well evidenced from B2B perspective as reflected in Knight et al. (2008), "For products from developed countries, consumers tend to believe they are good ... They don't really care if they are from the US, Canada, or Germany". As a consequence, importance of both concepts (CI and PCI) in capturing country influence on B2B buyers is supported by empirical evidences.

Another important issue investigated in previous consumer-centric COO research is that of the sequential direction of influence while using CI and PCI as COO constructs. Earlier models that tested direction between CI and PCI are 'halo model' and 'summary construct' model proposed by Han (1989). According to Han (1989), country image influence sequence of 'halo model' is $CI \rightarrow PCI \rightarrow \text{attitude}$; and of 'summary construct model' is $PCI \rightarrow CI \rightarrow \text{attitude}$. In the year 2000, Knight and Calantone proposed and tested the 'flexible model' that added another relationship $CI \rightarrow \text{attitude}$ (CI directly influence attitude) along with $CI \rightarrow PCI \rightarrow \text{attitude}$. Ironically, this country image influence sequence has never been tested in B2B domain despite the fact that B2B buyers are major decision makers of COO as evidenced in the introduction part of this paper. Therefore, the current study examines the 'flexible model' by Knight and Calantone (2000) from B2B perspective in an effort to make an addition to existing literature.

Table 3: Country image influence structure in flexible model

Flexible model sequence of influence	Model description
	<p>There is a higher probability that consumers use both cues, CI and PCI (when known to them), simultaneously and to varying degrees. This model allows attitudes to be directly influenced by CI along with indirect influence through PCI.</p>

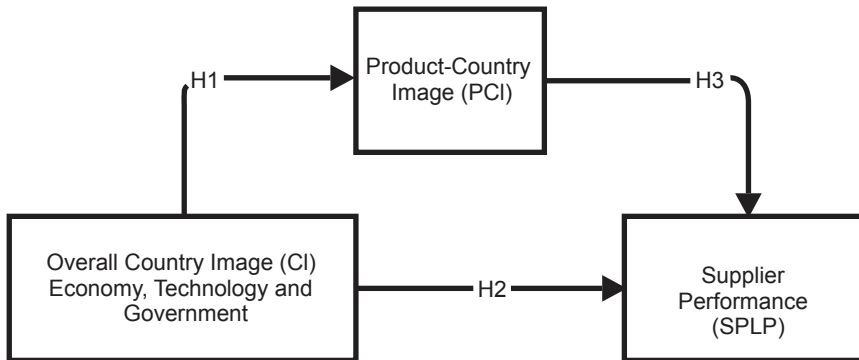
CI = Overall country image; PCI = Product-country image/product beliefs/product attributes; Attitude = Buyer attitude/purchase intention/product evaluation/behavioral intention.

The proposed model of the current study is based on the cognitive component of attitude theory, and the evaluative outcome construct is international supplier performance (SPLP) which indicates that, according to the flexible model the paths of influence are CI → PCI, CI → SPLP, and PCI → SPLP.

The Conceptual Framework

As B2B buyers have a “rich cognitive structure regarding country effects” and a “wealth of experience and information”(Samiee, 1994, p. 591), it is expected that they are more “rational and informed”(Ahmed et al., 1994). Moreover, B2B buyers tend to have greater familiarity with a country of origin’s product and country image (Askegaard & Ger, 1997, p. 14). For measuring the variables, this study uses a linear compensatory multi-attribute attitude model which has been used extensively as an instrument for collecting and gathering data on attitudes (Ajzen & Fishbein, 1977; Bradley, 2001; Fishbein, 1975; Ryan & Bonfield, 1980; Sampson & Harris, 1970).

Figure 1: Conceptual framework based on flexible model (developed from B2B perspective)



The current study includes two widely accepted constructs of COO, overall country image (CI) and product-country image (PCI) in measuring country effect. CI is operationalized through the ‘macro country image’ scale refined and validated as a second-order construct by (Pappu et al., 2007), which was originally developed by Martin and Eroglu (1993). In capturing country image, Heslop and Papadopoulos (1993, p. 61) reported two dimensions, product and country, out of the findings from a large research project involving consumer surveys in eight countries from North America and Europe. Therefore, the use of both dimensions (country image and product-country image) avoids the limitation of using only one dimension, as is typical of the majority of COO studies (Pappu et al., 2007, p. 728). The list of constructs is presented in Table 4.

Table 4: List of constructs and respective sources

Constructs in second-order model	Constructs in first-order model	Source
Overall country image (CI)	i) Economy (ECO) ii) Technology (TCH) iii) Government (GOV)	Adapted from Pappu et al. (2007)
Product-country image (PCI)	Product-country image (PCI)	Adopted from Maher and Carter (2011)
Supplier performance (SPLP)	Supplier performance (SPLP)	Most reported variables from multiple studies

The outcome construct, ‘supplier performance’ (‘SPLP’ hereafter) has been used in previous studies in the wider perspective of purchasing, but not in COO studies. A review of supplier performance measures used in extant studies has been made (see Table 5). This study measure the SPLP construct as incorporating product quality performance, delivery performance, and

Table 5: Variables reported in past literature for measuring supplier performance

Study	Considered variables
Olsen and Ellram (1997, p. 106)	Performance factors: Delivery, quality, price.
Ho, Xu, and Dey (2010, p. 21)Literature review of 78 journal articles from 2000 to 2008	The most popular criterion for evaluating and selecting most appropriate supplier as reported in the percentage of articles reviewed: Quality (87.18%), delivery (82.05%), price/cost (80.77%).

price performance for measure simplification and in accordance with expert (experts associated to the questionnaire development) advice.

Research Hypotheses

H₁: Overall country image (CI) is positively related to product-country image (PCI).

H₁ is proposed based on flexible model of Knight and Calantone (2000) that shows the relationships sequence as follows: CI → product belief → attitudes. The results of Knight and Calantone's (2000) study show that the CI → PCI path consistently achieved high coefficients in both low and high knowledge conditions. As the current study considers B2B buyers as the high knowledge condition buyers, the findings of the flexible model allow the testing of the hypothesis that CI positively influences PCI. In addition, other research findings (Diamantopoulos, Schlegelmilch, & Paliawadana, 2011, p. 518; Roth & Romeo, 1992) have substantiated this relationship.

H₂: Overall country image (CI) is positively related to supplier performance (SPLP).

According to the results reported by Knight and Calantone (2000), the flexible model substantiates a statistically significant relationship from country image to attitude. Moreover, Peterson and Jolibert (1995, p. 891) found in their meta-analysis, that the effect size (though very small) of country image on purchase intention is statistically significant. Such evidence of country image relationship with a positive behavioral outcome variable supports the proposition that overall country image is positively related to judgments of that country's supplier performance. The flexible model of Knight and Calantone (2000) shows two statistically significant directional relationships originating from overall country image. One, already discussed, as directing to PCI and another toward attitude, operationalized as purchase intention. The other is directed from country image to purchase intention. Laroche, Papadopoulos, Heslop, and Mourali (2005, p. 108) reported a statistically significant and moderately strong relationship between country image and purchase intention for both the samples from Japan ($\beta = .41, p < .05$) and Sweden ($\beta = .33, p < .05$) but an insignificant relationship between these two constructs was reported by Diamantopoulos et al. (2011, p. 518) Based on the mixed results regarding the relationship significance, the current study proposes the hypothesis with caution.

*H*₃: Product-country image (PCI) is positively related to supplier performance (SPLP).

Similar mixed results were observed for the relationship between PCI and the common consequential constructs in COO, such as purchase evaluation or purchase intention. Parameswaran and Pisharodi (2002) found statistically significant and strong relationships ($\beta=.55$) between specific PCI and purchase intention for all the categories studied. In comparison, the flexible model (Knight & Calantone, 2000) demonstrated mixed results regarding the hypothesized positive relationship from PCI to purchase intention. This relationship was statistically insignificant in case of high knowledge level students from Japan and low knowledge level households from Japan. In other cases the flexible model showed a significant relationship between these two constructs. The significant relationship was found between PCI and purchase intention from both the countries' samples in the study conducted by Laroche et al. (2005, p. 108). Conversely, Diamantopoulos et al. (2011, p. 518) found no significant relationship between these two constructs. Once again the mixed results suggest that the hypothesis is proposed with caution.

Study Focus, Survey Respondents, Survey Country and Product Category

This study uses an online survey questionnaire designed using Qualtrics survey software and the survey was administered online to professional purchasing managers in Australia by Research Now. The online panel provider companies maintain databases of respondents based on their professional, personal, industry affiliations etc. In addition, the authenticity of the respondents is regularly checked by the company and randomly by government regulators. This study specifically asked for B2B panels from Australia, who are making purchase decisions for raw materials and component parts. Several panel provider companies have been communicated for panels required for this study and only one was maintaining panel of B2B purchase managers purchasing raw materials and component parts.

B2B buyers in Australia feel very comfortable in communicating online to save their time and are very quick in responding emails. It is also associated with their work life efficiency. Online responding also allows to handle greater geographical dispersion of Australia and to give all geographical locations similar chance to respond. In addition, there are some control used

by the researchers as monitoring the total time to respond the questionnaire, disqualifying long pause in answering, pattern analysis of answering, inconsistent demographic information etc.

The study concentrated on international purchasing (Motwani & Ahuja, 2000) that can be synonymous to import sourcing (Swamidass, 1993), global sourcing (Kotabe, Murray, & Javalgi, 1998), worldwide sourcing (Monczka & Trent, 1992), international procurement (Scully & Fawcett, 1994) and so on. Note also that the study did not ask respondents about local or home country sourcing, which is the dominant focus of the extant COO literature, and which could be expected to reveal strong home country bias. Rather the focus of the current study is on COO effects in international procurement (excluding local procurement).

The survey country Australia plays an important part in the global economy; no less in relation to its imports. Regarding global imports, Australia ranked 18th (*Trade at a Glance*, 2013, p. 14), contributing 1.5% of global imports, remaining behind countries like, Brazil, Taiwan, Thailand, Turkey, Switzerland, Malaysia, Indonesia, Austria, and Sweden.

The product category of the current study is 'raw materials and components'. By investigating trade of 'raw materials and components' or intermediate goods, this study also aligns with an obvious reality of global trade in recent times. Additionally, no previous B2B focused COO studies explicitly addressed intermediate goods as a product category. The exponential growth of the global supply chain not only covers finished goods but also components and sub-assemblies (Gereffi & Lee, 2012, p. 25), which has given rise to the global trade in intermediate goods. In 2009, global exports of intermediate goods exceeded the export values of final goods plus capital goods, representing 51% of non-fuel merchandise exports (WTO & IDE-JETRO, 2011, p. 81). Therefore, a shift has occurred from 'trade in goods' to 'trade in value added' and 'trade in tasks' (OECD, 2011; WTO & IDE-JETRO, 2011).

The Questionnaire, Data Collection Procedure and Sample Characteristics

Data were collected using a standard self-completion questionnaire. Purchasing managers were asked to rate their major existing foreign supplier's country on the country image (CI) and product-country image (PCI) issues specified earlier in the conceptual framework. Before rating the

country-related scale items, the respondents were asked to write the country name of their major supplier in an open ended space. Next, respondents were asked to rate the respective supplier's performance based on scale items. In addition, some organizational and personal classification information was asked. Although all the items in the questionnaire were taken from previously used scales, five experts (three purchasing managers and two academics) checked the items for measurement appropriateness, language simplicity and their ability to be easily understood. In the overall country image or CI construct, nine country image variables were used in the final analysis based on those variables used by Pappu et al. (2007). Here, political stability of the government (Maltz, Carter, & Maltz, 2011) was included because it is considered important by purchasing managers and this item replaced previously used item 'civilian government'. All the nine items were measured by a 7-point Likert-type scale ranging from highest (7) to lowest (1).

Regarding the product-country image or PCI construct, five items used by Maher and Carter (2011) was taken with re-phrasing to capture the product-specific country image. The 7-point Likert-type scale used for the five scale items ranged from highest (7) to lowest (1) under the statement 'rate the product category you have purchased from this country based on the following issues'. Three items for measuring supplier performance or SPLP were also measured with a 7-point Likert-type scale ranging from excellent performance (7) to poor performance (1).

Data were collected from the online panel members provided by commercial panel provider company, Research Now and who were from all around Australia. Respondents were filtered using two screening questions: "are you significantly involved in making international purchase decisions?" and "are you involved in purchasing intermediate goods (e.g. non-fuel raw materials, parts and components for industrial use) from foreign suppliers?" Because organizational purchasing decisions are often a group decision (Andersen & Chao, 2003), the amount of involvement was considered and both questions were asked about international purchasing. In the final survey 1863 panel members were requested to participate in the survey and, following the screening questions, 293 completed questionnaires were received, giving a 15.7% response rate. Among the 293 responses, 276 were found usable for analysis. Sample characteristics of the respondents are presented in Table 6.

Table 6: Demographic profile of respondents

Gender	Highest level of completed education	Experience in purchasing profession	Type of materials purchased
Male: 62.7	Doctoral degrees 2.5	Less than 10 years: 38.8	Raw materials: 39.5
Female: 37.3	Master's degree: 29 Bachelor honours/Graduate certificate/ Graduate diploma: 22.1 Bachelor degree: 20.7 Advanced diploma/Associate degree: 9.8 Diploma: 10.1 High school: 8.3	10 to 20 years: 43.8 More than 20 years: 17.4	Components and parts 60.5

Note: All values are in percentage

Study Results

First order measurement model: The conceptual model of the study was tested with covariance-based Structural Equation Modeling (SEM), using the two-step process suggested by Anderson and Gerbing (1988). Consequently, assessment of fit and the validity of two key tests (measurement model and structural model) need to be established. The conceptual model consists of five first-order constructs. Initial estimation considered 17 measured variables under five constructs. Factor loadings (.5 or higher and ideally .7; Hair, Black, Babin, & Anderson, 2010, p. 709) and standardized residuals, (close to 4; Hair et al., 2010, p. 725) of the variables were examined and two variables were excluded (see Table 8). Model fit of the 15 item confirmatory factor analysis (CFA) was assessed using multiple indices. As suggested by (Hair et al., 2010, p. 672), at least one absolute (RMSEA, SRMR, Normed λ^2) and one incremental index (CFI, TLI, NFI, RNI) need to be used along with λ^2 value and associated degrees of freedom (*df*). Researchers suggest flexibility in evaluating fit indices considering model complexity (Hair et al., 2010, p. 673; Sharma, Mukherjee, Kumar, & Dillon, 2005, p. 941). In this vein, (Hair et al., 2010, p. 672) indicated liberal cut-off values for the model consisting of less than 30 but more than 12 observed variables and sample size of more than 250. Based on the specifications regarding fit indices, the CFA model of this study (15 measured variables and sample size of 276) fits the data well.

Table 7: First-order CFA model fit indices

GoF Measures	Calculated value	Threshold value
χ^2 (df)	187.26 (77)	
Sig.	.000	Significant p-value expected (Hair et al., 2010, p. 672)
Normed χ^2	2.43	3 or less associated with better fitting models (Hair et al., 2010, p. 668)
CFI	.96	.92 or better for acceptable model fit (Hair et al., 2010, p. 672);
TLI	.94	.92 or better for acceptable model fit (Hair et al., 2010, p. 672)
RMSEA	.072	.051–.08 suggests acceptable model fit to data (Browne, Cudeck, & Bollen, 1993; Jöreskog, 1993)
In comparison, the null model ($\chi^2 = 2570.47$; $df = 105$; $\chi^2/df = 24.48$; RMSEA = .292) in which the correlations among the latent constructs are constrained to zero shows a significantly worse fit ($\Delta\chi^2 = 85.11$; $\Delta df = 1$; $p < .001$).		

First-order measurement model validity: One important assessment of construct validity includes measurement relationships between observed variables and constructs (Hair et al., 2010, p. 707). The first-order measurement model consists of five constructs: economy (ECO); technology (TCH), government (GOV), product-country image (PCI); and supplier performance (SPLP). The measurement model estimates of standardized item loadings exceeded the suggested threshold (at least .5 and ideally .7; Hair et al., 2010, p. 708). Among the 15 item loadings only one is in the .5 range and the remaining are above .7 (see Table 8). Moreover, all the item loadings are significant at .001 level (see Table 8), which is also considered as a minimum requirement by Anderson and Gerbing (1988). In addition, high item loadings on intended constructs show convincing evidence of convergent validity (Fornell & Larcker, 1981).

The study computed average variance extracted (AVE) and composite reliability (CR) as an estimate of reliability of all measurement scales (Chin, 1998; Fornell & Larcker, 1981). All the AVE estimates are above cut off value .5 (Fornell & Larcker, 1981) and all the CR estimates are well above .7, (indicate good reliability; Hair et al., 2010, p. 710). So both the measures (AVE and CR, see Table 8) explain adequate reliability and convergent validity (Chin, 1998; Fornell & Larcker, 1981) of the constructs.

Table 8: Factor loadings of the supplier country and supplier performance variables (CFA model)

	Standardized loadings (t value)
Economy (ECO) CR: 0.84; AVE: 0.65	
Standard of living	.95 (12.69)*
Welfare concentration of government	.70 (14.21)*
Cost of labor	.72 (NE)
Technology (TCH) CR: 0.89; AVE: 0.72	
Level of economic development of the country	.83 (15.90)*
Level of industrialization	.88 (17.04)*
Level of technological research	.83 (NE)
Government (GOV) CR: 0.80; AVE: 0.67	
Freedom of market forces	.76 (NE)
Political stability	.87 (13.20)*
Democratic practices in forming government	Variable excluded
Product-Country Image (PCI) CR: 0.87; AVE: 0.62	Standardised loadings (t value)
Technological advancement in country's product	.80 (NE)
Aesthetics and design image of country's product	.74 (14.52)*
Value for money perception of country's product	.79 (12.97)*
Reliability and desired performance length perceived about country's product	.83 (12.38)*
Country's workmanship image	Variable excluded
Supplier Performance (SPLP) CR: 0.78; AVE: 0.55	
Product quality performance	.81 (8.02)*
Delivery performance	.86 (8.04)*
Price performance	.51 (NE)

* Significant at .001 level. NE = Not estimated as loading set to fixed value 1.

To demonstrate discriminant validity, the rigorous test (Hair et al., 2010, p. 710) is that the square root of AVE should be higher than inter-construct correlations (Fornell & Larcker, 1981). All constructs (Table 9) show evidence of discriminant validity according to the Fornell and Larcker (1981) specification. Therefore, based on satisfactory first-order CFA model validity, model estimation could now move toward a higher-order measurement and structural model.

Table 9: Composite reliability, AVE estimates and inter-construct correlation matrix

	PCI	TCH	ECO	GOV	SPLP
PCI	.79				
TCH	.73	.85			
ECO	.62	.66	.80		
GOV	.75	.74	.73	.82	
SPLP	.61	.42	.38	.48	.74
CR	.87	.89	.84	.80	.78
AVE	.62	.72	.65	.67	.55

Note: Square root of AVE on the diagonal

Common method bias and non-response bias: Common method variance (variance attributed to the measurement method) is a potential problem in behavioral research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003, p. 879). One important reason for encountering this problem is that data are collected at one point in time using the same method (Podsakoff et al., 2003). the study used Harman (1967) one factor test to assess the model for common method bias. The one factor CFA model resulted in λ^2 value 662.23 with *df* 87 that indicates the fit of one factor model is significantly worse ($\Delta\lambda^2 = 474.97$, $\Delta df = 10$, $p < .001$). This result indicates that common method variance does not pose a serious threat in explaining the measurement model results.

Data were also tested for non-response bias by analyzing early and late respondents (Armstrong & Overton, 1977) for significant differences. The sample of early 25% respondents and late 25% respondents was used to perform a *t*-test for mean difference. Mean values for early respondents (ER) and late respondents (LR) and respective *t*-value is reported in Table 10. As *t*-values of ER and LR for all the constructs are well below 1.96, non-response bias can be considered as not a major problem for data analysis.

Table 10: Results of *t*-test for significant differences between ER and LR

Constructs	ER	LR	<i>t</i> -value
ECO	4.156	4.093	.333
TCH	4.612	4.653	.157
GOV	4.256	4.180	.513
PCI	4.922	4.787	.944
SPLP	4.706	4.633	.535

Second-order measurement model: The second-order CFA model includes one second-order construct and two first-order constructs. The second-order construct is overall country image (CI) including ECO, TCH, and GOV as first-order constructs. The CI construct was operationalized in similar fashion to the construct in the source study (Pappu et al., 2007). The product-country image (PCI) and supplier performance (SPLP) constructs remain as first-order constructs in the second-order CFA model. The second-order CFA model fits the data well according to the threshold values of fit indices specified earlier [$\chi^2(df) = 191.53 (81)$, Normed $\chi^2 = 2.37$, CFI = .96, TLI = .94, RMSEA = .070].

Second-order measurement model validity: Item loadings (see Table 11) of the second-order constructs are substantially higher than the ideal threshold value .7 (Hair et al., 2010, p. 708). Additionally, the *t*-values of all the item loadings are significant at the .001 level (see Table 11). The item loadings of the first-order constructs changed minimally at fractional level and were not reported again. AVE and CR estimates for the second-order constructs convincingly exceeded the threshold value (AVE > .5, CR > .7). Considering all the constructs of the second order CFA model, AVE, and CR values there is substantial evidence of convergent validity.

Regarding discriminant validity, inter-construct correlations and square root of AVE estimates for the three constructs were examined. The results (see Table 12) indicated little deviation from the (Fornell & Larcker, 1981) specification. Therefore, the pairwise λ^2 difference test (Anderson & Gerbing, 1988, p. 416; Bagozzi & Phillips, 1982, p. 476; Farrell, 2010, p. 325; Jöreskog, 1971) was employed. Both the pairs of constructs passed the discriminant validity test with significant λ^2 differences (see Table 13). Consequently, the discriminant validity of second-order CFA model was established.

Table 11: Standardized loadings of second-order factors

Overall Country Image (CI) CR: 0.88; AVE: 0.73	Variable code	Standardized loadings (t value)
Economy	ECO	.78 (8.53)*
Technology	TCH	.84 (10.40)*
Government	GOV	.91 (NE)

* Significant at .001 level. NE = Not estimated as loading set to fixed value 1.

Table 12: CR, AVE estimates and inter-construct correlation matrix of second-order CFA model

	PCI	SPLP	CI
PCI	.79		
SPLP	.61	.74	
CI	.83	.50	.85
CR	.87	.78	.88
AVE	.63	.55	.73

Table 13: Pairwise Chi-square difference test for discriminant validity

Pair of Constructs	Constrained model		Unconstrained model	
	λ^2	df	λ^2	df
PCI \leftrightarrow CI	197.30**	82	191.53	81

** Significant at .025 level

Second-order structural model: As the measurement model provided sufficient evidence of construct validity, the structural relationships can now be estimated. Fit indices of all the structural model and the second-order measurement model are the same and therefore, the insignificant $\Delta\lambda^2$ value between CFA model and structural model strongly evidences adequate structural model fit (Hair et al., 2010, p. 738).

Hypotheses testing

As predicted in H_1 , there is a strong positive relationship from CI to PCI ($\beta = .83, t = 9.91, p < .001$): H_1 is thus *supported*. However, the relationship between CI and SPLP (H_2) is *not supported* as the relationship is not statistically significant ($\beta = .001, t = .008, p = .99$). The β value and t -statistic for H_2 is so negligible that there is no significant influence of CI on SPLP. Evidence of the strong positive relationship between PCI and SPLP (H_3) is detected ($\beta = .61, t = 3.78, p < .001$) that means PCI has strong positive impact on SPLP.

Table 14: Structural model results

Constructs/Paths	Hypotheses	Standardized path coefficients (t -value)
CI \rightarrow PCI	H_1	.83(9.91*)
CI \rightarrow SPLP	H_2	.001 (.008)
PCI \rightarrow SPLP	H_3	.61 (3.78*)
R ² : SPLP		.38
R ² : PCI		.69

* indicates $p < .001$

As can be seen on Table 14, the results show that the model explains 38% of variance in the outcome variable SPLP, which is contributed by PCI. In addition, Overall country image (CI) contributes 69% of the variability in PCI.

Results Summary

In the results of this study, the impact of overall country image (CI) on product-country image (PCI) is statistically significant with high magnitude. Therefore, it can be suggested that purchasing managers consider that higher development level of a country (high CI) leads to achieve high product-country image (high PCI). Again, the study results show that development level of a country does not have any direct influence on international supplier performance. Rather, high product-country image leads a country's supplier to be superior in the mind of purchasing managers.

Discussion and Implications

The current study supports the previous literature that relies on attitude theory in arguing that B2B buyers are more rational than consumers. The study results, as received post purchase opinion, depict the reality that international supplier performance does not depend on country's development level but on country's product country image. However, as this is a survey-based study, it is more likely to capture rational and verbally-expressed country associations than emotionally-held COO aspects (Boddy, 2005; Koll, Von Wallpach, & Kreuzer, 2010). The study also avoids the pitfalls of the majority of COO studies, which ask for perceived country image associations. Assessing the existing supplier company and its associated country characteristics are likely to be well known to B2B buyers. Moreover, B2B buyers' opinions regarding their familiar industry and product categories do not require them to imagine hypothetical scenarios. Therefore, by using a research instrument that captures rational aspects and a respondent group who answers questions based on real-world experience, the study avoids some elements of previous COO research in which it has been criticized for its "lack of realistic managerial relevance"; "consumers' impoverished origin knowledge base"; "explaining more of the variance than reality" (Samiee, 2011); "lack of familiarity"; "uninformed responses" (Usunier & Cestre, 2008); etc. In addition, this study contributes to the COO literature by adopting multiple COO images, an aspect that has been suggested by COO scholars to be incorporated (Chattalas, Kramer, & Takada, 2008; Dinnie, 2004; Hsieh, Pan, & Setiono, 2004; Peterson & Jolibert, 1995; Verlegh & Steenkamp, 1999).

With regard to the direction of country image influence, the study provides evidence that the direction from overall country image (CI) leads to product-country image (PCI) and consequently higher PCI leads higher supplier performance.

This study incorporates the prominence of the global supply chain and the reality of 'Made in the world (MIW)' that has eventually transformed the trade of intermediate goods as a significant part of global purchasing. Therefore, this study's focus on raw materials and component parts reflects the opinion related to current trade practices. In purchasing raw materials and component parts, B2B buyers need to work more closely with suppliers as the quality and performance of final products ultimately depends on the quality of raw materials and component parts. The significance of product-country image (PCI) on supplier performance (SPLP) in the purchase of raw materials and component parts is noteworthy. No previous study used multiple country constructs in assessing B2B buyers' international supplier evaluation. Such evidence signifies that the raw materials and component parts play crucial role in determining the quality of final products.

Overall country image (CI) is measured by country economy, country technology and country government: when CI is high, this means that the country is a developed country. According to the study results (CI → PCI → SPLP), developed countries normally have a higher product-country image (PCI) which leads to higher supplier performance (SPLP). This finding is easily acceptable based on numerous COO studies that have provided evidence of the high quality bias of B2B buyers (Ahmed et al., 1994; Chetty et al., 1999; Dzever & Quester, 1999; Insch, 2003; Quester et al., 2000) with regard to developed country products. Again, the insignificant relationship between overall country image (CI) and supplier performance (SPLP) indicates that the developed country image alone is not enough to generate superior supplier performance: rather, the findings indicate that only a developed country with a high product-country image can generate higher supplier performance. For example, with regard to industrial chemicals imports, developed countries will be preferred by the buyers: if the USA and Germany are the options, Germany has the higher PCI for chemicals and a German supplier generates higher supplier performance. Therefore, this study has revealed the crucial role of the PCI construct over the country's development image in B2B-centric COO research.

This finding also answers an important question of the most recent COO meta-analysis “*is macro country image (overall country image) more or less influential than micro country image (product-country image)?*” (Magnusson & Westjohn, 2011, p. 307).

In connection with this, the study also provides evidence of the statistical significance of the relationship from product-country image (PCI) → overall country image (CI). However, the path from overall country image (CI) → supplier performance (SPLP) is not statistically significant. From one perspective, the direction from PCI → CI cannot be true for the highly familiar and more knowledgeable respondent group because a country’s high PCI does not lead a B2B buyer to perceive the country as a developed country (high CI). For instance, a B2B buyer interested in buying high quality cotton must know the name, Egyptian cotton, but being familiar with this high quality cotton as a raw material (high PCI) will not lead him/her to consider that Egypt has a high CI: if it did, this would mean that Egypt is a developed country. Moreover, a B2B buyer at least knows the current state of Egypt and those B2B buyers who purchase cotton from Egypt are even more aware of its current state. Therefore, the more usual direction is that a developed country normally produces high quality products to satisfy the high living standards of its citizens and thus their PCI will usually be high (CI → PCI).

A country’s PCI is strongly associated with a particular industry’s strength or competitiveness. Gaining substantial advantage from a country’s PCI requires coordinated efforts from industry participants and government. Domestic rivalry within industry plays a vital role in gaining national competitiveness according to the determinants of national competitiveness (Porter, 1990). This phenomenon of within-industry rivalry is a prerequisite for the development of PCI. However, the COO facet ‘PCI’ is rarely applied in addressing national competitiveness in COO research. For example, if Sony was the only electronics company in Japan, people would not necessarily associate Japan with electronics; however, when companies that collectively belong to a particular industry originating from one country deliver consistently high performance, the product’s origin country gains a high PCI. Moreover, the involvement of government with industry complements PCI and enhances global positioning. This has implications for government policy makers.

Limitations and Future Research

As with any study, the present study has limitations. First, the extant research suggested the use of cognitive, affective and conative components of attitude theory, while this study captured only the cognitive component because this study was not undertaking a preference study where emotion plays an important role. There is scope in future research to accommodate several attitudinal components of country image. Second, the model testing took place only in Australia because of resource limitations. Future studies can use this model and extend the findings of this study by including multinational samples and can test cross country validation of this model. In addition, the model can also be tested for specific industry segments. By accommodating more generalized scale items used in previous studies and some refinements in this study this model may be used in different industry classes with minor changes. Future research in this area should take into consideration the effect of demographic variables on international supplier performance, which was not considered here. The respondents were representative of purchasing managers working in Australia, but the inclusion of managers in the survey was not purely random, but was random within selected panels. Therefore, more randomly selected members could have different views to those included through panels. Fourthly, international supplier performance from COO perspective can be enriched by including other product or supplier related cues.

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Land Market Receptiveness to Water-Logging: A Hedonic Pricing Approach Using GIS

Sanchita Chakrovorty* and A.K. Enamul Haque**

Abstract

Most of the cities in developing countries are built on filling wetlands and are also being expanded using continuous land filling and embankments. In coastal areas, cities are doubly threatened as this water is also saline. This paper used these backgrounds to understand how the urban land market is responding to such disasters in a coastal city of Bangladesh. The paper used spatial econometric analysis with GIS data along with a household survey data.

In terms of policy prescription, the study reveals that a parcel of land which is water-logged for a day drops its value by 6%; for 2 days drops it by 8% and for 3 days the value drops by 9% and so on. A public investment to remove water-logging increases the value by 14%, so it is possible to invest to reduce the impact and this can be partially financed by higher taxation of land value gains.

Key words: Geographic Information System (GIS), hedonic pricing, land market, spatial autocorrelation, water-logging, spatial regression.

Introduction

Many urban cities in India, China, and Bangladesh (like Kolkata, Shanghai and Dhaka) experience water-logging problem due to its drainage congestion. Most of these cities are built on wetlands and are being expanded using continuous land filling and embankments. Excessive rainfall and also inefficient management of city drainage and sewerage routes often lead to prolonged water-logging. A study on Shanghai reveals that water-logging induced by torrential rain or typhoon, urban development and changes in land use has potential risk affecting urban inhabitant lifelines and safety (Quan et al., 2010).

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In coastal areas, cities are also threatened by sea level rise and by increased rainfall due to climate change, and this is likely to increase risk to urban inhabitants. A study on Khulna city by the Institute of Water Modeling in Dhaka shows that sea level rise and higher precipitation, which are few of the most critical threats of climate change faced by coastal cities in Bangladesh, together are going to create increased level of water-logging in coastal cities (IWM & Alterra, 2010). This study used a regional climate change model and predicts that as much as 75% of the city areas will be suffering from water-logging due to climate change.

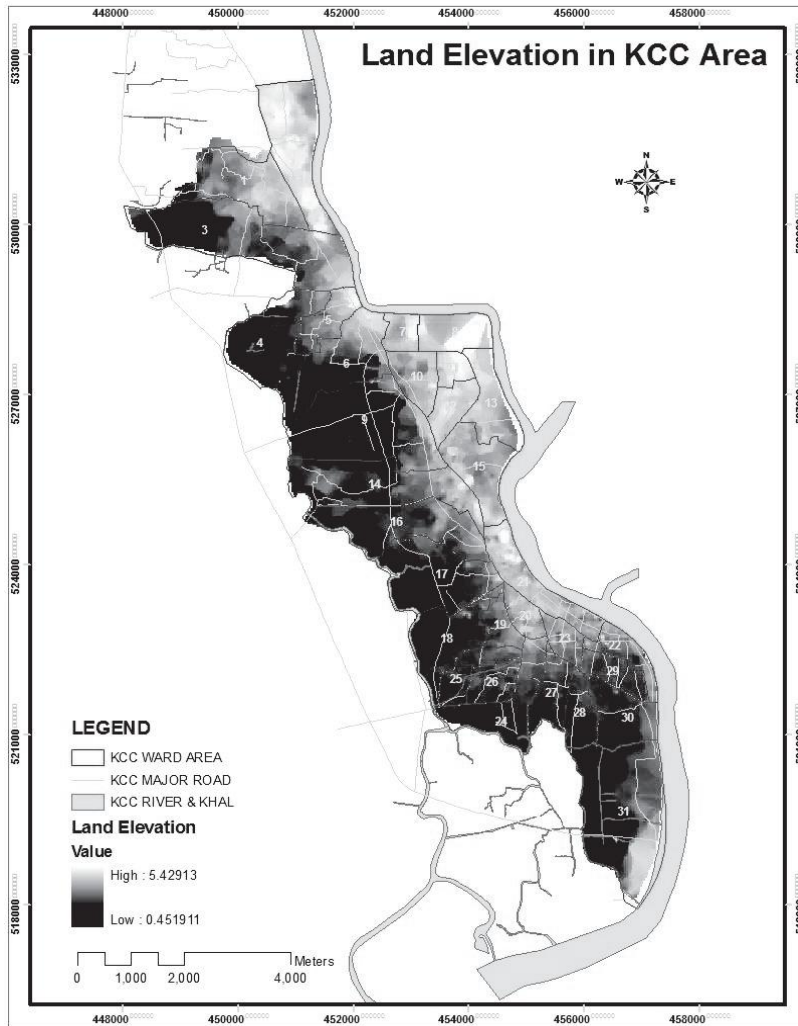
City land use is affected by many factors that include a) urban development plans and nature of existing infrastructure, b) city zoning plan, c) land characteristics (elevation, soil type, etc.), d) urban transportation networks, e) characteristics of the area, and f) the structure of land market. Mukherjee and others found that land use land cover changes are important elements of the global environmental change processes (Mukherjee et al., 2009).

Since urban infrastructure are mainly built on private land, it is expected that the land market is taking cognizance of these elements in its consideration and so prices are likely to be influenced by these factors on a plot to plot basis including water-logging characteristics. Therefore, understanding market responses to water-logging will help decision makers to develop a better adaptation plan. This paper used these backgrounds to understand how the land market is responding to such natural disasters in a coastal city of Bangladesh. The paper uses GIS based information with a primary survey of households from Khulna (a coastal city) in order to understand the relationships.

Background on the location of study

Khulna is one of the third largest cities of Bangladesh and is situated in the southwest part of Bangladesh near the largest mangrove forest, Sundarban, and is bounded by two rivers: one in the east and one in the west. Both of these rivers are tidal rivers. The city is administratively divided into 31 wards with a population of 2 million (2001 census) and is growing at a rate of 2% per annum. About 46% of the city's land area is now built up and is used for industrial, commercial and residential purposes, 5% land is under commercial use, 15% land is under industrial use and the remaining part is for residential and other purposes. Topographically, the city is situated at 2.5 meter above the mean sea level with slopes towards west but regionally toward south (Figure 1).

Figure 1. Land elevation of KCC area with rivers and roads



As the population is growing, the City is experiencing a 2% net growth of population per annum (since 2001) which has resulted in a vibrant and an active land market. At the same time due to absence of storm water sewage systems, and due to low maintenance of the city drainage system some parts of the city are already experiencing water-logging during heavy rainfall in the late monsoon (Murtaza, 2001). A previous study by (Haque, 2013) found that 70 percent of the households in the city area were directly or indirectly affected by water-logging. Haque also noted that the amount of damage is increasing exponentially over the years.

Analytical method

Studies on land market often use hedonic pricing models to separate price impact from changes in the characteristics of land. In addition, there is a growing body of literature that uses GIS information to relate land prices to its neighborhood, environmental and other characteristics. Analysis using GIS application to analyze spatial information, such as land record, natural resource features, and public infrastructure location, has become popular in the hedonic literature (Geoghegan et al., 1997). Kong (Kong et al., 2007), Clapp (Clapp et al., 1997), Colakovic (Colakovic & Vucetic, 2012) and many others used GIS based modeling to analyze land prices. Rehdanz showed that the market also responds to the demand for environmental good (Rehdanz, 2002). Mukharjee using GIS data and econometrics estimation found “a positive relationship between land price and its elevation, and a negative relationship between price and adjacency to a stagnant stream” (Mukherjee & Caplan, 2011).

As such, it is possible to use spatial econometrics with GIS information to find out whether in Bangladesh land market responds to environmental characteristics (here water-logging) or not. This study, therefore, uses the GIS-based hedonic price models to analyze impacts of water-logging on land prices.

The Spatial Econometric Model

The following price equation is used to estimate the hedonic price model. The fundamental hedonic equation along with attributes is:

$$P = f(E, L, A, N) \quad (1)$$

Where, E is a set of environmental variables and in this study it is the duration of water-logging, L is a set of location variables related to the plot that includes plot type (L1) and land elevation (L2), A is a set of variables that define access characteristics to the plot and it includes the type of road (A1) and proximity to the road (A2), and N is a set of neighborhood characteristics that includes population (N1), income of the plot resident (N2) and type of structure in the plot (N3).

The general estimation equation for hedonic model is specified as,

$$P_i = \alpha + \sum_{j=1}^n (\beta_j x_{ij}) + \varepsilon \quad (2)$$

where P is price of land, x_{ij} 's are the characteristics j of plot i , subscript i refers to plot. x_j 's are divided in several attributes of a plot (j) like

neighborhood characteristics (e.g., population, education facility), environmental characteristics (e.g., water-logging), accessibility characteristics (e.g., road structure type, proximity to nearest road, city, shopping mall) and socio-economic characteristics (e.g., income).

In general, consumers compete at several markets to determine the price they are willing to pay and the coefficient of environmental characteristics, in this case water-logging, shows the contribution of water-logging in formation of the price of land.

Consumers might pay higher property prices if the land or house is located in a preferred area. Also they might accept lower price for living in such areas (Rehdanz 2002). The total amount of utility a consumer receives from the purchase of products is subject to the total amount of characteristics purchased. In this way, this study wanted to estimate the natural disaster effects (i.e., water-logging) in determining land values.

Theoretically, when a consumer maximizes their satisfaction $U = U(z, \Omega)$, where z , set of consumables, and Ω set of characteristics (in this case land), then consumers' maximization of utility is subject to $I = z + V(\Omega)$, where I is income, prices of z are assumed to be 1 as *numeraire*, $V(\Omega)$ is the cost of purchasing the characteristics, and $\Omega = \{x_j\}$'s is the set of characteristics of land. Thus, the marginal value of a characteristics x_j is given by:

$$\frac{\partial v}{\partial x_j} = \frac{\partial U / \partial x_j}{\partial U / \partial z} \quad (3)$$

This equation (3) can be used to value the cost of water-logging in an urban area.

As the main objective of this study is to estimate the implicit price effects of natural disasters on land, water-logging is taken as a variable which is related to tidal surges as well as rainfall and drainage congestion. Understanding the loss of land price due to water-logging is, therefore, considered an effect of natural disasters which is relevant for Khulna city. Other variables in the model are taken from different studies which used similar models (Malpezzi, 2003; Ismail, 2005; Butsic et al., 2009). The property with a short distance from a road is expected to have a positive and higher impact on it (Can & Megbolugbe, 1997).

Many economists have stressed that economic theory does not suggest an appropriate functional form for hedonic price equations (Rosen, 1974; Freeman, 1979; Halverson & Pollakowski, 1981; Cassel & Mendelsohn, 1985; Amin, 2009). Consequently it is reliable to try several functional forms and utilize a multiple regression equations (Cassel & Mendelsohn, 1985). This study has used Mukherjee et. al. (Mukherjee &, Caplan, 2011) specification and estimation technique which used spatial lag model to remove spatial-autocorrelation from the model. Land prices models often suffer from spatial lag effect because price of a plot land is not independent of the price of the plot in the neighborhood. Models used in previous studies included both linear and non-linear specifications.

Data and variables

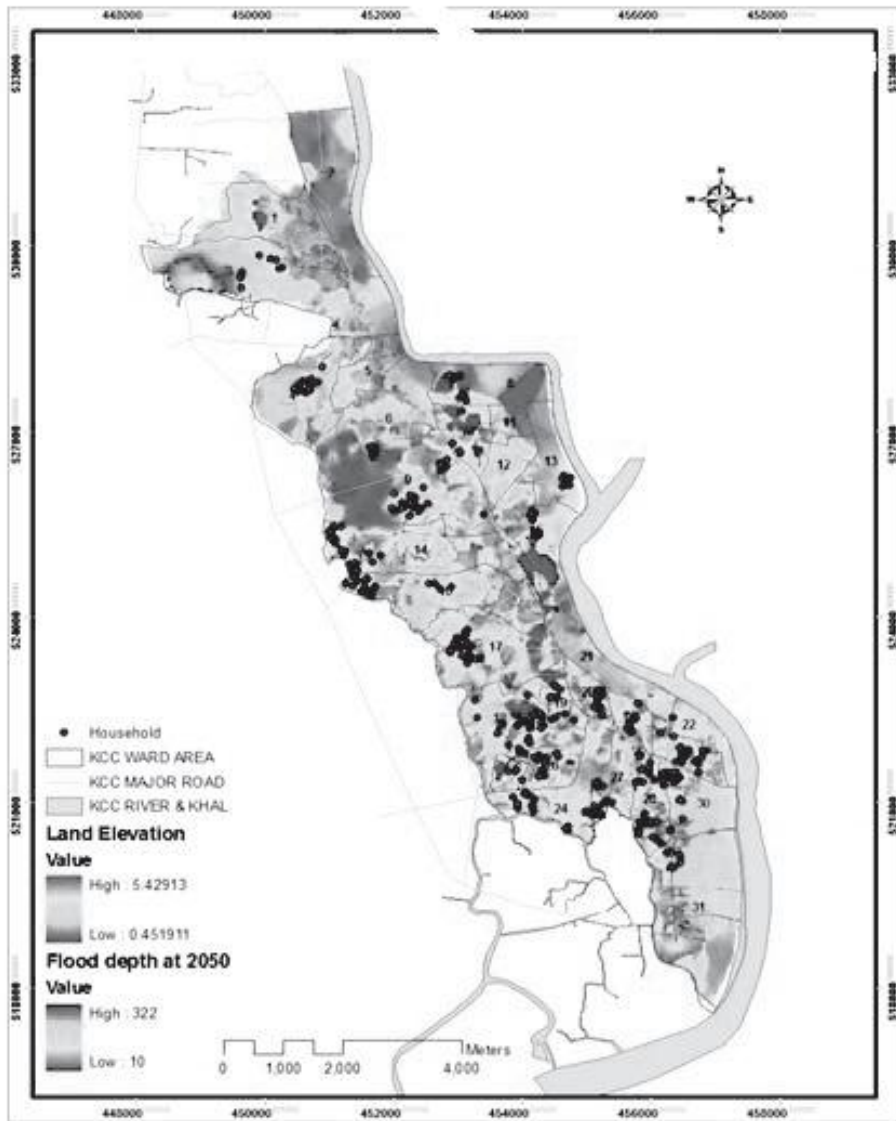
Three types of data are used in this study. Price and plot specific ELAN data were collected using a primary household survey. A total of 400 household were surveyed in Khulna city using a systematic stratified random sampling method based on the basis of house category [concrete (168), semi-concrete (148), and kacha/jhupri (84)] in the city. These data were supplemented and also triangulated using FGDs and in-depth key informant interviews with different stakeholders. Stakeholders include government offices, local representatives, NGO and others involved in disaster management activities. A total of 18 NGOs/community leaders/local representatives and 7 officers of the government and city corporations were interviewed. Figure 2 shows the sample plot points on the map which will likely to be inundated at future projected flood of 2050 with land elevation.

Land price data were collected in two different ways – household survey and local land registration offices. Data collection scheme is shown in Table 1.

Table 1. Data collection method and data sources

Data collection method	Data Sources
Primary data collection	Household survey In-depth interview Focus Group Discussion
Secondary data collection	BBS (2010) (Haque 2013) Land Registration Office
Interpolation through GIS	IWM SHELTECH

Figure 2. Locating sample households in GIS map of Khulna



Secondary Data sources

Data on population density was taken from a recent ADB study on Khulna city (ADB 2011). Actual **Land price** data were collected from Land Registration Office in Khulna for each ward for the year 2011 by land classification type (low land, habitable and commercial plots).

GIS data

Land elevation, roads, rivers, land use and plot type related data were collected from Institute of Water Modeling (IWM) and Sheltech (a developer company). **Land elevation** data were taken from digital elevation model (DEM) provided by IWM that was projected in Everest-Bangladesh Transverse Mercator (BTM) coordinate system. This variable was considered in meter unit from mean sea level. Point shape-files were generated using latitude and longitude data of 400 households and were projected using Everest-Bangladesh Transverse Mercator (BTM) coordinate system. **Proximity to nearest road** was calculated from GIS data using the shortest distance method.

Variables

Location characteristics or neighborhood were included to control for local amenities that contribute to the price of a property. Proximity to roads will likely have a positive effect on the value of land. **Road type** (paved and semi-paved) variable is also generated as the nearest road from land parcel and defined as a dummy variable i.e., paved road indicates 1 and 0 other wise. Average **land price** of the study area is BDT 357,888 per decimal and about 89 percent of study area is residential. Plots with high **elevation** and plots located beside a paved road is likely to suffer less damage than a low elevated plot and are likely to fetch higher price in the market. At the same time plot type is an important determinant of land price. Commercial plots are likely to be of higher value compared to non-commercial plots. Therefore, a binary variable **Residential** (=1) has been used in the model. Average **number of days of water-logging** in a plot over the past three years was used as a variable in the model. In terms of characteristics of the locality, we have used population as a proxy variable. **Population** density was not found to be useful because wards with bigger landmass might have low density due to the fact that some areas might be uninhabitable. In terms of characteristics of the buyer, income has been used. Table 2 shows the descriptive statistics¹ for a number of variables (dependent and explanatory) used in the model.

¹ Results were estimated using STATA/SE-11

Table 2. Dependent and explanatory variables: Definitions and descriptive statistics

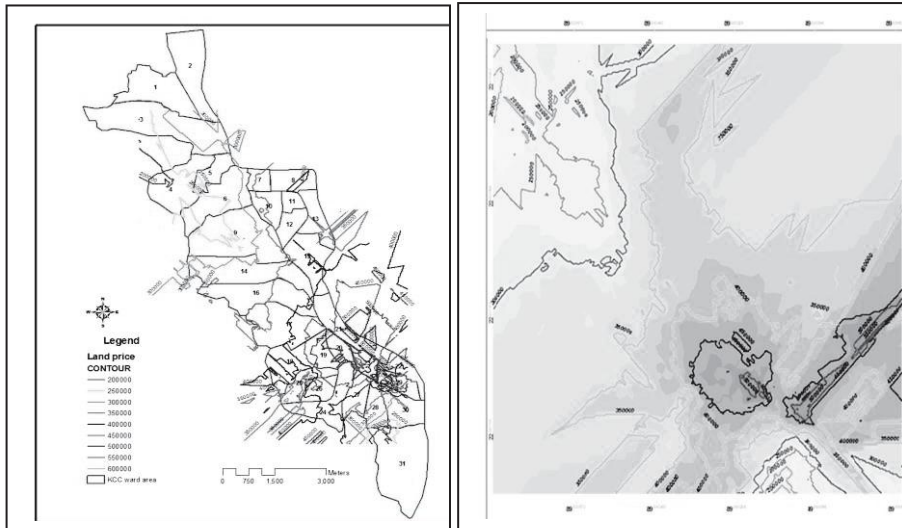
Term	Description	Mean	Std. Dev	Min.	Max.
Land price	Per decimal land value (BDT)	3,58,082	1,16,597.6	1,35,004	7,27,272
Water-logging	Days of water-logging	24.34	31.24	1	180
Plot type	Situated in residential area=1,0 otherwise.	0.89	0.31	0	1
Land elevation	land elevation in meters from mean sea level	2.54	0.72	1.23	4.704
Road type	Situated beside nearest paved road=1, 0 otherwise.	0.60	0.48	0	1
Proximity	Proximity to nearest road in meter	20.62	28.83	0.01	226.21
Population	Population of year 2010 in every ward	33,542.13	9,444.39	18,110	54,420
Income	Income of the resident	13,090	8641.7	2,000	38,000
Structure type	Structure type on plot. Concrete house=1, 0 otherwise	0.41	0.49	0	1

Note: Results were estimated using STATA/SE-11

Kriging analysis

To develop a correspondence between samples (400), with location coordinates (latitude and longitude), land elevation and land price distribution, land price contour map is created using GIS-based Kriging method and is shown in Figure 3. It shows that using GIS based information the price contour map can be produced but in this analysis non-geographic information like proximity to road, plot characteristics, etc. , were not included to measure the impact. Therefore, spatial regression analysis has been used later.

Figure 3. Land price contour across KCC area using Ordinary Krigging method



Note: Results were estimated using ArcGIS 9.3 software

Spatial Regression Model

To begin, OLS estimation technique was used to estimate the coefficients of Equation (4). Except for type of road (L1), plot type (A1) and type of structure in the plot (N3), other explanatory variables were also logged to find a better model (Equation 5).

$$P = \alpha + \beta_1 E + \beta_2 L1 + \beta_3 L2 + \beta_4 A1 + \beta_5 A2 + \beta_6 N1 + \beta_7 N2 + \beta_8 N3 + \varepsilon \quad (4)$$

$$P = \alpha + \beta_1 (\log E) + \beta_2 L1 + \beta_3 (\log L2) + \beta_4 A1 + \beta_5 (\log A2) + \beta_6 (\log N1) + \beta_7 (\log N2) + \beta_8 (N3) + \varepsilon \quad (5)$$

Where, P is price per decimal of land, L1 is plot type =1 for Residential & 0 otherwise, L2 is land elevation measured in meters, A1 is nearest road type =1 for paved road & 0 otherwise, A2 is proximity to road is measured in meters, Ln is natural log, E is duration of water-logging measured in days, N1 is ward population, N2 is income of the household, N3 is type of housing structure =1 for pacca house & 0 otherwise.

Despite transforming the variables into log scale, it was observed that water-logging is highly correlated with land elevation, house type and income of the resident in the plot. Therefore, these variables were dropped from the final model (Equation 6)

$$P = \alpha + \beta_1 \text{Ln (days of water-logging)} + \beta_2 \text{(plot type)} + \beta_4 \text{(nearest access road type)} + \beta_5 \text{Ln (proximity to the nearest road)} + \beta_6 \text{Ln (population of the ward)} + \varepsilon \tag{6}$$

The results from STATA, ArcGIS and Spacestat are shown in Table 3.

Table 3. Ordinary Least Square estimation result [Dependent variable: Land price (BDT)]

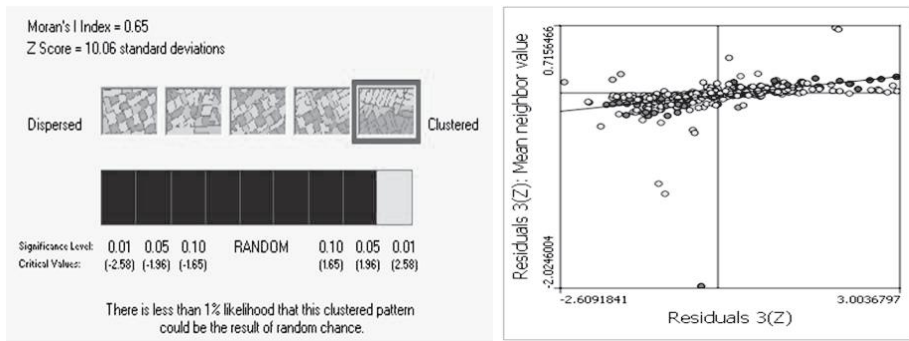
Explanatory variables	OLS-1 [linear]		OLS-2 [lin-log]		OLS-3 [lin-log]	
	Coef	SE	Coef	SE	Coef	SE
Intercept	252673** *	39890	566831**	211611	1192936* **	196174.5
Duration of water-logging (E)	-149.40	187.3	-10243.5*	4907	- 24326.6** *	4654
Plot type (L1)	-3717.75	18218	-2048.7	16524	2897	17279
Land elevation (L2)	54894.4** *	7986	130854.9* **	20674	-	-
Road type (A1)	27455*	11408	20007.2*	11469	30724.9**	11860
Proximity to road (A2)	-362.8*	204.9	-8321.1*	3453.7	-6325.7*	3626
Population (N1)	-1.66***	0.57	- 49394.6** *	18106.9	- 75469.6** *	18540
Income of residents (N2)	1.78***	0.64	24137	8787.7	-	-
Type of structure (N3)	-10518.9	11111	-11267.3	11023	-	-
Summary Statistics						
R ²	0.27		0.29		0.20	
Adjusted R ²	0.25		0.27		0.19	
N			400		400	
AIC			10342.7		10357.78	
Log Likelihood			-5162		-5172.89	
Joint F statistics			20.27		20.51	
Jarque-Bera Test			0.006		0.005	
Breusch-Pagan Test			0.0001		0.003	
Koenker-Bassett Test			0.0003		0.002	
White			0.002		0.002	
Durbin-Watson			0.32		0.33	
Spatial Dependence test (OLS-3)						
Moran's I (error)	-		-		5.701***	
Lagrange Multiplier (lag)	-		-		20.14***	
Robust LM (lag)	-		-		5.78***	
Lagrange Multiplier (SARMA)	-		-		49.18***	

*** Shows significance at 1% level, ** Shows significance at 5% level, * Shows significance at 10% level.

Note:1) Duration of water-logging (E), proximity to road (A2), population (N1) are natural log transformed variable in OLS-2 and OLS-3 model.2) OLS-1 result was estimated using STATA-11/SE, OLS-2 and OLS-3 results were estimated using ArcGIS 9.3, Spacestat 3.6. SE – Standard Error.

Since land price data often suffers from spatial auto-correlation, it has been tested using Moran I-test² and significance level of Lagrange Multiplier (lag). Figure 4 shows the result using a scale from dispersed to clustered. It also confirms that the null-hypothesis of no spatial autocorrelation is rejected at 1% level of significance as the pattern of residual observed from the GIS data is clubbed as ‘clustered’.

Figure 4. Moran’s I test for spatial autocorrelation



Note: First figure was estimated using ArcGIS 9.3 and the second one was estimated using Spacestat 3.6.

To remove spatial autocorrelation from the model, Mukherjee and Caplan’s correction method (Mukherjee & Caplan, 2011) was followed in this estimation using spatial lag model.³ The result with introducing a spatial weight matrix⁴ is shown in Table 4.

² $I = \frac{n \sum_{i=1}^n \sum_{j=1}^n w_{i,j} z_i z_j}{S_0 \sum_{i=1}^n z_i^2}$; Where z_i is the deviation of an attribute for the future i from its mean ($z_i - X$), $w_{i,j}$ is the spatial weight between feature i and j , n is equal to the total number of features, and S_0 is the aggregate of all the spatial weights.

³ $P_1 = \alpha + \rho W P_1 + \ln[\sum_{j=1}^n (\beta_j x_{ij})] + \varepsilon; \varepsilon \approx N(0, \sigma^2 I)$. Here W is the additional regressor.

⁴ Weight matrix W_i represents a measure of spatial proximity between two parcels of land i and j ((Kaltsas, Bosch, & McGuirk, 2000). This study followed $W_{ij} = 1$, if centroid of j is within 100 meter distance of i with k nearest centroids of 1 and 0 otherwise.

Table 4. Spatial lag model result: After correcting spatial autocorrelation[Dependent variable: land price]

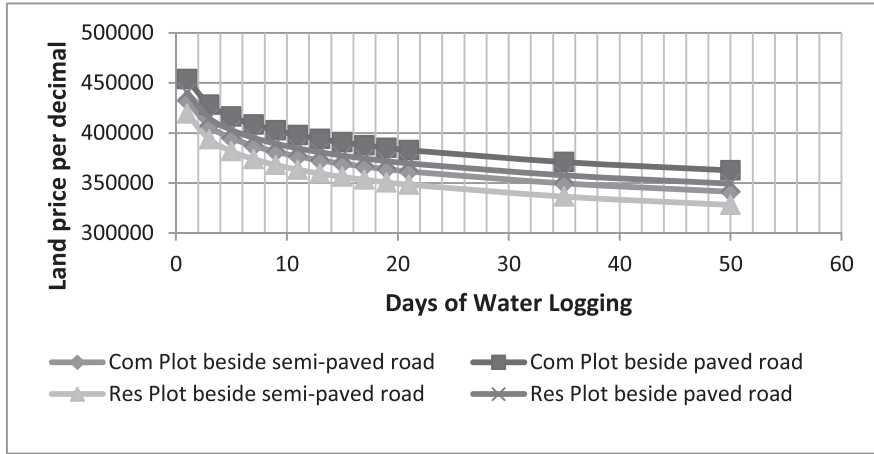
Explanatory variables	Coefficient	Standard error
Intercept	9,96,554.6***	1,79,016
Log of water-logging duration [LNWLD] (E)	-23,267.56***	4,158.64
Plot type [RESILOT] (L1)	-13,200.57	15,653.2
Road type [PROAD] (A1)	21,270.02**	10,650.2
Log of proximity to road [LNDISTANCE] (A2)	-4,683.56*	3,244.26
Log of population [LNPOP] (N1)	-62,871.27***	16,803.83
Rho (Wlandprice)	0.259***	0.029
R-squared	0.35	
AIC	10,284.3	
Log Likelihood	-5,135.15	
Breusch-Pagan Test	0.00005***	
Spatial B-P Test	0.006	
Likelihood Ratio Test	75.48***	
N	400	

NOTE: *** Shows significance level at 1%, **Shows significance level at 5%, *Shows significance level at 10%. Results were estimated using open GeoDa.

The coefficient of the Ln (duration of water-logging) is negative implying that land price is negatively related to the number of days of water-logging at the plot. On average, it means a 6% drop in land price (per decimal) due to 1 day of water-logging⁵. In our sample, maximum duration of water-logging is about 25 days for which the land price will drop by 14%. Figure 5 shows the relationship between land price (per decimal) and days of water-logging along with plot and nearest road type. Commercial plot beside paved road indicates higher price than semi-paved road and with the increase of water-logging (in days), land price decreases sharply upto 21 days. The same trend shows for residential plot beside semi-paved road and paved road, with the water-logging duration changing.

⁵ $[(B_1/1 \text{ day})/\text{Average land price}] * 100$

Figure 5. Relationship between water-logging and land price by Plot and Road Type



At the same time, commercial plots fetch 4% higher price, on average, and paved road increases land price by 6%. Results for Ln (proximity to nearest road) also exhibit a negative spatially dependent pattern with the land value. Using the coefficient it can be shown that for each 10 meter distance land price drops by 0.13%.

Conclusion

This research was designed to find out the pecuniary gains from protecting a piece of land from water-logging. This has been major issue in every urban area in developing countries. Combining the hedonic price models with GIS based models the study shows that benefits of land price do accrue to the plot owners. However, marginal impact of protecting land from water logging is far less compared to other development intervention by the government, like making paved roads and allowing land use change. Study also found that land price decreases for every day of water-logging in urban locations.

In terms of policy prescription, the study reveals a very interesting result. If a parcel of land is not water-logged and a similar second parcel of land is water-logged for a day, the drop in price is nearly 6% but if it is water logged for a 2nd consecutive day the drop is about 8% and for a 3rd day of water logging it is about 9% and so on. This means, incentives to invest to protect land from water logging diminishes for parcels of land which go under water for longer period. On the other hand, a public investment to reduce water-logging significantly increases value of land, nearly 14% in case of Khulna city. This could lead to higher land tax collection for the city governments, a direct benefit from drainage improvement in cities.

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