UNFIB-14

Conference agenda with track

At the UNF - Student Union Building 58

Program Chair: Dr. Saurabh Gupta (s.gupta@unf.edu)
# Program Committee

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Effectiveness Of Agricultural Applied-Scientific Trainings On Professional and Personal Empowerment

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ABSTRACT
The purpose of this research is investigating effectiveness of agricultural applied-scientific trainings in terms of graduates. The method of this research is descriptive. Statistical population consists of all graduates of applied-scientific programs from agricultural education centers between years ١٩٩٩ to ١٩٠٢ including ٢٥٢ persons, which selected through random sampling and surveyed by standard questioner in ١٩٠٢. The results of research show in terms of graduates the effects of these programs on improving communication skills and human relations and knowledge and job skills and content of practical courses and scientific ability and expertise of professors have the most impact in learning and preparing to enter life and job environment. According to this research, there is a positive and meaningful relation between age and grade of students and gender, admission quota and location of programs.

Keywords
Effectiveness, Graduates, Applied-Scientific Trainings

INTRODUCTION
Today education and using intellectual capital are bases for development of societies. The most important dimension of human capital is experienced, skillful and productive work force. The purpose of applied-scientific trainings is teaching skills with related sciences of that skill and educating expert work force with related knowledge and skill to perform their duties and solve their problems. Creating the link between education, skill, job and converting educators to skillful employees is important issue (Ziglary, ٤٠٠٢).

The purpose of applied-scientific trainings is promotion and transfer of knowledge, creating skills, increasing productivity, updating and developing knowledge and experience of workers, developing talents and finding talents for various professions and jobs for performing jobs with appropriate conditions (Rahnama, ٤٠٠٢). Changes in work market and technology revolution caused reviewing content, courses and quality of training programs. Therefore, it is important to consider efficiency and effectiveness of applied-scientific trainings in following areas (Soltani, ٤٠٠٢).

- Determining goal achievement
- Determining visible results of trainings from trainees
- Determining behavior adaptation of trainees with organizational expectations and professional environment
- Determining amount of created abilities in result of training programs

1
Considering applied-scientific trainings role in quality of higher education system of each country and its responsibility in needs. One of the major reasons for implementing evaluation is providing documentary information to improve plans and decisions. Through evaluating educational programs effectiveness, amount of achieved goals will be determined. It is important to have an evaluation system in educational institutes, because development and growth of an educational system needs information about efficiency of that educational system and planning for improvement of actions to achieve goals. By evaluating educational programs, planers and decision makers can supervise actions and make necessary decisions to improve actions and reach higher productivity (Biabangard, 2011).

Results of an appropriate evaluation lead to better actions and correcting actions leads to increase level of plans. Importance of evaluation is that its results cause necessary changes in context of plans. Therefore, the overall purpose of this research was investigating effectiveness of applied-scientific trainings in terms of graduates, which follows below objectives:

- Investigating reaction of graduates toward agricultural applied-scientific programs
- Investigating effectiveness of agricultural applied-scientific programs in personal and professional empowerment of graduates
- Investigating personal and educational characteristics intervening effectiveness of applied-scientific programs

**METHODOLOGY**

This research is a quantitative study. The main method of research is descriptive method. Statistical population consists of all graduates of applied-scientific training programs from agricultural centers between years 1349 to 1392.

The method used in this research for sampling is categorized random sampling. So 8 provinces that had applied-scientific centers having graduates from applied-scientific programs and selected according to geographic distribution placed in 8 geographic regions among them 7 to 9 provinces selected randomly totally 17 provinces selected as statistical sample and all agricultural centers in these provinces considered as sample.

Among registered persons in these centers in applied-scientific programs including 8418 persons and based on KOKRAN formula and population variance, 837 persons selected randomly as a statistical sample.

Data for this research is collected through a questionnaire that is designed according to objectives and with Likert spectrum. Questioners sent for graduates by post and 852 completed questioners received from respondents.

To achieve content and appearance validity, questioners evaluated by a group of experts, executives, planners in Applied Science and Technology University and needed corrections applied to questioners. To determine questioner reliability, questioner distributed among 81 graduates of applied-scientific programs by Kronbach alpha reliability of questioners determined.

Dependent variable of research is effectiveness of agricultural applied-scientific programs in personal and professional empowerment of graduates. We investigated impact of these programs on professional and job related knowledge of graduates, communication skills and problem solving, team working, entrepreneurship, job making, knowledge, and IT related skills. Independent variables including personal and educational characteristics of graduates such as age, gender, grade, entrance time, diploma degree, admission quota, place of program and field of study. Acquired data analyzed after coding with SPSS by descriptive and analytical statistical methods such as frequency, mean, standard deviation.

**RESULTS**

**Personal and educational characteristics of graduates**

Acquired results show 73.5 percent of respondents are male and 26.5 percent of respondents are female. About age composition, 41.3 percent are in range of 20 to 25 and 18.2 percent are below 20, rest of the respondents have higher than 25 years old and mean of respondents age is 21 years. Frequency distribution of respondents according to their diploma shows 71.2 percent of respondents have experimental fields degree and other ones have technical, mathematic and humanities degrees.

Frequency distribution according to place of applied-scientific programs shows number of students and graduates of applied-scientific centers, 11.1 percent of them are from Khorasane Razavi agricultural center and 14.2 percent from Yazd agriculture center, graduates of Sistan Baluchestan, Markazi and Azerbajian had lowest number of respondents in this research.

Rest of the respondents was from centers and campus of Semnan, Karaj, Mazandaran, Bushehr, Fars, Tehran, Kerman, Hamedan and Zanjan. Considering year of entrance, 40.3 percent of respondents entered in year 2001 and earlier, and rest of the respondents were from 2002 and later. Frequency distribution of respondents according to admission quota shows 75 percent of respondents were free admitted students and 25 percent of them were employee applicants. Frequency distribution of respondents according to their field of study, shows most of the respondents were in fields related to animal sciences (11.5 percent) and agricultural sciences (18 percent) and rest of them were in fields of natural resources and soil and water (11.3 percent), engineering, technical and agricultural instruments (18.3 percent),
horticultural sciences (7.5% percent), fishery (7% percent), complementary and converting industries (9.3% percent) and 9.5 percent were in other fields of study.

**Reaction of graduates toward agricultural applied-scientific programs**

To investigate graduates reaction toward applied-scientific programs, usefulness of various factors of educational programs in terms of graduates investigated. Frequency distribution of respondents views about content of practical lessons (mean: ٦.٧) and scientific and expert characteristics of teachers (mean: ٦.٧) had the most effect on learning and preparation for entering work and life environment. Factors such as cultural and student affairs (mean: ٦.٤) library and computer systems (mean: ٧.٨) have lower effects in this context.

In terms of graduates, usefulness of factors such as content of theory lessons and educational technology was medium and usefulness of agricultural educations outside centers, communication with work environment, workshops and laboratory in learning and preparing of graduates to enter work and life environment was medium to high (table ١).

<table>
<thead>
<tr>
<th>Educational Factors</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Changes Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content of practical courses</td>
<td>٥٢٢</td>
<td>٣٧.٧</td>
<td>٤٠.١</td>
<td>٣.٨٢</td>
</tr>
<tr>
<td>Scientific and technical ability of teachers</td>
<td>٠٣٢</td>
<td>٧٦.٣</td>
<td>٤٠.١</td>
<td>٣.٨٢</td>
</tr>
<tr>
<td>Agricultural educations in the center and in educational farms (Internship)</td>
<td>٦١٠</td>
<td>٦٧.٣</td>
<td>٢٢.١</td>
<td>٤.٢٣</td>
</tr>
<tr>
<td>Content of theory courses</td>
<td>٨٢٢</td>
<td>٨٠.٣</td>
<td>٥٠.١</td>
<td>١.٤٣</td>
</tr>
<tr>
<td>Educational Technology</td>
<td>٩٢٢</td>
<td>٨١.٣</td>
<td>٢١.١</td>
<td>٢.٥٣</td>
</tr>
<tr>
<td>Agricultural Educations Outside the Center (Internship)</td>
<td>٥١٠</td>
<td>٥٤.٣</td>
<td>٥٣.١</td>
<td>١.٩٣</td>
</tr>
<tr>
<td>Connection with work environment</td>
<td>٨١٢</td>
<td>٦٤.٣</td>
<td>٧٣.١</td>
<td>٦.٩٣</td>
</tr>
<tr>
<td>Training workshop and laboratory</td>
<td>٧٢٢</td>
<td>٩٥.٣</td>
<td>٣٠.١</td>
<td>٧.٨٢</td>
</tr>
<tr>
<td>Library and computer systems</td>
<td>٧٢٢</td>
<td>٧٨.٢</td>
<td>٤٣.١</td>
<td>٧.٦٤</td>
</tr>
<tr>
<td>Culture and student affairs</td>
<td>٦٢٢</td>
<td>٦٤.٢</td>
<td>٣٣.١</td>
<td>١.٤٥</td>
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</tbody>
</table>

Table ١: Frequency distribution of responds about usefulness of educational factors

**Effectiveness of agricultural applied-scientific programs in terms of graduates**

Considering objectives of agricultural applied-scientific programs and expectations from graduates of these programs, to investigate effectiveness of these programs in work and professional empowerment of graduates on communication, work, problem solving, teamwork, entrepreneurship and knowledge skills of graduates.

Table ٢ shows effectiveness of agricultural applied-scientific programs on human relationships, work and knowledge was higher than other skills.

<table>
<thead>
<tr>
<th>The program Develops:</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Changes Coefficient</th>
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</thead>
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<tr>
<td>Communication skills and human relationships</td>
<td>٧٧٨</td>
<td>٣٥.٤</td>
<td>٧.٨٢</td>
<td>٧٧.٨</td>
</tr>
<tr>
<td>Work skills</td>
<td>٧٧٧</td>
<td>٣٦.٤</td>
<td>١.٦٢</td>
<td>٧٨.٨</td>
</tr>
<tr>
<td>Work and professional knowledge</td>
<td>٧٧١</td>
<td>٣٥.٧</td>
<td>١.٨٨</td>
<td>٧٨.٤</td>
</tr>
<tr>
<td>Problem finding and problem solving skills</td>
<td>٧٨٨</td>
<td>٣٧.٣</td>
<td>١.٧٠</td>
<td>٧٧.٣</td>
</tr>
<tr>
<td>Team and group work skills</td>
<td>٧٢١</td>
<td>٣٧.٢</td>
<td>١.٦٨</td>
<td>٧٧.٣</td>
</tr>
<tr>
<td>Entrepreneurial and employment skills</td>
<td>٧٢٢</td>
<td>٣٧١</td>
<td>١.٦٨</td>
<td>٧٧.٣</td>
</tr>
<tr>
<td>Knowledge and skills related to IT</td>
<td>٧٢٢</td>
<td>٣٧.١</td>
<td>١.٦٨</td>
<td>٧٧.٣</td>
</tr>
</tbody>
</table>

Table ٢: Effectiveness of agricultural applied-scientific programs in terms of graduates
Personal and educational characteristics affecting agricultural applied-scientific programs

In this section, we investigate some personal characteristics such as age, gender and some educational characteristics such as type of diploma, place of applied-scientific program, year of entering program, admission quota, grade of technician program and field of study on effectiveness of agricultural applied-scientific programs in terms of graduates. Therefore, we used correlation coefficient between variables and compared means.

Table 1 shows there is a positive meaningful relationship between age and grade of graduates. Higher age and grade shows higher effectiveness of programs.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Measurement</th>
<th>Correlation test</th>
<th>Correlation coefficient</th>
<th>Significant</th>
</tr>
</thead>
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<tr>
<td>Age (year)</td>
<td>Interval</td>
<td>Pearson</td>
<td>( r = 0.74 )</td>
<td>( p &lt; 0.01 )</td>
</tr>
<tr>
<td>Average grade of training program</td>
<td>Interval</td>
<td>Pearson</td>
<td>( r = 0.9 )</td>
<td>( p &lt; 0.01 )</td>
</tr>
<tr>
<td>Year of entering the program</td>
<td>Ordinal</td>
<td>Spearman</td>
<td>( r = 0.8 )</td>
<td>( p &lt; 0.01 )</td>
</tr>
<tr>
<td>Type of diploma</td>
<td>ordinal</td>
<td>Spearman</td>
<td>( r = 0.1 )</td>
<td>( p &gt; 0.05 )</td>
</tr>
</tbody>
</table>

Table 1. Correlation test between effectiveness of programs and personal characteristics

Table 2 shows there is a relationship between gender, admission quota and place of programs. Males and respondents entered to programs with workers quota relating females and free quota have higher effect on effectiveness of applied-scientific programs.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gender</th>
<th>Admission Quota</th>
<th>Place of program</th>
<th>Field of study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>Sig</td>
<td>T</td>
<td>Sig</td>
</tr>
<tr>
<td>Effectiveness of program</td>
<td>( r = 0.6 )</td>
<td>( p &lt; 0.01 )</td>
<td>( r = 0.46 )</td>
<td>( p &lt; 0.01 )</td>
</tr>
</tbody>
</table>

Table 2 – comparison of effectiveness of programs with personal characteristics

CONCLUSION

Decision making about every educational program needs educational evaluation, since applied-scientific agricultural programs implement to educate expert workforce needed for agricultural section, it is expected from graduates to have related skills in fields of work and professional agriculture, so this research is implemented to evaluate effectiveness of applied-scientific educations in terms of graduates and investigating their reaction towards usefulness of these programs in professional and work conditions.

Results of this research depicted the share of these programs in knowledge increscent and acquired skills in fields of communication and human relationships, work and knowledge compared to other skills are higher and its role in knowledge improvement and its share in knowledge improvement and problem solving skills and team working was at average level.

According to this research findings the content of practical courses and scientific and specific ability of teachers have the most effect in learning and preparation for students to enter work and life environment and factors such as cultural and student and library affairs have less effect, factors such as theory lessons and educational technology have average effect and usefulness of internship educations outside the educational center and relationship with work environment and workshops and laboratory educations in learning to inter work and life environment was in range of average to high.

According to Bastaki (2002) researches the practical content and quality of theory courses have the most impact on job seeking of graduates of applied-scientific programs.

Khoinjed and Feyzabadi (2010) concluded that graduates of agricultural applied-scientific of Khorasan center were satisfied of quality of educational program and according to Feyzabadi (2010), \( \nu^2 \approx 0.5 \) percent of graduates of agricultural
applied-scientific were satisfied from quality of their education. Moeen (٥٠٠٢) research shows the most important effect of these educations is on professional and social skills and scientific abilities. According to findings of this research and necessity to focus on new ways of education, problem solving, experimental learning and design and implementation of programs related to education of entrepreneur and self-employed in educational programs and encourage of students to use new communication systems leads to experience and acquiring work skills.

REFERENCES


The Impact of Foreign Direct Investment in Sub-Saharan African Nations

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Abstract
This research examines the relationship between foreign direct investment (FDI) inflows, economic growth, and domestic investment capital for Sub-Saharan African (SSA) countries. The study had five specific objectives: (a) To determine the relationship between FDI, economic growth, and domestic investment of SSA countries; (b) To examine the determinants of FDI; (c) To investigate the relationship between FDI, market size, and economic growth; (d) To examine the relationship between FDI, domestic investment, and natural resource; (e) To investigate the relationship between FDI inflow, economic growth, and marginal productivity of capital. Data was collected for 46 SSA countries for the period 1995 to 2009. The finding revealed that domestic investment, human capital, infrastructure development, and trade openness promote FDI. The results also revealed strong relationship between FDI inflow and natural resource. In contrast, the result revealed a negative relationship between market size and FDI. The result revealed that the relationship between FDI and marginal productivity of private capital was negative; however, a positive relationship was evident between economic growth and marginal productivity of private capital.

Introduction
The last 30 years have witness a steady increase in Foreign Direct Investment (FDI) around the world (United Nations Conference on Trade and Development, 2006) (UNCTAD). The annual average growth rate of FDI was over 20% in the 1980s and nearly 40% in the 1990s (UNCTAD, 2006). In addition, UNCTAD (2008) reported that global FDI inflow reached a new record high in 2007 with inflows of $1,833,000 billion. Therefore, the record set in 2000 was surpassed by $400 billion. This growth in the level of worldwide foreign capital has captured the attention of policy makers in industrialized and emerging economies (Wang & Wong, 2009). Growth theorist (Solow, 1956; Aghion & Howitt, 1992; Weil, 2005) posited that physical capital accumulation and advances in technological development could improve economic growth performance.

Sussan and Ekanayake (2010) stated that North African region’s exports to the U.S. accounts for nearly 13 percent of region’s overall exports. Their research analyzed U.S. trade flows to North African regions and to identify the effects of trade with the U.S. on economic growth in North African countries. The finding of their research indicated that the need for growing trade relations with North African nations.

In the recent past, Sub-Saharan African (SSA) countries have witnessed substantial increase in the level of inward FDI (UNCTAD, 2009). Foreign direct investment inflow to SSA countries amounted to $12 billion in 2005, $14 billion in 2006, $18 billion in 2007, and $20 billion in 2008 (Jones, 2010). UNCTAD (2009) report on world investments indicated that Africa maintained a 3% share of the global allocation of FDI inflow. This is a miniscule share compared to 15% global allocation to South, East, and Southeast Asia, and the 6% global allocation to Latin America and Caribbean countries.

Sussan and Ekanayake (2010) stated that for a complete study on economic growth, the focus has to be not only on export-led growth hypothesis, but FDI as well. Although there are numerous studies dealing with the effects of trade on growth. Recent literature has highlighted the role of both exports and foreign direct investment (FDI) on economic growth.

Statement of the Problem
Studies have shown that FDI played a significant role for economic growth in Western economies and in most emerging economies of Asia and Latin America (Bailey et al., 2009). However, in Africa, particularly in the SSA,
the idea that increasing level of FDI inflow can stimulate economic growth is a controversial one. Divergence exists regarding the level, nature, and direction of FDI. One area of controversy is the criticism of Multinational Enterprise (MNE) for directing the bulk inward FDI to oil exploration and mineral resource sectors of SSA countries. Butkiewicz and Yanikkaya (2010) argued that the concentration of FDI inflow into gas and oil exploration industries have done little to benefit ordinary citizens or even stimulate economic growth. Similarly, other critics have question the rationale for directing FDI inflow to an industry (oil exploration and mineral resources) that is capital intensive, and that does very little to establish links and stimulate growth with the rest of the economy (Bush, 2008; Faras & Ghali, 2009). Such actions, diverts attention from investing in other sectors such as manufacturing for export (Faras & Ghali, 2009).

In last decade, SSA countries have witnessed new resource seeking and market seeking FDI inflows from China and India (Cleeve, 2009). According to Cleeve (2009) FDI inflow to SSA was caused by rapid economic expansion in China and India, and fierce competition from Asia. The notion that FDI inflow can be beneficial to receiving SSA countries is irrefutable, what is questionable is how to assess the effects of FDI on the wider economic and developmental gain to SSA countries. Cleeve (2009) asserted that a balance mechanism could benefit SSA countries. This mechanism could allow African governments to consider both country-specific and sector specific cost and benefit. Cleeve (2009) maintained that the inflow of FDI may be beneficial but that the resulting high profit outflow might turn out to be huge cost. Consequently, the expected benefit in terms of development might not materialize.

Underscoring this view is UNCTAD (2005) report on Economic Development for Africa, which shows that profit outflows from many SSA countries have in the recent years surpassed total FDI inflow. In addition, tax incentives provided by many SSA countries in other to attract FDI, follow an immediate opportunity cost in lost government revenue. The UNCTAD (2005) study indicated that gold exports in Ghana for the period 1990-2003 rose threefold to about $893.6 million, of which Ghana received about 5% in revenue. This research study investigated the relationship between FDI inflow, economic growth, and domestic investment capital of 46 Sub-Saharan African countries. In addition, the objective was to determine the degree of the relationships of the dependent and independent variables by employing quantitative correlational research method and design.

**Purpose of the Study**

The purpose of this quantitative correlational study was to examine the extent of relationship between FDI inflow, economic growth, and domestic investment capital formation for 46 SSA countries. Equally, the principal objective was to investigate whether the level of FDI inflow have an effect on economic growth and domestic investment capital formation for SSA countries. In addition, the goal was to examine whether the level FDI inflow to SSA countries is more productive than domestic investment.

The raw data collected for use in this study comprised of 14-year panel data for SSA countries that covers the period from 1995 to 2009. The research design includes the collection of available data on 46 SSA countries that reflects their GDP, gross fixe capital formation, FDI inflow, trade openness, market size, human capital development, gross savings, infrastructure, and financial risk. All of the data collected was examined to assess the relationship between FDI inflow, economic growth, and domestic investment capital. The 46 countries of Sub-Saharan Africa represented the geographic area for this research. Secondary data sources were comprised of the World Bank database, peer review articles, and textbooks. The above-mentioned data sources provided a rich source of information about economic and business indicators of countries of SSA.

**Research Questions**

This research used time series data to test empirically whether FDI inflows have a significant impact on economic growth, and domestic investment capital formation of SSA countries over the period of 1995-2009. Against this backdrop, the following five research questions are central to the study:

- **RQ1**: What is the relationship between FDI inflow, economic growth, and domestic investment capital in SSA countries?
- **RQ2**: What origin-specific antecedents motivate transnational firms to engage FDI activities in countries of SSA?
- **RQ3**: What is the relationship between inward FDI, market size, and economic
growth of SSA countries?
RQ4: What is relationship between FDI, domestic investment capital, and natural resource?
RQ5: What is the relationship between inward FDI, economic growth, and the Marginal productivity of private capital?

**Hypotheses**

To respond to the research questions, five hypotheses were tested. This approach allowed for examination of the relationships that exist between FDI, economic growth, and domestic investment capital.

**Hypothesis 1**
- \( H_0 \): There is no statistically significant relationship between FDI inflows, economic growth, and domestic investment capital.
- \( H_1 \): There is a statistically significant relationship between FDI inflows, economic growth, and domestic investment capital.

**Hypothesis 2**
- \( H_0 \): There is no origin-specific antecedents motivating multinational firms to undertake FDI in SSA countries.
- \( H_1 \): There are origin-specific antecedents that motivate transnational firms to make FDI in countries of SSA.

**Hypothesis 3**
- \( H_0 \): There is no statistically relationship between inward FDI, market size, and economic growth of SSA countries.
- \( H_1 \): There is a statistically relationship between inward FDI, market size, and economic growth of SSA countries.

**Hypothesis 4**
- \( H_0 \): There is no statistically significant relationship between FDI inflows, domestic investment capital, and natural resource.
- \( H_1 \): There is statistically significant relationship between FDI inflows, domestic investment capital, and natural resource.

**Hypothesis 5**
- \( H_0 \): There is no statistically relationship between increase levels of FDI Inflow, economic growth, and marginal productivity of private capital.
- \( H_1 \): There is a statistically relationship between increase level of FDI inflow, economic growth, and marginal productivity of private capital.

**Research Method**

According to Fawcett and Garity (2009), correlational research cannot establish causation. Hence, the designation of the independent and dependent variable in this study was not considered as denoting that change in one variable causes a change in another variable. The rationale for using the correlational research design is two-fold. First, correlational design can guide researchers in recognizing relationships between variables. Second, the correlational design can guide researchers by describing the direction (positive or negative) and the strength of variables without introducing an intervention variable (Fawcett & Garity, 2009).

**Design Appropriateness**

The correlational research design is appropriate for this study because the objective is to determine the relationships between FDI, economic growth, and domestic investment. Equally, the purpose of the study is to measure the strength and directions of the variables by applying model-testing designs such as multiple regressions. Creswell (2008) underscored this view by asserting that the correlational research design allows researchers to predict the outcomes between variables.
Data Collection
Collier and O'Connell's 2006 study and the World Bank 2010 classifications provided the basis for selecting the 46 countries from SSA. Based on data availability, the research employed panel data from 46 SSA countries for 14 year periods between 1995 and 2009. The nature of this study requires the use of available data for the countries under study. Therefore, primary data was applicable for this research. The World Bank, UNCTAD, the International Monetary Fund, the International Labor Organization, and the International Telecommunication Union provided the data for the study.

Data Presentation and Analysis
The data panel for this study contains observations from 46 SSA countries. This study examined the relationships between FDI, economic growth, and domestic investment capital formation for SSA countries over the period 1995-2009. The analysis was used to test the strength of the associations between the dependent variable and the explanatory variables.

An examination of cross-sectional panel data highlights the importance of considering variables across countries. In this study, multiple regressions were used to examine the effects of FDI inflow into SSA countries. Equally multiple-regression was employed to investigate the strength of the relation between FDI, economic growth, and domestic investment capital formation. The selection of 46 SSA countries for which data was available in the years 1995 to 2009 formed the sample population from which analysis of this research was based. The analysis was done using multiple regression estimation, with resulting $F$-test, $t$-test, and $p$-values calculation.

To synthesize the research questions and hypotheses, this study incorporated panel data into a regression model following the work of Krifa-Schneider and Matei (2010); Jajri (2009). Accordingly, the model took the form:

$$
\begin{align*}
FDI_{it} &= \alpha XGDP_{it} + XGFCF_{it} + XHCF_{it} + XTO_{it} + XMS_{it} + XINFRA_{it} + XFR_{it} + XNRF_{it} + XNREP_{it} + XMPC_{it} \\
\Delta GDP &= \gamma_0 + \gamma_1 \Delta FDI + \gamma_2 \Delta GFCF + \gamma_3 \Delta HCF + \gamma_4 \Delta TO + \gamma_5 \Delta MS + \gamma_6 \Delta INFRA + \gamma_7 \Delta FR + \gamma_8 \Delta NRFFF + \gamma_9 \Delta NREP + \gamma_{10} \Delta MPC
\end{align*}
$$

where GDP$_{it}$ = gross domestic product (in current $U.S.$) of country $i$ in period $t$; FDI$_{it}$ = foreign direct investment, net inflow (BoP, current $U.S.$) of country $i$ in period $t$; GFCF$_{it}$ = gross fixed capital formation of country $i$ in period $t$; HCF$_{it}$ = human capital of country $i$ in period $t$; TO$_{it}$ = trade openness of country $i$ in period $t$; MS$_{it}$ = market size of country $i$ in period $t$; Infra$_{it}$ = infrastructure of country $i$ in period $t$; FR$_{it}$ = financial risk of country $i$ in period $t$; NRF$_{it}$ = natural resource (fossil fuel consumption) of country $i$ in period $t$; NREP$_{it}$ = natural resource (energy production) of country $i$ in period $t$; and MPCI$_{it}$ = marginal productivity of capital of country $i$ in period $t$.

The analysis and discussions follow the sequence of the proposed research questions and hypotheses: the equations used for the Models are presented below:

Research Question 1: What is the relationship between FDI inflow, economic growth, and domestic investment capital in SSA countries?

**Model 1:**
$$
FDI_{it} = -1.236E8 + 0.017GDP + 11614457.21GFCF - 62979.17MS + 1746597.32TO + 504901.59FR + 10878659.18Infra - 3984721.39HC + 504901.59FR + 10878659.18Infra - 3984721.39HC
$$

**Model 2:**
$$
FDI_{it} = -30548804.94 + 0.017GDP + 12145570.95GFCF + 366563.65TO + 422790.58FR - 7030202.64INFRA
$$

**Model 3:**
$$
FDI_{it} = -1.970E8 + 0.018GDP + 10813643.72GFCF - 2774130.20TO + 254020.92FR + 6341124.08INFRA - 78458MS
$$

**Model 4:**
$$
GDP = 2.223E10 + 22.04FDI - 9.552E8GFCF + 14.00MS - 4.195EB - 53.46FR + 2.585E8 + 4.746E8
$$
In Model 1, FDI was used as dependent variable in estimating the strength of the relationship between FDI, economic growth, and domestic investment capital. The result shows positive and significant relationship between economic growth (0.017GDP), domestic investment (11614457.21GFCF), and FDI inflow. The relationship is significant at $p < .001$ and $p < .047$ respectively. The positive relationship suggest that an increase in economic growth (GDP) by 1% increase FDI inflow by $1.7$ million (0.017 *100) and an increase in domestic investment by 1% increase FDI inflow by $11,614,457.21$ million.

In Model 2, market size was dropped from the estimation and, in Model 3, human capital was dropped from the estimation. The results in Model 2 and Model 3 show a positive and significant relationship between economic growth and domestic investment. The importance of infrastructure was evident in the estimation of Models 2 and 3 because the relationship was positive and significant between infrastructure and the control variables. This result underscores the importance of infrastructure development in attracting FDI and in contributing to economic growth in SSA countries. Model 4 was used to estimate the strength of the relationships between the GDP (control variable), FDI, and domestic investment capital. The result of Model 4 shows a positive relationship between FDI inflow (22.04FDIi) and the GDP (economic growth). The relationship is significant at $p < .001$. The finding implies that economic growth is important in explaining FDI inflow in SSA countries.

The estimated results suggest that a strong nexus exists between FDI, economic growth, and domestic investment capital for the SSA countries studied. The implication of the result is that FDI plays a key role in stimulating growth especially in countries with abundant natural resources (Equatorial Guinea, Nigeria, Gabon, Angola, Chad, Sudan, and Mozambique). These countries have attracted the bulk of FDI inflows in the last decade. The expectation is that FDI inflows should boost economic growth by attracting new technology and encouraging domestic productivity through technology spillover.

**Research Question 2:** What origin-specific antecedents motivate transnational firms to engage FDI activities in countries of SSA?

**Model 1**

\[
\text{FDI}_{it} = -2.122E8 + .011GDP_{it} + 3990683.28GFCF_{it} + 11.05HC_{it} - \
67213.36MS_{it} + 6260583.28GFCF_{it} + 179362.54FR_{it} - 1295307GS_{it} + 
6473933.10TO
\]

**Model 2**

\[
\text{GDP}_{it} = 6.107E9 + 3.969FDI_{it} - 2.749E8GFCF_{it} + 630.67HC_{it} - 
1478741.63MS + 63480642.42INFRA_{it} + 
4672324.49FR_{it} - 
11464442.86FR_{it} + 
6473933.10TO
\]

**Model 3**

\[
\text{FDI}_{it} = -1.186E8 + .017GDP_{it} + 1068731.99GFCF_{it} + 285399.43FR_{it} - 
40696.71MS_{it} + 6327611.53
\]

The result for Model shows a positive relationship between FDI and the explanatory variables, and the statistical estimation reveals that the GDP (.011GDPit) is positively related to FDI. The relationship is statistically significant ($\rho < .001$). In addition, the result reveals a positive relationship between domestic investment (3990683.28GFCFit) and FDI, but the relationship is not significant ($\rho = .200$). Interestingly, in Model 1, market size (-67213.36MSit) is negatively related to FDI and, despite the inverse relationship, the relationship is significant ($\rho < .001$). The result for Model 2 shows a positive relationship between GDP and the explanatory variables. Interestingly, in Model 2, domestic investment (-2.749E8GFCFit) is negatively related to the GDP and the relationship is significant at $\rho < 001$. As expected, financial risk (-11464442.86FR) is negatively related to the GDP and the relationship is significant at $\rho < .023$. This implies that a decrease in financial risk can lead to an increase in economic growth in SSA countries.

The result for Model 3 shows positive relationships between economic growth (.017GDPit), domestic investment (10687314.99GFCFit), and FDI. The relationships are significant at $\rho < .001$ and $\rho < .022$, respectively. The positive relationships suggest that an increase in economic growth (GDP) by 1% increases FDI inflow by $1.7$ million and that an increase in domestic investment (GFCF) by 1% increases FDI inflow by $2.2$ million.
The estimated results for the second research question indicates that economic growth, domestic investment, market size, human capital development, infrastructure development, trade openness, and gross savings can promote FDI. Similarly, the regression results also revealed that FDI inflow, domestic investment, market size, and infrastructure development can promote economic growth. Asiedu’s 2002 work on the determinant of FDI in Africa tends to underscore the finding of this study.

Research Question 3: What is the relationship between FDI, market size, and domestic investment?

\[
\begin{align*}
\text{Model 1} & \\
\text{FDI}_{it} &= -1.263E8 + .017\text{GDP}_{it} + 4414889.25\text{GFCFi}_{it} + 4483211\text{TOi}_{it} - \\
& 14618\text{MSi}_{it} - 258844\text{GSi}_{it} \\
\text{Model 2} & \\
\text{GDP}_{it} &= 4.674E9 + 5.805\text{FDI}_{it} - 1.55E8\text{GCFCi}_{it} + 71452656\text{GSi}_{it} + \\
& 586048.72\text{MSi}_{it} + 42298131\text{TOi}_{it} \\
\text{Model 3} & \\
\text{MSi}_{it} &= -1161.21 - 4.286E7\text{FDI}_{it} + 5.088E9\text{GDP}_{it} + 55\text{TOi}_{it} + 2.12\text{GSi}_{it} \\
\text{Model 4} & \\
\text{FDI}_{it} &= 1.011E8 + .021\text{GDP}_{it} - 6976\text{MSi}_{it}
\end{align*}
\]

Foreign direct investment inflow was used as the dependent variable for the estimation of Model 1. The result shows positive and negative relationships between the outcome variable and the explanatory variables. The statistical estimation of Model 1 shows that economic growth (0.017GDP<sub>it</sub>) is positively and significantly related to FDI (p < .001). The positive relationship suggests that an increase in economic growth by 1% can increase FDI inflow by $1.7 million. In contrast, market size (-14618MS<sub>it</sub>) is negatively related to FDI and the relationship is not significant (p = .096). This is an important finding because the expectation is that large markets are supposed to attract FDI in SSA countries.

In Model 2, the GDP (economic growth) was used as the dependent variable. The statistical estimation for Model 2 shows that FDI (5.805FDI<sub>it</sub>) and market size (586048.72) have a positive and significant relationship with GDP. Both relationships are significant at p < .001. Furthermore, the statistical estimation for Model 2 shows that FDI inflow (5.805FDI<sub>it</sub>), market size (586048.72MS<sub>it</sub>), trade openness (42.36TO<sub>it</sub>), and gross savings (71452656GS<sub>it</sub>) are positively related to economic growth and the relationships are significant (p < .001, p < .001, p < .040, and p < .003, respectively). Conversely, domestic investment (-1.555E8GCFCi<sub>it</sub>) is negatively related to economic growth, and the relationship is significant (p < .001). This is an interesting finding because domestic investment is a significant determinant for economic growth.

In Model 3, the market size was used as a control variable and domestic investment (GFCF) was dropped from the estimation in order to evaluate its absence on the general fit of the model. The results for Model 3 reveal a positive but insignificant relationship between economic growth (1.641E8, p = .056) and market size. An interesting note in Model 3 is that FDI (-4.796E7, p < .024) is negative and is significantly related to market size; and, when compared to Model 1 (with FDI as the control variable), market size (-14618.34, p < .096) is negatively related to FDI and the relationship is not significant. This is an important finding because the expectation is that large markets have the tendency to attract FDI inflow. Therefore, FDI and market size are supposed to move in the same direction.

The finding for Model 4 is especially important because FDI, GDP (economic growth), and market size formed the basis for the relationship considered. Foreign direct investment was used as the dependent variable for the estimation. The result for Model 4 shows that economic growth (0.021GDP<sub>it</sub>, p < .001) is positively and significantly related to FDI. Alternatively, market size (-6976.98MS<sub>it</sub>, p = .490) is negatively related to FDI and the relationship is not significant.

Research Question 4: What is relationship between FDI, domestic investment capital, and natural resource?

\[
\begin{align*}
\text{Model 1} & \\
\text{FDI}_{it} &= -.11.084 + .624\text{GFCFi}_{it} - .001\text{MSi}_{it} + .072\text{TOi}_{it} + .054\text{NRFFi}_{it} + 2.15\text{NREP}_{it} \\
\text{Model 2} & \\
\text{FDI}_{it} &= -3.880 - .001\text{MSi}_{it} + .184\text{TOi}_{it} + .113\text{NRFFi}_{it} + 3.50\text{NREP}_{it} \\
\text{Model 3} &
\end{align*}
\]
Foreign direct investment was used as the dependent variable for the estimation of Model 1. The result of Model 1 indicates that domestic investment (.624GFCit), trade openness (.072TOit), and natural resources (2.150E5) are positively related to FDI and that the relationships are significant ($p < .001$, $p < .003$, and $p < .029$, respectively). The finding implies that domestic investment and natural resources play a significant role in attracting FDI inflow to SSA countries.

The statistical estimation of Model 2 did not include the values of domestic investment because the goal was to examine the relationship between FDI and natural resource. Controlling for market size and trade openness, the result shows that fossil fuel and energy production were used as a measure for natural resources (.113NRit; 3.504E-5NRit) and are positively and significantly related to FDI ($p < .001$ and $p < .008$, respectively).

The result for Model 3 shows that trade openness (.180TOit) is positively related to domestic investment, and the relationship is significant, $p < .001$. The result for Model 4 shows positive relationships between the two types of natural resource variables used (.029NRff, 1.512E-5NRep) and FDI but the relationships are not significant ($p = .248$ and $p = .141$, respectively).

Research Question 5: What is the relationship between inward FDI, economic growth, and the Marginal productivity of private capital?

Model 1

\[
\text{FDI}_t = -10.615 - .095\text{GDP}_t + .712\text{GCF}_t - 4.484E-8\text{MPC}_t + .102\text{TO}_t - .001\text{MS}_t - .015\text{GS}_t
\]

Model 2

\[
\text{GDP}_t = -2.022 + 2.10\text{GCF}_t + 2.034E-7\text{MPC}_t + .065\text{TO}_t + .268E-5\text{MS}_t + .003\text{GS}_t
\]

Model 3

\[
\text{FDI}_t = 2.486 + .586\text{GDP}_t + 6.368E-9\text{MPC}_t
\]

Foreign direct investment was used as the dependent variable in Model 1. The statistical estimation of Model 1 considered FDI and the marginal productivity of capital (MPC) while controlling for market size, gross savings, and trade openness. The result for Model 1 shows that MPC (-4.484E-8MPCit) is negatively related to FDI and that the relationship is not significant ($p = .293$). In contrast, domestic investment (.712GFCit) and trade openness (.102TOit) are positively related to FDI and the relationships are significant ($p < .001$ and $p < .001$, respectively).

The result for Model 2 shows that domestic investment (.210GFCit), marginal product of capital (2.034E-7MPCit), and trade openness (.102TOit) are positively related to economic growth, and that the relationships are significant ($p < .001$, $p < .001$, and $p < .001$, respectively). The finding for Model 3 was especially significant because FDI, economic growth, and the marginal productivity of capital formed the basis for the relationship considered. The result shows that economic growth (.586GDPit) is positively and significantly related to FDI ($p < .001$). The marginal productivity of capital (6.368E-9MPCit) is also positively related to FDI. However, the relationship is not significant ($p = .912$).

Limitations of the Study

This study has several limitations. First, qualitative characteristics such as the similarity of nations, growth potential for individual countries, competition, and the uniqueness of each country were not considered. Such characteristics play a significant role in the attractiveness of a country relative to its neighbors and can influence the pattern of FDI inflow.

Second, this research was conducted using variables developed from macro panel data for individual countries. The study was constrained in that the incorporation of micro level data and variables that affect FDI, economic growth, and domestic patterns was not considered. Future research could be undertaken that will incorporate micro level variables in the study of SSA countries.
Third, this study was constrained by two significant problems that have confronted growth researchers dealing with developing countries (especially SSA countries). The first problem deals with the difficulty of finding data. The problem of finding complete data (for specific periods) is more prevalent in unstable countries (Congo, Democratic Republic, and Sierra Leone) than they are in stable countries such as Ghana and South Africa. In this study, data for specific periods for countries such as Congo Democratic Republic, Equatorial Guinea, Liberia, and Sierra Leone were not available.

**Conclusion**

The rationale that guides FDI decision-making is complex and versatile and no single universal hypothesis applies to every country. The literature suggests that multinational firms engage in FDI activities because of different reasons. The motives for why firms engage in FDI activities overseas is a function of many different factors, which include industry type, business nature, international orientation, level of international experience, and corporate strategy.

**References**


ABSTRACT

The purpose of this study is to examine the current political and economic situation in modern Russia and assess the current opportunities as well as challenges for new business development there. The current state of marketing in Russia is evaluated. Based on the analysis promising areas for international business development in Russia are discussed and evaluated.

Keywords

International business in Russia, marketing, business opportunities, challenges for the business

Eleven time zones, the largest country in the world territory wise, a variety of peoples, cultures and languages, religions, buyers’ behavior, different income groups and lack of distribution infrastructure is what international businesses face when considering doing business in Russia. Russia, indeed, is very different from the Western countries, and that is very challenging for companies trying to find their market in Russia, because many of the management and marketing strategies, that proved to be successful in the Western markets simply won’t work in Russia. Let us consider some historical facts. If we were to briefly compare Russia and the US, Russia borders more than 10 different countries and the US only borders 2; Russia has a much harsher climate, which makes it much more difficult and expensive to supply the country with home made food products than for the US; Russia fought many wars on its territory, just in the Second World War the country has lost over 20 million people, while the US has never fought a war with a foreign country on its land, and lost less people in all wars combined than in the civil war. Finally, unlike the US, which developed a network of roads all across the country under the President D. Eisenhower, Russia has developed a sophisticated train network, but it does not have anything close to the road infrastructure, which the US has developed, hence logistics and distribution represent another challenge for international business. The dictatorial administrative system which used to manage the country had collapsed after being in place for over 70 years and the transition to the new management system under complex economic conditions did not go smoothly, while it was very difficult for the new emerging businesses to adequately adapt and survive, which was never an issue for the US. Russia had no experience in market economy and western management strategies until perestroika of the 90s (the reforms
started by M. Gorbachev), which also has to be taken into account by international businesses when considering Russia as their target market.

Let us examine the current political and economic situation in Russia and try to assess it from the standpoint of risk/opportunity to foreign businesses.

When V. Putin was the Prime Minister of Russian Federation, on February 2, 2012 he declared the following: “According to the majority of independent studies, Russia is among the top five economies with the greatest potential for attracting foreign direct investment.” (Deloitte, 2013). He clearly continues the policy of welcoming foreign direct investment after winning the Presidential elections in Russian Federation on March, 4, 2012. According to the Federal State Statistics Service (FSSS) of Russian Federation, the change in volume of foreign investments by countries in the economy of Russia has grown for almost all countries with the exception of Switzerland based on the graphical data comparison for the first quarter of 2012 and the first quarter of 2013 (FSSS, 2013).

If we were to examine the Russian political system more carefully, we would find out that the President’s term length in Russian Federation was extended from four to six years in late 2008, which went into effect after the 2012 election. The next Presidential elections will be held in March 2018. When we look at the Russian legislative branch, we can infer, that the elections to the lower house (the State Duma) which were held on December 4th, 2011 were clearly won by the United Russia Party, lead by the Prime-Minister D. Medvedev, with 49.6% of the votes. (The World Factbook: Russia, 2013). The outcome of this investigation is the conclusion that the political system is rather stable, focused on acquisition of foreign direct investment, interested in International Businesses to develop in Russia. In fact, the Russian government itself outsources work to foreign companies and invites them to work in different sectors, from marketing to finance and urban planning. The two recent examples, to name a few, are: 1) hiring the American Public Relations Company Ketchum, a subsidiary of OmnicomGroup several years ago to promote a positive image of the country being a reliable energy supplier as well as a safe and profitable haven for foreign investments. It has played a significant role in Russian policy. From 2006 to 2012, Ketchum was paid almost $23 million in fees and expenses on its Russia account, as well as $17 million on an account for Gazprom, the Russian state-controlled energy giant. In the first six months of 2013 it was paid $1.9 million on its Russia account and $3.7 million on the Gazprom account (Logiurato, B., Businessinsider, 2013). 2) Goldman Sachs, led by Chief Executive Officer Lloyd C. Blankfein, signed a three-year agreement with Russia’s Economy Ministry and the Russian Direct Investment Fund this year to help set up meetings with investors and better communicate government decisions, according to Sergey Arsenyev, the company’s managing director of investment banking in Moscow. Blankfein is also a member of Prime Minister Dmitry Medvedev’s advisory committee on turning Moscow into a financial center. “It is in the long-term interest of Russia and its people to attract foreign investment,” Michael DuVally, a spokesman for New York-based Goldman Sachs, said in an e-mail. “That is why we are pleased to play a role helping to make Russia more open to foreign investors.” (Harper, C. Bloomberg. 2013).
Let us investigate the Russian economic system in greater detail. The Russian currency, the ruble is officially linked by the Central Bank of Russia to the Dollar and the Euro: the weight of in the dollar in one ruble is 55% and the weight of the Euro is 45%. (Central Bank of Russia, 2013). The current discount rate in Russia is 8.25%, with the interest on personal installment loans currently offered by banks exceeding 20%. The interest rate on credit cards for Citibank, Russia, for example, exceeds 30%. It is rather evident, that financial services, banking especially with focus on micro-credits is one of the many great opportunities for Western financial businesses in Russia. To prove it even more, let’s look at some numbers:

Based on the data from the Russian Newspaper “Sankt-Peterbyrgskie Vedomosti” for 2012, the income of the population has grown 2.7% in the first part of 2012 compared to first half of 2011, but the turnover of retail trade has grown 7.1%. The demand for mortgages has gone up 60% (same reference period) and the credit debt of the Russian population have reached the level of two Federal budgets. The reason for that is poverty: the Russian GDP is twice lower than that of Germany or France, and the real estate very expensive: average Russian would have to save all the income for 10 years or more to be able to buy a 1 room apartment with average monthly payments: 20000-25000 rub. per month. Mortgage conditions: real estate as collateral, 30% down payment. Statistics for overall mortgage market: ½ 2012: 430 bln. Rubles vs. 273 bln. Rubles ½ 2011. Mortgage debt as of July 1, 2012 has reached 1.67 trillion rubles. Interest on mortgages went up from 11.6 to 12.2% (rubles). This example clearly demonstrate the potential for financial services and affordable housing development in Russia.

The automobile dealers are making significant progress in Russia as well: Car sales in the first half of 2012 went up 14% compared to ½ 2011, whereas in the European Union car sales dropped 6.8% in the first half of 2012 compared to ½ 2011 according to Sankt-Peterbyrgskie Vedomosti.

It is also important to note, that Russia has become part of WTO in 2012, which really opened up the borders to International companies. Also, Russia has one of the lowest personal income taxes in the world: it is 13% for Russian citizens irrespective of the amount they earn. This is way the famous French actor Gerard Depardieu recently announced he would give up his French passport after the government criticized his decision to move abroad to avoid higher taxes. He applied for the Russian citizenship and has received it.

There are a number of other factors that in general make operations of foreign business more profitable in Russia than in mature markets. First of all, the official minimum wage in Russia is a bit under $200 per month. Typically, a Western company is spending approximately 40% of their net profits on their employees. In Russia this number is at best 15-20%. Also, the prices for automobiles, hotel rooms and many other goods and services are typically higher in Russia than in the West. This could be best explained by the fact that many businesses in Russia are at their development, growth or expansion stage of the Industry Lifecycle Curve, whereas in the mature market the companies are struggling in the maturity and decline stages. This has to do with fierce competition, which has not really developed yet in many sectors in Russia – from hospitality to retail. Inevitably, competition will develop and revenue management would be the ultimate remedy for those who would want to stay in business. So far, revenue management techniques and solutions, when different conditions/terms of trade are applied to exploit different buying behaviour or willingness to pay are hardly even existent in Russia, which makes it a very promising field. Another Western concept, which seems to be extremely promising, is the concept of shared economy. In the US and Europe companies, founded on the shared economy principle like Zipcar, Kitchit, Zimride, GetAround, SideCar, Relay Rides, Zokos, ReDigi, Netflix, Neighbourgoods, Trade school, SnapGoods, LifeBook, ThredUp, Vayable, TaskRabbit, Home Exchange, Airbnb, Couchsurfing, LooseCubes, SpareRoom and others are doing extremely well. This year Avis bought Zipcar vehicle sharing firm for $500 million. In Russia this market niche is basically vacant.

However, there are also challenges which International companies have to look out for. From the marketing standpoint, Russia is not really a “country”; it is rather a huge sparsely populated landmass to which no unified marketing concept applies. What sells perfectly all right in Moscow, may not impress buyers in St. Petersburg, and even less so in Siberia (Repiev, 2011). Russian markets are so dynamic that selling points that work today may become out of place tomorrow, which puts a lot of pressure on businesses. Also, marketing in Russia is mostly a qualitative rather than quantitative exercise, mostly because it is much harder than in the West to get reliable data to analyze, if possible at all. It really implies that emphasis is necessarily on marketing as a craft, experience and intuition often being more productive than formal quantitative methods, which Western companies are not used to be doing any more. In Western markets, firms are used to well-defined ready-made distribution channels. In Russia, they are just taking shape in some industries, which also makes it very difficult for businesses to progress.

It is clear that Russia offers ample business opportunities along with a consumer market hungry for new products, brands, and services, which, most importantly, is ready to “digest” them. Russia is among the world’s fastest-growing economies in terms of domestic market size. Consumer purchasing power in Russia is four to eight times greater than in China, India and certain European countries (USDA Foreign Agricultural Service Report, 2013). If fact, it is private consumption, in our opinion, which in many ways vehicles economic growth in Russia.
In 2005 the richest ten percent of the population accounted for 30% of Russia’s income, and the poorest 10% accounted for 2% of the income (Library of Congress, country profile: Russia, 2006). Considering the total population, 1.4 million consumers had no limitations on their spending and could afford any luxury brand. Since then, the number of wealthy Russian has increased and the middle class started to emerge as well. Therefore, Russia could be viewed as a heaven for luxury brands, which is indeed true. The top 50 most searched for luxury brands in Russia include such giants as BMW, Audi, Volvo, Mercedes Benz, Chanel, Swarovski and others (Digital Luxury Group, 2012).

The ranking and analysis of the most searched-for brands within the luxury industry is based on the unbiased search inputs originating from Russian global luxury consumers in the Yandex.ru search engine. The information was derived from a sample of over than 150 million consumer queries on the leading search engine in Russia (Luxury Society, 2012). It became part of the culture in modern Russia to “assess” somebody based on the quality of garment the person is wearing, the type of car the person is driving, the perfume the person is using, etc. especially in the business world. The logic behind it is quite simple: if he or she (representing a particular business or company) displays luxury brands, the outcome of the assessment is that the person (and the company he or she works for) is successful, doing well and it would be to the mutual benefit to engage in joint business activity. The luxury cars in Russia rule the road, the Russian car market is booming and is expected to become Europe’s largest car market by 2014. If we were to segment the luxury market in Russia based on consumer interest, we would obtain the following results: cars – 74.65%, fashion – 8.09%, beauty – 7.81%, hospitality – 3.71%, watches – 3.4%; jewelry – 3.33% (Luxury Society, 2012). This is a clear signal to the luxury industry to be more active with approaching the Russian market.

It is quite obvious, that building trademark awareness is critical in Russia. The main reason Pepsi is so successful in Russia, is because it was in Russia for decades and the brand is well recognized by the consumers. It the first Western pop drink to be offered in the Soviet Union and loyalty has been in place ever since. It was a great example of a barter agreement between the Soviet State and Pepsi, when Pepsi got the exclusive rights to market Stolichnaya Vodka in the US and the Soviets got the Pepsi syrup in return. An example of failing to recognize the need to build trademark awareness was Nike. When the company came to Russia, it assumed that Nike products would be popular by default among the consumers. However, Russia was a long-time the land of Adidas, and loyalty to the Adidas brand was in place. Nike really overestimated the demand for their products, only because they did not establish the trademark awareness. Recognizing cultural differences is very critical for doing business in Russia also. These differences need to be carefully studied on a per product category basis and absolutely have to be taken into account. We have already addressed cultural differences in relation to the luxury brands, but another good example which would illustrate the differences in the way the average consumers view certain products in Russia is the Bacardi experience. When it came time to advertise the Bacardi alcohol products in Russia, the company focused on featuring a big bat displayed on the billboards across Moscow (Repiev, 2011). The reason for choosing the bat image was because it was the symbol of wisdom in the market of origin, and the company was planning to capitalize of that in their marketing campaign in Russia. The mistake they made was not studying the cultural differences between the two markets, while for Russian consumers the bat was not associated with wisdom, but rather was viewed as a terrifying monster, which sure did not help the sales.

Conclusions

Clearly, Russia offers ample opportunities for new business development. The key advantages of investing and doing business in Russia could be summarized as follows: the country displays steady economic growth over the past decade, including the emergence of the Russian middle class; it represents one of the largest consumer markets worldwide; after joining the WTO in 2012 Russia has already started lowering the trade barriers; has no capital flow restrictions and hence is more open to foreign investment compared to other countries; it offers the most educated and skilled labor force in the world at a much lower cost than the developed countries; has ample natural resources; has a unique geographical position; offers a much more attractive taxation system than the developed and many of developing countries; has a stable social and political system; offers extensive government support, encouraging foreign investment and business development. In order to succeed in Russia, however, international businesses have to display flexibility and understanding. Categorizing the products in accordance with the expectations of the customers, building trademark awareness, recognizing cultural differences form the keys to success in the Russian market.

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EXAMPLES OF TOTAL CO₂ EMISSIONS DECREASE BY FREIGHT TRANSPORT DISTANCE

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ABSTRACT
The total emissions related to the transport of a consignment are obviously far from proportional to the distance between consignor and consignee. A hypothesis is that it is possible to identify certain distance intervals, in which the total CO₂ emissions from transporting a consignment actually decrease by distance. Some reasons are that the transport is generally better planned, consignments are more densely loaded in the vehicle, a larger quantity is accumulated before discharge, the consignment is consolidated with other consignment on vehicles or in terminals, a larger and more emission efficient vehicle is used, non-road traffic modes are used.

The purpose of this Research in progress is to expand the theoretical work by identifying real-world examples where a longer transport distance implies less emissions, categorize the examples and indicate under which consequences they can offer lower environmental impact.

Keywords
Environment, transport distance, emissions,

INTRODUCTION
The total emissions related to the transport of a consignment are obviously far from proportional to the distance between consignor and consignee. A hypothesis is that it is possible to identify certain distance intervals, in which the total CO₂ emissions from transporting a consignment actually decrease by distance. An earlier article has addressed the issue qualitatively identifying that the longer the distance, it is more likely that:

• the transport is generally better planned  
• return loads are more actively sought for  
• consignments are more densely loaded in the vehicle  
• a larger quantity is accumulated before discharge  
• the consignment is consolidated with other consignment; on vehicles or in terminals  
• a larger and more emission efficient vehicle is used  
• non-road traffic modes are used

The purpose of this article is to expand the theoretical work by identifying real-world examples where a longer transport distance implies less emissions, categorize the examples and indicate under which consequences they can offer less emissions. It is also attempted to, in a set context, define the distance intervals where the operators take actions to improve the utilization of vehicles. In essence, this is empirical work based on earlier conceptual theory development.
METHODOLOGY
The work departs from a literature study and the earlier deductive analysis structuring the issue of the distance-dependence of CO2 emissions. In-depth interviews and data gathering from major logistics service providers are used for finding examples of individual logistics services with decreasing total CO2 emissions by distance and attempting to identify the distance intervals where the phenomenon occurs. The tool NTM Calc 3.0 is used for the emission calculations.

IMPLICATIONS FOR RESEARCH
In the public debate, freight transport is often accused of not being sustainable. This sometimes the case, but the debate would gain from being more knowledge-based and particularly by challenging the prevailing simplistic assumption that goods sourced from long distances are non-sustainable. Consumers, for instance, would make better purchasing choices if equipped with more insight into the emissions from local vs. global sourcing. Freight transport is often made a scapegoat and logistics researchers are responsible for feeding the debate with knowledge. Hence, a practical impact of the article is to question the simplistic view that CO2 emissions are proportional to the transport distance, structure the arguments why it is not true and provide examples of low emissions from comparatively long transport services.

CONCLUSION
It is acknowledged that freight transport is contextual and a truly complex field for generic analysis. It can still be argued that organizers of freight transport find reasons for seeking alternatives to direct transport with a transport means adapted to the consignment size when distances increase. If successful, we will provide examples showing that total CO2 emissions can decrease in certain distance intervals.
CONSIDERATIONS ON THE ROLE OF IS IN SOCIAL INNOVATION PROCESSES

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ABSTRACT
This research-in-progress paper considers social movements as a particular form of social innovations. In such initiatives, diversified groups form which tackle pressing social problems. Information systems (IS) can function as integrators in this context. This paper poses the question, in which way research on IS can be introduced to the area of social innovation. Three facets of social innovation processes (SIPs) are introduced and discussed, and several insights can be formulated. First, it appears practicable to include IS research into a trans-disciplinary research approach. Second, it seems realistic that the integrative function of IS can contribute to the governance of SIPs. Third, regarding tools for knowledge integration, in the IS scientific community, research methodologies are already in use which are applicable in diversified groups as they exist in SIPs. The presented facets might allow creating boundary conditions for IS research which specifically answer to the requirements of social innovation.

Keywords
Social innovation, information systems design, innovation management, trans-disciplinary research, diversity, knowledge integration

INTRODUCTION
It is a recent phenomenon that social innovation has gained increasing attention in its mission to improve societies’ capacities for solving pressing problems in all areas of life (Mulgan, Tucker, Ali, & Sanders 2007). Social innovation deals with improving the welfare of individuals and community, by addressing novel approaches to education and training, employment, consumption or participation (OECD 2011). While in the business context, vast literature on innovation exists, the social aspects of business innovations or social innovations outside the business focus are rarely addressed (Pol and Ville 2009). In current literature, the areas of social innovation, social entrepreneurship and nonprofit management are often intermixed (Dacin, Dacin & Tracey 2011).

Social movements can be considered as a particular form of social innovations (Mulgan et al., 2007:4). In general, they form bottom-up, starting from locally embedded interest groups, in order to tackle specific social problems. Such movements often form initiatives which undergo various development stages—similarly to those present in a business context—as soon as the movement’s members could demonstrate worthiness of an idea, and (financial) resources and commitment of followers or supporters such as incubators have been assured.

For the management of innovation in companies, various methods have been proposed in order to systematically support innovation. Among them are Quality Function Deployment (Akao 1990), Failure Mode and Effect Analysis (FMEA), Lead User Analysis (Von Hippel 1986) and many others more. These methods have been widely and successfully applied by firms, yet their inter-organizational use still generates high obstacles (Hummel, van Rossum, Verkerke, & Rakhorst 2002). This is due to the particular difficulties arising when knowledge from different domains needs to be integrated (Mulgan et al. 2007). In social innovation processes, in addition, the persons and organizations which can potentially contribute to an initiative are characteristically diverse, a topic which has only recently gained attention in the business context as well (Bridgstock, Lettice, Özbilgin, & Tatli 2010).

The issues of knowledge exploration and management, as well as of supporting knowledge management with information systems (IS) have been advanced considerably by the IS research community (e.g. Alavi and Leidner 2001; Brown and Duguid 1998; Pipek, Wulf, & Johri 2012; Schultzze and Leidner 2002). Several authors, like Orlikowski (2002), have emphasized in this respect that knowing and development of knowledge is an “ongoing social accomplishment”. At the same time, approaches to provide IS that are adaptive to evolving knowledge processes are rare (Markus, Majchrzak, & Gasser 2002).
These factors outlined above meet in the challenge to manage social innovation processes, and to support them with appropriate information systems and information technology (IT) tools: (i) the systematic (methodological) support of the innovation process, (ii) the integration of diverse knowledge domains, (iii) the support of innovation management, and in particular knowledge and project management, with appropriate IT tools.

The role of IS in the context of social innovation has up to now gained only marginal attention, although the role of IS in society has recently been rediscovered (Galliers 2003). In this conceptual paper, I want to address this issue by proposing an approach to the design of IS for social innovation processes. Here, it is not so much the design process which is in focus, but rather the creation of boundary conditions which inform the design process. In the remainder of this paper, three facets are outlined, first, considerations on the trans-disciplinary dimension of research, second, on the governance of social innovation processes, third, on the significance of knowledge in this context. Finally, conclusions for an integrative research program, and for the design of IS are drawn.

CONSIDERATIONS ON THREE FACETS OF SOCIAL INNOVATION PROCESSES

Trans-disciplinary research

Trans-disciplinary research considers complex societal problems (Bergmann, Jahn, Knobloch, Krohn, Pohl, & Schramm 2010). The idea is to overcome disciplinary boundaries and knowledge fragmentation by establishing critical dialogues, integrating approaches, concepts, tools and methodologies from the involved disciplines (Darbellay, Cockell, Billotte, & Waldvogel 2008). In addition, and as a core element, expertise from the considered societal field is taken into account on an equal basis. The trans-disciplinary research process targets at creating new knowledge about how to integrate actors and existing solutions or solution strategies. A first step is thus to constitute a common research subject, which comprises aspects from both, science and the living environment in focus. An integrated understanding of a problem is then further developed along two tracks (Bergmann et al. 2010: 28). First, in a societal discourse, public administrations and institutions, non-governmental organizations, companies and politics discuss strategies, concepts and measures; in a scientific discourse, second, theoretical and methodical questions are to be discussed by academia, research institutions, and funding organizations, both eventually involving further stakeholders (Bergmann et al. 2010). While from the first track, the societal problem is defined and public awareness is created, from the second, controversial knowledge, missing methods, or new solution approaches are to be identified.

Various methods have been proposed in order to integrate those two disparate worlds (Bergmann et al. 2010: 47). Among them are integration through (i) theoretical frameworks, research questions, hypotheses formulation, and method development, (ii) evaluation methods, model development and application, (iii) artefact, service and product design, and (iv) formation of inter-disciplinary teams, stakeholder participation, actor inclusion, and awareness creation. All of these methods are well known in the area of IS design and development.

For the design of IS intended to support social innovation processes, from existing literature, only vague requirements can be assumed in terms of process support, data processing, communication and cooperation functionality, technical infrastructures etc. It seems plausible to call for an inclusion of the IS design process into the overall methodology of trans-disciplinary research outlined, eventually as part of both tracks of action as sketched before.

Innovation Management

A core aspect in the success—or failure—of social innovation initiatives has been the management of respective projects (Mulgan et al. 2007: 21). During formation and development of social innovation processes, as in any innovation process, several phases can be distinguished which advance the “readiness level” of the innovation (Tao, Probert, & Phaal 2010). In these phases, the interplay of various factors influences the positive development of a project. Among them are (i) actors, skills and competences, (ii) organization, management and capabilities, (ii) resources, technical issues, knowledge, and (iii) objectives, as well as economic and legal boundary conditions. These factors can obtain varying significance, and evolve in different ways, during an innovation project. In particular, the stakeholder parties or actors involved and their roles are changing. These changes affect governance issues such as power relationships, responsibilities for promotion of the entire process, resource combination, and organization. Appropriate governance is required in particular for supporting the uptake of systematic innovation methods such as Quality Function Deployment, and promoting them throughout the process.

Studies intended towards understanding these changes in the government of social innovation processes, or practical guidelines for management, have not been proposed by research so far. An open question is thus how governance of social innovation processes can be conceived. Developments in research on services might provide fruitful influence in this respect, if social processes can take advantage of—being part of—an emerging landscape of services, connecting for-profit and not-
Diversity, knowledge integration and dialogue stimulation

While the characteristic diversity of actors in social innovation processes can be considered a demanding challenge, it doubtlessly offers a unique opportunity also. Seizing this opportunity puts high requirements on the ability to manage conflicts, group cohesiveness, and identity formation, among further factors (Bassett-Jones 2005). Research on group dynamics proposes that different types of diversity can have different effects on group and task performance (Larson 2010: 311). They stimulate or impair the creation of synergy, understood as gains in performance which are due to group interaction. An important role is played by the integration of knowledge, which is reinforced by methods for (self-) reflection within (role playing) dialogues (Leonard 1996). Gaming approaches are intended to support learning, and to initiate collective behavioral change as a further driver of a social development process.

This encourages the need for applying techniques for active and effective inclusion of all participants to a social initiative, into a common and shared development process. Such techniques initiate contacts, foster discussions and exchanges, create momentum, and eventually lead to shared identities and shared knowledge. Various techniques exist for both, small and large groups and are broadly applied in practice (Bunker and Alban 1997; Larson 2010: 259).

Research on the facilitation of mentioned techniques within social innovation processes might benefit from an inclusion of existing IT tools from the areas of social networks and social inclusion. The analysis of which functionalities will be conducive, and which hinder the adoption of IT tools will apparently have to be carried out in-practice, in dialogue with the users, thus challenging IS researchers to follow participatory, action research approaches to this end. Such approaches are already followed broadly in the IS communities on Human-Computer Interaction and several others.

CONCLUSION

This conceptual paper considers social movements as a particular form of social innovations. It poses the question, in which way research on IS design can be introduced to the area of social innovation processes. The paper drafts considerations from an early research initiative on the design of IS for social innovation processes. It builds on a restricted literature basis which however opens up several promising avenues for research.

Three factors are identified which are likely to open up opportunities for IS research: (i) the systematic (methodological) support of the innovation process, (ii) the integration of diverse knowledge domains, (iii) the support of project, knowledge, and innovation management.

Some considerations on how IS research can be integrated are discussed and some insights can be formulated. First, it appears practicable to include IS research into the overall approach of trans-disciplinary research. Second, it seems realistic that the integrative function of IS can contribute to issues concerning the governance of social innovation processes. Third, in the IS community the research methodologies to engage in the demanding tasks of providing tools for knowledge integration in diversified groups are already in use, and can presumably applied in the context of social innovation.

Together, these factors might allow creating boundary conditions for IS research which informs the design process in a way that specific tools and artefacts can be provided for social innovation. There could be high rewards to the IS research community, taking into consideration that “innovation” is an exploratory process rather than an operating routine and repeatable process as is often suggested in literature (O’Connor 2008). Participating in social innovation might inspire innovative IS research, too.

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ABSTRACT
Efficient short sea shipping is vital for trade and industry in Northern Europe. About 90% of the volume of goods exported or imported to Sweden is transported by ships in at least one part of the transport chain. It is therefore important to find cost-effective solutions for shipping in order to improve the global availability of goods in Northern Europe and to reduce the environmental impact caused by the transport industry. The purpose of this paper is to develop a container shipping concept—the Short Sea Shuttle Concept. The concept involves transportation of containers between a number of ports and a hub port with functional inland connections, fixed schedules, and high reliability and departure frequency. High punctuality is an essential factor for the shuttles, as it allows a transfer of more time-sensitive cargo to sea, which currently is transported by other modes.

Keywords
Short Sea Shipping, Short Sea Shuttle, Dry Port, Sustainability

INTRODUCTION
Over the last decade, the container shipping industry has improved its performance at an impressive pace and is now the backbone of global trade. Currently about 80% of the world’s trade volumes are transported by sea (UNCTAD, 2008). The maritime part of the transport chain has employed ever larger ships to cope with increasing transport demands and to facilitate lower unit costs, with the latest vessels reaching a capacity of 18,000 TEU. To fully utilize the economies of scale, activities in ports and hinterland operations must match these large volumes. Despite heavy investments in container terminal capacity, larger ships and larger flows of containers have led to a situation where many larger ports face capacity shortages in both port operations and hinterland connections. Consequently, for some ports the weakest link in their transport chain is their back door, where congested roads or inadequate rail connections cause delays and raise transportation costs. For several years the European Commission has had an active policy promoting short sea transport in order to reach its sustainability targets for the transport sector, because shipping is energy efficient per transported unit and is able to solve traffic congestion. In the latest EU White Paper on transport (European Commission, 2011), there is a clear focus on the transfer of cargo from road to rail and sea. Despite its advantages, short sea shipping has not yet been developed to its full potential in Northern Europe. In order to be profitable, a shipping service requires critical cargo volumes, so the fixed costs can be distributed over a larger number of units. Well-developed shipping services are of great importance for the creation of an efficient transport system and to accumulate more goods in the port in order to achieve economies of scale in the port activities. Therefore, the purpose of this paper is to define a concept of Short Sea Shuttles that is intended as a complement to existing land-based and waterborne transport services. The goal is to develop the concept and analyze the conditions under which the concept is competitive. The work has been carried out in close cooperation with the port and shipping industries in order to facilitate an implementation of the shuttles. The focus so far has been on the development of the concept for transport within, to, and from Sweden. Realization of the Short Sea Shuttles Concept implies that new markets can open and that future capacity shortages in rail and road infrastructure can be handled. In addition, the integration of the sea shuttles with existing dry ports will lead to a gradual development of the “motorways of the sea”. Short Sea Shuttles aiming at improving transportation and trade in Northern Europe will better integrate the countries around the Baltic Sea and part of the North Sea. A successful implementation of Short Sea Shuttles would also mean that road transportation in Southern and Western Sweden can be reduced. Intermodal transport has far from reached its full market potential in some markets. Therefore, better coordination between different modes of transport need to be given higher priority.
METHODOLOGY
The literature review, together with a workshop discussion and interviews, resulted in the description of the Short Sea Shuttle Concept and its benefits for the actors of the transport system. Literature studies were carried out throughout the research period with the purpose of identifying the state of research and areas of interest for further investigation. A broad literature review on the subjects of short sea shipping and dry ports was carried out initially, followed by an examination of reports and investigation on infrastructure requirements and new regulations. Face-to-face interviews were conducted with nine actors of the transport system, such as port authorities, port operators, shipping companies, transport consulting companies, transport operators, and main customers. Semi-structured, open-ended interviews were chosen as the most appropriate method to explore the issues, as it allowed the interviewees to introduce new issues and the interviewer to more fully follow up on topics. In accordance with recommendations by Stuart et al. (2002), a case study protocol consisting of a semi-structured interview, based on research questions, was developed in order to insure reliability. The interviews were recorded and transcribed. In addition, the interviews were supported by site visits. In order to ensure validity, triangulation (Stuart et al. 2002) with multiple means of data collection was also carried out. Therefore, apart from having interviewees from different transport sectors, secondary data sources were also used, such as internal company reports, internet based documents, and archival records. Some additional phone interviews, as well as e-mail correspondence, were carried out in order to fill the gaps. Furthermore, workshops related to the subject studied were carried out with researchers, practitioners, and actors of the transport system or potential customers. The workshops ended with the development of a preliminary SWOT analysis that was further developed after interviews and literature reviews.

FRAME OF REFERENCE
Short Sea Shipping
Short sea shipping is often defined as the movement of cargo and passengers by sea between ports that do not require an ocean crossing (European Commission, 1999). A liner provides regular services between specified ports according to a fixed sailing schedule and usually carries cargo for a number of different shippers (UNCTAD, 2004). The main advantages of short sea shipping are an alleviation of congestion, a reduction of the environmental impact, a decrease in overall costs to the shipper, and lower risk for theft and damage (PROPS, 2008). As a consequence, the European Commission has an active policy to promote short sea shipping to meet the goals of the European sustainable transport policy (European Commission, 2011). Short sea shipping currently accounts for nearly 40% of all cargo moved in Europe, and its volumes have increased over the years while its market share has remained stable (European Commission, 2012). In 2010, total short sea shipping in the EU-27 was close to 1.8 billion tons of goods and represented 62% of EU-27 maritime transport of goods (Eurostat, 2012). The largest type of cargo is liquid bulk, which accounted for nearly half (48%) of total short sea shipping of goods to and from the EU-27 (ibid). Dry bulk is the second largest type of cargo, making up 19% (ibid).

Traditionally, the maritime transport industry has been divided into two major sectors: liner shipping and tramp shipping. Liner shipping provides regular services between specified ports according to timetables and usually carries cargo for a number of different shippers, whereas tramp shipping is irregular in time and space and the vessels are usually chartered to carry a full shipload of cargo (UNCTAD, 2004). Some liner services commute between two ports and others visit a string of ports in a fixed sequence. Furthermore, a third general mode of operation in shipping is sometimes also used, in which the cargo owner or the shipper controls the vessels: industrial shipping (Christiansen et al., 2004). Important factors that influence customers’ choice of shipping company for their cargo are space available onboard the vessel when needed, service frequency (Matear and Gray, 1993; Mangan et al., 2002), and transit time reliability, e.g., punctuality (Matear and Gray, 1993; Murphy and Hall, 1995; Cullinane and Toy, 2000; Mangan et al., 2002). Good predictability and reliability of cargo movements in liner shipping are important issues for manufacturers and traders because they can lead to inventory savings (Lagoudis et al., 2002). Thus, these requirements are important for the shipping companies to meet.

The main advantages of short sea transport (SSS) (adapted from Blonk, 1994):

- Compared with inland transport, SSS is cost-effective with respect to the relationship between investment and the resulting increase in transport capacity. Sea-lanes require no expensive construction or maintenance. An increase in SSS in most parts of the EC will not require expensive additional infrastructure in the ports.
- Short sea shipping has a relatively good safety record and is generally regarded as environment-friendly in terms of levels of pollution and noise.
- Short sea shipping is also more energy-friendly than land transport.
- In general, there is spare capacity available in SSS, and cargo could be moved to this mode of transport without high investment in additional vessels or supporting infrastructure.
• Short sea shipping can contribute to the development of remote and peripheral regions in an efficient and cost-effective manner.

• Many industrial centers in the EC are less than 400 km from a port and a large number are linked to seaports by rivers or canals, which should facilitate door to door transport on water.

Despite these advantages, short sea shipping has not yet been developed to its full potential. Obstacles may include complex documentation and administrative procedures in the ports (MarNIS, 2006). Ship-owners in SSS do not sufficiently use existing electronic data interchange systems. Other problems that SSS might face are related to environmental issues. SOX Emission Control Areas (SECA) limit the sulfur content of marine fuel oil to 1.5% per mass and is already applied in designated SECAs, like the Baltic Sea, the North Sea Area, and the English Channel. Furthermore, the IMO’s market based measures limit carbon dioxide emissions from shipping. All of these issues will have a negative effect on SSS cost structure. In order to maintain their market position, seaports have to improve their competitiveness by adding various value-added services to their service range while keeping the price adequate. It is also of great importance that they have a functional hinterland access that might be obtained by a well-developed feeder system as a complement to land-based infrastructure.

The number of vessels in the global merchant fleet has grown by 20% since 2002 (Copenhagen Economics, 2012). Meanwhile, the average size of vessels has increased, which means that the capacity of the global merchant fleet has grown even more. Despite a strong maritime shipping economy and an increase in the Swedish-controlled fleet as a whole, the Swedish-flagged fleet declined significantly, from 40% to 28% during the past five years (Copenhagen Economics, 2012). Measured in terms of capacity, the decline has gone from 20% to 13%, which depends to some extent on the fact that more new ships are registered abroad, but also because there is an increased out-flagging of existing ships (Copenhagen Economics, 2012).

Dry ports

Terminals, the physical plants that meet the business needs of a specific marketplace, may take many forms, depending on the characteristics of the landscape, their proximity to the seaport, and their location relative to the main rail infrastructure. This conscious and strategic development of intermodal terminals in the seaport’s hinterland is approaching what we denote as dry ports. A dry port is an inland intermodal terminal directly connected to seaport(s) by rail, where customers can leave/pick up their units as if directly at a seaport (Roso, 2007). This definition emphasizes a connection to a seaport as well as the environmental benefit and promotion of intermodal transport. Essentially, four functions take place at the goods terminal: transfer of cargo, mostly unitized, between two modes; the assembly of cargo in preparation for its transfer; the storage of cargo awaiting pick-up; and delivery and the logistical control of flows (Slack, 1999). In addition to all functions mentioned above, services such as maintenance of containers, customs clearance, and other value-added services should take place at a dry port terminal in accordance with customers’ needs. The quality of the access to a dry port and the quality of the road–rail interface determines the dry port’s performance. Scheduled and reliable high-capacity transportation to and from the seaport is therefore necessary. Potential benefits resulting from dry port implementation are very country- and transport system-dependent and may include: increased seaport capacity, increased seaport productivity, reduced congestion at seaports and in the seaport cities, reduced risk for road accidents, lower environmental impact, may serve as a depot, improved seaport access to areas outside its traditional hinterland, and support of regional development. The concept of Short Sea Shuttles is intended as a complement to existing land based dry port operations and therefore functional coordination between different modes of transport is of high importance.

Policy context

Even though maritime transport is viewed as an environmentally friendly mode of transport regarding CO2 emissions, other emissions, such as sulfur dioxide, nitrogen oxides, and particles, are high for shipping compared to other transport modes, especially when no abatement technologies are used (Hjelle and Fridell, 2010). It is harder to regulate the shipping industry than trucking, since it has a lower degree of national control, and regulation must therefore be imposed on an international scale to be efficient. As a result of this, emissions of CO2 from shipping were exempted from the Kyoto protocol since they were not able to allocate emissions to individual partner states. However, the MARPOL Annex VI regulations cover emissions of CO2, SO2, and NOx from combustion in marine engines. The shipping industry is the highest contributor to SOx emissions due to high sulfur levels in marine fuels. The issue of regulating sulfur in marine fuel was brought up at the Marine Environmental Protection Committee (MEPC) of IMO in 2005 and the first regulation of sulfur content on marine fuel entered into force in 2006. The main focus, at the beginning, was on acidification and “acid rain,” but recently the focus shifted to problems associated with the emission and atmospheric formation of sulfate particles that have an impact on human health, visibility, and the climate. Only a handful of ships have exhaust gas treatment for SOx abatement on board and the amount of SOx emissions from ships is therefore usually solely dependent on the sulfur content of the fuel. Due to increased shipping activity and the absence of regulations, the SOx emissions from international shipping have increased (Svensson,
2011) while emissions from land-based sources have decreased. In October 2008, IMO adopted stricter limits for sulfur in marine fuel. These new rules state that the limit for sulfur in fuels used in SECAs will be reduced from 1.0% to 0.1% by 2015, and globally from 3.5% to 0.5% by 2020 (possibly postponed until 2025). Fuels with higher sulfur content will be allowed if exhaust gas cleaning systems are used (SMA, 2009). Malmqvist and Aldén (2012) divide expected consequences of the sulfur directive into maritime consequences, such as change of fuel (resulting in increased cost) and optimization of routes and other measures; logistic consequences, such as modal back-shift and intermodal opportunities; and industrial consequences, such as competitiveness and decreased incentives for investments. With the assumption that fuel costs represent 30% of the total cost for transport of vessels, the internalization of the external costs for sulfur, nitrogen, and carbon dioxide will lead to an increase of the total transport cost by 12-20%, according to a study by Vierth (2012). Other studies have concluded consequences that include a 5-6% increase in transport on rail and road, respectively, and a 7-10% decrease in shipping transports (Malmqvist and Aldén, 2012). Notteboom (2010) also indicates that MARPOL regulations on sulfur may lead to goods being moved from sea to land based transport modes in response to elevated transport costs. The concept of Short Sea Shuttles has to face those challenges.

FINDINGS

The results from the interviews (Table 1) are categorized in six sections according to the main issues discussed: expected function, type of cargo, requirement for implementation, strengths, weakness, and vessel size. These show that different actors in the transport system do have different opinions and expectations for the concept; however, what they all have in common is a positive attitude towards the concept and its application. The main purpose with the concept, according to the respondents, is the possibility to shift cargo to sea and to increase cargo throughput. Base cargo and non-time sensitive goods are suggested to be the most suitable cargo, but re-positioning of empty containers has been lifted as an issue. However, the most important factor for establishment of the concept is available volume.

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Expected function</th>
<th>Type of cargo</th>
<th>Requirement for implementation</th>
<th>Strengths</th>
<th>Weakness</th>
<th>Vessel size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeder operator</td>
<td>Cargo shift from land to sea</td>
<td>Warehouse to Warehouse</td>
<td>Existing cargo flow Operator</td>
<td>Environmentally friendly</td>
<td>Increased lead time</td>
<td>700-1,000 TEU</td>
</tr>
<tr>
<td>Ocean shipping company</td>
<td>Possibility to re-position empty containers Additional transport concept in the region</td>
<td>Non JIT Low value cargo such as steel, forest products, and chemicals</td>
<td>Vessels</td>
<td>Enhanced possibilities</td>
<td>Decreased punctuality</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Flexibility</td>
<td>Increased lead time</td>
<td></td>
</tr>
<tr>
<td>Satellite port</td>
<td>Increased cargo throughput</td>
<td>All except JIT and production Manufacturing goods aimed for production Food and products for supermarkets</td>
<td>Need for large base customers in start-up process Organized as financially competitive concept</td>
<td>More cargo – increased income Punctual and reliable mode of transport for customers</td>
<td>Non-existing concept Conservatisms in the industry amongst potential customers</td>
<td></td>
</tr>
<tr>
<td>Hub port</td>
<td>Attract new cargo</td>
<td>All except JIT and production</td>
<td></td>
<td>Increased port utilization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cargo owner</td>
<td>Possibility for large batches</td>
<td>Not time sensitive</td>
<td>Flow of suitable cargo</td>
<td>More transport options</td>
<td>Increased lead time</td>
<td></td>
</tr>
<tr>
<td>Maritime consultant</td>
<td>Cargo shift from land to sea</td>
<td>Not time sensitive</td>
<td>Public-Private partnership Political force</td>
<td>Existing infrastructure</td>
<td>Conservatism</td>
<td>700-1,200 TEU</td>
</tr>
<tr>
<td>Freight Forwarder</td>
<td>Cargo shift Transport alternative</td>
<td>Low value cargo</td>
<td>Well integrated in supply chains Public-private cooperation</td>
<td>Possible environmental benefits</td>
<td>Flexibility</td>
<td></td>
</tr>
</tbody>
</table>
The starting point of the development of the Short Sea Shuttles is rail shuttles (dry port concept) and traditional feeders. The idea was to combine the two concepts to suggest a shipping concept that is more integrated in the transport chain and with higher reliability than a traditional feeder, as shown in Table 2. According to Douet and Cappuccilli (2011) there is a lack of concise and unambiguous definition for short sea shipping, which creates problems for policy makers as well as for researchers. Therefore, all variety of different definitions on short sea shipping affects the description of the Short Sea Shuttle Concept as well. In this report, the rather broad EC (1999) definition is used, where short sea shipping is defined as the movement of cargo and passengers by sea between ports that does not involve an ocean crossing. Stopford (1997) also uses a simple criterion and regards it as maritime transport within a region serving port-to-port feeder traffic in competition with land transport. The definition used in this work does not include any other criteria, but the geographical scope of the routes. Other criteria suggested by other authors are: technical criteria such as ship size, cargo handling methods, ports, networks (e.g. Marlow et al., 1997), and ship characteristics (e.g. Criely and Dean, 1993). Further, Paixão and Marlow, (2005) made the definition more comprehensive by including criteria such as ship type, markets, logistics requirements, and service offerings.

The research has resulted in a definition of the Short Sea Shuttle Concept:

"High-frequency short sea liner shipping of standardized load units, highly integrated into supply chain with functional inland connections”.

The definition does not specify the size of the vessels because this depends on the volumes available on a specified route. The same applies to the frequency, which should at least be weekly, but how often within a week is determined by market and customer demands. Table 2 clarifies the differences and similarities between the concept, conventional rail shuttles, and traditional feeders. The Short Sea Shuttles do not primarily aim at economies of scale, but rather to find their niche market by offering high-level service.

<table>
<thead>
<tr>
<th></th>
<th>Short Sea Shuttle</th>
<th>Rail Shuttle</th>
<th>Traditional Feeder</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timetable</strong></td>
<td>Fixed</td>
<td>Fixed</td>
<td>Semi-fixed, but with short-term changes / adjustments</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>At least 1/week</td>
<td>Up to several times/week</td>
<td>Varies</td>
</tr>
<tr>
<td><strong>Punctuality</strong></td>
<td>High, deviation up to 1 hour</td>
<td>High, deviation up to 1 hour</td>
<td>Low, deviation up to day/s</td>
</tr>
<tr>
<td><strong>Time perspective</strong></td>
<td>Longer, months to years</td>
<td>Longer, months to years</td>
<td>Shorter, weeks to months</td>
</tr>
<tr>
<td><strong>Transport chain integration</strong></td>
<td>High</td>
<td>High</td>
<td>Low-medium</td>
</tr>
</tbody>
</table>

Table 2 Differences and similarities between rail shuttles, Short Sea Shuttles, and traditional feeder service

Goods transport is highly contextual and different segments serve shippers with quite diverse demand patterns. The Short Sea Shuttles aim at combining intra-regional flows of goods loaded in standardized load units (e.g. containers) with flows of standardized load units as part of deep sea shipping. This somewhat limits the scope of transport demands that need to be fulfilled. The estimated potential volumes should not be interpreted as “added” to the existing system of feeder services, since most of these volumes are already using the respective ports for transshipment. However, a modal shift from land-based transportation is also expected to some extent.

**CONCLUSION**

The most suitable ports for the Short Sea Shuttles are the ones with large potential volumes, both in the port cities and in the hinterland. Potential volumes include both existing containers that are currently transported by other modes (including feeder shipping) and cargo that is not containerized today, but is likely to be so in the future. In the context of Scandinavia the potential would be especially interesting for the extension of existing rail shuttles with sea links connecting other countries and regions surrounding the Baltic Sea.

The proposed definition includes both the important demands on frequency and fixed schedule (liner shipping), as well as the supply chain integration. These characteristics distinguish the Short Sea Shuttles from the traditional feeders. However, even though waterborne transportation is viewed as an environmentally friendly alternative to road transportation and there are large potential benefits that the Short Sea Shuttles would bring to the transport system, the concept faces challenges. The
major challenge is new regulation that demands use of low sulfur fuels resulting in high fuel costs for ship operators. These mean additional costs for an industry that already currently faces downward pressure on price and low profitability in many segments.

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SMALL DATA: THE DEFENSE MECHANISM OF SMALL RETAILERS

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Abstract

The modern retailer is capable of collecting large amounts of electronic data from its customers. Currently, much discussion has been devoted to the privacy invasion of retail customers and the ethical implications. However, electronic data must be considered not from an ethical prospective but as a major support for the strategic implementation of the modern retailer. This article advocates that electronic data is a plus factor for the modern retailer to do the job of enhancing quality of life. The modern retailer can develop detailed small data by getting information from its customers as they shop. These retailers rely on personalizing their customers so that they can serve them well.

**Key Words:** electronic data, customer privacy, strategic value of modern information technology, customer personalization, small data.
Introduction

With great advances in technology and data gathering techniques, retail giants such as Wal-Mart and Kroger know more about the consumers and their shopping habits ever more than the consumers themselves (Greenfeldt 2013). This is part of the big data that is out there and used by giant retailers to improve their profit pictures (Gooble 2013). To the extent that these giants are making progress using big data small and medium sized independent retailers are fighting multiple major pressures for survival. They are finding it more and more difficult to compete with the discounting giants. Small and medium sized retailers (SMEs) in order to survive in this age of discounting have to utilize electronic data gathering. Their goal would be “I cannot be cheaper but I can be better.” While giant discounters are utilizing, even though not very well, the big data SMEs must also use the electronic data but not the “big data.” They must develop the small data through which they personalize their customers, unlike the retailing giants whose customers are simply numbers, the small retail approach to personalizing is first of all acknowledging that they are individuals and are important. Of course in the process these small and medium sized retailers, SMEs will improve their services but for this they should know their customers better. Small and medium sized retailers (SMEs), capture much information about their customers at the point of point-of-sales or at the checkout systems. These database systems have the ability to collect information regarding what customers prefer, how much they are likely to pay, what products, and what brands they emphasize, who they are, and what kind of
store loyalty they have. This is the nature of small data that SMEs must emphasize to accumulate data from their individualized customers. This paper deals with this particular aspect of modern electronic data generating activity. Directly or indirectly the modern SMEs are capable of collecting and using in-store data for personalization of the sales or purchase experience. Sensor networks along with other top information exchange devices are accumulating information. The collected data are accumulated without any predefined purpose. These data are not deleted since the cost of data storage has been constantly decreasing. Each and every movement of the customer is recorded without any predesigned or pre-prioritized approach. Similarly, recording devices register multiple events simultaneously. Events like as one person is looking at a product, another person is approaching the isle while the third person is examining products physically (Sackman, Struker, and Accors 2006).

**Modern Electronic Data Utilization by SMEs**

With the advancement of information technology (IT) which has provided consumers with mobile communication devices while gave SMEs sensor networks among other information exchange devices which are creating information gathering possibilities constantly. In the modern SMEs when a purchase is made it is automatically registered as to how much was paid for it. Furthermore, customer’s choice of paying cash versus paying by a credit card is automatically registered indicating perhaps the preferred price range. Another customer motivation is negotiation on price. While most SMEs don’t directly compete on price, they can illustrate some examples of good prices based on the
existing local competition. Retailers are also exploring how advanced mobile phones can be used at point-of-sale (POS) system in the store by the customers themselves. Additionally, most POS systems have the ability to uniquely identify a customer, using either a frequent shopping card, phone number, or other similar attributes. When combined with the point of sale information, the system is also able to store a series of customer preferences such as what they mainly buy in that store, how much and how often.

Types of Information for the Retailers Use

Although there are many different types of information that may be accumulated by SMEs, Exhibit I illustrate five very specific types of information and how they may be used by the SMEs. These five types of information are part of the SMEs effort to generate the small data so they can serve their customers better.

As indicated in the exhibit many retailing decisions can be made by using the data that are being collected. As mentioned earlier activating POS systems not only gives information about a sale but when it is purchased, by whom, how frequently it is purchased also indicating that customer’s preferences. POS websites collect and distribute reviews or databases of most frequently asked questions on specific products (Epinions 2013). These questions can be integrated with the product label using certain QR codes. This allows getting to know specific customers. Overall the data allows for greater sensory stimulation for the customer which is utilized to decide what product mix or product mixes the SME must carry to satisfy these customers.
The data gauge customer interests and priorities based on reports as to what has been scanned and when. Thus, when preferred products are identified inventory controls become more accurate and information for particular promotional activity becomes available. Information on purchase patterns of key customers peak sales, best sellers peak times, by whom can give enough guidance to the retailer about the impact of the product, its price level and its display. Which products or product groups are preferred and paid more attention to is an automatic indicator for the retailer not only to control the inventory but also to develop those product groups more. In addition to price levels of the more popular and preferred products as the retailer identifies them, the store layout may be adjusted accordingly. Thus, the customer finds the preferred product easily at the price that is preferred and location where it is more appealingly presented as the retailer who is accumulating information, based on happenings in the store, is learning more about what is occurring in that store. Thus, based on personalized customers’ activities small data would guide the retailer to serve personalized customers better to satisfy personal needs (Zhang, Agarwal and Lucas 2011).

On the other end of the spectrum, the complete information generated through modern IT is creating a heated controversy regarding the extensive and unobserved data collection. These activities are making it difficult not to invade an individual’s privacy. Having all this information for each and every customer without their knowledge has become objectionable because of claims about invasion of their privacy. It is almost redundant to say that the more information
is accumulated about the customer the more claims can be made about invasion of the individual privacy (Rallapalli 2012).

It must be reiterated that modern IT has revolutionized a retailer’s capability to offer personalized services to its customers. However, as this information is accumulating and subsequently being used, it is creating a widespread concern among customers, regarding their privacy being invaded (Lee, Ahn and Bang 2011).

This is a basic dilemma, because the small data is perhaps the only life of defense for the SMEs to cope with the discounting giants. The SMEs by generating and using the electronic data are able to make many important managerial decisions which would enhance the store’s efficiency and enable it to serve its customers better. Without the accumulation and proper utilization of small data, the retailers are helpless in this age of discounting (Matthews 2012).

Customer Service Enhancers

The electronic data forming the small data about customer’s attitudes preferences and consequently enabling the retailer to provide greater value to its customers should not be taken lightly (Levy and Weitz 2012).

As illustrated in Exhibit 1, the retailer improves the store’s performance by making sound managerial decisions which are based on the small data. This is the supply side, but it must be recognized that consumers do not frequent retail establishments just for the lowest prices and quick purchases. Although Wal-Mart and other discounters have done extremely well with offering discounted prices, and typically they do not look at the electronic data, that is
accumulating, for the same purpose the SMEs would. They are typically not engaged in personalizing their customers. Tesco the largest supermarket chain in the United Kingdom is an exception. The chain identifies its best customers and gives them special discounts. Furthermore, it sends personalized coupon to certain groups. At the same time the chain offers special products for these groups of preferred customers (Levy and Weitz 2012). Unlike Tesco, however, larger retail chains do not use the intimate knowledge of their customers even though such information is present. Modern discounters and other giant retailers are extremely busy accommodating their customers in masses with discounts and variety while the SMEs must be involved in I-to-I retailing. Certainly, unlike some people claim, they can use a much more specific electronic database to adjust their store layout and their inventories along with other managerial decisions. Customer relationship management (CRM) is much more important for CMEs who are struggling in the era of discounting. Delivering personalized service requires well-trained and properly motivated retail employees. This aspect of retail management will make it possible to be better than discounters (Levy and Weitz 2012, Battle 2008).

**Electronic Data as a Strategy**

As is known, approximately 90 percent of retailing is performed by about 10 percent of retailers which are discount giants or gigantic retail chains (Samli 2004). The SMEs that are independent and entrepreneurial are having great difficulty coping with the retail giants. Once again, the question is do they have to be cheaper than discounters? Certainly, this is not a possibility. The next
question here is if you cannot be cheaper is it possible that you could be better? In order to answer this question it may be reasonable to ask consumers who frequent the retail establishments. Unlike some popular thinking, consumers are not going to abandon retail shopping. There are many reasons why consumers frequent retail establishments. Although there are some 12 specific reasons for consumers to shop around only five are enhanced by small data (Samli 2004). Indeed, Samli and Choi (2013) have shown that consumers will frequent a non-discount retail store and pay a little more in exchange for the services and the atmosphere experienced. Exhibit 2 presents five of these shopping motives which are reinforced by the modern information technology. Having the retailer to use the electronic data to make shopping easier and more pleasurable is the overall goal depicted by Exhibit 2. If this goal is achieved the retailer is better if not cheaper. This, again, is achieved by using the small data and personalizing the customer i-on-I where each customer is well-known, well respected and well taken care of. The authors believe that this is the future of FTEs. As the independent retail FTEs survive and succeed, it means that they are making a positive contribution to their customers’ quality of life.

The issue of privacy invasion must be resolved at the beginning of retail transactions. The retailer may sign a privacy protection contract upfront so that customers know the efforts to get to know them better will mean they will get better quality of service. Furthermore, there will be additional details in the small data which would make shopping more pleasant for each and every
customer as the retailer receives more revenue and the survival of the SME is enhanced.

**Shopping Motives and Information Technology Contribution**

The first motive is that some consumers would like to know more about new fashions, new colors or many other related facts. Certainly, small data will contribute much in this direction.

The second motive in Exhibit 2 is sensory stimulation which means some people like to touch, feel, smell or try the product. The small data would facilitate that by enhancing the inventory control and creating the store layout to accommodate such desires.

The third motive is negotiation. Some like to compare prices follow price changes and try to get their favorite products cheaply. The small data would facilitate this particular motive to a certain extent.

Satisfying needs and wants is the fourth motive in Exhibit 2. Choosing from and buying a variety of products is made possible by the small media.

Finally, the fifth motive is satisfying shopping needs. Being able to shop effectively and leisurely, which the small data would readily facilitate, will satisfy that need.

**Conclusions and Future Research**

The independent SMEs must go beyond simple convenience that they offer to their customers. Since these stores cannot be cheaper they must develop and use in store developed small data to personalize their customers and serve them on the basis of i-on-i. That is making it easier and more pleasurable to shop.
Unlike many articles that are discussing the importance of preserving customer privacy, in this article the authors maintain that SMEs must learn as much as they can while the customers are in the store and must develop small data which is based on personalizing each customer and treating all of their customers accordingly. The electronic data must be collected to achieve this goal. The modern technology must be able to provide more and more detailed information for the retailers so that they can be BETTER.
### Exhibit 1

**ELECTRONIC DATA PROVIDED INFORMATION FOR RETAILERS**

<table>
<thead>
<tr>
<th>Types of Information</th>
<th>Decisions Based on the Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detecting shopping patterns</td>
<td>Developing merchandise mix</td>
</tr>
<tr>
<td>Evaluating customer priorities</td>
<td>Inventory control, more promotion</td>
</tr>
<tr>
<td>Learning what they pay cash for</td>
<td>Pricing decisions</td>
</tr>
<tr>
<td>In general what do they buy more</td>
<td>Making those products more available</td>
</tr>
<tr>
<td>Physical examination</td>
<td>Rearranging store layout, instructing sales people</td>
</tr>
<tr>
<td>Shopping Motive</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>Learning more</td>
<td>New fashions, popular styles etc.</td>
</tr>
<tr>
<td>Sensory Stimulation</td>
<td>Interacting with products more closely</td>
</tr>
<tr>
<td>Negotiation</td>
<td>Being able to compare contrast before purchase</td>
</tr>
<tr>
<td>Satisfying Needs and Wants</td>
<td>Choosing from and buying of variety of products</td>
</tr>
<tr>
<td>Satisfying Shopping Needs</td>
<td>Being able to shop efficiently and leisurely</td>
</tr>
</tbody>
</table>
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ACTION RESEARCH IN ACTION: STUDYING A REAL LIFE RFID IMPLEMENTATION IN HOSPITALS

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Action research, healthcare, innovation management, RFID.
ABSTRACT

Action research falls into the interpretive paradigm. Despite some of its inherent limits, it represents a non-conventional but relevant research approach for exploring the potential and the deployment of new disruptive innovations. This paper demonstrates that action research is indeed suitable for exploring real-life RFID implementation within the very complex and even “chaotic” environment of hospitals that may raise specific and unique challenges. The paper also offers some insights on how to conduct, structure and formalize action research.
INTRODUCTION

The average hospital manages on a daily basis thousands of mobile assets such as infusion pumps, surgical equipment, electrocardiograms, portable x-ray machines, defibrillators, wheelchairs, etc. Although these assets are essential for healthcare delivery, they are not necessarily available when needed. Tracking and tracing mobile assets within the hospital is particularly challenging, labor-intensive, and time-consuming. RFID (Radio Frequency Identification) holds the potential to uniquely and seamlessly track and trace mobile assets in healthcare organizations but tends to be implemented at a much slower pace than in other sector (Chao et al., 2007; Romero and Lefebvre, 2013).

This paper attempts to demonstrate that action research is especially suited for exploring the potential of new disruptive innovations such as RFID technology (Romero et al., 2012) in hospitals that represent complex professional bureaucracies (Castro et al., 2013). Indeed, we agree that “action research can be employed successfully to diffuse innovations that need a high level of adaptation in each new setting or where there is high complexity and mismatch between groups of people in an organisation, providing there is an established need for researching the said innovation further” (Waterman et al., 2007, p.380).

The paper is structured as follows. The following section briefly outlines the main principles of action research. The third section examines the specificities entailed by the action research design carried out during a real-life RFID implementation in one hospital. The paper concludes with a discussion on the suitability of action research.

ACTION RESEARCH

Action research was initially used in social sciences and in medical sciences, and, was only introduced in IS research in the late 1990s (Baskerville, 1999). Among the multiple definitions of action research, we will retain the one that we believe to be the most accurate and complete: “Action research assists in practical problem solving, expands scientific knowledge, enhances actor competencies, is performed collaboratively in an immediate situation, uses data feedback in a cyclical process, aims at an increased understanding of a given social situation, is applicable for the understanding of change processes in social systems, and is undertaken within a mutually acceptable ethical framework” (Hult and Lennung, 1978 in Vries, 2007). From this definition, four main principles arise:

1) Action research is particularly concerned by change. “The fundamental contention of the action researcher is that complex social processes can be studied best by introducing changes into these processes and observing the effects of these changes” (Baskerville, 1999, p.4). Participants (including researchers) are collectively involved to observe, appraise and evaluate a real-life situation (“as is”) and they collectively find a solution to improve this situation (Van Beinum, 1998). They then induce a change in order to improve the “as is” situation and evaluate the effects of the induced change. Since “action research is primarily applicable for the understanding of change processes in social systems” (Baskerville, 1999, p.4), it seems particularly relevant to investigate information systems in general (Puaro et al., 2010; Goldkuhl, 2011; Baskerville and Myers, 2004), and, RFID implementation in particular. Let us mention that action research seems to be rarely mentioned as the primary research method in articles on
The “juxtaposition of action and research” is required. Action research thrives on this duality by involving both an “intervention in real-world settings” as well as the “development of scientific knowledge” (Vries, 2007). It thus attempts to comprehend and manage the ‘relationship between theory and practice’ (Ottosson, 2003), taking into account that “theory informs practice, practice refines theory, in a continuous transformation” (Gilmore et al., 1984, p.161). This cyclic transformation which is central to action research is based on a number of steps that may vary: five cyclical steps, namely diagnosing, action planning, action taking/intervention, evaluation and learning/reflection (Baskerville, 1999) or four phases – i.e. planning, action, observation and reflection- (Estay-Niculcar and Pastor-Collado, 2002). The five steps from Baskerville seem to better align with an RFID implementation and are retained here because they enable to diagnose the impact of implementing this innovation on healthcare organisations.

3) Action research is highly interactive, participative and collaborative as it is based in joint involvement, joint action, and shared responsibilities (Gustavsen, 1992; Van Beinum et al., 1996). Moreover, a strong emphasis is placed on joint learning that reinforces and improves the competencies of participants.

4) Action research relies heavily on qualitative data and analyses. This does not exclude quantitative data (for instance, raw data from the RFID tags) but “the full set of quantitative operations is not entirely legitimate for such use without qualitative interpretation through mapping, indexing and scaling” (Halfpenny, 1979). Moreover, this does not mean that qualitative data cannot be transformed into quantitative data (for example, simple frequencies could be derived from counting the number of the sub-processes that are eliminated, automated or improved with RFID).

ACTION RESEARCH IN ACTION: STUDYING A REAL-LIFE RFID IMPLEMENTATION

LONGITUDINAL SINGLE FIELDWORK CASE STUDY

This research entails a single case study in order “to investigate holistic and meaningful characteristics of real-life events” (Yin, 2009, p 4) related to the implementation of a specific RFID application within one hospital. The selected single case is therefore the RFID implementation and not the hospital, the latter being the primary research site. Case study research is particularly relevant to answer research such as How? Why? (Yin, 2009). It is well documented (Corbin and Strauss, 2008; Gomm et al., 2002) and well-accepted in many disciplinary fields, including management (Dul and Hak, 2012), software development (Mockus et al., 2000) and information systems (Orlikowski and Baroudi, 1991). It is also heavily used in RFID adoption research (Ngai et al., 2010; Fosso Wamba, 2011).

As an RFID implementation implies the need for investigating changes over time, it naturally points to a longitudinal case study. Data collection for the case study lasted 25 months.
PARTICIPATING ORGANIZATIONS AND PARTICIPANTS

This research involved eight organizations (Table 1)

Table 1

Among the eight participating organizations, three are Canadian, four are Dutch (including the hospital), one is American and one is from the UK. All communications (written or oral) were made in English with the only exception concerning the some internal documents written in Dutch, which were translated into English. The size of these organizations differs widely ranging from a few employees (NPO) to a rather large organization of more than 3000 employees (Dutch hospital). Cultural differences (European vs. North-American organizations) and the influential power usually linked with the size of the organizations may raise some minor issues. As illustrated in Table 1, all organizations with the exception of the Dutch hospital, act as technological and non-technological partners for the implementation of the retained RFID application. As the implementation is limited to the hospital, it is referred as a closed-loop implementation.

Table 2

The research required the input from thirty-five (35) participants (Table 2). Some additional persons (not listed in Table 2) acted as punctual informants mainly for validation purposes and their involvement usually required a few minutes of their time and at the most two hours. Such input allows a more holistic perspective on the RFID deployment within the hospital.

The profile of key participants is very diverse (Table 2). Nineteen (19) participants (54%) are from the primary observation site (the Dutch hospital) and belong either to the clinical side, to the administrative side or to the technical and support side (ICT, manager of medical technical department, biomedical engineers and support staff). Some participants with clinical or technical expertise are also responsible for their units or wards and act as mangers (this is the case for the manager of the biomedical department and the two ward managers). The wide-ranging expertise of participants from the Dutch hospital and their corresponding mind sets that go beyond the cleavage between non-clinical vs. clinical staff, proved to be significant in the RFID implementation.

DATA COLLECTION METHODS, TYPES OF DATA AND DATA RECORDING ISSUES

DATA COLLECTION METHODS

Data collection occurred over a two-year period (25 months more precisely). The Canadian research team went back and forth to the Netherlands on five occasions for extended periods of stay in order to participate to the on-site activities, including semi-structure interviews, observations, etc. Progress could be also traced virtually with multiple electronic exchanges with the other participants (e-mails, electronic documents, etc.). In particular, RFID data was forwarded back and forth.

Since multiple data collection methods allow data triangulation (Yin, 1994; Miles and Huberman, 1994),
we relied on several sources of empirical evidence during this 25 months period, namely 1) internal documents such as clinical and non-clinical procedures and directives, and external documents, 2) multiple on-site observations and 3) data generated by RFID tags and the corresponding RFID reports, 4) focus groups and panels (almost the same individuals over a two year period, including researchers), and 5) semi-structured on-site interviews.

**TYPES OF DATA**

Most empirical data collected during the 25 months period represents primary data - i.e. original data collected by the researchers. Primary data arise from the multiple on-site observations carried out, the semi-structured interviews conducted, the focus groups and the panels. Primary data allow an in-depth knowledge of the existing operations of the hospital, focusing on mobile asset management, as well as a key opportunity to point-out unique areas for improvement that would not have been assessed otherwise. Semi-structured interviews were in line with previous RFID research in healthcare (Ngai, 2008) and proved to be quite insightful, especially in terms of gaining process knowledge and rethinking current practices (Table 3 provides an extract from the interview guides). Focus groups and panels are aligned with action research as they structured joint decision processes, collaborative actions and the analyses of changes.

Table 3

Secondary data – i.e. data collected from existing documents, from the RFID system, etc. - also receive special attention (see Table 4 for an example). Some of the existing documentation was available in Dutch as it was provided by the NL Hospital; thus, this information was translated into English so that it could be shared among all project participants could. We believe that the interplay between primary data and secondary data reinforces their mutual validity, leading to more robust results.

Table 4

As it is usually the case in fieldwork research, empirical evidence emerges from quantitative and qualitative data. In fact, the combination of quantitative and qualitative data “can be highly synergistic” (Eisenhardt, 1989). Quantitative data basically comes from the analysis of internal documents (content analysis), the transformation of qualitative data into quantitative such the frequency of specific events and from the analysis of the raw data generated by the RFID systems. Qualitative data mainly arises from the transcripts of interviews, focus groups and panels.

**ISSUES WITH DATA RECORDING**

Multiple data collection methods involving eight organizations and 35 participants for over a two-year period appear to be an appropriate research strategy. However, such strategy creates problematic issues with data recording. They also generated enormous (one might say overwhelming when taking into account the RFID data) quantities of data that had to be recorded, analysed, and, following the core principles of action research, discussed, re-analysed and revisited. A rigorous recording protocol was thus established and includes a research journal, field notes, and data analyses. Tables 4 and 5 and Figures 2 and 3 give snapshots of the recording process put in place in the context of this research. In the research journal, detailed research activities were first recorded and were then summarized. Table 5 gives an extract of such summaries.
In addition to the research journal, an indexed field notes journal was kept. The field notes reflected the individual and the group perspectives on the different issues related to the RFID implementation. The individual perspective includes for the most part the interview transcripts typically found in field research work. Interview transcripts are essential here because they allow direct quotes that exemplify interpretations, add richness to those interpretations and “give the participants a “voice” in the research” (Schultze and Avital, 2011). Field notes from the group perspective dealt with documents resulting from joint actions and from collaborative decision making processes (see Figure 4 for an example). Participants had to select one type of mobile assets that could be tagged in the hospital with RFID. Infusion pumps for the RFID implementation were collectively agreed upon based on different factors such as the risks they entail, their costs, their depletion rates, etc. In particular, the risk assessment score as evaluated by the participants was high for the infusion pumps (36 out of maximum score of 45 or 80% - Figure 1) and provided the justification to select infusion pumps for the RFID implementation. Figure 1 also illustrates one crucial point: it shows how collective actions or decisions can be structured.

Field notes contained several visual displays such as self-explanatory pictures illustrating a critical issue prior to RFID implementation such infusion pumps being stored in a non-dedicated area while they should have been located in the storage room (Figure 2). Visual displays were also particularly useful in elaborating different RFID scenarios. For instance, the hospital plan integrating the access points and the wireless areas (Figure 3) spoke to all participants. The hand-written comments on the plan came directly from the activities recorded in the research journal and displayed in Table 5.

We believe that business process is particularly pertinent as unit of analysis in the context of this research for three main reasons. First, the process centric analysis is one of the prominent method to study organizations in research in the information system field (Eatock et al., 2000). Davenport (1993, p. 5) defines business processes as “a specific ordering of work activities across time and place, with a beginning, an end, and clearly identified inputs and outputs.” Further, Hammer and Champy (1993) state that business processes are “series of interrelated activities that take an input, add value to it, and produce an output that is of value to the customer”. Second, RFID is considered a « transformational technology » (Hanebeck, 2004) that allows the emergence of innovative and efficient processes. However, the level of improvement that could be potentially attained by integrating RFID into existing processes implies significant, sometimes “dramatic”, change to the ways an organization is used to work. Thus, RFID adoption implies the development of new “redesigned” or “reengineered” processes (Wu, 2012). Third, process mapping allows to structure masses of qualitative data into a structured visual display that serves as a powerful tool for data analysis and increases the interactions between participants. In the context of this research, we thus rely on a process centric approach in order to
investigate the impacts and benefits that RFID can bring into asset management processes. Using appropriate methodologies and tools to analyse, design and visualise business process have been identified as key elements for successful BPR implementation (Al-Mashari and Zairi, 1999). Information flowcharts, infrastructure and network blue prints, and business process maps are among the tools used by Bendavid and Cassivi (2010) to evaluate RFID in the supply chain context.

CONCLUSIONS

Action research brings its own set of limitations. First, as researchers were actively involved in the RFID implementation process, they have to maintain their own objectivity throughout the ups and downs of the implementation process. We therefore try to lower such problems by structuring and formalizing the data (for instance, with process mapping) and by repetitively checking the accuracy of the empirical data with semi-structured interviews, focus groups and panel groups. The second significant issue raised by action research deals with ensuring anonymity and confidentiality. This goes beyond the simple fact of erasing the names of the participants. For instance, we cannot give specific technical details about the RFID infrastructure (the type of RFID tags, the decision rules for the middleware, etc.) without indirectly disclosing the participating organizations. The practical value of some of the findings is therefore lowered.

Despite some of its inherent limits, we believe that action research represents an innovative and non-conventional research approach that is relevant to gain an in-depth understanding of RFID deployment. Action research is indeed suitable for exploring RFID implementation within the very complex and even “chaotic” environment of hospitals that may raise specific and unique challenges.

REFERENCES


Romero, A., Lefebvre, É., & Lefebvre L.A. (2012). Improving the hospital pharmacy logistics function
through the adoption of barcodes and RFID: Towards a hybrid solution. *International Journal of Information Technology and Management* (sumitted).


**FIGURES AND TABLES**

**TABLE 1: PARTICIPATING ORGANIZATIONS**

- A Dutch hospital, called hereafter NL hospital, where the real-life site RFID implementation is taking place. It also represents the primary observation site where observations, semi-structured interviews, focus groups and panels took place.
- A Canadian SME with strong expertise in software development and deployment of RFID applications (Firm X). This company provided the professional expertise needed to define, validate and implement the RFID technological scenarios.
- An American firm recognized as a global market leader in asset visibility solutions (Firm Y). This company acted as a partner of the Canadian SMEs and was responsible for providing the hardware and software components of the RFID solution to be implemented by the Canadian SME at the NL hospital.
- A Dutch SME whose core competences lie in RFID components (Firm Z). This company provided inputs into the different technological solutions in terms of hardware.
- An U.K. based subsidiary of a company based in Japan and the business partner of the Canadian SME (Firm V). This company acted a partner of the Canadian SMEs and was responsible for providing support in terms of the specificities corresponding to European context.
- A non-profit organization representing Dutch hospitals (an association of Dutch hospitals), called hereafter NPO. This

organization, through its Chair, was responsible for facilitating the establishment of the necessary links with the hospital.

• One Canadian university-based research centre with expertise on technology management and, more specifically, e-commerce, e-collaboration and RFID technologies. Researchers from this research center were actively involved in all project phases and carried out on-site observations, semi-structured interviews with hospital participants, participated to the focus groups, participated in site surveys, and collaborated in the development of technological scenarios.

• One Dutch university-based research centre with expertise on innovation management. Researchers from this research center were actively involved in the facility management and logistics reengineering aspects of the RFID implementation.

### TABLE 2: PROFILE OF KEY PARTICIPANTS

<table>
<thead>
<tr>
<th>Type of organisation</th>
<th>Organisation</th>
<th>Type of participant</th>
<th>Participant</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare organisation</td>
<td>NL hospital</td>
<td>Hospital administration</td>
<td>Hospital director</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomedical</td>
<td>Manager, biomedical department</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Biomedical engineers</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinical professionals</td>
<td>Ward managers</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Team managers</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Head nurses</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ICT department</td>
<td>Manager of automation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ICT manager</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Technical expert</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Support services: Stores</td>
<td>Supervisor</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clerk</td>
<td>1</td>
</tr>
<tr>
<td>Canadian SME</td>
<td>Firm X</td>
<td>Management</td>
<td>Director</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Manager</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other professionals</td>
<td>Technical experts</td>
<td>3</td>
</tr>
<tr>
<td>American firm</td>
<td>Firm Y</td>
<td>Professional</td>
<td>Director, Healthcare sector</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Technical expert</td>
<td>1</td>
</tr>
<tr>
<td>Dutch SME</td>
<td>Firm Z</td>
<td>Professional</td>
<td>Technical expert</td>
<td>1</td>
</tr>
<tr>
<td>U.K. based subsidiary</td>
<td>Firm V</td>
<td>Consultant</td>
<td>Technical expert</td>
<td>1</td>
</tr>
<tr>
<td>Non-profit organization</td>
<td>Dutch NPO</td>
<td>Management</td>
<td>Chairman</td>
<td>1</td>
</tr>
<tr>
<td>University-based research centre</td>
<td>Canadian university-based research centre</td>
<td>Management</td>
<td>Director</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Researchers</td>
<td>Full professors</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PhD Candidate</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Researchers</td>
<td>Full professor</td>
<td>1</td>
</tr>
</tbody>
</table>
TABLE 3: EXTRACTS FROM THE INTERVIEW GUIDES USED DURING THE SEMI-STRUCTURED INTERVIEWS

- Examples of questions regarding the unavailability of infusion pumps (questions were repetitively asked to participants from different units, services and departments).

Why are infusion pumps unavailable? Any other reasons?
How do you proceed to find unavailable infusion pumps? Who is responsible for searching for unavailable pumps? How often do you search them? How much time do you spend searching for IV pumps? How can the search be improved?

How much time the staff from other units or departments spend searching for IV pumps? How can the search be improved?

- Examples of questions regarding mobile asset management processes. Below, are examples of the questions for one specific process, namely the restocking process. Similar questions were repetitively asked for each process regarding mobile asset management to participants from different units, services and departments.

Do you agree with the overall process of mobile equipment restocking for mobile assets? Regarding infusion pumps?

Does the process of restocking assets reflect the reality of the way the tasks are performed and the way should be performed? (The process maps are being displayed during the interview for a visual anchor).

Does this specific process of restocking infusion pumps reflect the reality of the way the tasks are performed and the way should be performed? Is the process efficient? Inefficient? Why? Could it be improved? How?

What is the existing procedure when an infusion pump fails to work properly? When there is a simple problem with a pump, do you attempt to fix it yourself? How? By restarting them? Do you call the technical department when the message on the infusion pump indicates that a serious problem has occurred? Do you leave some indication that the pump is defective on the pump itself? How much time does it usually take before a defected pump is picked up for repairs?

TABLE 4: EXAMPLE OF SECONDARY QUANTITATIVE DATA – EXTRACT FROM A REPORT GENERATED FROM THE RFID ASSET MANAGEMENT SYSTEM

<table>
<thead>
<tr>
<th>Event ID</th>
<th>Event Monitor Name</th>
<th>Type</th>
<th>Severity</th>
<th>Asset Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>421</td>
<td>In Hospital (381)</td>
<td>Entrance/Exit</td>
<td>Normal</td>
<td>P01 (180)</td>
<td>Hall</td>
</tr>
<tr>
<td>422</td>
<td>In Wing B (161)</td>
<td>Entrance/Exit</td>
<td>Normal</td>
<td>P01 (180)</td>
<td>Wing B</td>
</tr>
<tr>
<td>413</td>
<td>In Hospital (384)</td>
<td>Entrance/Exit</td>
<td>Normal</td>
<td>P01 (180)</td>
<td>Elevator</td>
</tr>
<tr>
<td>414</td>
<td>In Wing A (385)</td>
<td>Entrance/Exit</td>
<td>Normal</td>
<td>P01 (180)</td>
<td>Wing A</td>
</tr>
<tr>
<td>417</td>
<td>In Hospital (384)</td>
<td>Entrance/Exit</td>
<td>Normal</td>
<td>P01 (180)</td>
<td>Elevator</td>
</tr>
</tbody>
</table>

Note: By default, the list of events is sorted chronologically (newest at top)
Overview of activities
Dates: Oct 1st – Oct 3rd
Overview:
The survey visit consisted of a site visit (1/2 day), an RFID site survey (1 day), a presentation to hospital management and follow-up meeting (1 day).
Summary of activities
1) Activity: Process Analysis
   Participants: 1 technical expert (Firm X), 1 technical expert (Firm Y), 2 Ph.D. candidates (Canadian and Dutch university-based research centres).
   Overview: Observations of the physical movements of intravenous pumps
2) Activity: RF Finger Printing
   Participants: 1 Technical expert (Firm X), 1 technical expert (Firm Y), 1 Ph.D. candidate (Canadian university-based research centre).
   Hardware: ROHDE & SCHWARZ FSH6 Spectrum Analyzer.
   Overview: Walk through of specific areas in the hospital to measure possible interference and Wi-Fi coverage.
3) Activity: Visual Analysis
   Participants: 1 Technical expert (Firm X), 1 Ph.D. candidate (Canadian university-based research centre).
   Hardware: Canon SD1000 Digital Photo
   Overview: Strategic photos taken of environment to evaluate installation and potential interference of objects.
4) Activity: Meeting with Network Specialist
   Participants: 1 Technical expert (Firm X), 1 technical expert (NL hospital), 2 Ph.D. candidates (Canadian and Dutch university-based research centres).
   Overview: Discussing wireless network and features of it.
5) Activity: Meeting with upper management
   Participants: 1 manager and 1 technical expert (Firm X), director, manager of medical technical department, ward managers, 1 technical expert (NL hospital), 2 Ph.D. candidates (Canadian and Dutch university-based research centres), 2 full professors (Canadian and Dutch university-based research centres and Dutch university-based research centres), and chairman (Dutch NPO).
   Overview: Overall process of the RFID pilot installation, timelines, and forward looking step

Important conclusions
- Follow-up is tentatively scheduled for Oct 22nd
- The hospital team is awaiting wireless access point positioning data from the firm X
- Questions regarding SSID singularity of access points, Channel Usage, and SSID broadcasting are still pending
- Map with detailing location of access points is still pending
- Walls are brick (8-12 inch) what looks like double bricked
- Wi-Fi coverage is weak inside rooms

Third party is intended on installing the wiring prior to arrival on October 22.
Table 1: Extract from the field notes - justification for selecting infusion pumps for the RFID implementation (risk assessment analysis used by the hospital)

<table>
<thead>
<tr>
<th>Risk Assessment System</th>
<th>Name of equipment: Infusion pump</th>
<th>Type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Function</td>
<td>Infusion pump</td>
<td></td>
</tr>
<tr>
<td>1. Treatment-Life support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Treatment: Intensive Care Surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Treatment: Physical therapy or treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Diagnostic: Intensive or Surgical Care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Diagnostic: Other monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Analytical: Analytical Laboratory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Analytical: Laboratory accessories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Analytical: Computer-related accessories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Diverse: Patient related</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Diverse: Non-Patient related</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Consequence (patient) of sudden defect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Potential risk of patient death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Potential risk of patient injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Wrong diagnosis or therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. No non-avoidable risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Consequence (business process) of sudden defect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. All (related) activities until aborted object is repaired</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Treatment of patient stopped until object is repaired</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Treatment of patient can be prosecuted, however, some annoyance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Not involved in treatment of patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Not involved in business process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0. Low risk, 1-20, medium risk, 21-32, high risk, 33 or higher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Environment</td>
<td>Infusion pump</td>
<td></td>
</tr>
<tr>
<td>5. Anesthesia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Critical care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Non-locations: Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. General care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. No relation to patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Required/desired preventive maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Monthly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Quarterly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Semiannual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Yearly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Not required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Frequency of Usage</td>
<td>Infusion pump</td>
<td></td>
</tr>
<tr>
<td>4. Daily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Weekly</td>
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<tr>
<td>2. Monthly</td>
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<tr>
<td>1. Occasionally</td>
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<tr>
<td>G. Several users</td>
<td>Infusion pump</td>
<td></td>
</tr>
<tr>
<td>3. Different departments</td>
<td></td>
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<tr>
<td>2. Several users</td>
<td></td>
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<tr>
<td>1. Solid user</td>
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<tr>
<td>H. Trend (mean time between failure-MTBF)</td>
<td></td>
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<td>5. &lt; 3 Month</td>
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<td>4. 3-6 Month</td>
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<td>3. 1-3 Year</td>
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<td>2. 3-10 Year</td>
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<td>1. &gt; 5 Year</td>
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</tbody>
</table>

Total score: 36

**FIGURE 2: INFUSION PUMPS BEING STORED IN A NON-DEDICATED AREA**

**FIGURE 3: ACCESS POINTS AND WIRELESS AREAS IN THE HOSPITAL – A FIRST ANALYSIS OF THE CURRENT STATE AND THE FUTURE NEEDS**
ABSTRACT
Determining the focal international trade markets can be seen as a sophisticated topic for researchers especially for emerging economies due to the complexities based on distance and transportation availability, trade openness, financial background, demographic specialties, political and economic sustainability and trade restrictions. According to the most basic international trade behavior, companies are willing to export their goods as many countries as they can; nevertheless, companies should order the market preferences based on a reasonable methodology. On the other hand, exporting goods to different regions is not always profitable for firms owing to high competitiveness, transportation costs, and so on. Thus, in this paper, we proposed a geographic ordering methodology based on multiple spatial criteria decision making techniques for determining the preferences of alternative markets, and an application is given for better understanding the discussed concept.

Keywords
International trade, spatial analysis, Geographic Information Systems (GIS), multiple criteria spatial decision making

INTRODUCTION
In competitive trade environment, each company should focus the most profitable trade functions for their economic survival. Instead of staying in domestic markets, exporting goods to different markets significantly increases the volume of total sales. Since exporting is getting easier with the developments in information technologies, every company in the world is willing to reach as many countries as they can to create profitable selling space. At this point, one of the most important question is emerging to “where to export?”. Due to the problems’ decision environment, multiple criteria approach can be used for ordering the market alternatives; yet, multiple criteria decision making is based solely on experiences and thoughts of the experts. There are different applications such as fuzzy concept (Ekmeclioglu, Kutlu, & Kahraman, 2011; Kahraman & Kaya, 2010), group decision making (Buyukozkan, 2012; Kahraman, Ruan, & Dogan, 2003), Delphi technique (Okoli & Pawlowski, 2004; Onden, Tuzla, & Cobb, 2012), and etc. to overcome the challenges of expressing the thoughts of the decision makers. Using experts’ experiences is useful when it is not possible to reach any certain information about the decision criteria. In addition to multiple criteria decision making literature, there is a sub-topic called spatial multiple criteria decision making which combines geographic information with multiple criteria decision making techniques (Jankowski & Richard, 1994; Zucca, Sharifi, & Fabbri, 2008).

Suitability analyses are used to investigate which locations are appropriate for location selection problems, describing the environmental protection areas, and so on. In this study we used this phenomenon to research which countries are proper to establish collaboration for emerging markets. There are several steps to reach the final ordering decision with the analysis abilities of multiple criteria decision making and GIS.

In international trade studies, geography and transportation which can be reflected by spatial information can be seen as major factors that affects the volume between countries. There are also non-spatial criteria affects the trade volume such as trade openness, financial development, political and economic sustainability, and demographics which is illustrated in Figure 1. Thanks to GIS analysis abilities, suitability models can combine spatial and non-spatial information into geographic models in suitability analysis. According to suitability models, decision environment should be reflected first, then, decision makers should evaluate what are the priorities of the decision criteria.
Figure 1. Decision criteria

METHODOLOGY

There are several steps for reaching country’s preference orders according to the proposed methodology which is given in Figure 3. In the beginning of the study the criteria which decision environment should be determined. Afterwards, data gathering and creation of geoDB, and prioritization of these criteria should be accomplished. These are necessary to perform spatial analysis. Spatial analyses are crucial for understanding which country is a better alternative for international trade among alternatives. In the next step, a brief information about GIS analyses are given.

Hot spot analysis is a spatial statistics method used for finding the hot or cold spots on the plane statistically or for clustering the separated subgroups of the study area based on spatial autocorrelation and Moran’s I structures. In addition to the harmony of this technique with the proposed methodology, there are existing studies based on the hot spot analysis for different research applications. (Erdogan, Yilmaz, Baybura, & Gullu, 2008) used the GIS abilities to determine the traffic accident hot spots of Afyonkarahisar city. (Levine, 2006) used spatial autocorrelation structure and hot spot analysis for crime mapping. (Truong & Somerenhalli, 2011a) used GIS to identify hot spots for pedestrian-vehicle crush with gathered 13 years data under spatial correlation, Moran’s I, and Getis-Ord Gi * rules.

Moran’s I index is needed to be used to measure the spatial autocorrelation to examine the spatial patterns of the study area. Moran’s I measures the similarities of the attributes and calculates an index which consists of location proximities. There are different approaches to measure the location proximities, and zone of indifference is one of the options for calculation. The stated index can be calculated using the following equation 1 where \( w_{ij} \) is the proximity weight of location i and location j (when \( w_{ii}=0 \); \( x_i \) is the severity index at location j; \( x \) is the global mean value; \( n \) is the total number of focused location (Truong & Somenenhalli, 2011b).

\[
I = \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij}(x_i - \bar{x})(x_j - \bar{x})}{\left( \sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij} \right) \left( \sum_{i=1}^{n} (x_i - \bar{x})^2 \right)},
\]  

Equation (1)

Moran’s I’s statistical significance can be calculated via z-score methods. In the equation 2, the expected values (E[I]) for a random pattern, the variances (VAR[I]) is used. Mathematically representation of the Z-score:

\[
Z = \frac{I - E(I)}{\sqrt{VAR(I)}}.
\]  

Equation (2)

Appropriate distance threshold value should be found where the spatial autocorrelation is maximized since each data point is
analysed in terms of its neighbouring data points defined by a distance threshold. To reach the maximum value, spatial autocorrelation tool should be performed several times, and the changes in the z value should be observed empirically. Z-value shows whether the data clustered or randomly distributed on the plane with a determined significance level.

Getis-Ord statistic [28] is used for specifying hot spots. A high value of Getis-Ord statistic expresses the hot spots; whereas a low value shows the cold spots. The mathematically definition of the Getis-Ord Gi* statistic is given in the following equations which are 3 and 4:

\[
G_i^*(d) = \frac{\sum_{j=1}^{n} w_{ij}(d)x_j}{\sum_{j=1}^{n} x_j}, \tag{3}
\]

\[
Z(G_i^*) = \frac{I-E(I)}{\sqrt{VAR(I)}}, \tag{4}
\]

One of the analysis ability of the GIS/SA is euclidean distance analysis which gives the chance to calculate how the geographic criteria sprawled on the plane. The distance analysis does not measure the densities of the focused attribute; it converts analysis area to raster data and separates the focused plane to the small grids to understand the closeness of the grids to the points which belong to the decision criteria’s locations. The calculation of the euclidean distance analysis is expressed in Figure 2. After gathering the euclidean distance values of the grids, it is necessary to reclassify the calculated maps with determined intervals for adjustment of the criteria maps. The reclassified maps show how the decision criteria affect the study area and there are different ways to reach the reclassified maps. Despite the fact that there are different calculation techniques in the classification, using natural breaks is seen the reasonable one for calculating the process which represents the characteristics of the scattering of the criteria on the plane. In Figure 2, there is a stepwise illustration of the euclidean distance with a basic application for better understanding. The calculated values in the reclassified maps show accordance with conversion SA analysis outputs when 9 intervals are used and when the Saaty’s 1-9 scale is used in the pairwise comparison step.

<table>
<thead>
<tr>
<th>Plane</th>
<th>Euclidean Distance</th>
<th>Reclassification</th>
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<tbody>
<tr>
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<td>1.0</td>
<td>0.0</td>
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<tr>
<td></td>
<td>1.4</td>
<td>1.0</td>
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<td></td>
<td>2.2</td>
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<td>2.0</td>
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<tr>
<td></td>
<td>1.0</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Figure 2 Illustration of the euclidean distance analysis
After performing the GIS analysis, the reached result should be evaluated with scenario analysis which are also sensitivity analyses to understand how reached preference orders change.

CONCLUSION

In the paper, we described what factors are affecting international trade and a methodology is developed to select focal countries to collaborate with for sustainable economic relationship.

This paper summarizes a work-in-progress study with an application and the given example can be seen as a test example to figure if the methodology is working correctly or not. For this reason, it is essential to expand the used data and the scope of the study.

REFERENCES


China's tax revenue evolution and suggestions based on the national income distribution theory

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Abstract
This paper describes the status of the taxes participation in the primary distribution, redistribution of national income in accordance with the different type taxes participation in the different levels of the distribution, and analyzes the causes and results of China tax revenue evolution. Moreover, we will perspective the role played by China's tax system in the different distribution levels. On this basis, give the idea of tax reform in China.

Keywords
Distribution of national income, Direct taxes, Indirect taxes

Introduction
The national income distribution refers to the national income’s the allocation proportion among residents, enterprises and governments and their mutual relations. In the primary distribution, moderate income distribution difference is both a source of market efficiency and the power, is also the result of the market efficiency. The government can play a major role in the link of redistribution. If the government gets share too much through tax distribution in the process of primary distribution, will dampen the enthusiasm of the residents and enterprises, affect the market efficiency to fully play. At the same time, the condition of the government getting tax distribution too much is hard to reverse in the process of redistribution, which goes against the government play the adjustment role it deserves in the redistribution process.

The indirect tax participation in the primary distribution of national income
This concept of the primary distribution of national income is not so much the sequence as the level of the distribution. The taxation participates in the national income primary distribution mainly through indirect taxes. The government obtains tax revenues through the indirect taxes, department of personal income is the direct labor remuneration, the rest of the department of revenue for the enterprise.

1, The status of indirect tax participation in national income primary distribution
In the process of primary distribution, distribution is conducted within each production unit. On the one hand the government directly involved in distribution of elements income in the production process through collection of indirect taxes. On the other hand, can adjust and control income gap through the indirect tax in the process of primary distribution. In the primary distribution link, from the amount of tax and GDP, great changes have taken place since the reform and opening up 30 years. We need further through the tax revenue to GDP compared to observe the relationship between them.
As can be seen from the figure 1, from 1978 to 2011, the change of tax revenue as a share of GDP is roughly symmetrical "V" type. From 1978 to 1984, tax revenue as a share of GDP between 11.6% and 12.0% in the primary distribution, the fluctuation is not much. Since the 1984 industrial and commercial tax system reform comprehensively, some the new indirect taxes such as value added tax, product tax, business tax, resource tax is imposed successively, so tax revenue in the process of primary distribution in 1985 rapid increase, tax revenue as a share of GDP rose to 14.3%, this year is volatile, later dropped year by year, has declined to 8.6% in 1992. In this period, the range of the decline is more noticeable. But since the tax reform in 1994, in order to improve the amount of tax rebates, the local governments allocate false tax or over tax, the result is indirect taxes as a share of GDP has increased in 1993. From 1993 to 1996, there was a brief fluctuation. Indirect tax revenue as a share of GDP since 1997 showed signs of recovery, to 8.9%, after a few years continues to grow steadily, since 2000, this proportion is rising, it was 13.9% in 2011, close to 1985 highs.

2. Tax structure of the indirect tax in the process of primary distribution

The previous section analyzes the indirect tax as the share of national income distribution in the primary distribution link and its change law since 1978. The next research is from which taxes the share is mainly obtained in the primary distribution link. That is the tax structure problem. Figure 2 reflects the proportion of different categories tax in the primary distribution. Customs is a kind of turnover tax, but the customs is levied mainly on the goods of in and out China customs boundary, different from other turnover tax. In order to meet research needs, we separate list here.
As can be seen from Figure 2, the revenue share government obtain in the primary distribution is mainly from turnover tax (excluding duties). 1978-1984 turnover tax account for more than 80% of total revenue government get from the primary distribution, in the beginning three year, even more than 90%. In 1985, the proportion drop to the lowest point in the history 75%. From 1986 to 1992, the proportion has gone up, but has been stable at around 80%, from 1993 began to rise, fluctuate in some year, 2011 reach 89.4%. The proportion of tariffs account for GDP in the primary distribution is little fluctuation, most of the year remained at about 4-7%, but in 1983-1993 the proportion is high, up to 15.9%, average 10%.

If putting tariffs into turnover tax to calculate together, then the proportion of turnover account for total revenue got from the primary distribution has been more than 90%. Resource tax’s proportion in the primary distribution are relatively small over the years, and reducing year by year, decline very obviously in recent years, less than 1%. Now study behavior tax the proportion is small, from 1978 began to rise year by year, but never more than 10%. Although behavior tax contains a lot of taxes, the proportion in primary distribution is not high.

The direct tax participate in the national income redistribution

The government mainly gets redistribution income through direct tax. At the same time, some state-owned enterprises turn in profits. I 1985, state-owned enterprises change turning in profits into tax, and state-owned enterprises pay income decreases considerably. Since 1994, enterprises pay income tax completely. In order to meet the demands of research, the income and expenditure are divided in theory, main focus on the status of the government participate in the national income distribution through direct tax in the process of redistribution.

1, The status of direct participation in the national income redistribution

The government obtains tax revenues through the direct tax in the link of redistribution, at the same time also can effectively regulate the economy. This is because the direct tax cannot pass on tax burden, which should be borne by the taxpayer. So allocating direct tax will reduce the income of high incomes, so as to narrow the income gap, and the government can also obtain corresponding fiscal revenue. When the government uses the tax on public spending, and will benefit the low income earners. Therefore, the government levy direct tax in the redistribution link can effectively regulate the economy. The following investigate overall condition of direct tax participation in national income distribution in the link of redistribution in China since the reform and opening up. (As shown)
As can be seen from the figure 2, from 1978 to 2010, direct tax revenue as a share of GDP is roughly the asymmetric "U" shape. From 1978 to 1984, direct tax as a share of GDP is on the decline, slightly better in 1983, in 1984 return to the level of 1.5% in 1982. Since 1983, 1984, state-owned enterprises hand in profits change into turning in tax, which makes direct tax as a share of GDP quickly pull up to its highest level in 1985, it is 9.4%, then began to decrease year by year, to 2.2% in 1995. Early reform and opening up, the direct tax as a share of GDP reduced year by year in line with policy of the state transition from the planned economy system to market economic system increase the strength of market regulation, decentralization and concessions benefits.

But since the nineties, tax revenue as a share of GDP falling too fast, it was unexpected at the beginning of reform and opening up. So in order to improvement china’s financial situation, carry on comprehensive industrial and commercial tax system reform in 1994. After the 1994 tax reform, the effect is more noticeable, begin to rebound from 1996, except the growth rate was bigger in 2001, stable growth in other years, in 2008 to 6.6%, and then began to decline, to 7.1% in 2011. From the point of redistribution taxes as a share of GDP, as a whole is lower, the highest year was 9.4%, no more than 10%, below the 3% level of 14 years. In recent years, with economic growth and the collection and management level, enterprise income tax and personal income tax to the rapid growth of the direct tax as a share of GDP increased year by year.

2. Tax structure of the direct tax in the process of redistribution

As can be seen from Figure 4, the income tax and the agriculture tax are the main sources of government revenue from 1978 to 1984 in the redistribution. The proportion of property taxes and other tax is very small, and the proportion of income tax has been about 60%. In 1985, because of state-owned enterprise turning in profits converting into tax makes the income tax as the share of total tax revenue got from redistribution link accounted for 92.4%, declining year by year, down to 68.4% in 1998, they began to rise after 1998, reaching 76.5% in 2011. Since 1985, property taxes and other taxes in the proportion of the redistribution is increasing year by year, some year fluctuate, but the little fluctuation, by 2010 their share reached 20.1%. The agriculture tax gradually increased from 4.9% in
1985 to 22.6% in 1996, reaching the top. When the agriculture tax was canceled in 2006, the proportion is only 8.8%, all other agriculture taxes in 2010 accounted for 3.5%.

Studying from different tax categories in the redistribution link, since 1978, income tax has been the dominant, property tax and other tax status is very weak. Income tax includes corporate income tax, foreign-invested enterprise income tax and personal income tax. Foreign-invested enterprise income tax and corporate income tax was consolidated in 2007. The corporate income tax in the proportion of redistribution tax revenue from 1978 began to decline, in 2003 to a minimum of 48.4%, after a few years has increased, reaching 80 percent by 2011. Personal income grew rapidly from 1978 to 2002, reached its highest point 31.9%, and after began to decline but no less than 20%.

Conclusions and suggestions
The results show that from 1978 to 1978, in the link of primary distribution, the change of China's tax revenue as a share of GDP is roughly symmetrical "V" type. In the link of redistribution, direct tax revenue as a share of GDP is roughly the asymmetric "U" shape. More than 30 years of reform and opening-up, the proportion of indirect tax to total tax on average more than 75%, and the proportion of direct tax to total tax on average less than 25%. Thus, tax revenue function is very strong, and adjustment function of tax on the economy is relatively weak.

From the analysis of primary distribution link tax situation, the existing tax system, the primary distribution adjustment function is very limited. In 1994 China's consumption tax is imposed, play a regulatory role for the primary distribution, but the proportion of the total turnover taxation is not high, and has a downward trend, accounts for only about 10% of the turnover tax in 2011. From the current status of tax participate in the distribution, there are problems of market failure: the land and resources differential income is not effectively regulate. luxury goods, restriction consumer goods such as tobacco, wine, all countries in the world universal levy heavy taxes, and life essential consumer goods, such as grain, food is more cheap, but the price of China formed by government policy is not perfect, has not been effective to solve these problems, resulting in the primary distribution link unfair phenomenon is serious.

From the point of redistribution taxes as a share of GDP, as a whole is lower, the highest year was 9.4%, no more than 10%, below the 3% level of 14 years. And from the different tax categories link of redistribution, since 1978, the income tax has been dominant, personal income tax is growing rapidly, and the ratio of property tax and other tax is very weak. The current tax system meet the function of raise fiscal revenue, not give full play function of regulation income distribution, this is one of the main problems of tax system in China.

In future tax system reform, accompanied by transformation the way of economic development, under the condition of maintaining the relative stability macro tax burden, the adjustment of the tax structure is important, namely by changing the tax system structure to ensure government revenue, at the same time, effectively regulate the economy, to narrow the gap in income distribution, to achieve the purpose of social justice. We can draw lessons from the experience of the OECD gradually reduce indirect taxes as a share of GDP, increase direct tax as a share of GDP, change the tax source structure, increase the proportion of direct tax to total tax revenue, change indirect tax as the main body of tax structure in our china. Implement raise fiscal revenue, at the same time, increase of direct tax regulation function, makes tax system structure truly playing the function of automatic stabilizers.

References
MANAGING E-TRASH FOR GLOBAL SUSTAINABILITY

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Abstract

In this article the authors posit that a lack of e-trash management is a major threat to global sustainability. It is maintained here that e-trash management must be connected to electronic equipment research and production simultaneously. If manufacturers explore how much e-trash will be produced and how it should be disposed of, there will be major savings and improvement in global sustainability. The authors present a model and an orientation to achieve such an important orientation.

Keywords: electronic trash, global sustainability, management planning of electronic equipment innovation
The incredible increase in electronic equipment production and use, there is equally a great increase in what is called “electronic trash”, unusable electronic equipment. According to one estimate, in the United States only two percent of the waste in landfills is electronic in origin, however, it is responsible for approximately 70 percent of the toxic waste found in landfills (University of Arkansas, 2009). At this point in time there are no cut and dry procedures unilaterally or globally for a comprehensive management plan for this increasing and extremely dangerous problem. At this point in time, the industrialized countries of North America and Western Europe are exporting e-trash to India, China, and Nigeria primarily, which certainly is not a solution for sustainability. The authors propose a simplified and reasonable approach and resultant solution to this major problem so that global sustainability would be enhanced.

The Impact of E-Trash

The U.S. Environmental Protection Agency (EPA) estimated that there will be 25 million televisions, about 40 million personal computers, and nearly a billion cell phones, which were near the end of their useful life and ready for disposal or replacement (Carroll, 2008). It must be understand that the U.S. figures indicate only a fraction of the e-trash that is being produced. Globally, it has been estimated that the volume of electronic waste is increasing at a rate of approximately nine percent per annum (U.S. Environmental Protection Agency, 2008). With increasing global affluence and ever increasing demand for electronics, it is reasonable to assume that the nine percent annual growth rate and electronic waste will prove to be conservative. Worldwide, about 2.25 million tonnes of electronic waste is actually being created every year. Of this, only about 18 percent is being recycled (Lyman, 2010). Even if e-trash were to be recycled, it is
recycled not for global sustainability but for profit. There are inherent problems associated with e-trash disposal and transportation. As electronic waste is transported from developed countries to developing countries, unnecessary threats to water, soil, and air of the receiving countries are created (United Nations, 2002). In Guiyu, China, a once pristine agricultural region has become a major exporter of e-trash. Researchers have found high levels of metal (i.e., lead, chromium, tin, etc.) in the soil brought on by the residual e-waste left in the city and scientists fear that incineration of discarded computer parts will spread toxic ash to residents. In that part of China, the workers have very dangerous jobs including cracking CRT tubes, toner sweepings, and open burning computer parts with little or no protective gear. As a result, the residents have demonstrated increased levels of lead poisoning and a higher rate of miscarriages (Terada, 2012). Preliminary research indicates that the number of dangerous substances is increasing and the results are becoming more alarming (Kerr, 2011). Similarly in Nigeria and India, the trafficking of electronic waste is creating a threatening environment.

Problems with Possible Management of E-Trash

Exhibit 1 illustrates five areas of e-trash management unknowns, which are likely to block a global approach to e-trash management. With these five points, the exhibit displays a gigantic barrier to e-trash management. The indications are such that there must be a management attitude modification and special emphasis on major research before e-trash management can be successful. Perhaps the most critical issue in the Exhibit 1 is not having a global authority such as the U.S. EPA strictly controlling the e-trash production
Possible Progress in E-Trash Management

The authors propose a somewhat simplistic model to cope with global e-trash management issues. Exhibit 2 presents a simplified model. The Exhibit starts with industry regulation. Here presumably a global authority would impose regulations on all of the manufacturers of electronic equipment are using a “cradle-to-grave” approach. The concept of “cradle-to-grave” life cycle planning involves planning for the end of life in the beginning. Although at this point this proposition sounds almost totally impossible, we must ask the question as to what about the sustainability of the fragile world? Which is more important?

Exhibit 2 gets into original research for recycling purposes. As the concept of “cradle-to-grave” life cycle planning is being forcefully applied the companies will find it quite manageable to develop new electronic innovations and simultaneously how they must be recycled. In fact, this approach might make the manufacturers think how they may minimize e-trash possibilities and how they may be able to improve the costing of the new equipment. The cost improvement may be related to minimized amount of trash along with reduced energy and materials consumption in the production process. Thus, the original research on recycling must be combined with the innovation activity. The authors believe that this orientation would make the manufacturers pay much more attention to electronic trash possibilities at the beginning of the production process.

Conclusions and Future Research

Not only are the dangers of e-trash are not quite understood, but e-trash problem in general have been set aside even though its danger and its volume have been
increasing. It is proposed here that e-trash is a great challenge to global sustainability and its management is a necessity. In this article, the authors propose a “cradle-to-grave” approach to managing e-trash, which in essence means connecting electronic equipment production to e-trash recycling. It is also proposed that if manufacturers were to look at the electronic equipment production and e-trash management simultaneously, they may find ways to not only economize on resources and energy but also proper ways of using and getting rid of e-trash as needed. The authors maintain this key issue to enhance global sustainability cannot be done on a piecemeal basis. More research is needed to manage e-trash and a set of global standards needs to be created and followed to cope with the increasing amount of e-trash and improve the sustainability of our fragile planet.
Exhibit 1: Coping with Electronic Trash Unknowns

<table>
<thead>
<tr>
<th>Management overall attitude</th>
<th>Management in general does not feel obligated to do anything with e-trash.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management profit making instinct</td>
<td>Companies are making money by exporting e-trash.</td>
</tr>
<tr>
<td>Lack of overall knowledge</td>
<td>Management is not sure how the new equipment should be recycled.</td>
</tr>
<tr>
<td>Lacking management resources to extend e-trash management</td>
<td>E-trash management needs special attention and research knowledge.</td>
</tr>
<tr>
<td>Not having an international authority</td>
<td>E-trash cannot be managed on a piecemeal basis</td>
</tr>
</tbody>
</table>
Exhibit 2 A Simplified Model

Industry Regulation

E-trash

Original Recycling Research

Combination with Innovation

Global Sustainability Enhancement
References


Empirical Study on Location Choice of Foreign Banks in China

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ABSTRACT
Using the panel data from 2006 to 2010, this paper analyses the determinants of location choice of foreign banks in China with the amount of assets of foreign banks in different regions as dependent variables. The empirical results show that market opportunity and following clients factors are both important determinants for foreign banks’ location choice. Meanwhile the presence of foreign banks tends to be more in financial centers of China, holding everything else being equal. However, the non-performing loan ratio of commercial banks of one region is not important factor for foreign banks to consider for now.

Keywords
Foreign Banks, China, Location Choice

INTRODUCTION
With the complete liberalization of banking industry at the end of 2006, foreign banks accelerated the pace of entering into China. By 2010, 185 banks from 45 countries and regions set up 216 representative offices in China; 37 banks from 14 countries and regions were locally incorporated which maintained 223 branches. In addition, there were 90 foreign bank branches established by 74 banks from 25 countries and regions. And the total assets of foreign banking institutions in China increased 29.13 percent year-on-year to RMB1.74 trillion (China Banking Regulatory Commission (CBRC), 2010). According to the author’s statistics, these foreign banks maintained business branches in 34 cities in China. Shanghai, Beijing, Shenzhen, Guangzhou and Tianjin have the largest number of business branches respectively, in which Shanghai is the top one and has 102 business branches, accounting for 30% of the number of business branches of foreign banks in China. It can be seen that there is an agglomeration effect in the location choice made by foreign banks in China, i.e. the offices of foreign banks concentrate in those more developed and first-deregulated cities, such as Shanghai, Beijing, etc. Therefore, what factors determine the location choice of foreign banks in China? And which regions can attract foreign banks to do more business? These are interesting problems worth concerning.

Among foreign literatures, in addition to the studies on the location choices among various host countries, there are some researches on the internal location choices in a host country, such as Bagchi-Sen(1991), Goldberg and Grosse(1994). In China, some researchers made some descriptive analysis on the features of location choices of foreign banks in China (for example, Zheng and Tang (2001), Xie and Wang (2004) and Bai and Ji (2010), etc.) Using panel data, Zhang and Yang (2007) made the empirical analysis on the determinants of location of foreign banks in 16 cities in China for the first time. Li (2009) examined the determinants in 24 cities on the basis of Zhang and Yang (2007). He and Yeung (2010) examined the locational distribution in 32 cities with conditional logit models. Existing studies, however, all took the number of institutions but not the amount of assets of foreign banks as the dependent variables, while the number of institutions cannot accurately reflect the business development status of foreign banks. This paper aims to contribute to the existing literature by using the amount of assets of foreign banks as the dependent variable to investigate the determinants of location choice of foreign banks in China.

1. HYPOTHESIS DEVELOPMENT
On the basis of previous studies and taking into account the availability of data, this paper empirically examines four factors that affect the location distribution of foreign banks in China.
1.1 Market Opportunity

Existing literatures prove that market opportunity is one of the important factors that affect the location choice of foreign banks. The market opportunity is generally measured from two aspects, economic development level and size of financial sector.

The higher the level of economic development, (which is usually measured by GDP, GDP per capita or the growth rate of GDP), and the larger the financial markets, the demand of households and businesses for financial services is greater, which can bring more profit opportunity for foreign banks. Many studies have proved it. For example, Buch (2000) and Yamori (1998) proved that from the perspective of national level, the entry of foreign banks is positively related with the GDP or GDP per capita of host countries. The further study by Focarelli and Pozzolo (2005) showed that profit opportunities resulting from a high expected economic growth and the prospect of competing with relatively less efficient banks appear to be a key factor affecting the expansion abroad. Goldberg and Grosse (1994) found that foreign bank presence in various states in the U.S., as measured by assets or offices, is positively related with the size of the state’s banking market.

Studies on location distribution of foreign banks in China have the identical results. Zhang and Yang (2007) proved that disposable income per capita is positively related with the office number of that city. Li (2009) proved that the office number of foreign banks is significantly positively related with both disposable income per capita and credit aggregates.

Therefore, based on the above discussion, the following are inferred:

H1: Foreign bank presence is drawn to the economically developed areas.

H2: Foreign bank presence is drawn to the areas with large banking market sizes.

1.2 “Follow-the-customer” Factor

Theories on multinational banking indicated that one of the motives of multinational banks to go abroad is to follow the customers. Numerous empirical studies also proved that foreign banks presence is significantly correlated with the foreign trade or FDI volume between the home and host countries. Meanwhile, some studies showed the foreign trade or FDI volumes of one area play important role in location choice of foreign banks within one country. For example, Goldberg and Grosse (1994) proved that the amount of FDI in the state is a significant determinant for attracting foreign bank assets, while the foreign trade volume is not. Studies on China made by Zhang and Yang (2007) and Li (2009) also proved that number of foreign banks’ offices in one city is positively related with the foreign trade volume, while the amount of FDI is not a significant determinant. Therefore, the following is speculated:

H3: Foreign bank presence is drawn to the areas with more foreign trade or FDI volume.

1.3 Institutional Factors

Institutional factors are also important for location distribution of foreign banks. Numerous studies found that foreign banks tend to enter the financial centers of one country, which result in agglomeration effect. Setting up offices in financial center makes it convenient for foreign banks to establish good relationships with regulatory authorities and other financial institutions. It is also convenient to gain funds and information with low cost and to receive specialized services from other companies. Studies made by Bagchi-Sen (1991) and O hUallacháin (1994) all showed foreign banks in the U.S. concentrated in the financial centers. He and Yeung (2010) showed that foreign banks agglomerate in Beijing, Shanghai, and cities hosting the regional branches of the People’s Bank of China (central bank of China). Based on the above discussion, it is reasonable to deduce the following:

H4: Foreign bank presence agglomerates in financial centers in China.

1.4 Risk Factor

In consideration of risk control, foreign banks usually make the regional risk assessments for location choice. Therefore, financial risk status of one region is also one of factors affecting the location distribution. Empirical study made by Li (2009) used weighted average nonperforming loan ratios of 24 cities as independent variable. But the coefficient was not significant. This paper tries to study whether the asset distribution of foreign banks is related with the risk status of one region and thus the following hypothesis is proposed:

H5: Foreign bank presence is negatively related with the financial risk level of one region.
2. METHODOLOGY AND DATA SOURCES

2.1 Dependent variable

As mentioned before, different from the previous studies on China, this paper uses the amount of assets of foreign banks but not the number of offices in different regions as the dependent variable. However, due to the availability of data, the amount of assets of foreign banks in different provinces, autonomous regions, or municipalities but not in different cities is used, which is denoted as FBASSET (in natural logarithmic form). The data is from Financial Performance Report of each region from 2006 to 2010. Since foreign banks did not enter some provinces until recently, this paper selects 20 among 31 provinces, autonomous regions, or municipalities which have foreign bank presence at least after 20081.

2.2 Explanatory variables

Based on the previous studies and the availability of data, definitions of explanatory variables are as follows:

(1) The natural logarithmic form of GDP and the growth rate of GDP are introduced to measure the level of economic development, which are denoted as GDP and GDPGROWTH respectively and the data are from China Statistical Yearbook.

(2) The ratio of total banking loan or total amount of banking assets to GDP are introduced to measure the banking market sizes of one region. The reason is that compared with provinces and autonomous regions, municipalities are much smaller with respect to area and population. Then it is biased to use the absolute value of total banking loan or banking assets to measure the banking market sizes. Two variables are denoted as LOAN and ASSET respectively and the data are from Financial Performance Report.

(3) To test the “follow-the-customer” hypothesis (H3), the natural logarithmic form of volume of foreign trade (TRADE) and the natural logarithmic form of realized amount of foreign direct investment (FDI) are included as explanatory variables. The data are from China Statistical Yearbook.

(4) Dummy variable (CENTER) is introduced to test whether foreign bank presence agglomerates in financial centers in China (H4), which represents the locations of regional branches of the central bank, assigning a value of “1” for Beijing, Shanghai, Tianjin, Chongqin, Guangdong, Liaoning, Shandong, Sichuan, Jiangsu, Hubei, and Shanxi, and zero for other provinces.

(5) The nonperforming loan ratios of commercial banks of each region (NPL) are introduced to measure the financial risk status. The data are from Distribution of NPLs of Commercial Banks by Region, Annual Report of China Banking Regulatory Commission of each year.

In summary, regression model based on panel data is as follows:

\[ FBASSET_{it} = c_i + \beta_1 OPPOTUNITY_{it} + \beta_2 FOLLOW_{it} + \beta_3 CENTER_i + \beta_4 NPL_{it} + \epsilon_{it} \]

Where \( i=1, \ldots, N, t=1, \ldots, T \)

3. REGRESSION RESULTS

First, the correlation test of all variables except dummy variable is made and the result is shown in table 1.

<table>
<thead>
<tr>
<th></th>
<th>FBASSET</th>
<th>GDP</th>
<th>GDPGROWTH</th>
<th>LOAN</th>
<th>ASSET</th>
<th>TRADE</th>
<th>FDI</th>
<th>NPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBASSET</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>0.564</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDPGROWTH</td>
<td>-0.060</td>
<td>-0.050</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Twenty provinces, autonomous regions, or municipalities include Beijing, Shanghai, Tianjin, Chongqing, Guangdong, Fujian, Liaoning, Shandong, Sichuan, Jiangsu, Hubei, Hunan, Jiangxi, Anhui, Shanxi, Guangxi, Yunnan, Heilongjiang, Zhejiang, and Hainan.
As the table 1 shows, among the explanatory variables, LOAN and ASSET are highly correlated and the correlation coefficient is 0.926. TRADE and FDI are also highly correlated with the coefficient being 0.866. To mitigate the multicollinearity issue of estimates, the interaction of LOAN and ASSET, and TRADE and FDI are introduced in the model, to show the effect of banking market sizes and “follow-the-customer” factor on the location choice respectively. Besides, GDP is also highly correlated with TRADE and FDI. So the significance of GDP and TRADE*FDI is tested separately.

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPGROWTH</td>
<td>0.0630*</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(1.66)</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>-</td>
<td>1.5105***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5.37)</td>
</tr>
<tr>
<td>ASSET*LOAN</td>
<td>0.1550***</td>
<td>0.1112**</td>
</tr>
<tr>
<td></td>
<td>(2.97)</td>
<td>(2.13)</td>
</tr>
<tr>
<td>FDI*TRADE</td>
<td>0.1054***</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(5.45)</td>
<td></td>
</tr>
<tr>
<td>CENTER</td>
<td>1.7155***</td>
<td>2.0640***</td>
</tr>
<tr>
<td></td>
<td>(3.57)</td>
<td>(3.26)</td>
</tr>
<tr>
<td>NPL</td>
<td>-0.0143</td>
<td>0.0099</td>
</tr>
<tr>
<td></td>
<td>(-0.76)</td>
<td>(0.51)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.5830</td>
<td>0.4990</td>
</tr>
<tr>
<td>Number of observation</td>
<td>82</td>
<td>89</td>
</tr>
<tr>
<td>Hausman test (P value)</td>
<td>2.05 (0.73)</td>
<td>6.18 (0.10)</td>
</tr>
</tbody>
</table>

Table 2. Regression Results on Location Choice of Foreign Banks in China (2006-2010)
Notes: (1) The sample period is from 2006 to 2010 and the number of cross-section is 20. The actual sample is less than 100 because some data are default or wrong.

(2) The constants are left out in the results.

(3) *Significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level, t values are in parentheses

(4) Hausman-test statistic shows whether the random effects method is suitable.

The empirical results of table 2 show that the asset distribution of foreign banks in China is significantly positively related with GDP or GDP growth rate of that region, demonstrating that the level of economic development is one of important determinants for foreign banks presence. Thus, $H_1$ is supported. In addition, the disposable income per capita is also introduced into the model instead of GDP and the result is similar. This is slightly different from the results of Zhang and Yang (2007) and Li (2009) which showed the number of offices of foreign banks is positively related with the disposable income per capita but not GDP.

Both of results (1) and (2) verify that the foreign bank presence is significantly positively related with the total banking loan or total amount of banking assets, proving foreign bank presence is drawn to the areas with large banking market sizes ($H_2$). This is consistent with Li (2009).

The coefficient of TRADE*FDI is significantly positive, proving that foreign bank presence is drawn to the areas with more foreign trade or FDI volume ($H_3$). Foreign banks may follow their customers and enter the area with more international trade or FDI, providing financial services to those customers. This result is consistent with other studies on China.

The coefficient of CENTER is significantly positive and thus $H_4$ is supported very well, showing that holding everything else being equal, foreign banks tend to operate in financial centers to obtain the advantages in funds, information and others. This result is consistent with He and Yeung (2010).

$H_5$ is not proved since the coefficient of NPL is positive or negative but not significant, showing that the foreign bank presence is not significantly related with the nonperforming loan ratios of commercial banks, which is consistent with Li (2009). This indicates that foreign banks do not take the nonperforming loan ratios as an important factor when making location choice. One of reasons may be that foreign banks do not consider the nonperforming loan ratios of commercial banks equivalently with the financial risk status of that region.

4. CONCLUSION

Based on the previous studies and using the panel data from 2006 to 2010, this paper analyses the determinants of location choice of foreign banks in China with the amount of assets of foreign banks in different regions as dependant variables. Market opportunity, “follow-the-customer”, institution factor and risk factor are all included.

The empirical results show that when foreign banks make the location choice, market opportunity is one of the important factors so that the economically developed regions with large banking sizes are more attractive to foreign banks. On the other hand, foreign bank also consider “follow-the-customer” strategy so that foreign bank presence is drawn to the areas with more foreign trade or FDI volume. Meanwhile the presence of foreign banks tends to be more in financial centers of China, holding everything else being equal. However, the non-performing loan ratio of commercial banks of one region is not important factor for foreign banks to consider for now.

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THE DISPLAY CHARACTERISTICS OF EXHIBITION INDUSTRY IN CHINESE MAINLAND

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ABSTRACT

This essay aims to discuss the display characteristics of exhibition industry in Chinese mainland to supply a new analysis view for researching on China’s exhibition industry. This essay takes Chinese website pages about Chinese exhibitions in 2012 as the study text, uses the content analysis method of media study to analysis the quantity, industry, theme, character, scale, dates and especially the characteristics of the main exhibitions’ time and location in five economic areas of Chinese mainland by SPSS statistical analysis. The result shows that the characteristics on both time and location of the exhibition industry are different in different seasons and areas. Besides, the five economic areas shows different degrees of industry concentration and characteristics. These characteristics reflect their developing levels and space agglomeration.

Keywords  
Exhibition industry; Time and space characteristics; Chinese mainland

INTRODUCTION

With the development of globalization and the expanding of enterprises’ market space, the exhibition industry boosts rapidly. From 2001 to 2005, the number of the exhibitions increased at a speed of 16%. In 2005-2007, the increase reached 28%. However, there are also problems concerning its development, for example, the lack of overall management by the government and the vacancy of exhibition centers. At present, there is vacancy in the research of agglomeration characteristics of exhibitions. This paper aims to discuss these agglomeration characteristics and provide guidance on developing the industry scientifically.

TIME DISTRIBUTION CHARACTERISTICS OF EXHIBITIONS

The Time Distribution Shows a Doublet Shape

Graph1: Distribution of the exhibitions’ opening dates in our country

The graph indicates that in May and September, there are more exhibitions and less in January, February and July. That is because of the climate in China. The relatively low point in April and October derives from the opening of the China Export Commodities Fair. Many exhibition organizers choose to avoid competition with it.

In the first quarter of the year there are least exhibitions. Besides the climate, it also owes to our traditional festival-the Spring Festival. The trade between companies reduces dramatically in this period.
**Time Distribution is More Unequal in Five Economic Zones Than in the Country**

Lorenz Curve: Lorenz curve is put forward by Max Otto Lorenz to measure fair distribution level of social income. Here we use this curve as a tool to measure the degree of uniformity of the exhibitions’ distribution in the 12 months in 2012 in five economic zones.

With Lorenz curve, we can only get a rough qualitative inequality degree of exhibition distribution in the 12 months. To present it precisely, we can use Gini coefficient, which refers to the percentage of the area surrounded by the actual Lorenz curve and the curve of absolute equality. Gini coefficient is between 0 and 1, the bigger the coefficient is, the bigger the inequality degree is. The calculation formula is:

\[ G = 1 - \frac{1}{n} \left( \sum_{i=1}^{n} W_i + 1 \right) \]

**Season Coefficient**
Season Coefficient can be used to analysis the concentration degree of exhibitions’ time distribution quantitatively. The calculation formula is:

\[ R = \frac{1}{12} \sum_{i=1}^{12} \left( x_i - \frac{33}{12} \right)^2 / 12 \]

Xi refers to the percentages of numbers of exhibitions in each month. The closer R is to 0, the more even the time distribution among months is; the bigger R is, the bigger the gap between slack seasons and peak period is.

Chart1: Gini coefficient and Seasonal coefficient of exhibitions’ opening dates’ distribution in our country

<table>
<thead>
<tr>
<th>Economic Zones</th>
<th>Beijing and Tianjin Economic Zone</th>
<th>The Yangtze River Delta Economic Zone</th>
<th>The Pearl River Delta Economic Zone</th>
<th>The Northeast Economic Zone</th>
<th>The Midwest economic Zone</th>
<th>Nationwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gini Coefficient</td>
<td>0.399</td>
<td>0.244</td>
<td>0.407</td>
<td>0.607</td>
<td>0.435</td>
<td>0.291</td>
</tr>
<tr>
<td>Season Coefficient</td>
<td>6.676</td>
<td>5.458</td>
<td>6.728</td>
<td>7.928</td>
<td>7.080</td>
<td>4.421</td>
</tr>
</tbody>
</table>

It can be seen from the chart that in the Northeast Economic Zone and the Midwest Economic Zone, time distribution are the most uneven. This coincides with some scholars’ research findings: in provinces where exhibitions are fewer, the seasonal concentration degree is higher; in provinces that enjoys more exhibitions, the seasonal concentration is relatively low.

Besides, the inequality degrees of time distribution in five economic zones are much higher than the nationwide. That is because that China is a large country and there is significant difference between the north and south area. For instance, July and August are the slack seasons for exhibitions in the south area, but that is not the case in the north area. November and December are the slack seasons for exhibitions in the north area, but that is not the case in the south area.

Therefore, from the view of the nationwide, its concentration degree of time distribution is smaller than the regional.

THEME DISTRIBUTION CHARACTERISTICS OF EXHIBITONS

Close Relationship Between the Themes of Exhibitions And the Economy

Chart2: percentages of exhibitions’ themes in our country
From a national perspective, Exhibitions of Machinery industry, Property of building materials and Food and beverage constitutes the largest proportion. This is consistent with the characteristics of economic operation and reflects the fact that exhibition is the barometer of economy. Infrastructure, such as real estate, is the major driving force of the economic growth. China, the factory of the world, has strong request for the machinery industry. This explains why the numbers of the two kinds of exhibitions are larger. Food and beverage has obvious regional characteristics so the number of exhibitions is also larger. With China's economic transformation from investment to consumption, from export oriented to domestic demand oriented, the percentage of the tertiary industry will rise and so does the exhibition type. In the future, cultural trade, entertainment exhibition types may increase.

**Difference in Exhibition Themes’ Concentration in Five Economic Zones And the Nationwide**

Herfindahl Index

Herfindahl Index is used to reflect the distribution of market forces and the degree of market monopoly. It refers to the quadratic sum of the percentages of enterprises’ shares on the whole market. The calculation formula is:

\[
HHI = \sum_{i=1}^{N} \left( \frac{X_i}{X} \right)^2 = \sum_{i=1}^{N} S_i^2
\]

Chart3: HHI coefficients of exhibitions’ themes distribution
<table>
<thead>
<tr>
<th>Economic Zones</th>
<th>Beijing and Tianjin Economic Zone</th>
<th>The Yangtze River Delta Economic Zone</th>
<th>The Pearl River Delta Economic Zone</th>
<th>The Northeast Economic Zone</th>
<th>The Midwest economic Zone</th>
<th>Nationwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHI</td>
<td>0.004057</td>
<td>0.008547</td>
<td>0.003467</td>
<td>0.00028</td>
<td>0.002473</td>
<td>0.065261</td>
</tr>
</tbody>
</table>

It is obvious that HHI is the highest in the nationwide and concentration ratio nationwide is bigger than that of the economic zones, with economically developed areas larger than the less developed area. Among the five economic zones, the Yangtze River Delta Economic Zone’s concentration ratio of exhibition types is the highest while that of the Northeast Economic Zone’s is the lowest. This is because that economically developed countries have formed its advantage industries. So certain themes of exhibitions in this region are in the majority and HHI is consequently higher.

Numbers of Five Economic Zones and GDP

<table>
<thead>
<tr>
<th>Economic Zones</th>
<th>Beijing and Tianjin Economic Zone</th>
<th>The Yangtze River Delta Economic Zone</th>
<th>The Pearl River Delta Economic Zone</th>
<th>The Northeast Economic Zone</th>
<th>The Midwest economic Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibition Number</td>
<td>150</td>
<td>258</td>
<td>145</td>
<td>35</td>
<td>112</td>
</tr>
<tr>
<td>GDP (0.1 Billion yuan)</td>
<td>30686.2</td>
<td>72035.92</td>
<td>40949.84</td>
<td>50430.69</td>
<td>35825.95</td>
</tr>
</tbody>
</table>

The Yangtze River Delta Economic Zone has the most exhibitions and its GDP also ranks first; GDP of the Northeast Economic Zone ranks second, but it has the least exhibitions. That is because although its economic scale is large, its radiation force is limited. GDP of Beijing and Tianjin Economic Zone is smaller than the Midwest economic Zone, but it has more exhibitions. The reason is that Beijing market can radiate to nationwide so that it can attract more exhibitions.

CONCLUSION

This paper shows that exhibitions in Chinese mainland have some distribution characteristics. Industry development plan should be made based on these characteristics, that is to say, to fully take industrial and economic advantages in different regions to develop the exhibition industry. These distribution characteristics provide guidance on it.
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Enhancing the Quality of Dairy in China

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ABSTRACT
After the 2008 China dairy scandals, China’s dairy industry experienced a difficult time. However, the dilemma still exists. The amount of exported dairy and the consumers’ confidence has been seriously impacted. This paper reviews the processing of the scandals and analyzes the causes of the scandals. The domestic and international economic environment and institutional structure led to the scandals, but some papers have pointed out that liability insurance works well in this field. This paper analyzes the effect of liability insurance in this field and suggests that it is too limited because liability insurance coverage does not include incidents which have resulted from inferior quality. Thus, there were three main recommendations: (1) Establish a dairy animal care program. The quality of dairy must be managed from an animal care program; (2) Set up third-party verification; and (3) Strictly enforce national dairy standards. The method used in this paper is known as case analysis. The significance of the study may review and assess some measures taken by the government after 3 years, and then give some suggestions to help the dairy industry development.

Keywords
The quality of dairy, China dairy scandals. Liability insurance

INTRODUCTION
The 2008 dairy scandals have seriously impacted dairy industry development. Blaskó (2011) discussed the importance of the dairy sector around the world and illustrated the trends of milk production, consumption, trade, and prices mainly based on the FAO database. Some papers have also designed measures that the government should take to avoid future dilemmas (yanhongjin, li guo lin, l an yao, 2011). As a result, the government has taken measures to push the development of the dairy industry in China. For example, they established nearly 400 product testing centers from 2008 to 2010 and have given special subsidies to dairy farmers. Thus, it would be of interest to learn how these measures work and if they are effective. Another aspect to study is liability insurance for the dairy industry. Some authors have concluded that there was no dairy company that purchased food liability insurance, so the financial result of the scandal bankrupted the Sanlu Company. There have been surprisingly few studies devoted to the effect of liability insurance in inferior quality products, and what government effects these measures have based on the incidents in 2008. The purpose of this paper is to provide critical suggestions for the dairy industrial and discuss the validity of liability insurance for inferior quality.

1. SCANDALS IN CHINA’S MILK INDUSTRY AFFECTING SAFETY
Before July 2008, confidence among Chinese consumers about food safety was very high. However, on July 16, 2008, a food safety incident occurred in the People’s Republic of China. The World Health Organization referred to it as one of the largest food safety events in recent years, and it was eventually named the 2008 Chinese milk scandal. The scandal involved milk and infant formula, and other food materials and components, adulterated with melamine. By November 2008, China reported an estimated 300,000 victims, (1) with six infants dying from kidney stones and other kidney damage, and another 860 babies hospitalized. (2) Melamine was illegally added to the food products to increase their apparent protein content. (3) Because melamine can cause renal and urinary problems in humans and animals when it reacts with cyanuric acid inside the body, all of countries have banned melamine for use in food production.

In late October 2008, melamine was added to animal feed which, in turn, was discovered in eggs and possibly other food. As of July 2010, melamine-contaminated dairy products were discovered again in some provinces. Chinese authorities were not clear whether these new contaminations constituted wholly new adulterations or were the result of illegal reuse of material from the 2008 adulterations.
The scandal had far-reaching consequences for the consumption of milk. First, consumers panicked about the food safety. The confidence crisis among Chinese consumers would be difficult to overcome. Second, political corruption in mainland China became the focal point. Third, at least 11 countries stopped all imports from mainland Chinese dairy products, and the reputation of China’s food exports was severely damaged. The passive influence eventually expanded to other industries.

The scandal began with revelations of contamination of Sanlu milk products. The Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) issued the results of a sample testament from 491 batches of products sold by all 109 companies producing baby milk formula. The highest level of contamination among all the samples tested was Sanlu, whose products sold at half the price of equivalents on the market. Unfortunately, “Chinese national brands” Yili, Mengniu and Bright Dairy & Food Co. were also placed on the contamination list.

A compensation plan for the scandal included a full product recall, free treatment offered by the State, medical and other expenses, as well as compensation offered by firms. The value of the company went into a nose-dive as a result of the scandal. Fonterra announced it had written down the carrying value of its investment by NZ$139 million (two-thirds), reflecting the costs of the product recall and the impairment of the Sanlu brand because of the “criminal contamination of Milk” (4) By September 27, China Daily reported that Sanlu was close to bankruptcy, and might be taken over by the Beijing Sanyuan Foods Company (5).

2. ANALYSIS OF THE CAUSE OF THE SCANDALS

2.1 The economic cause

China’s economy experienced the highest growth rate in the world from 1990-2004, with an average rate of 10% per year, so the government attempted to cool the economy which impacted the cost of raw materials. The macroeconomics environment of the dairy industry in 2008 experienced growing costs of livestock, feed, facilities. The higher costs of raw milk resulted in Mengniu’s share price falling 12% since October 2007. The government had taken some measures against inflation including price controls which resulted in farmers seeing diminishing profit.

2.2 Institutional cause

In its 30 years of transition from a planned economy to a “socialist market economy,” the government has always played a role of entrepreneur. The government is a large shareholder of most of the county’s large corporatized state-owned enterprises (SOEs), in addition to maintaining economic growth, measured by GDP growth, a key policy priority. The Chinese state and the Chinese state-controlled companies have a very close relationship but this relationship is not helpful when it comes to supervising the market run by the state.

Sanlu Company was tested in June 2008 after 7 months when it had received complaints about sick infants on December 2007 and revealed by a State Council investigation. It said leading government officials in Shijiazhuang city had failed to report the contamination to provincial and state authorities (until September 9) in violation of rules on reporting major incidents involving food safety.

3. CHINA’S FOOD LIABILITY INSURANCE FUNCTION

The series of scandals of China milk safety presents a basic question: how to protect enterprises and customers. From this series of scandals, no company has purchased liability insurance. Many people attribute the bankruptcy of Sanlu to the lack of liability insurance, and clearly enterprises involve great risk. Product liability insurance protects the business from claims related to the manufacture or sale of products, food, medicines or other goods to the public. It covers the manufacturer's or seller's liability for losses or injuries to a buyer, user or bystander caused by a defect or malfunction of the product, and, in some instances, a defective design or a failure to warn. Food liability insurance can not provide a financial protection for the food company in the claims that come from the series scandals of China milk safety because food liability insurance doesn’t cover the risk form illegal actions. However, the reason for the series scandals is exactly illegal adulteration. On the one hand, liability insurance suggests that its ownership is socially responsible, and it can raise the confidence of consumers. Many consumers prefer a brand of milk just because of its liability insurance. Consumers take liability insurance as a sign of high quality milk even though that is not the case. Food liability insurance play an important role for marketing. Although the insurance company should take some measures to supervise the food company, the liability insurance mostly protects its holders to compensate them for legally mandated sanctions within insurance amount. It protects the food companies when they are sued for claims that come within the coverage of the insurance policy. However, food liability insurance is not an important safeguard for quality control of milk. First, the food liability insurance coverage does not include any compensation or legally mandated sanctions resulting from inferior quality. Only the food company is responsible for the quality control of milk. Second the insurance company may first pay an indemnity within the insurance amount, and then the
insurer claim to the food company. The food company will return the indemnity to the insurance company. The food liability insurance provides some protection in the event that the insured food product causes injury to a user.

Another limitation is that the amount of food liability insurance may not enough to pay the indemnity. Food liability insurance is not legally compulsory. The food company can choose to purchase the minimum level of liability insurance to reduce its cost. Since food liability insurance is accepted as a symbol of high quality milk by the customers, the food companies often think of food liability insurance in terms of marketing. Like an advertisement, food liability insurance can increase sales. However, the premium is relative to the amount. If the food companies choose the higher amount of insurance, they will pay a higher premium, so the food companies decide to purchase the minimum level of liability insurance. When an accident occurs, the insurance company will only pay the indemnity within the insurance amount purchased. The indemnity takes the limitation that is either the accumulative total sums of limits or the total sums of limits per claim. When death occurs, the limitation is quite inadequate, and the insurance company first pays the customer for the food company within the liability amount. The food company needs to return the indemnity paid by the insurance company and replenish the unpaid indemnity to the insurance company.

4. GOVERNMENT STEPS IN

In order to set up new food testing centres and replace outdated equipment, the government had established nearly 400 product testing centres, and 80 of these are food testing centres.

An emergency rescue plan had been drawn up by the Ministry of Agriculture and the Ministry of Finance to give special subsidies to dairy farmers who seriously affected by the lack of demand after the contamination scandal. Local governments sent 150,000 officials to overhaul the entire supply chains from cattle feed to milk-collection and registered 18,803 milk-collecting stations.

All measures the government taken focus on the checking and testing the quality of milk. However, improving milk quality is more essential than testing and checking.

5. HOW TO IMPROVE MILK QUALITY

The principal goal of improving milk quality is that dairy products will be satisfying or better than of the national standard. To carry out this principal goal, the premise is that there is an operative and acceptable national standard. The higher goal is to ensure the public that the finished milk product will be of high quality and acceptable to the consumer. The higher goal is only possible if the food company operates with integrity and social responsibility.

On the surface, improving the quality of milk will be exceptionally expensive, but in practice, it will increase the profits of the dairy companies. Profits will increase due to the sale of more products, reduced product recalls, and a better reputation. The next section outlines several suggestions to improve the quality of milk.

5.1 Establish a dairy animal care program.

The dairy industry has the mission to take care of the well-being of the animals. Consumers purchase dairy products from a dairy company, and they do not know which farmer the dairy products come from. The dairy company must ensure that the farmers operate in a way that is consistent with the company’s values and expectations. Thus, the milking station should manage the practices for a variety of animal care issues including animal health from birth to the end of life, facilities/housing, nutrition, equipment/milking procedures, transportation, and handling. This can ensure that animals receive the highest level of care, and dairy products are safe, wholesome, and nutritious. The dairy animal care program provides consistency and uniformity to ensure best practices in animal care and quality assurance in the dairy industry.

5.2 Set up third-party verification

Third-party verification can make a significant contribution to improve the quality of milk. An independent third organization should employ some experts with wide experience to provide cost-effective services. The validity of the third-party verification lies in its independence without a conflict of interest in the dairy industry. TPV should be required or authorized by the international dairy foods association. The international standard is more credible.

5.3 Strictly enforce national dairy standards

The Ministry of Health published the new compulsory dairy safety standards on March 26, 2010, which will greatly impact the future development of the Chinese dairy industry. First, the new standards tighten quality control in the dairy industry and regulate the dairy market. Currently, it is very common that Chinese milk cows are bred on small household hobby farms. Because the ability of these owners is relatively poor, the raw milk quality can not be guaranteed. The new standards us the
Ma

Enhancing the quality of dairy in China

CDC standards as a reference which will require higher technology and quality of raw milk and dairy. Currently in China, there are approximately 2000 dairy manufacturers with relatively poor staff, processing equipment, and management skills.

Another impact of the new standards is that they will integrate the Chinese dairy industry, leading to resource restructuring from unqualified small dairy farmers and dairy manufacturers to better qualified corporations. Therefore, a more standardized, large-scale, and intensified Chinese dairy industry can be expected. The new standard will also help elect the international trade of dairy products. The supply of qualified raw milk and dairy will be less than the market demand under the new standard, so importing high-quality dairy from Oceania, Europe, and North America will supply the gap. As far as dairy exports, the melamine incident impacted seriously hurt Chinese dairy product exports. However, the new standards will enhance the access and quality so it can improve the situation so growing exports can be predicted.

6. CONCLUSIONS

There are important differences between our study and (John H. Kirk, DVM, MPVM,2010) in what the government and dairy companies should do. If the government follows these measures, the effect should be tested in the future again. The measures should be constantly monitored and improved to ensure the safety of China’s milk products and to sustain China’s dairy industry.

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FRENCH EXECUTIVES’ PERCEPTIONS: RESEARCH IN PROGRESS

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ABSTRACT
The twelve-nation European Union (EU) was established through final ratifications of the Maastricht treaty in late 1993. This event was the culmination of work begun in 1951 by Germany, France, Italy, the Netherlands, Belgium and Luxembourg through the Schuman plan for common management of steel and coal industries. The hallmark EU characteristic was to be “four freedoms”: movement of people, goods, services and money between nations as freely as within. Anticipating this new economic reality, business firms were expected to begin responding by giving more attention to external interests and less to internal interests. The first stage of a longitudinal study of this expected trend was completed in January 1994 with a survey of business executives of large public French firms. Anticipated follow ups have not yet been conducted. Findings from the first stage of the study and plans for follow up surveys and analyses are discussed.

Keywords
France, European Union, Business Interests, Executive Perceptions

INTRODUCTION
On November 1, 1993, the European Union (EU) was formally established through final ratifications of the Maastricht treaty by 12 European nations. This event was the culmination of the work begun in 1951 by the nations of Germany, France, Italy, the Netherlands, Belgium and Luxembourg through the Schuman plan for the common management of steel and coal industries. The hallmark character of the EU was to be the “four freedoms”: the movement of people, goods, services and money between member nations as freely as they did within a single country.

In anticipation of this new economic reality, business firms were expected to begin responding by giving more attention in their strategic planning to external interests (public at large, customers) and less to internal interests (owners, managers, employees). A longitudinal study was planned to begin documenting this expected trend; the first stage was completed in the first quarter of 1994 with a survey of business executives of large public French firms. Anticipated follow ups of this longitudinal study have not yet been executed.

This paper provides a description of the findings from the first, 1994, stage of the study and plans for follow up surveys are discussed.

FIVE INTERESTS OF BUSINESS FIRMS AND RELATED FACTORS
As noted in the early 1990’s (Calori& Sarin, 1991) the economic performance of business firms in France is closely aligned with key elements of corporate culture including the relative importance assigned to various stakeholders. As political and economic conditions change, the importance of such stakeholders may also change. One such major political and economic change of the early 1990s for French business firms was the establishment of the European Union (Barnier, 2013). As a result of the establishment of the EU, it was expected that there would be a gradual shift in the priority of French business organizational cultural values from emphasizing internal stakeholders to external stakeholders. Frequently discussed stakeholders are (1) owners, (2) managers, (3) employees, (4)
customers and (5) the public in general. Internal stakeholders include owners, managers and employees while external stakeholders include customers and the public in general.

The change in political and economic conditions represented by the establishment of the EU was only one of several possible factors which could alter internal shifts in the priority of French business organizational cultural values from emphasizing internal stakeholders to external stakeholders. Other possible factors which could also alter internal shifts in the priority of French business organizational cultural values are (1) organizational size in terms of the number of employees, (2) proportion of manual workers among employees, (3) the degree of employee recognition of the mutual benefit of the firm’s operations (4) the extent to which the firm is satisfied with the production defect rate (Burt et al, 2000; Essounga, 2009; de Bony, 2010; Paillé, 2009).

PHASE ONE OF THE RESEARCH PROJECT

In order to document the extent to which the political and economic change represented by the establishment of the EU and other factors listed in the section above would result in internal shifts in the priority of French business organizational cultural values, a longitudinal research project was designed. The approach of the project was to collect perceptional data from senior human resource managers of the largest manufacturing firms of France immediately upon establishment of the EU in 1994 and then to follow up periodically with the same firms using the same instrument to document the types of changes which would occur through the years.

A survey was designed, translated into French and mailed via the U.S. Postal service in January 1994. One hundred such surveys were distributed. Eighty seven surveys were delivered and twenty of these eighty seven were returned via the French postal system. Of these twenty that were returned, eight were deemed to be complete enough to analyze.

The following questions were among those included in the survey and the responses to these questions form the basis for the findings reported in this paper:

1. Among the following central interests, which are considered by your firm to the most important? Number from 1 to 5 in order of priority, “1” indicating most important, etc.
   - Owners interests
   - Managers interests
   - Employees interests
   - Customers interests
   - Public in general interests

2. Do you believe that your employees recognize that the prosperity of the firm is linked to the improvement of their lives? Check one of the following.
   - Strongly recognize
   - Recognize more or less
   - Hardly recognize
   - Do not recognize

3. How satisfied is your firm with the actual percentage of production defects? Check one of the following.
   - Very satisfied
   - Satisfied
   - Unsatisfied
   - Very unsatisfied

4. What is the total number of employees of your firm? ________________.

5. What is the total number of manual workers among the employees of your firm? ________________.

The responses to questions 2, 3 4 and 5 were dichotomized (see Table 2 and Table 3) and the list of eight firm analyzed by the phase one data collection effort are shown in Table 1.
<table>
<thead>
<tr>
<th>The Case Study Firm</th>
<th>Address (1994)</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groupe Ciments Francais (Now Ciments Francais – part of</td>
<td>Tour Generale</td>
<td>Construction Cement Manufacturing</td>
</tr>
<tr>
<td>Italcementi Group)</td>
<td>Paris La Defense</td>
<td></td>
</tr>
<tr>
<td>Renault</td>
<td>Rue Servient, Lyon</td>
<td>Automobile Manufacturing</td>
</tr>
<tr>
<td>Sopad Nestle</td>
<td>Quai du President Paul Dourmer Courbevoie</td>
<td>Food Processing (SOPAD: Société de Produits Alimentaires et Diététiques)</td>
</tr>
<tr>
<td>Imetal (Former Societe Le Mickel is now part of part of</td>
<td>Ave du Maine</td>
<td>Construction Metals Manufacturing</td>
</tr>
<tr>
<td>ERAMET)</td>
<td>Paris</td>
<td></td>
</tr>
<tr>
<td>Coopagri Bretagne (Now Triskalia after merger with Cam56</td>
<td>B.P. 100 Landerneau</td>
<td>Agricultural Marketing Cooperative</td>
</tr>
<tr>
<td>and Eolys)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lafarge Coppee</td>
<td>Rue des Belles-Feuilles Paris</td>
<td>Construction Cement Manufacturing</td>
</tr>
<tr>
<td>Dumez-GTM (now part of Vinci)</td>
<td>Ave Pablo Picasso Nanterre</td>
<td>Bridge Construction (Now also infrastructure and concessions)</td>
</tr>
<tr>
<td>Aussedat Rey (Now part of International Paper Co.)</td>
<td>Ave du Petit Clamart Clamart</td>
<td>Paper Manufacturing</td>
</tr>
</tbody>
</table>

Table 1. The Case Study Firms – All unionized & public (Coopagri Bretagne members are the only shareholders).
<table>
<thead>
<tr>
<th>Average Rank of Importance of Firms’ Interests</th>
<th>Smaller Firms (1,750-8,000)</th>
<th>Larger Firms (13,300-30,000)</th>
<th>Lower Percentage of Manuel Workers (26% - 51%)</th>
<th>Higher Percentage of Manuel Workers (60% - 94%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Average Rank of Importance</td>
<td>Customers</td>
<td>Owners</td>
<td>Customers</td>
<td>Owners</td>
</tr>
<tr>
<td></td>
<td>Owners</td>
<td>Customers</td>
<td>Owners</td>
<td>Customers</td>
</tr>
<tr>
<td></td>
<td>Employees</td>
<td>Employees</td>
<td>Employees</td>
<td>Employees/Managers (Tied)</td>
</tr>
<tr>
<td></td>
<td>Managers</td>
<td>Managers</td>
<td>Managers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public at Large</td>
<td>Public at Large</td>
<td>Public at Large</td>
<td>Public at Large</td>
</tr>
</tbody>
</table>

Table 2. Average Rank Orders of Reported Relative Importance of Firms’ Interests by Firm and Percent of Manuel Workers

<table>
<thead>
<tr>
<th>Average Rank of Importance of Firms’ Interests</th>
<th>Employees Do Recognize Mutual Benefit</th>
<th>Employees Do Not Recognize Mutual Benefit</th>
<th>The Firm is Satisfied with Production Defect Rate</th>
<th>The Firm is Not Satisfied with Production Defect Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Average Rank of Importance</td>
<td>Owners</td>
<td>Customers</td>
<td>Owners</td>
<td>Customers</td>
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<tr>
<td></td>
<td>Customers</td>
<td>Owners</td>
<td>Customers</td>
<td>Owners</td>
</tr>
<tr>
<td></td>
<td>Employees</td>
<td>Employees</td>
<td>Employees</td>
<td>Employees</td>
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<tr>
<td></td>
<td>Managers</td>
<td>Managers</td>
<td>Managers</td>
<td>Managers</td>
</tr>
<tr>
<td></td>
<td>Public at Large</td>
<td>Public at Large</td>
<td>Public at Large</td>
<td>Public at Large</td>
</tr>
</tbody>
</table>

Table 3. Average Rank Orders of Reported Relative Importance of Firms’ Interests by Levels of Employee Recognition of Employee/Firm Mutual Benefit and Firm Satisfaction With Defect Rate.
REMAINING PHASES OF THE RESEARCH PROJECT

There are four planned activities for this project which, in part, are designed to convert the project form a longitudinal sample survey project to a case study project which will incorporate all information acquired to this point as well as through the winter, spring and summer 2014 phases as outlined below.

Winter 2014
Complete histories of the firms’ activities from 1994 to 2014 will be documented through compilation of secondary sources resulting in eight case history files.

Spring 2014.
The immediate first step will be to distribute surveys to the eight business firms requesting that human resource professionals complete and return them. Rather than using paper instruments delivered by postal services of two different nations, the surveys will be distributed via Qualtrics.

Summer 2014
Follow up personal visits to the eight firms’ French Headquarters will be conducted and interviews with human resources professionals will be conducted.

Fall 2014
Manuscript wiring concern the relative impact of the implementation of the four freedoms of the EU on the hierarchy of business interests of the firms as a set of case studies.

ACKNOWLEDGMENTS

Even though more than ten years have passed, the author remains extraordinarily appreciate of the enthusiastic and competent assistance provided by Samuel Petit-Perrin, MBA ’94 in translating documents and assisting in every phase of the original 1994 data collection effort..

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Evaluation of information technology and information systems: a case study of Iran

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Abstract

This research aims to assess the effectiveness, efficiency and performance of the information systems and IT within organizations, particularly Iranian governmental agencies. It is a case study which was conducted in the Department of Budget and Planning of Tehran Provincial Governor’s office. Fujanlay and OBrion’s (2005) model, was used as the theoretical framework for this study. Four aspects of information system including E-business, users and strategies support, management report support, and data processing were used as the independent variables; and three aspects of effectiveness including variety, quality, and cost were taken as dependent variables. The population of the study included all users of the information system of the Budget and Planning Department of Tehran’s Provincial Governorship, which amounted to 150 people. Applying Morgan’s formula, a sample of 120 people was randomly selected; and from this sample, 108 people returned their completed questionnaires to the researchers. The collected information covered all subsidiary governor offices and county seats. Using indicators such as mean, percent, frequency distribution, and correlation coefficient, the relationships among the variables were explored. The results of the study indicated that information systems affect the effectiveness and the performance of the organization under study. The results of the research show that information systems affect the effectiveness and efficiency of the organization and that it influences strategy support systems, users and the expenses most, it affects data and quality processing systems highly while its effect on strategy support systems, users and service variety has been low and its average among strategy support systems, users and quality is low.

Keywords: Information systems, E-government, Effectiveness, Management information system, Information technology.
.Introduction

Information systems caused many changes in all aspects of life. These changes have influenced organizations as well. This age, whose main characteristic is the strong presence of computers in all aspects of human life, with the advent of public access to internet in the 90s, entered its turning point; and is rapidly evolving along its developmental stages. These developments have influenced the organizational structures, as well as the nature and the role of different sectors within those organizations. Information systems include information technologies, data, data processing procedures, and people who gather and analyze data (Geodon, 2004). Tehran Provincial Governorship’s Department of Budget and Planning is in a systemic relationship with Tehran’s subsidiary governor offices and county seats. Regarding information system and information technology, all subsidiaries to Tehran Provincial Governorship, even municipality, are networked to the Governorship’s net. This study aims to explore the influence of information systems on the effectiveness and performance of Tehran Provincial Governorship’s Department of Budget and Planning.

.Principles and the theoretical framework

Information is one of the main and valuable resources for the management of an organization. In the production process, information is of special value as well as human resources, raw materials and financial means are important. The more, the extent and complexity of the activities, the more important the role of information is. Literature suggests that 90 percent of the decision making process relies on information and only 10 percent on the decision maker’s perceptual skills (Drucker, 1993; Quee, 1993; Haml&Pralahad, 1994.)

Increased use of IT by governments will have beneficial organizational effects on the development of the information society. In this transfer process, civil society and private institutions have a greater role to play in decision making and reinforcing the democratic process. Today, the governments of developing countries are using IT.

.Different approaches to information age reforms

-Ignoring IT: In this approach, the officials’ knowledge about IT and information systems is poor. Hence, they do not include these two in their plans to reform the public sector.
-Isolation: In this approach, the officials do not have "computer literacy" and they are not quite aware of the role of "information". However, they are aware of IT and its potentials.

-Imitation: In this approach, the officials have somewhat gained computer literacy. They use computers and they are quite aware of the potentials of IT.

-Integration: In this approach, the officials have gained "information literacy". They consider information a key source of the organization which is the center of all government functions.

Basic definition of the ‘Information Systems and Information Technology (IS/IT)’hybrid builds on the concept of information systems, and as such, according to the definition of IS, is tasked with the collection, processing, storage, and analysis of data for specific purposes and the presentation of the ensuing information. Like all other information systems, its main components include:
Inputs: including data and guidelines
Outputs: including reports and calculations
Process: the procedure through which input turns into output to be used in the system or other systems
Feedback: measures which enable control of the operations.
In view of the cited definitions, the hybrid term ‘Information Systems and Information Technology (IS/IT)’, in this study, refers to all data processing elements, including hardware, software, and human-ware, and the how of information flow in the organization, whereby information technology answers the ‘how’ question, information systems answer the ‘what’ question, and in the meanwhile both are interdependent (Earl, 1989).

Advantages of Information Systems Creation and Development:

- Task or job of the employees is done more quickly.
- Fewer people are needed in management.
- Information security will improve.
- Costs are reduced
- Having more satisfied customers leads to fewer complaints from the organization.
- Providing fast and accurate data for the management
- Creating a more friendly business environment.
- Human error in organizational information processing network reduces.
- Using IT reduces Costs, improves the quality of production and efficiency by rising the effectiveness (Double, 2001, p 294).
Technologies in Iran:

The popular misconception is that IT does not have a historical background. However, IT has a history dating back to thousands of years ago when the cavemen first communicated. Verbal communication as a primary form of communication had limitations because communication was only possible through face-to-face contact.

It can be said that the development of Iran is not possible without technology transfer, because Iran is a developing country. Reaching the status of being a developed country is the priority of all sorts of plans. Clearly, this is possible only by the development of technology because it is ridiculous to imagine a community only with the basic technical level where social, subsistence and welfare institutions rule in harmony. It is impossible for a country with development as its priority in reaching the sustainable development to be able to do so without a revolution, a shift and a fundamental change in the status of IT as our current state of scientific - technological development is not aiming towards development; it is playing a role more like a luxury or being decorative in our country and under these circumstances it is in vain to think of technology transfer and its impact.

The reason is very clear; Iran has a history of several thousand years of independent cultural style and any new technology which is not compatible with this historical background would be of no use. Instead, it will merely become a decorative, marginal tool. The government should focus on this for the private sector is not equipped with the potential and motivation to activate itself in this area. Therefore, the government should train users of these systems, rather than focusing on the business and marketing side of these systems in a way that this may obstruct the government from using in its own governmental role. The government should provide infrastructure and the major IT infrastructure is training (Sadri, Mohammad Reza, 1381).

The use of information and communication technologies in developing countries:

Although the level of access to information and communication technologies in developing countries is rapidly improving, but it is still very low. Nowadays, information and communication are important considerations in the performance of developing countries and emerging economies. In order to perform effectively in the areas of management, information analysis and release and to reduce transaction costs, big business corporations and governments rely on their information networks and computer applications. Likewise, it gradually plays an important role. ICT is being increasingly used by private users in the developing countries in addition to their importance for the economy and the country in general (Commission of the European communities, 2001).
.Limitations

- An increase in the purchasing power of the poor
- Training and development of human potential
- Increased levels of literacy
- Improved power supplies
- Access to capital and attraction of investment

The World Bank estimates that nearly €350 billion should be spent on the creation of telecommunications infrastructure in developing countries. It is clear that governments in developing countries with limited resources cannot afford to provide it.

.Iran ranking in the IT Indices

In order to determine the position of Iran in the region, information and communication technology indices were reviewed in three areas of economic indices, e-government and communication development indices (World Economic Journal, 2012).

The low volume of ICT exports

A sub-economic index related to IT is the export of the products of this area to international markets. Study of this index indicates that exports of IT products compose only a small proportion of Iran exports. According to the World Bank, ICT exports make up only 35 thousandths of Iran exports, which, regarding the ICT exports, has caused Iran to rank 12 among 17 countries of the region which is lower than Saudi Arabia. According to the compilers of this report, this can be due to the large share of oil and oil derivatives in the portfolio of our exports.

But the second subset related to economic indices of ICT belongs to the proportion of ICT services exports to total services exports including computer and communications services and information, but Unfortunately, according to the Majlis Research Center data, the export of IT services to, Iran and some countries are not available. Since the World Bank receives this data from countries, the lack of this data indicates that the statistics of this section were not reported by our officials. The third sub-economic index related to IT suggests the positive role of broadband Internet in economic development, revenue scale and cost reduction, where again Iran, unfortunately does not stand in a good position. Iran ranks 13 among 19 countries with their data available regarding the
Consistency in the development of e-government

One of the most valid indices of evaluating e-government and e-government development is the United Nations Index for E-government Development which is focused on in the Law of the Fifth Development Plan. According to this law, Iran e-government development index must be placed second at the end of the plan; however the recent Majlis Research Center report shows that there is a huge distance between the current status of the country and the designated destination and goal. Despite the growth in e-government development index by 8 scales in the world ranking, Iran position in e-government development in the past 4 years in comparison with the countries included in the Vision Plan remains unchanged as 16. As a result, there is a huge gap between reaching the objectives of the Law of the Fifth Development Plan where Iran is supposed to rank second in the index and the current rankings. Also, E-Government Development Index includes three indices of IT infrastructure, online services and human capital. The faster development of infrastructures of the countries of the region has lowered Iran sub-index for IT infrastructures (World Economic Journal, 10/12/1391).

Distancing from the World

But perhaps the most disturbing part of the report presents statistics on the indices of communication development including Internet permeation coefficient, broadband internet permeation coefficient, international bandwidth, landline and mobile phone permeation.

According to the Majlis Research Center Office for New Technologies, Iran sub-indices of ICT development are miles away from the top ones with the exception of the development in the landline permeation coefficient. Ministry has provided for the international community including the World Bank, the Iranian Internet permeation coefficient in 2011 was 21 percent which means Iran ranks 17th among the 24 countries in the region and it comes after.

However, official domestic statistics of permeation was more than 46 percent in the same year. Also, The International Telecommunication Union in one of its reports in 2012 declared that the Internet permeation coefficient of Iran was 13 percent in 2010, which is lower than the downloadable statistics of the site of this union. Nevertheless, in broadband Internet permeation coefficient in the region, Iran has achieved less favorable ratings. According to the report, the broadband Internet receives considerable emphasis owing to its role in creating new opportunities and in terms of its
role in economic development. The definition of broadband Internet in many countries in the region is 256 kilo bits per second, while in some areas it is 512 or 1 mega bits per second (World Economic Journal, 10/12/1391).

**Difficulties in IT Development in Iran**

One: some problems are directly related to organizations, programs and other divisions elsewhere related to IT.

Two: ultra-divisional problems in the area of IT are like a structure in the Economy and they impact the developmental process of the technology.

- Lack of proper understanding of the nature of IT and its security

- The first and foremost difficulty in IT development in the countries is misunderstanding the concept and significance of IT and a lack of sufficient resolution to implement IT development programs.

- A lack of a comprehensive system for IT development in the country.

- Lack of necessary funds: Problems in the IT development in our country is a shortage in the share costs of researches in the GDP.

- Lack of education: the training in our country compared to developing countries is good but the statistics given do not reveal exact information in terms of quality.

- Economic situation: The IT development is realized when the economic system performance is in such a way that different levels of IT can be activated.

**E-government:** During the second half of the 60s, US government commissioned private sector to establish E-government. E-government refers to the government’s attempts to exploit new technologies to facilitate public’s access to quality government information and services and to provide them with more opportunities to participate in democratic processes (Fang, 2002). In public sector, this concept alludes to electronic service delivery and electronic administrative system, and electronic service delivery, in turn, indicates that government information, programs, strategies, and services are delivered electronically on an all-day basis. E-government utilizes information to deliver government services to customers around the clock and without intermediaries. In other words, E-government is a compilation of information and World Wide Web to deliver services directly to the general public. The
common point in all definitions of E-government relates to the use of information system and information technology. Organization for Economic Cooperation and Development defines E-government as the use of communications and information technologies, particularly internet, as an instrument to realize a more efficient government (OECD, 2003). The role of E-government is not confined to mere delivery of information and services, and besides communication with citizens and the private sector, it enables strategic relations between organizations and the public sector. Information technology has been able to exert an 84 percent influence over quality of information, performance, and effectiveness (Danziger & Andersen 2002).

**Barriers to the implementation of IT and e-government projects in developing countries**

<table>
<thead>
<tr>
<th>The main factors</th>
<th>Signs</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional weakness</td>
<td>Inefficient planning, unclear goals</td>
<td>Insufficiently designed systems, exceeding expenditures</td>
</tr>
<tr>
<td>Human Resources</td>
<td>Shortage of qualified human resources, lack of local training</td>
<td>Inadequate support, unfamiliarity with technology resources</td>
</tr>
<tr>
<td>Finance and budget supply</td>
<td>Underestimation of project expenses, Lack of return of resources consumed</td>
<td>Unfinished projects, Rise of living costs</td>
</tr>
<tr>
<td>Local environment</td>
<td>Lack of essential, lack of backup systems</td>
<td>Lack of necessary technical support, operational difficulties</td>
</tr>
<tr>
<td>Technological changes</td>
<td>Software/hardware limitations, inappropriate softwares</td>
<td>Incompatibility of systems, Heavy reliance on customer request</td>
</tr>
</tbody>
</table>

In fact, e-Government makes use of IT to make reforms by strengthening transparency, eliminating the gap between government and citizens and enabling people to participate in the political processes affecting their lives e-Government domain ((Heeks, 2002, 4-8).

**Iranian E-Government Status**

Developing countries have taken steps towards the development of e-government, but in order to succeed in the establishment of electronic government, culture and institutions should be taken into consideration (Schuppan, T, 2009). In order to enjoy the benefits E-government, nothing has been done in Iran yet. Chronologically, the first effective step in
developing e-government in Iran in recent years can be the Supreme Bureau Act in the year of 1381 which required the bureaucratic system to automate its exclusive and inclusive activities. One of the seven areas in strategic ICT planning is e-government. The Supreme Council approved of e-government scheme proposed by the Management and Planning Organization (Information Council, 2008).

**Iranian experts pointed to the existing barriers:**

E-government and utilizing it is not only a must-do, but also it is considered a means of developing our country. However, the only thing done in this regard is seminars and conferences for a day or two; nothing done practically (Information Council, 1387).! The recent study by Business and Social Affairs Department of the United Nations (2008) shows that in terms of e-government status, Iran ranks 108 with a score of 0/4067, which is 10 ranks lower than the same report in 2005 bringing Iran below countries. (2) The percentage of e-government services in the years 2004 to 2005 nearly doubled (from 15% to 28%) and since then it has not made any specific progresses. (Jalaly, 2008).

**Research model and hypotheses:**

Decision making is the most significant responsibility of the management of an organization and without the existence of an information flow; this vital issue would not be possible. Without a doubt, the more up to date, appropriate, and relevant the information is, the more its effectiveness in the relevant organization.

**Dimensions of IT**

. E-business systems:
Generally, activities within electronic markets are referred to as E-business.

. Users and strategies support systems:
Strategic decisions are the ones which affect the organization as a whole.

. Management decision and report support systems

The information technology criterion of decision making support relates to the implementation of information technology to support management in the process of decision-making.

. Data processing system
Operation processing system is a multi task information system which is designed to process the data resulting from organization operations.
Main research hypothesis:
There is a significant relationship between the upgrading of information systems and the effectiveness in Tehran Provincial Governorship’s organization.

Subsidiary research hypotheses:
- There is a significant relationship between E-business systems and the cost, quality, variety effectiveness.
- There is a significant relationship between users and strategies support systems and the cost, quality, variety effectiveness.
- There is a significant relationship between management report support systems and the cost, quality, variety effectiveness.
- There is a significant relationship between data processing systems and the cost, quality, variety effectiveness.

Research methodology
Regarding the goal, this study belongs to the applied research category and with regard to the nature and the methodology of research, this study falls within the descriptive and survey research classifications respectively. The population of this study included Tehran Provincial Governorship’s Department of Budget and Planning. The study sample comprised of a small subset of the population which, nevertheless, was representative of the population. This sample, whose required number of participants was calculated with the help of Morgan formula, consisted of 108 managers and experts of Tehran Provincial Governorship’s Department of Budget and Planning. The current study relied on simple random sampling. A researcher constructed questionnaire acted as the main data collection instrument of this research. This questionnaire included questions with five option Likert scale. Number 5 indicated the highest level of a variable and number 1 showed the lowest level of the variable in terms of the effectiveness of information...
systems on that variable. Cronbach's coefficient alpha was used to test the reliability of the research instrument, and the results of this test are presented in Table 1.

Table 1. Cronbach's coefficient alpha for the variables of information systems questionnaire

<table>
<thead>
<tr>
<th>Variables</th>
<th>Questions</th>
<th>Cronbach's coefficient alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-business users and strategies</td>
<td>1-5</td>
<td>7130/</td>
</tr>
<tr>
<td>system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>management report support system</td>
<td>6-10</td>
<td>0/717</td>
</tr>
<tr>
<td>data processing system</td>
<td>11-16</td>
<td>0/686</td>
</tr>
<tr>
<td>Variety</td>
<td>17-20</td>
<td>0/653</td>
</tr>
<tr>
<td>Quality</td>
<td>21-23</td>
<td>0/730</td>
</tr>
<tr>
<td>Cost</td>
<td>24-27</td>
<td>0/779</td>
</tr>
</tbody>
</table>

As for the validity of the research instrument, the author focused on the content validity of the questionnaire. For this purpose, the researcher relied on the review and study of questionnaires and the research questions of similar studies, the study of various articles and books related to the research topic, and the consultation with professors, industry experts, and veterans in the field.

Data analysis and findings of the study

In this study, the participants were asked to fill in following demographic information: gender, age, educational level, organizational position, and work experience. In the study sample, 40.7% of the participants were female and 59.3% were male. Regarding the age, 16.7% of the participants were 25 to 30 years old, 30.6% were 31 to 40 years old, and 52.8% were 41 to 50 years old. Regarding level of education, 73.1% of the participants held bachelor’s degree, 23.1% master’s degree, and 3.7% doctorate degree. 91.7% of the participants held expert positions in the organization and 8.3% held management positions. Regarding work experience, 14.8% of the participants had 1 to 4 years of experience, 25% five to ten years of experience, and 60.2% more than ten years of experience.
Table 2. Descriptive statistics for the scores of the participants on variables of the IT/IS questionnaire

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Max</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-business users and strategies support system</td>
<td>108</td>
<td>3.41</td>
<td>0.68</td>
<td>4.80</td>
<td>1.40</td>
</tr>
<tr>
<td>management report support system</td>
<td>108</td>
<td>3.58</td>
<td>0.59</td>
<td>4.50</td>
<td>2.00</td>
</tr>
<tr>
<td>data processing system</td>
<td>108</td>
<td>3.43</td>
<td>0.67</td>
<td>4.75</td>
<td>2.00</td>
</tr>
<tr>
<td>Variety</td>
<td>108</td>
<td>3.46</td>
<td>0.82</td>
<td>5.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Quality</td>
<td>108</td>
<td>3.25</td>
<td>0.85</td>
<td>5.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Cost</td>
<td>108</td>
<td>3.22</td>
<td>0.80</td>
<td>4.75</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Statistics presented in Table 2 demonstrate that variables of management report support systems and users and strategies support systems enjoyed highest means and variables of quality effectiveness and cost effectiveness had the lowest means.

Results for the test of main and subsidiary research hypotheses are presented in Table 3. As can be observed, there are significant correlations between all of the variables. Thus, the research hypotheses are confirmed.

Table 3. Matrix of correlations between information systems variables and effectiveness variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>cost</th>
<th>quality</th>
<th>variety</th>
<th>data processing</th>
<th>management report</th>
<th>strategies support</th>
<th>E-business</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-business users and strategies support system</td>
<td>** 570**</td>
<td>377**</td>
<td>**</td>
<td>**</td>
<td>521**</td>
<td>582**</td>
<td>1</td>
</tr>
<tr>
<td>management report support system</td>
<td>** 538**</td>
<td>312**</td>
<td>**</td>
<td>**</td>
<td>586**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>data processing system</td>
<td>** 403**</td>
<td>646**</td>
<td>**</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Variety</td>
<td>** 386**</td>
<td>285**</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>** 475**</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>** 523**</td>
<td>1</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Amos software package was used to conduct path analysis for intended variables.

Table 6. Fit indexes for initial and final models

<table>
<thead>
<tr>
<th>Model fit criteria</th>
<th>initial model</th>
<th>final models</th>
<th>ideal level of fit for the model</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMIN(Chi-square)</td>
<td>=0/0001p144/42.</td>
<td>=0/142p5/44.</td>
<td>nonsignificance</td>
</tr>
<tr>
<td>CMIN/df</td>
<td>16/05</td>
<td>1/81</td>
<td>approximate to 2-3</td>
</tr>
<tr>
<td>GFI</td>
<td>0/703</td>
<td>0/986</td>
<td>approximate to 0/95</td>
</tr>
<tr>
<td>AGFI</td>
<td>0/75</td>
<td>0/869</td>
<td>approximate to 095</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0/375</td>
<td>0/08</td>
<td>0.05 approximate to</td>
</tr>
<tr>
<td>NFI</td>
<td>0/593</td>
<td>0/985</td>
<td></td>
</tr>
</tbody>
</table>

Results presented in Table illustrate that none of the model fit indexes are at the ideal and acceptable level; therefore, the model needs to be modified. Statistics in Table 6 illustrate that fit indexes for the final model are at the ideal and acceptable level. Model fit indexes reveal that Chi square index (p=0/142, df=3, \(X^2\) = equals 5.44; the nonsignificance and the reduced magnitude of this index, in comparison to the initial model’s Chi square index, indicate the fit of the final model. The ‘proportion of Chi square to degree of freedom’ index equates 1.81, and since this number is less than 3, indicates the fit of the model. RMSEA index is 0.08 and, considering the residues and the errors, its low magnitude demonstrates the fit of the model. GFI and AGFI indexes equal 0.986 and 0.869 respectively, and, thus, verify the fit of the model. An NFI index of 0.985 is observed which, if equal to or larger than 0.9, ratifies the model fit. Overall, the results of model fit indexes demonstrate that the structural model enjoys good fit, and that all of its existing structural relations are significant at 0.05 levels. Standard and nonstandard coefficients for direct paths from data processing systems to variety, and management report to quality, and the significance test of these relations, are presented in Table 7. As can be observed, all coefficients are significant at 0.05 level. Highest standard coefficients belong to data processing-quality and strategies-cost paths respectively, while lowest standard coefficients relate to strategies-variety and strategies-quality paths respectively.
Overall model

Conclusion and suggestions

Statistical analysis of hypotheses (12 hypotheses) illustrates that, in most of the cases, there are significant relationships between the variables. Thus, it can be argued that, in users’ view, even in the worst case scenario, information system has proved relatively effective and, regarding the aspects under investigation in this study, has satisfied their expectations. Therefore, training in and development of information system seems necessary for the users. With such a viewpoint and based on the findings of this study, following suggestions can be made:

1. This study reveals, has yielded highest effectiveness in terms of the relationship between users and strategies support systems and cost effectiveness. Thus, this finding can be used to reduce costs. To better control organization’s expenditure, support systems in relevant units must be activated and updated so that the users would be able to satisfy their information needs and make decisions more expeditiously; that is, at any moment access latest information in a short time.

2. Results of the current study demonstrate has been relatively high in terms of the relationship between data processing and quality effectiveness. Therefore, to upgrade effectiveness and enhance data quality, various instruments such as web sites and etc. must be employed so that all sectors, including governor offices and county seats, could benefit from more accurate, more precise, more complete, and more relevant information in an appropriate and timely manner, compared to past practice.

3. This research has been relatively low in terms of the relationship between users and strategies support system and variety effectiveness. The author suggests that, through reanalysis of users’ work related needs and revision of information; more attention must be expended toward the input, process, and output of the system. And, also, the Governorship must exploit various service delivery methods to enhance the satisfaction of its clients and the organizations with which it is in contact.

4. This study illustrates that the has been low in terms of the relationship between users and strategies support system and quality effectiveness and these two variables have not influenced each other considerably. However, for managers and experts of the organization, the significance of this relationship is non-negligible. By preparing the ground for the appropriate development and learning of organization staff, their work
quality can be improved, and the development of the system, on the other hand, would provoke the motivation required for the appropriate conduction of organization’s affairs.

Most of the people, usually, do not have a clear understanding of systems. It must be comprehended that, depending on an organization’s budget, extensive training is required for the support and maintenance of new systems. As such, when a chain of information systems are loaded onto the database of an organization to be accessed by thousands of staff, there is good cause for asking: How do the staff learn? How is the system used by the staff? And how can their learning be effective?

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8. Information Council (1387), General Development Plan and other words of Communication and Information User Forums.
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15. (www.Persian-ventures.com/FAQs)
INTRODUCING A PREDICTIVE THEORETICAL MODEL FOR THE PERFORMANCE OF MICROFINANCE FIRMS

Abstract

Because borrowers sometimes take out additional loans in order to repay their earlier microfinance loans, microfinance loan repayment rates may be artificially inflated. Consequently, a more basic approach to measure the default risk of microfinance loans should be taken. We therefore propose a temporal socio-cultural model based on Hofstede’s (1980) cultural dimensions, the diffusion of innovations, and the social network theory, that can be used to predict the default rates of microfinance loans in India. This approach adds a new dimension to understanding how to steer the industry away from some of the problems it has recently faced. Gaining an understanding of the socio-cultural effects of MFI performance over time can potentially prevent higher default rates on microfinance loans, which would keep the country’s economy from becoming worse off than before. Successful microfinance loans have the potential to stimulate a country’s economy. Additionally, the avoidance of a potential asset bubble in any particular country would prevent that country’s government from having to bail out the microfinance industry.
INTRODUCING A PREDICTIVE THEORETICAL MODEL FOR THE PERFORMANCE OF MICROFINANCE FIRMS

Introduction

Microfinance lending programs are aimed at individuals to help them rise out of poverty, resulting in access to credit for low income groups that did not traditionally have such access (Brau and Woller, 2004). Ultimately, this should allow them to expand and diversify their economic activity and become economically successful entrepreneurs (Davis, 2009). Thus, microfinance uses direct engagement with the poor and attempts to generate economic growth via market-driven business initiatives. Several researchers have documented that the majority of microfinance is aimed at the estimated 2.8 billion people who live on less than $2 per day. (Khavul, 2010).

Reille and Glisovic-Mezieres (2009) report that there are about 100 private equity funds, managing about $6.5 billion and channeling money to microfinance organizations. Recently, the number of for-profit microfinance organizations has increased (Battilana and Dorado, 2010). According to the International Monetary Fund (IMF), there were approximately 1,500 microfinance institutions functioning in 85 nations in Asia, Latin America, and Africa. About $18 billion of credit is outstanding to over 54 million borrowers. This results in an average loan balance of about $500 per person.

The incredible growth and presence of microfinance in recent years has been confirmed by the United Nations’ declaration of 2005 as the International Year for Microcredit and the receipt of the Nobel Prize in 2006 by Muhammad Yunus of Grameen Bank.¹ According to Richardson (2009), microfinance is now a mainstay of international finance, and Swibel (2007) comments on the increasing supply of microcredit around the world. Khavul (2010) reports that the average individual microfinance debt in India has increased fivefold, from $27 in 2004 to $135 in 2009.

The growth and popularity of the microfinance industry also increase the riskiness of that industry, especially considering that there is still substantial room for growth. The OECD Observer (2011) reports that there are currently about 700 million micro-entrepreneurs, but only 190 million of them have access to microcredit. Recent experiences with the global financial crisis carry with them substantial fears of overinflated asset markets. Therefore, some authors (Gokhale, 2009; Khavul, 2010) have

¹Grameen Bank has operated for over 30 years and has extended $9.1 billion in loans in 37 different countries.
warned that there could be a microfinance lending bubble on the horizon, particularly since there may be a developing sense that microfinance organizations are “too big to fail.” This higher perceived risk has resulted in higher interest rates on microfinance loans. As a result, it is important to obtain a better sense of the risks that these microfinance institutions (henceforth MFIs) are subject to. Historically speaking, a primary measure of MFI performance has been loan repayment rates, which are very high for microfinance loans. However, because borrowers sometimes take out additional loans in order to repay their earlier loans, these rates may be artificially inflated. Consequently, a more basic approach to measure the default risk of microfinance loans should be taken.

In order to accomplish this, we propose a temporal socio-cultural model based on three theories - Hofstede’s (1980) cultural dimensions, diffusion of innovations, and the social network theory - that can be used to predict the default rates of microfinance loans in India. Using a socio-cultural lens to study the microfinance industry over time adds a new dimension to understanding how to steer the industry away from some of the problems it has faced more recently. A pure financial or economic analysis may not yield the insights that can come from the temporal socio-cultural approach.

In order to do so, we look at an exemplary case (Yin, 2002) of a microfinance firm in India, SKS. We analyze the performance of SKS through the temporal socio-culture lens to gain an understanding of the rapid growth and sharp decline of the firm. The performance of the firm exemplifies both the promise and the disillusionment that the relatively new industry of microfinance offered.

The outcomes of this study are multifold. By gaining an understanding of the socio-cultural effects of MFI performance over time we, although potentially far in the future, can aid in prevention of higher default rates on microfinance loans would keep the country’s economy from becoming worse off than before. Successful microfinance loans have the potential to stimulate a country’s economy. Additionally, the avoidance of a potential asset bubble in any particular country would prevent that country’s government from having to bail out the microfinance industry.

At a more granular level, the borrower who takes out additional debt to repay his or her original debt would be prevented from going deeper into debt. Since the true purpose of microfinance is to

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2Gonzalez and Rosenberg (2006) document that approximately 10% of microfinance organizations serve 75% of borrowers. Therefore, the microfinance market is very concentrated.

3For example, Grameen Bank posted the most recent repayment rate as 96.88%.
create a better life for the poor, this would be especially counterproductive. Identifying a scenario where the borrower would be poorer as a result of the microfinance loan keeps with the original intent of the microfinance industry. In addition, the MFI who lends the funds can significantly reduce its exposure to bad debts. While microfinance allows borrowers who would otherwise not have access to funds the ability to borrow them, no one is served in case of excessive defaults. Stated another way, if there is a very low probability or repayment from a borrower, and if this probability can be identified prior to the time that the loan is made, then a sure bad debt can be avoided. According to Rosenberg (1999), MFIs need to keep default rates low because of high operating costs.

By understanding the effect the socio-cultural influences played in the case of SKS Microfinance over time, we present some takeaways that can alleviate the problem of default rates that threaten to plague MFIs.

Cultural Dimensions in India

Although the social nature of microfinance initiatives is well recognized in literature, the role of culture has not been explicitly considered in the plethora of literature that now exists in microfinance. This is not surprising, considering that the notion of culture is so broad that researches are reluctant to rely on culture as a possible determinant of financial and economic phenomenon (Guiso et al., 2006). However, we believe that a discussion of culture is important in understanding MFIs.

We define culture as the societal norms and values that guide people’s behavior and beliefs (Hofstede, 1980). Literature has established the influence of national culture on the development of trust in the business context (Doney et al., 1998), which has been found to impact organizational performance (Nemetz and Christensen, 1996).

Many different definitions of cultural dimensions exist in the literature. Trompenaars and Hampden-Turner (1997), for example, developed seven cultural dimensions. The Global Leadership and Organizational Behavior Effectiveness (GLOBE) conducts an analysis of the cultural, societal, organizational, and leadership differences between 62 different societies around the world. However, Hofstede’s (1980) definition of cultural dimensions is often the most prominently cited. Developed over time by Hofstede (1980, 1984, 1991, 2001), Hofstede and Bond (1988), Minkov (2007), and Hofstede, Hofstede, Minkov, and Vinken (2008), the Value Survey Module 2008 (VSM 08) covers seven cultural dimensions. Below are the five original dimensions suggested by Hofstede (1980):
**Power Distance (PDI)** reflects the extent to which members of organizations and institutions (like the family) accept and expect unequal power distributions unequally. A high degree of power distance indicates that individuals are less approachable.

India scores high on the dimension of PDI, indicating an appreciation for hierarchy, and a typically top-down structure in society and organizations (Hofstede, 1984). Real power is centralized, even though it might not appear to be so, and communication is top-down. Negative feedback is rarely, if ever, offered up the ladder.

**Individualism (IDV)** reflects the extent to which individuals in a society are integrated into groups. Individualistic societies are those where the ties between individuals are loose. Collectivist societies are those where people are integrated into strong, cohesive in-groups, often extended families (with uncles, aunts and grandparents), which continue protecting them in exchange for unquestioning loyalty.

India scores low on IDV, demonstrating clear collectivist traits (Hofstede, 1984). For a collectivist, to be rejected by one’s peers or by thought of lowly by immediate or extended in-groups, leaves him or her with a sense of intense emptiness.

**Masculinity (MAS)** versus its opposite, femininity refers to the distribution of roles between the genders in a society. The assertive pole is called ‘masculine’ and the modest, caring role ‘feminine’. The relationship of the masculinity/femininity variable is very interesting in the microfinance context, since a vast majority of borrowers are female.4

India scores high in this dimension and is considered a masculine society (Hofstede, 1984). Masculine societies focus on success and achievements, validated by material gains.

**Uncertainty Avoidance Index (UAI)** reflects a society’s tolerance for uncertainty and ambiguity. It indicates to what extent members of a culture feel either uncomfortable or comfortable in unstructured situations, which are novel, unknown, surprising, and different from usual. Uncertainty avoiding cultures try to minimize the possibility of such situations. Uncertainty accepting cultures exhibit greater tolerance toward opinions different from what they are used to.

India is medium-low on UAI. Hence there is acceptance of inefficiencies and tolerance for the unexpected. The society is not driven or compelled to take action-initiatives, and rules are often

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4For Grameen Bank, about 97% of borrowers are female.
circumvented. This can result in a range of outcomes, from turning a blind eye or flouting the rules to finding solutions to insurmountable problems.

**Long-Term Orientation (LTO)** versus short-term orientation: deals with virtue regardless of truth. Long Term Orientation is characterized by thrift and perseverance; Short Term Orientation manifests itself in respect for tradition, fulfilling social obligations, and protecting one's 'face'.

Indians score high on LTO, making it a long term, pragmatic culture (Hofstede, 1984). To some degree, LTO is driven by dominant religion or philosophy. In the case of India, there is an acceptance in the culture for various views, practices and beliefs. Time is not viewed as linear. Hence punctuality, and adherence to short-term schedules or deadlines is not given much importance in the grand scheme of things.

**Social Theories for MFI Adoption**

Although in the realm of finance and economics, the domain of microfinance can benefit from analysis through a social lens. This is because of the inherent social nature of how microfinance operates, and the target population. We focus on two theories that can help understand microfinance in India – the diffusion of innovation, and the strength of weak ties.

**Diffusion of Innovation**

Microfinance initiatives were designed to be a bottom-up; they require social diffusion of participation. Diffusion helps us understand the effects of initiatives over time. Hence a diffusion model can add temporality in studying a phenomenon, such as MFI adoption.

There are broadly two types of models that can help understand how diffusion occurs. The pure contagion models depict diffusion as purely a mechanical transmission, such as in the spread of a disease or virus. However, in endorsement effect models, there are interactive effects between individuals that influence diffusion. For social phenomenon these models have higher predictive power.

Thus far, diffusion models have been applied to a wide variety of social phenomenon, such as the diffusion of innovations. As seen in the figure below, the model follows an S-shaped curve of cumulative adoption.
In MFI, the following process is usually adopted to raise awareness and generate participation (Banerjee et al., 2012):

- A set of initial leaders is first informed of MFI plans. The leaders decide whether or not to participate.
- Informed households pass information to their neighbors and friends, following an endorsement effect model. The probability of information passing depends on whether the household had decided to participate or not.
- Households that are informed in the next time period decide whether or not to participate.
- The process repeats itself.

People that were first informed of the program, the “injection points”, are central to the adoption curve. Microfinance participation is significantly higher when the injection points have high centrality. Participants are more likely to pass information on to friends and acquaintances than informed non-participants, resulting in a snowball effect that can be depicted in an S-shaped curve.
The Strength of Weak Ties

A second social theory diffusion of MFI would be Grannovetter’s theory of social networks (Granovetter, 1973). Grannovetter’s theory describes two types of ties, or associations, between nodes (in this case individuals) of a network. Strong ties exist when there is high frequency of interaction and high volume of communication between the nodes. Weak ties exist otherwise.

The strength of weak ties has been applied to study diffusion in networks. The role of highly connected individuals, i.e. those with high centrality in a network, influences diffusion. While strong ties result in high speed and volume of communication, it is the weak ties that bridge sub-networks, resulting in diffusion of new information.

The strength of weak ties has also been applied in the microfinance context. In a case study of a microfinance firm in India, Jackson and Marr (2011) found that the poor rely on strong ties, which influences the nature of diffusion of microfinance.

Theoretical Lens and Research Questions

Putting together the theories of cultural dimensions, diffusion of innovation, and social networks, we arrive at our temporal socio-cultural lens. Our theoretical lens is depicted in the picture below. Based on the lens, we analyze microfinance initiatives longitudinally (temporal dimension), based on the strength of weak ties (social dimension), and based on cultural dimensions (cultural dimension).

In order to make sense of the data, we divide the temporal dimension in three phases predicted by the diffusion of innovations theory – initiation, growth, and stagnation. The following questions emerge based on the theoretical lens. When analyzing the data, we hope to generate insights into:

a) What are the socio-cultural characteristics of each phase?

b) What are the events that mark the demarcation between the temporal phases? That is, what occurs for the adoption to move from initiation to growth, and growth to stagnation?

c) Are there any deviations from the model predicted in literature in the context of microfinance?
**Data**

We structure our narrative on the temporal dimension – the diffusion of microfinance initiatives - at SKS Microfinance. Within each of the stages of the S-shaped curve of diffusion, we first present financial data of the events that occurred at the firm. In the next section, we analyze this data through our theoretical lens by looking for evidence of cultural and social dimensions to help explain the empirical data gathered of the firm.

**Initiation 1997-2006**

Vikram Akula founded SKS Microfinance in 1997. Akula led company until 2004, then joined McKinsey and Co as a management consultant. He came back in 2005 when SKS had converted to a for-
profit company. He grew the company to take it beyond the Indian State of Andhra Pradesh, to having a presence in 19 Indian states.

**Growth 2007-Mid 2011**

At its initial offering, SKS Microfinance raised Rs 1,600 crore in August 2010. Investors included Sequoia Capital, Goldman Sachs, Sandstone Investment Partners, DSP Blackrock Equity, N.R. Narayana Murthy’s Catamaran and angel investor Vinod Khosla. SKS Microfinance is the only listed MFI company in India, listed on National Stock Exchange and Bombay Stock Exchange.

The company enjoyed increasing growth rates in all categories through 2011. The company had profits of nearly Rs 112 crore in fiscal 2010-11. From 2007 to 2010, the number of SKS branches grew from 276 to 2,029. In 2011, branches still increased, to 2,379. The number of employees rose consistently from 2,381 in 2007 to 22,733 in 2011, almost tenfold. The company kept expanding through 2011, when its fixed assets reached over 218 million rupees.

At the peak of its performance, signs of trouble started being noticed. The Andhra Pradesh government led a crackdown on the MFI sector in October 2010, which resulted in a drop-off in loan collections and a drying up of funding for microlenders. A new law named the Andhra Pradesh Microfinance Institutions Ordinance 2010 came into effect. The following were the changes that occurred due to the new law:

- Law severely restricted new lending and made it harder to companies to collect loan repayments.
- Local leaders barred loan officers from entering many villages or forbade borrowers to repay their debts.
- MFIs must register within 30 days of the ordinance and have to specify the towns and villages they operate in, the rate of interest being charges, the system of conducting due diligence, system of recovery of money, list of persons authorized for conducting the activity or recovery of money which has been lent.
- Registration renewal also had stringent rules: registering authority will verify the performance of the MFI at the field level and hear general complaints from the public before extending registration.
CEO Suresh Gurumani was ousted (as CEO and managing director) on October 4, 2010, followed in quick succession by the AP MFI crisis in October 2010.

- Days later, Akula mentioned that Gurumani was removed because of some “Interpersonal issues”

Stagnation/ Decline Mid 2011-2012

In November, several news sources reported that SKS MF has lost its position as the largest Indian microfinance institutions by loans to Kolkata-based Bandhan Financial Services. Fiscal year 2011/12 resulted in losses of Rs 1,360. SKS slashed 1,200 jobs in Andhra Pradesh and shut down 78 branches in the state. The Andhra Pradesh loan portfolio shrunk from Rs 1,311 crore in March 2011 to Rs 236 crore in March 2012. Furthermore, SKS had written off Rs 678 crore of loans and was rumored to potentially write off its entire Andhra Pradesh portfolio of Rs 822 crore in a worst-case scenario.

There were significant decreases in growth in 2012 in all areas. In 2012, the number of branches declined to 1,461 and the number of employees declined to 16,194. Loans outstanding (in rupees crores) increased from 264 in 2007 to 4,111 in 2011. They declined to 1,699 in fiscal 2012. This decrease in the loans outstanding was largely attributable to the bad debt write-off of almost 11 billion rupees in 2012 (prior to this year, bad debt write-offs had always been less than 1 billion rupees). The stock price went from a peak of Rs 1,491 in September 2010 to just over Rs 100 currently.

Akula resigned from all posts (executive chairman and director) on 11/23/2011 without severance package and signing a non-compete agreement. Ravi Kumar, an independent director of SKS was appointed interim chairman.

Akula made the following comments that drew ire, and necessitated a deeper look into the MFI industry in India:

- MFIs were earning record profits even as they charge poor women interest rates of 30% to 65%.
- MFI, even if it did give the poor a small boost, often did not lift them out of poverty, as the lenders had claimed.
• A sizeable minority of borrowers became overly indebted because of the ease with which they could borrow money from competing lenders.

• On December 6, 2011, 40 executives indicated they may leave SKS MF to join a venture Vikram Akula plans to start. Rumor is that he may start a mobile banking venture.

Current situation

SKS Microfinance raised Rs 230 crore through qualified institutional placement in July 2012 to meet credit requirements of rural borrowers. The main investor was CLSA (Mauritius) Ltd, gaining a 9.15% stake in SKS. It had raised Rs 34 crore from preferential allotment a bit earlier (to Kumaon Investment Holdings, a wholly owned arm of one of its promoters – Westbridge Ventures II LLC). This increases the net worth from Rs 435 crore as of March 2012 to Rs 700 crore. SKS Microfinance recently diversified its lending portfolio to include financing of small kiranas, loans for purchase of mobile handsets and gold loans in the urban areas. The lending portfolio from non-Andhra Pradesh regions grew by 11% to Rs 1,320 crore in fourth quarter of 2011-12, with 95% collections, on average.

The Andhra Pradesh writeoffs are continuing, with Rs 1,130 crore in loans written off as on March 31, 2012. The stock price increased in early July, when the Reserve Bank of India (RBI) hinted that capital adequacy and provisional norms for non-banking financial corporations (including MF institutions) could be relaxed. The stock price increased 16% on 8/6/12 on news that company’s net loss had narrowed down to Rs 39 crore in the quarter ended June 30 (loss was Rs 219 crore in the quarter one year prior). Analyst recommendations on Bloomberg were inconsistent, with some firms rating SKS “buy” and others as “underweight” or “sell.”:

Also based on Bloomberg, relative to the same period last year, EPS and net income are expected to increase by 87.8% and 80.4%, respectively.

Overall Financial Performance (also see charts)

• For almost all performance measures, financial performance peaked in 2010, declined in 2011, and was dismal in 2012.

• Net profit margin increased from 9.7% in 2007 to 18.2% in 2010, then declined to 8.8% in 2011 and to -288.3% in 2012!!

• Return on equity (ROE) increased from 8.5% in 2007 to 21.5% in 2010, then declined to 7.5% in 2011 and to -118.90% in 2012.
• Operating income margin peaked at 40.1% in 2010, then declined to 18.97% in 2011 and to -486.39% in 2012.
• Earnings per share peaked at 27.5 in 2010 and then declined to -188.06 in 2012.
• Shares in company have fallen more than 80 percent over July 2011 due to slowing business and a boardroom struggle that led to the exit of its founder Vikram Akula in November 2011.

Analysis
Based on the information collected above, we seek to answer the three research questions outlined based on our theoretical lens. In this section, we provide insights for each.

a) What are the socio-cultural characteristics of each phase?

Initiation
From a social network perspective, the initiation phase is crucial in identifying nodes with high centrality. In the case of microfinance, it would be important to identify the right “initial leaders” in the rural communities to inform of the microfinance products. If these initial leaders were not well connected, the initiation would not be successful.

From a cultural perspective, the process of initiation is driven by the primary interaction between the lender and the borrowers. It is easy to see the dimension of power distance (PDI) coming into play here given the separation of roles. Another dimension that would possibly come into the picture would be that of individualism (IDV). Since the centrality of the initial leaders is important, collectivism (the opposite of IDV) is important at this stage. India ranks high in both PDI and IDV, fostering an environment for initiation.

Growth
From a social network perspective, the growth phase marks the diffusion within the network. Exponential growth can be reached when nodes diffuse information to weak ties. The ratio of weak ties to strong ones in a network is much greater. Hence, even though the proportion of adopters within strong ties might be greater than that within weak ties, participation in terms of numbers would be much higher once diffusion occurs through weak ties.
From a cultural perspective, we can envision different dimensions becoming important at this stage. During growth, the lenders play an indirect role in promoting microfinance. This is unique to the context of MFI, since the goal is to achieve grass-root adoption. Hence, the focus is on peer-to-peer interaction, rather than institutional interaction, lessening the effects of PDI. The focus is on weak ties rather than strong ones that are reached through the social network. Hence IDV is important. Since India is high on collectivism, it is possible that high growth is reached due to the extensive networks. Masculinity (MAS) is important due to the focus of microlenders on women. India is high on MAS, which would suggest that adoption is low. However, India is also high on uncertainty avoidance (UAI) and long-term orientation (LTO), which offset the severity of the decision-making by the women to participate in MFI. In other words, although it is women that were encouraged to participate in a male-centric society, the lack of focus on immediate action items coupled with the high tolerance for personal risk enabled the male-centric society to “allow” women to participate in large numbers, fostering high growth.

**Stagnation**

From a social network perspective, the stagnation phase marks the saturation of the network and its eventual demise. Temporally, this occurs when there is no new information and when there are no novelty effects of the products in the market. At this stage, all ties, whether strong or weak, have been reached.

From a cultural perspective, dimensions that play a role in decision-making would become prominent at this stage. Temporally, this is a period when debts need to be repaid, and the company needs to start collecting payments. Due to disregard of short-term schedules and personal risk due to UAI and LTO dimensions, this stage is characterized by decline more than stagnation. The high MAS dimension comes into play here when decisions are made by the males in the society, rather than females that had initially participated in the MFI.

**b) What are the events that mark the demarcation between the temporal phases?**

**Initial Phase ➔ Growth Phase**

The events that demarcate the initial phase and the growth phase are not apparent in the financial reports of SKS Microfinance. The firm enjoyed a period of growth that began before its initial public offering in 2010. Hence, we turn to other potential factors that could have influenced the change in phase. First, there was an international sentiment in favor of the microfinance industry in general, which
caused analysts to have a positive outlook for MFI firms. However, in the context of microfinance, the grass-root level factors are equally important in considering adoption.

From social network analysis, we can say that growth was achieved when the initial leaders that were informed of MFI products at initiation communicated the information to their strong ties. Strong ties are characterized by homophily and trust. Homophily has been studied on the basis of similarity in age, gender, education, prestige, social class, and occupation (Katz et al., 2004). Since the initial target population of microlenders was restricted to rural women of the lower social class, we can assume that strong ties had a role to play in microfinance initiatives. Hence, it is possible that the growth, at the demarcation point, reflects the adoption of microfinance by a set of nodes strongly connected to the initial leaders partly due to novelty effects of the information diffused.

From a cultural perspective, the two dimensions that would apply at the stages when new information is passed would be power distance and individualism. It is possible that cultures with high power distance would respect and trust information that is being passed top-down within hierarchical structures. This would have been the case when microlenders approached potential borrowers.

In a country like India with a high power distance index (PDI), the lenders would be seen as people with authority and power, and hence those that should be respected. At the same time, the collectivist tendency in the Indian culture (IDV) would influence those whose strong ties had participated in microfinance, to sign up for the same initiatives.

**Growth Phase → Stagnation/ Decline Phase**

Ostensibly, the decline phase started soon after the tightened governmental regulations on the MFI sector. However, the question remains as to why there was a need for reform in an industry that was apparently doing so well financially.

From social network analysis, we can say that the exponential growth can be attributed to the diffusion of information in the weak ties of the social networks. Weak ties lack trust and homophily. However, the ratio of weak ties to strong ones in a network is much greater. Hence, even though the proportion of adopters within strong ties might be greater than that within weak ties, participation in terms of numbers would be much higher once diffusion occurs through weak ties. However, there is a limit reached when the social network is saturated, and no further diffusion can occur. It is possible that at the demarcation point, there was a saturation of information about microfinance, such that there were no novelty effects.
From a cultural perspective, the dimensions that would apply in a predominantly weak tie-network would conceivably be different from those that had applied in the predominantly strong tie-network. In weak ties, when people don’t know each other well, have similar characteristics, or trust, the dimensions of power distance and collectivism may become less important. Instead, individuals are forced to make decisions without relying on the social network, and may fall back on cultural traits such as masculinity, uncertainty avoidance, and long-term orientation.

India ranks high on the masculinity scale (MAS). This is a potential problem, since a vast majority of borrowers (by design) are female. Without the required cultural structure in place that allows women to be the dominant decision makers in households, it is possible that decline resulted from the strong masculine influence.

India is medium-low on uncertainty avoidance (UAI). There is acceptance of inefficiencies and tolerance for the unexpected. The society is not driven or compelled to take action-initiatives, and rules are often circumvented. This is a problem from a microfinance perspective, where despite the small loan amounts, the high interest rates require that borrowers be driven to repay in a timely fashion. India also ranks high on long-term orientation (LTO), which results in disregard for short-term schedules. Again, this is a problem in the MFI sector, where microloans are driven by the short-term of the loan.

c) Are there any deviations from the model predicted in literature in the context of microfinance?

Prior literature predicts an S-shaped curve to model the adoption of MFI initiatives based on the social network-based diffusion theories. However, what emerges from the case study of SKS Microfinance does not exactly model the smooth curve of adoption. Instead, due to the interaction of the cultural dimension factors, there is a sharp decline in the third stage, rather than stagnation.

The temporal socio-cultural analysis can be summarized in the graph below.
Discussion

Given the promise of MFI in the global context due to the success of initiatives in countries like Bangladesh, the failure of microlending in India, as exemplified by the case of SKS Microfinance, was surprising to many. In this paper, we suggest analyzing MFI initiatives through a temporal socio-cultural lens. This is important especially in the context of MFI due to the bottom-up emphasis of microfinance initiatives. The grass-roots approach, which is the strength of microfinance, needs to be accounted for when drawing financial and economic predictions. We believe that this can be achieved by adding social and cultural dimensions, and looking at their interactions over time.

To this end, we propose a theoretical lens that analyzes MFI longitudinally by incorporating social network diffusion theory and cultural dimensions. We have presented the case of an Indian MFI, SKS Microfinance, which was India’s largest microlender in 2010, and explained the reason for it’s
exponential growth and sudden decline. This pattern was one that was followed by several other MFI firms in India.

To further strengthen the case for our approach, we can contrast the cultural dimensions of India versus Bangladesh. Bangladesh, the birthplace of MFI, has fared successfully in its MFI initiatives. Our temporal socio-cultural lens suggests that the differences between the success of MFI in India and Bangladesh can be attributed to social and cultural factors.

Ostensibly, Bangladesh is like India given their geographic proximity and the fact that they were a part of one country half a century ago. However, applying Hofstede’s lens, we see the following disparity between the two countries in terms of cultural dimensions.

Cultural dimensions of Bangladesh vs. India (Hofstede, 1984)

As seen in the graph, Bangladesh and India are similar in the dimensions of PDI and MAS, but vary in IDV, UAI and LTO. Since PDI is high in both, it is possible that MFI initiatives would be well received, at least initially in both countries. However, the differences in the other dimensions would cause the adoption of the initiatives to vary. Based on our analysis of SKS, we would predict that MFI initiatives would grow faster in Bangladesh rather than India. This is due to IDV being lower in Bangladesh, suggesting a strongly collectivist culture, much more so than that of India. Thus, there would be more strong and weak ties that would cause the initiatives to diffuse faster.

In conclusion, our study contributes by providing certain recommendations based on extant literature and data from a MFI organization. First, given the social nature of the microfinance industry, it is important to understand the pattern of diffusion of innovations in social networks. Second, taking into
account social network theory, it is important to understand the role of central nodes, strong ties, and weak ties. Third, it is important to identify and analyze differences in cultural dimensions that might influence social factors of diffusion. While the study of cultural dimensions is not new, we propose that in conjunction with social factors, the dimensions that gain importance change over time. Hence, it is important to look at the phenomenon longitudinally, rather than in a cross-sectional manner. Vikram Akula, the founder of SKS Microfinance, attempted to adopt the model that was made successful in Bangladesh by Mohammad Yunus. The pitfalls encountered by SKS Microfinance could have been predicted, to some degree, by an examination of how the socio-cultural factors differ between India and Bangladesh.

With this study we hope to provide some recommendations to entrepreneurs that are interested in microfinance initiatives. Given the unique context of this industry, financial and economic factors cannot be considered without understanding the effects of socio-cultural factors over time.
Appendix: Charts and Graphs

The following graphs were compiled from information contained on Bloomberg and within the SKS Annual Reports.

**Number of Branches**

**Number of Employees**
References


Investigating Willingness to Pay for Quality Drinking Water: A Contingent Valuation Study in the City of Jacksonville, Florida

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The objective of this study is to investigate preferences for quality drinking water among residents in Jacksonville, Florida. The findings will provide useful information about the extent to which Jacksonville residents may be willing to spend additional dollars, via taxes or fees, to improve tap water quality. The purpose of this study is four folds: 1) Investigate resident willingness to pay (WTP) for improved water services; 2) Investigate the role of Jacksonville Electric Authority (JEA), the seventh largest community-owned utility company in the United States, as the primary supplier of drinking water; 3) Address the knowledge gap between demand side (the households), and the supply side (JEA) in the market for tap (drinking) water; and 4). Explore issues surrounding the long-term environmental impact of plastic water bottle usage, as a substitute for quality drinking water.

The short-term objective of this study is to examine the WTP incentive for safe drinking water in the city of Jacksonville. We anticipate broadening the scope of this study to regional and national levels hoping to better understand the development of a sustainable drinking water system that produces quality drinking water in the long run, in addition to being economically and environmentally friendly.
Proposal Narrative

Much has been written about the dubious quality of tap (drinking) water in Jacksonville, Florida. The primary supplier of this water is Northeast Florida’s not-for-profit community-owned utility, JEA, - created by the City of Jacksonville to serve those who live in the area. JEA is the primary water utility provider in the city of Jacksonville and Duval County, Florida, as well as for parts of neighboring St. Johns, Nassau, and Clay counties. More than 240,000 customers get tap water supply from the JEA. JEA produces 114 million gallons of water each day, and operates 36 water treatment plants. The Floridian aquifer, JEA’s water source provider, is one of the major sources of groundwater in the United States.

Using water quality data from multiple sources for five consecutive years between 2005 and 2009, the Environmental Working Group (EWG) examined the quality of water supplies in most major American cities. According to that list, the city of Jacksonville was ranked the 10th worst city (McIntyre 2011). Evidence shows that there are as many as 23 different types of toxic chemicals in Jacksonville's water supply. In particular, unsafe levels of Trihalomethanes were detected during each of the tests conducted in 32 months during the 5-year period. Trihalomethanes are a group of organic chemicals that often occur in drinking water as a result of chlorine treatment for disinfectant purposes. These chemicals may result in adverse effects on the human central nervous system, liver, kidneys and heart (Nazir and Khan 2006). The Environmental Protection Agency (EPA) deemed the Trihalomethanes levels illegally high in 12 of the 32 tests. The evidence also shows presence of other chemicals like arsenic and lead at levels exceeding the health guidelines. The report has not been updated since then, but has caused JEA customers to have serious concerns about the quality of their tap water. The health concerns have grown to an extent causing Jacksonville residential grassroots effort, petitioning JEA to reduce the level of Sodium fluoride in the municipal water supply.¹ Sodium fluoride is a highly toxic, inorganic compound that is considered unsuitable for consumption by the U.S. Food and Drug Administration (FDA). Tests find the level of sodium fluoride in the municipal water supply of Jacksonville between 0.7 to 1.2 mg/L, which is acceptable by the EPA (under 4 mg/L). However, the FDA recognizes that level of sodium fluoride in drinking water as a hazardous carcinogen. The JEA, however; denies all complaints. They argue that the statistics given by the EWG is largely based on the total number of samples that tested positive for a chemical, and not based on the percentage of positive detections. Another common complaint issued to (or expressed to) the JEA is about the potently bad smell of the tap water. The JEA says the odor is caused by the presence of sulfur and iron bacteria, which are known not to cause major health problems in humans.

Given the pervasive concerns about the quality and safety of drinking water supplied by JEA in Jacksonville, it is quite justified for the residents of Jacksonville to prefer bottled water to tap water for drinking and even cooking purposes. Bottled water, however; is not only expensive but also environmentally hazardous. Consider that only PET (Post-consumer polyethylene terephthalate) bottles are recyclable, and even their recycling rate is very low. Therefore, an improved level of understanding of the household WTP for a safe and sustainable water supply can provide important insights for the municipal planning process in order to develop a better

¹ Please details visit http://www.change.org/petitions/jea-stop-adding-sodium-fluoride-to-the-municipal-water-supply.
water supply system that not only improves quality of water but also is economical and environmentally friendly.

**Environmental Benefit**

Concerns about quality of drinking water are likely to cause consumers to try better alternatives, such as bottled water. The average American consumption of bottled water has increased from 1.6 gallons/year in 1976 to 29.2 gallons/year in 2011 (Institute For Water And Watersheds 2012). According to the Earth Policy Institute, bottled water can cost anywhere from 240 to 10,000 times more than tap water (Earth Policy Institute 2006). Despite the size and visibility of bottled water businesses, the total amount of water Americans buy in the bottles in a year would merely supply U.S. tap water needs for only 9 hours. Thus, considering volume consumption, bottled waters are an inadequate substitute for tap water and simultaneously more expensive and adversely impact the environment.

Although the total demand for bottled water remains relatively insignificant compared to the demand for tap water, both the production and disposal of the empty water bottles cause significant pollution and other damages to the environment. The production of plastic bottles requires millions of barrels of oil per year, and the transportation of bottled water from its source to stores causes the release of thousands of tons of carbon dioxide. If one were to fill one quarter of a plastic water bottle with oil, the amount would roughly equal what was expended to produce that bottle. During the production of all the plastic necessary for the water bottles purchased in United States, 17 million barrels of crude oil are used annually (National Geographic 2011). Such an amount is equivalent to one day’s worth of oil consumption in America: a cost of nearly $1.795 billion (United States Energy Information Administration). Furthermore, the recycling rate for these bottles is low. The statistics show that only about 13 percent of the bottles eventually arrive in the recycling stream (Didier 2013), with the remaining bottles in U.S. landfills. Many of these landfilled bottles cause incinerated toxic byproducts, such as chlorine gas and ash containing heavy metals, are released into the atmosphere. Some of these plastic bottles also end up in streams, rivers, and ocean, and so contaminate the water in those places.

Organized anti-bottled water campaigns across the country and debates over bottled water’s environmental impact have not reduced bottled water consumption. In fact, bottled water consumption is increasing. Consumers are often suspicious of the tap water’s quality, and prefer to consume bottled water. Hence, addressing the consumers’ concern for tap water quality before they start drinking the tap water is increasingly importance. Thus, we propose a consumer’s study to estimate the WTP for safe drinking water in the city of Jacksonville. The findings will be useful information to design future city budgets for water quality improvement. Successful water quality improvement plans will reduce the consumption of bottled water, leading to lesser use of fossil fuel and fewer environmental cleanup costs.

**Literature Review**

The system revenues from water supply and available program subsidies from the government to improve the water quality are often not enough to maintain water infrastructure and use water for drinking purposes. Consequentially, tap water is often unsafe to drink and the water supply system is generally unreliable (Gadgil 1998; UNDP 2006). Thus, access to safe and reliable
water supply remains a serious concern even when basic water delivery systems are in place. In these situations, households usually resort to using alternative sources, such as privately investing in water infrastructure, filtering water at home, or drinking bottled water. Such substitutes are neither environmentally friendly nor economically efficient. Ferrier (2001), for example, has reported that the price of bottled water is typically 500–1000 times more expensive than tap water. Water treatment at home such as boiling drinking water or installing water purifier, is also not cost effective (Goodrich et al. 1992).

An important limitation to the implementation of public provision of safe and reliable drinking water supply systems is lack of information on household preferences (Whittington et al. 1990; World Bank 1993). Hence, better understanding of the household preferences, e.g., WTP for safe and reliable drinking water, can help to identify the preferred level of services. This information provides implications for designing appropriate policies for recovering maintenance costs and beginning sustainable projects (Gadgil 1998).

Survey-based stated preference approaches are commonly used to provide input for policy and planning purposes. This is especially true when a good or service is not traded in a market setting because of its public good characteristics, the case of a natural monopoly, or due to other market failures (Freeman, 2003). The contingent valuation (CV) method elicits stated preference behavior (e.g., WTP) for changes in the provision of a non-market or publicly provided good, such as water quality (Champ et al. 2003). We will therefore develop a similar model to answer what fee or tax, if any, will consumers be willing to pay to improve water quality in their municipal supply in the city of Jacksonville.

Analytical Framework And Modeling Approach
Let us suppose that \( V(Y-E, W, P, Z) \) is the indirect utility function of a household, which increases with disposable income \( (Y-E) \) and positive attributes of water services \( (W) \). Here \( W \) is a multidimensional vector of different attributes relevant to the provision of water services, such as quality and reliability of tap water. The indirect utility decreases with prices, and may be affected by relevant household characteristics \( (Z) \). The disposable income of a household is the total personal income \( (Y) \) minus the household’s total expenditure on bottled water or water purification \( (E) \). We assume that \( E \) is inversely proportional to \( W \), or \( \frac{dE}{dW} \leq 0 \).

Households will be willing to pay for water service improvements up to the extent that this payment does not decrease their utility below the original utility level (what is the original utility level?). For example, a household’s maximum WTP for any improvement (from \( W_0 \) to \( W_1 \)) in water services can be stated as the following;

\[
V(Y-E_0, W_0, P, Z) = V(Y-E_1-WTP, W_1, P, Z)
\]

It is obvious that \( W_0 \) represents the initial and \( W_1 \) represents the improved quality of tap water. A household’s expenditure on bottled water or water purification decreases from \( E_0 \) to \( E_1 \) (i.e., \( E_0 > E_1 \)) as a result of the increment in tap water quality. By assumption, we consider WTP is \( (E_1-E_0) \). A household’s WTP for improved water quality is a function of multidimensional water attributes, income, prices, and other relevant household characteristics. We will use a regression analysis to estimate the WTP for water services by household’s characteristics, such as, annual
family income, otherwise expenditure on bottled water and water purification, dissatisfaction with existing tap water quality, as well as their demographics.

**Survey Method and Future Goals:**

The initial round of the survey will comprise of 600 students/employees of UNF. Participants would be contacted by email invitation, which will provide an online survey link for completion. The survey will be conducted using UNF’s survey software platform, Vovici Enterprise, and the first 600 respondents will receive a $5 gift card as compensation for their time. After evaluating the online responses, we may, provided the necessary resources, extend our study to include a household survey of Jacksonville residents. For this, we will be applying for external funding, so that we may conduct a household survey about the use of tap water and expenditure on bottled water that we hope will furthermore represent other regions as well. In addition, we will add Miami as a control sample of another Floridian city that does not have as many issues with its water quality as Jacksonville. This will help us to compare the responses of participants in the two cities regarding their WTP safe tap water infrastructure. In addition, results from this survey will help establish a WTP for installing water bottle filling (hydration) stations across UNF campus with a goal of reducing and possibly eliminating the use of plastic water bottles on campus.

**Work Plan:**

I. Develop the online survey (January)
II. Send survey invitation to UNF staff and students (February)
III. Survey implementation and data collection (March)
IV. Data analysis and report writing (April)
V. Conclusions/Limitations/Questions for Further Research (May)
References:


World Bank, 1993. The demand for water in rural areas: Determinants and policy implications. The World Bank Research Observer, Volume 8, Number 1, Pages 47–70.
Proposed Budget with the Budget Narrative:

1. **Participant compensation:** Keeping in mind the length and detailed design of the survey\(^2\), respondents will receive a $5 UNF bookstore gift card upon the successful completion of the survey.

2. **Student stipend:** Under the project two students will be employed, Thomas J. Lally (Undergraduate Student of Economics) and Miriam A. Okeyo (Non-degree seeking Undergraduate Student). They will assist with data collection and tabulation. Both of them will receive a $500 stipend.

**Note:** All funds will be spent by 26\(^{th}\) of May 2014, the deadline for the UNF purchasing.

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<tbody>
<tr>
<td>1. Student Stipend ($500 x 2)</td>
<td>$1000.00</td>
</tr>
<tr>
<td>2. Participant Compensation ($5 x 600)</td>
<td>$3000.00</td>
</tr>
<tr>
<td>Total Budget</td>
<td>$4000.00</td>
</tr>
</tbody>
</table>

\(^2\) Please consider the draft survey, narrated in the appendix, for initial review.
Appendix: Draft Survey

Thank you for your time. We are conducting a university-approved research on your drinking water preferences. We really appreciate your time and request you to complete the survey sincerely. If you do not wish to participate choose the opt-out option. Thank you for your time and help. As you complete the survey, please take a printout of the confirmation page and you can redeem the code for a $5 gift-card at UNF bookstore.

Would you like to respond to this survey? Yes □ No □

We would appreciate your name, current phone number and address should we have further questions. Please be assured that your contact will not be shared under any circumstances.

First Name: ______________________

Last Name: ______________________

Phone: __________________________

Email ID: _________________________

Address: ______________________________________________________

Age: _________________

Gender: Male □ Female □

What is your housing situation now? Check any of the responses below that apply to you:

□ Living alone
□ Living in a large or congregate arrangement
□ Living with my family
□ Living in a nursing facility or institution
□ Living with roommates
□ Homeless living in a shelter or motel
□ Living in a shared situation with 2-3 others
□ Homeless living temporarily with someone else

Other: Description: ______________________________________________

Do you own your own home or condominium? □ Yes □ No
Do you rent an apartment?  □ Yes  □ No

Ethnicity:
- Caucasian
- African American
- Native American or Alaska Native
- Hispanic
- Asian
- Native Hawaiian or Other Pacific Islander
- Others

Do you pay or share your household water bill? (Mark that suits your response):
- Yes  □
- No  □

What kind of housing/accommodation do you live in? (Check as many as applicable)
- Owned house
- Rental property
- College hostel
- Room in a house
- Studio
- 1 BHK Apartment
- 2 BHK Apartment
- House
- Other
  Please specify: _____________________________________________________

Choose you type of housing option.
- □ An apartment by myself alone.
- □ A shared apartment of house with 3 or more roommates.
- □ An apartment with my children.
- □ An elderly/disabled housing complex.
- □ An apartment with my spouse.
- □ Living with a family that is able to provide support services.
- □ An apartment with my parents.
- □ Sober Housing.
- □ An individual apartment grouped with other apartments sharing services.
- □ Other...
  Description: _____________________________________________________
- □ A nursing facility or state hospital.
- □ A shared apartment or house with 1 or 2 roommates.
What is the annual income of your family?

- Below $10,000
- $10,000 to $20,000
- $20,000 to $40,000
- $40,000 to $60,000
- $60,000 to $80,000
- $80,000 to $100,000
- $100,000 to $150,000
- $150,000 to $200,000
- $200,000 and above

Please response to the following questions:

How many members are there in your family? ___________

What is the average monthly water bill in last six months? ___________

Do you use tap water for,

- Drinking
  - Yes
  - No
- Cooking
  - Yes
  - No
- Cleaning dishes
  - Yes
  - No

Do you buy bottled water for any of the following purposes? Mark as many as apply.

- Drinking
  - Yes
- Cooking
  - Yes
- Cleaning dishes
  - Yes

If yes, how much on average do you spend on bottled water every month?

_______________________________

Do you use water purifier for any of the following purposes? Mark as many as apply.

- Drinking
  - Yes
- Cooking
  - Yes
- Cleaning dishes
  - Yes

If yes, how much on average do you spend on water purifiers every month?

_______________________________

Do you have any complaints of the quality of your tap water? If 1 represents “STRONGLY DISAGREE” and 10 represents “STRONGLY AGREE”, select a unit number that reflects your support for the following comments.

My tap water smells really bad. ___________

I doubt there is contamination in my tap water. ___________
I am unable to drink the tap water because it smells bad.

I do not drink the tap water because I suspect there will be health-risk from contamination.

Do you think the tap water quality can be improved?

Yes ☐ No ☐ Not sure ☐

If your concerns of the quality of the tap water were taken care of, would you start using tap water for,

Drinking Yes ☐ No ☐
Cooking Yes ☐ No ☐
Cleaning Dishes Yes ☐ No ☐

How much, do you think, it will reduce your expenditure on bottled water and on water purification.

On a scale of 0–100, where 100 means completely certain, and 0 is completely uncertain, how sure are you of the answer you just gave to the survey question?

Thank You For Your Responses And Have A Great Day.

Note: If you have any question, please contact Chiradip Chatterjee at c.chatterjee@unf.edu.
A FRAMEWORK FOR TRANSPORT PLANNING
A LOGISTICS SERVICE PROVIDER PERSPECTIVE

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ABSTRACT
Purpose - The purpose of this paper is to explore operational planning processes for road based long haul transportation and analyze the potentials for improvements. The point of departure is an operations management planning model used to build a frame of reference that is used to analyze transport planning processes.

Design/methodology/approach - A literature study was conducted to review models and theories from the Operations Management area. The outcome of that study was used to provide a theoretical foundation for analyzing transport planning processes. Following the literature study, empirical data was collected where data was collected from a hauler and a logistics service provider with focus on their transport planning processes.

Findings - A framework for transport planning is suggested based on well known operations management planning models. By using such a framework, the analysis reveals shortcomings in transport planning related to lack of information access but also time to allocate the right resources to various assignments.

Research limitations/implications – This paper is focused on road based transportation. The provided transport planning framework constitutes a theoretical contribution and is beneficial for analyzing transport operations planning.

Practical implications – The developed framework is useful in identifying opportunities for improvements in planning as well as what prerequisites needs to be fulfilled to enable better transport planning.

Originality/value – This work provides a transport operations planning framework based on traditional Operations Management planning models and transport planning models.

Keywords: Transportation, Freight Transport Operations, Transport Planning, Resource utilization, Logistics Service Provider.
1 INTRODUCTION

Road based logistics service providers are facing many challenges, both in their daily operations as well as in the planning activities. One of the reasons planning is difficult is the fact that the information is typically available at very short notice, often in less than 24 hours in advance. It is not uncommon that a service buyer can have their shipments picked up and shipped to their customer within hours of contacting a logistics service or transportation service provider. This leaves very little room for making informed decisions on scale and scope of capacity of the transport resources such as vehicles, trailers and personnel at terminals. The key concern is the inability to reliably plan transport operations mid- to long term, and to a great extent even short term.

Within the Operations Management field, normally dealing with production planning, the story is somewhat different. Manufacturing companies have traditionally put a lot of efforts into planning and control to increase efficiency and gain competitive advantages. Planning of material flows and production capacity are vital for effective and efficient operations. Without planning and forecasting the future would be too uncertain, which would have a serious impact on how the operations can be managed and controlled and that greatly affects profitability. It would be impossible to know how much material and production capacity needs to be available which could lead to a lot of wasted labor and material use. For this reason it is of importance that planning is conducted on short-, mid- and long terms. In a production context a solid manufacturing process and control (MPC) is vital for success (Jacobs et al, 2011).

In the transport research field a lot of effort has focused on aspects such as network balancing and design including last mile problems. Much of this is focused on mathematical solutions to quantitative problems such as location of facilities, shortest routes for distribution, selection of transportation modes and consolidation possibilities. Much of this is focused on mathematical solutions to quantitative problems such as location of facilities, shortest routes for distribution, selection of transportation modes and consolidation possibilities. The same is true for manufacturing, where researchers such as Wiers (2002), de Kok & Graves (2003) and Lin et al (2007) have described mathematical solutions to scheduling and planning problems. But unfortunately, this only solves a part of the equation. In the manufacturing industry the conversion ratio of theory and models to practical implementation is not perfect and research often ends up specifying specific software or ERP module functionality (Brown et al, 2001; Gupta et al, 2002, Fleischmann et al, 2006) to solve existing problems. In the transportation industry mathematical solutions are widely used for solving specific quantifiable problems, but on a larger scale the core issue remains unsolved. How much transportation resources that has to be available in the system has to be decided before the demand is known, which makes it a “guesstimation”.

The lack of reliable data input results in unreliable output data. And even if the data quality is reliable enough it is often attained too late, with no time to realize its benefits. In the transportation industry much of the information is available only shortly before the operations have to be conducted. Hence, the amount of resources, i.e. vehicles and trailers in the transportation system has to be based on historical data and rough estimates.

Unpredictable behavior of transport service buyers is resulting in less than optimal resource utilization of freight transportation resources resulting in poor fill rates (McKinnon, 2008). Not fully utilizing the available resources is a problem stemming from the planning aspects of the transport operations such as the dimensioning of the network. It is important how the operations are planned on a strategic, tactic and most importantly, an operational level. Incomplete or erroneous planning of operations is causing unnecessary costs in addition to the obvious environmental strains (McKinnon, 2010).
After reviewing literature related to transport management processes a literature gap has been identified. Little has been written about transport planning processes and how transport planning affects resource utilization in road based transport operations. Furthermore, a framework for transport operations planning has not been identified and by using theories and models from production planning research in the operations management literature this article attempts to begin to bridge parts of that knowledge gap and put forward a framework for transport operations planning.

The outline of the paper includes a short description of the methodology applied, followed by an introduction to the relevant literature in chapter 3. That chapter ends by introducing a framework for transport operations planning based on the literature. This is central to this work as it is used for analyzing the data collected from the empirical work. This analysis is presented in chapter 4.

2 METHODOLOGY

The approach for this work has been based on a two-step approach. First a literature study was carried out to find the relevant literature for planning in the field of operations management and the field of transport operations respectively. The result of the literature study was then used to develop a framework for transport operations planning. Empirical data was collected through a case study where one company’s transport planning processes were studied.

The empirical data included a hauler and a well known and large logistics service provider. The purpose of the study was to examine their road based transport operations and in detail investigate the planning process carried out to schedule their operations. In order to do so all activities and the information/data used and generated in the transport operation process was mapped. The process started when a supplier received a customer order and ended when it had been delivered to the customer. The reason for mapping the entire process was to gain a firm understanding of how the service consumers behave, how the network is structured, which stakeholders are involved in the process, and what their different roles are. This was essential in order to identify and understand what all the factors that affect the planning process are. The empirical data was collected using semi-structured interviews and were documented using a tested and standardized case study template.

3 TRANSPORT PLANNING – LITERATURE REVIEW

In this chapter, the relevant literature is reviewed, mainly from the operations management field in addition to the transport operations field. The purpose is twofold, to put this research into perspective, but furthermore, to put forward a frame of reference that is necessary for structuring and analyzing the transport operations planning processes.

3.1 Relevant literature

Complexity of freight transportation is related to the fact that demand for transportation is generated out of the complex world of supply chain activities and cannot be isolated from them. The complex interaction between decisions made at different levels in the supply chain has direct consequences on the freight transport operations where short decision turnover often result in ad-hoc solutions (McKinnon and Woodburn, 1996). Activities included in procurement operations, production operations, inventory management, warehousing and market operations have great impact on the efficiency of the associated freight transport
network (McKinnon, 2008). The above is mainly affecting the daily transport operations, but even the strategic and tactical factors are influenced.

Fill rate of vehicles in freight transportation are to great extent affected by inter-functional relationships between transport and the core activities of the shippers. A collaborative supply chain and logistics management means that two or more independent companies work jointly to plan and execute supply chain operations with greater success than when acting in isolation (Simatupang and Sridharan, 2002; Stefansson, 2006). The business relationships between the firms affect the nature and the outcome of the firms’ actions and their potential sources of efficiency and effectiveness (Håkansson & Snehota, 1995). Cross-functional integration within companies is a prerequisite for successful operations and necessary in order to capitalize on potential service improvements (Bowersox and Daugherty, 1995; Kahn & Mentzer, 1996; Croxton et al., 2001; Christopher, 1998). Such collaborative setups require adjustment of mutual processes and effective sharing of information between the business partners involved (Lee and Lim, 2005; Aviv, 2007; Stefansson and Russell, 2008).

Complexity of the supply chain contributes to planning difficulties, and to simplify the chain structure manufactures and retailers are reducing the number of suppliers in their supplier base (Sanchez and Perez, 2005; Paulraj and Chen, 2005; Sengupta et al., 2006). In addition, the buyers are developing closer relationships with their reduced number of suppliers of products (Corbett, et al., 1999; Kotabe et al., 2003). This does not have to be valid for service supply chains as many global supply chains include ever-increased number of service providers (Stefansson, 2006). This implies increased number of relations and relationships based on high-involvement are costly because coordination, adaptation, and interaction create expenses. Low-involvement relationships on the other hand, can be handled with limited coordination, adaptation and interaction costs (Gadde & Snehota, 2000, Håkansson & Ford, 2002).

Planning of operations is necessary for all organizations. The degree of planning needs and capabilities differs greatly between types of organizations, types of industries and size of companies (Jacobs et al., 2011). The individual stakeholders traditionally do planning of activities within different supply chains. These plans are as usually based on historical data in addition to existing orders. Unfortunately mismatches in planning due to lack of decent forecast capabilities are still today a huge challenge despite availability of sophisticated information systems on the market. The existence of the famous Bullwhip effect in inventory availability shows this clearly in physical supply chains (Lee et al., 1997, Cachon et al, 2007). Uncertainty of future demand is obviously a major contribution to forecasting failures in capacity needs and many attempts to improve accuracy fall short.

Traditionally operations management planning and scheduling is done in in several steps. Manufacturing planning and control (MPC) system includes management of materials, scheduling machines and people, and coordination of suppliers and key customers (Jacobs et al, 2011). The typical activities that are supported by MPC can be divided into three time horizons (ibid):

- In the long term, the sale and operations planning to provide information for making decisions on the appropriate amount of capacity to meet the market demands of the future.
- In the intermediate term, the fundamental issue is to match supply and demand in terms of both volume and product mix supporting detailed capacity and material planning.
- In the short term, the resource’s detail schedule is required to meet production requirements and generate a detailed production planning.
A general MPC system is illustrated in Figure 1 below and structures the MPC system into three different phases: Front end, Engine, and Back end.

![Diagram of MPC system](image)

**Figure 1 Manufacturing planning and control system (Jacobs et al., 2011)**

The MPC system different phases: Front end, Engine, and Back end all have various purposes where the Front end builds up the overall company’s direction of product sale bases on orders and forecasts, the Engine phase focuses on detailed material and capacity planning ands the Back end focuses on the execution of the plans, both in own production facility and also follow-up of vendor deliveries.

The literature presents a wide range of planning models for operations management and supply chain management (Narashiman and Santosh, 2004; Ma and Davidrajuh, 2005; Jacobs et al., 2011). Some examples of specific freight transport planning models have been developed (Roy and Delorme, 1989; Brown and Ronen, 1997; Crainic and Laporte, 1997; Crainic, 2000; Caputo et al., 2006) Despite the existence of the above planning models, no transport planning model is as established as the one for operations planning above. However, some similarities can be found where planning is divided into Strategic planning, Tactical planning and Operational planning. The division into these three areas have been widely applied in transport planning, not the least by Crainic (Crainic and Laporte, 1997) and work de and his team has done in recent decades.

Strategic planning is the one made for long term planning and typically involves the highest level of management. The decisions taken set the operations strategies for the company and often require large investments that need to be capital returned over long time horizons. Such decisions can relate to design or extended changes of the physical network including locations of facilities, both locally and globally, acquirement of resources to be used long terms, management of demand, etc.

Tactical is a medium term planning in aiming at improving the performance of the business operations. The available data is on a high aggregated level and the typical activities involve
type of service to operate, allocation of assignments to the existing resources, both terminals and vehicles, reposition of resources, etc. The output of the tactical planning is a transportation plan that is used to guide the future operations. The tactical planning is important for the transport operators as they frequently apply consolidation operations that need advances coordination (Crainic, 2000).

Operational planning is a short term planning that involves the resources used in the services being offered. This includes routing of vehicles, crew allocation, dispatching of vehicles and crews as well as maintenance of the involved resources. The resource allocation is the most important operational decision made in all transport operations where the time plays an important role. It is also important to be able to feed back the status of various resources and activities.

Unfortunately, due to time constraints, business partners do not always take the necessary time to adequately plan all aspects of their business relationship (Hadaya and Cassivi, 2007). The time constrains are different in different industries and obviously companies within the process industry producing Make to Stock (M2S) products with long production runs in a certain demand market have completely different planning environment compared to a Make to Order (M2O) producers in a market with volatile demand structure (Fisher, 1998). Not only does this apply for the retail and manufacturing industry, but for the transport service industry as well.

3.2 Frame of reference

As stated before, a frame of reference for transport operations planning is needed, partially to structure the different requirement for transport operations planning but also to analyze the used planning setup. In this work the framework has been put forward to analyze the data collected in this work. It is based on the three level approach already introduced in the literature discussion above related to the MPC framework. The transport operations framework includes:

- The “Strategic planning” is used from the transport literature and represented by the “Front end” in the OM planning literature.
- The “Tactical planning” from the transport literature and represented by the “Engine” in the OM planning literature and,
- The “Operational planning” from the transport literature and represented by the “Back end” in the OM Planning literature.

4 EMPIRICAL DATA

In this chapter, the empirical data from the “Transport operations planning “ study is presented.

4.1 The transport operations planning study

The companies in the case study are large global logistics service providers and multi-modal freight forwarders. This study is limited to road based freight transport operations in Sweden, and the focus is on the planning processes and the related information, data and activities. The logistics service providers’ purchase capacity or full truck loads from haulers and do not own the fleets of vehicles used in the operations.
This operation provides the means as to how the transportation network can move small shipments over large distances. The network consists of a number of terminals in different cities/regions where shipments are consolidated and transported in line traffic with daily departures to most other terminals in order to be forwarded or distributed elsewhere.

The pick-up and distribution operations collect and distribute the smaller shipments that for economic reasons cannot be sent directly from point A to point B. These are picked up and brought to a terminal for sorting and consolidation in order to be distributed or shipped to another terminal in a different city or region.

Within the frame of the study there are three areas of operations that have been studied, but only two are included in this paper. These are the three categories of operations that include road based freight transport operations, and they are direct delivery services (DDS), pick-up and distribution (PUD) services and line haul (terminal to terminal). The DDS are full truck loads (FTL) while PUD are less than full truck loads (LTF). Since the DDS are not of interest from a planning perspective in the context of the article they are not included. The other two are described more in detail above in Figure 2.

There are four different phases of the logistics service providers transport operations. Before anything is physically moved from the site of the service buyer pre-transportation activities such as receiving customer order and picking the orders are conducted. It is in this phase the logistics service provider is notified that there is one or more shipments that should be picked up. The next phase is pick-up when the logistics service provider, mainly through use of haulers, collect and deliver shipments to terminals. In the third phase the shipments are sorted to be distributed locally, or to be moved within the logistics service providers network of terminals if it is going to another region/country. The final phase is when the shipment leaves the terminal in order to be distributed in the receiving region where the receiver resides.

All the various activities, decisions, physical movements and the related information that is created, used or sent to different stakeholders are shown in the process mapping Figure 4 below. The mapping depicts the entire process for all shipments passing through a terminal, presented in a chronological order.
5 ANALYSIS AND RESULTS

In this section the empirical data is analyzed and results are presented. The framework used is a combination of the MPC and transportation frameworks. They were adapted to create a similar framework where the planning process data could be inserted. The different aspects of the planning process are depicted and analyzed.
5.1 The transport planning process

The frame of reference has been used to analyze the empirical data previously presented where the hierarchy of planning level is used; Strategic planning, Tactical planning and Operational planning. Based on the empirical data and MPC model, a new model for transportation planning has been developed and is shown in Figure 5. The different levels of the model are described in detail in the subheadings.

![Diagram of the Logistics Service Provider planning process]

**Figure 5 The Logistics Service Provider planning process**

5.1.1 Strategic planning

Planning on the strategic level is based on quantitative historical data, and the decisions are based on predicted expected trends and variation. Decisions taken on this level are for example where facilities such as terminals should be located, how the network is designed and how much capacity and resources that should be made available in the network as a whole. Other important decisions taken are how their services are designed and how pricing is modeled. These decisions mainly have global and national impact.

5.1.2 Tactical planning

The tactical planning mainly focus on decisions that have national and/or regional level impact. The primary goal of the tactical planning is to efficiently and rationally allocate resources based on both the strategic plan and aggregated forecasting, combining quantitative and qualitative input. Planning decisions are taken based on forecasts. These planning decisions are for example which terminals and routes that should be used to connect different
regions, what their areas of distribution and delivery are, and so forth. Also, it is decided how resources and shipments are allocated between terminals in order to balance and maximize use of resources. Additional input from customer’s forecasts or requests is included and translated into a plan for how traffic is routed through the network.

5.1.3 Operational planning

As opposed to the other levels of planning the operational planning is focused on a local level, or more specifically, in a terminal. The transport resources are requested and allocated locally on a daily basis. When and where resources are needed depends on customer behavior, and there is variation in demand as different service buyers consume services based on their individual needs and requirements. The various activities are scheduled daily basis, and shipments are registered and sorted in order to use route optimization software to make efficient use of the resources. The output is a route planning with designated drop-off points for each and every shipment. This route planning is given to the hauler, which in turn decides whether to use it, or plan its own route.

5.2 Transport planning issues

There are a number of issues that create planning difficulties for logistics service providers. These are mainly related to two different categories of problems, “information lead-times” and “communication”. Both of these types of issues cause a troublesome environment for planning as they affect both quality and how far in advance planning can be conducted.

Information lead-time issues include incomplete and erroneous input data provided by the customers. Missing, or incomplete data turns out to lead to planning issues such as allocating wrong load to a vehicle that either leads to insufficient vehicle capacity or poor resource utilization.

The rapid operation cycles and lack of information in advance in the transportation industry creates a different planning environment. The first and foremost problem is the lack of proper lead-times on information transfers. This creates difficulties to somewhat reliably plan mid-term and especially in the long-term. The lead-time problem stems from how the different stakeholders communicate and interact.

Previous work by Crainic & Laporte (1997) indicates that transport planning operations would benefit from learning from Operations Management. So what happened? Did the research community then fail to convey the lessons and knowledge to the industry? Or were there barriers hindering implementation of new planning tools and methods? One such barrier could be lack of data or information sharing and integration between different stakeholders. As technology and information systems are maturing and developed there should now be much better conditions for more advanced solutions than those that were previously possible to put into practice. Transparency and visibility in the needs, requirements and behavior of both customer and the customer’s customer could greatly improve the planning capabilities, which would be a crucial part in achieving the highest possible resource utilization.

In addition to information issues, communication issues also are identified. Generally there are two categories and methods to how customers purchase transport services. The first category is the customers that communicate their needs through EDI, directly from information system to information system. The second category consists of those that use a web booking system. In rare cases communication is conducted by phone or fax, but that only happens under special circumstances such as being unable to access the web based system. As such over 95% of the communication is digital.
Historic data combined with contracted or explicitly implied capacity need is what provides the input for daily forecasts as to what each particular day, route and customer will require. The contracted or explicitly implied capacity functions as a sort of capacity allotment, and is estimated to generally be around 30% of the planned capacity. Due to inconsistent or incomplete data making accurate forecasting difficult there is normally extra capacity planned to avoid any ambulatory transports or unnecessary delays.

Direct delivery service purchasers communicate their needs and requirements further in advance and in detail due to the nature of their more specific demands i.e. requiring entire vehicles, bulky goods etc. They normally book transportation 1-2 days in advance, and 60% of the volumes are booked 1 day in advance. Large shipments that require multiple vehicles it is booked further in advance, and the rule of thumb is that the larger the shipment is the further in advance it is booked.

6 CONCLUSIONS

The literature shows that successful collaboration in supply chains is built upon long-term relationships and trust between stakeholders. This applies especially to markets where competition is tough. The transportation industry does often not have such long-term relations, and is mainly based on relatively short-term, arms-length relations. Transport service buyers do not need to secure long-term transport capacity in most instances as transport services are highly commoditized. High expectations on availability and flexibility of the Logistics Service Providers create an environment where planning in advance is particularly troublesome. In addition, information sharing is vital for successful collaboration and long-term economic stability. Information availability is important for execution of processes and it is a prerequisite as input to forecasting activities and for successful planning.

In this paper, the purpose was to explore operational planning processes for road based long haul transportation and analyze the potential for improvements. A literature study was conducted to review models and theories from the Operations Management research area as well as the Transport Management research area. The study was used to provide a theoretical foundation for analyzing transport planning processes. Following the literature study, empirical data was collected through a case study including a hauler and a logistics service provider, with focus on the transport planning processes.

The literature study, including the operations management planning models showed that there are many similarities with transport operations planning. The major similarity is the three level approaches of Strategic planning, Tactical planning and Operational planning.

The findings from the empirical study using the developed framework show opportunities for improvements in transport planning as well as to identify the prerequisites for enable better planning. By using that framework the analysis revealed shortcomings in transport planning that are mainly related to lack of information and a shortage of time to effectively and rationally allocate the right resources to the assignments.
REFERENCES


Sustainable Marketing: An Oxymoron?

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ABSTRACT
As sustainability continues to become an important social objective, companies that formulate and implement marketing strategies designed to promote consumption are therefore increasingly viewed as being responsible for maintaining sustainable consumption! Consumption has long resided within the domain of marketing (Belk et al., 1996). However, there is little in mainstream marketing management theory, research, and practice that equips companies to deal with an evolving operating environment in which sustainability is progressively becoming the consumption norm. The purpose of this paper is to offer a harmonious framework for sustainable marketing designed to reconcile the objectives of marketing with sustainability outcomes desired by consumers, organizations, and society at large.

Keywords
Marketing, sustainability, framework, corporate social responsibility, organizational theory.

ON THE SPECIFICATIONS OF A FRAMEWORK FOR SUSTAINABLE MARKETING
Sustainability and marketing are inextricably linked to consumption. The goal of marketing as a discipline is to promote consumption. Sustainability, however, attempts to accomplish the opposing goal of consumption reduction. Therefore, a pre-emptive conflict exists when attempting to tie marketing to the rising trend toward sustainability in the world of business. A societal-macro perspective of consumption suggests that a higher level of consumption is an engine for economic development, but successful sustainability implies a lower level of consumption! A consumer-micro perspective suggests that higher levels of consumption are indicative of affluence, well-being and higher social status, but sustainability continues to imply responsibly-limited consumption!

Clearly, sustainability is a multi-faceted behavioral-based phenomenon with contradictory, yet reconcilable, implications for organizations, consumers, and society at large. The purpose of this paper is to offer a harmonious framework for sustainable marketing designed to reconcile the objectives of marketing with sustainability outcomes desired by consumers, organizations, and society at large. The proposed framework conjectured is a process model based on organizational and marketing theory resulting in economic, ecological, and social sustainability outcomes (Jackson, 2006; Seyfang, 2009; WCED, 1987). By necessity, such a framework must be imbedded in organizational and marketing theories that account for the perspectives of both constituents: organizations and consumers.

ORGANIZATIONAL THEORIES
A special issue of the Journal of the Academy of Marketing Science, Volume 39, Issue 1, February 2011, was devoted to sustainability. In this issue, notable marketing scholars suggested particular nine organizational theories that they believed to be the most pertinent for sustainability research and considered the key insights that emerged from each theory. Specifically, these theories included transaction cost economics, agency theory, institutional theory, population ecology, resource dependence theory, the resource-based view of the firm, the upper echelons theory, social network theory, and signaling theory, respectively (Connelly et al., 2011). These nine theories offer either a rational view of interpreting the firms organizational behavior or a prescription for formulating
organizational strategies (See Figure 1). These theories suggest that in order for these strategies to achieve the desired ecological, economic, and social outcomes of sustainability, consumers must engage in “mindful consumption.” The conclusion here is that the firm’s performance on the ecological, economic, and social fronts of sustainability is mediated by end consumers.

Figure 1:

<table>
<thead>
<tr>
<th>Theoretical perspective</th>
<th>Key premise</th>
<th>Key insights for sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction cost economics</td>
<td>Firms make decisions about activities in which they will engage by evaluating the total economic cost of the activity.</td>
<td>Firms will engage in sustainable practices when the economic rationale for doing so is clear to them. Technologies and processes that reduce the cost of implementation of sustainability initiatives will increase the likelihood of their adoption.</td>
</tr>
<tr>
<td>Agency theory</td>
<td>Managers (agents) and shareholders (principal) have divergent interests, so the principals must monitor the agents or incentivize agents to act in the interests of principals.</td>
<td>Some principals may have sustainability interests (e.g., concern for the environment) that run counter to managerial interests. Other principals may have only short-term interests, so managers must be aware of the potential for principal opportunism as well.</td>
</tr>
<tr>
<td>Institutional theory</td>
<td>To survive, organizations must earn legitimacy by conforming to institutional pressures prevailing in the environment.</td>
<td>Firms can improve their ability to survive and thrive by being aware of and conforming to emerging industry trends and policy changes about sustainability initiatives. There may be value in mimicking successful sustainability initiatives that competitors are not attempting to model. New organizations and organizational forms will arise that are well suited to the triple bottom line. Organizations that do not adapt their processes to become more sustainable may be selected out of the population.</td>
</tr>
<tr>
<td>Organizational ecology</td>
<td>Organizations emerge, evolve, and die in response to changes in their environment.</td>
<td>A firm’s ability to implement sustainable practices may be constrained when it is dependent on others. The environment contains limited resources, so firms must learn to forbear and trust if they are going to coexist over time. Sustainability practices can provide competitive advantage. Firm resources are limited, so sustainability efforts should consider how they might be maintained or renewed over time.</td>
</tr>
<tr>
<td>Resource dependence theory</td>
<td>Organizations are constrained by their external relationships, so managers act to reduce the power of others have over them and increase their own power over others.</td>
<td>Decisions about sustainability are shaped by past practices and managerial backgrounds. More diverse top management teams may be more creative and proactive about sustainability efforts.</td>
</tr>
<tr>
<td>Resource-based view of the firm</td>
<td>The basis for sustainable competitive advantage resides in its resources and in how the firm structures, bundles, and leverages these resources.</td>
<td>Diffusion of sustainability practices occurs through networks of interconnected firms. Firms that reside at structural holes in their inter-firm networks may have a unique ability to learn about sustainability and reduce uncertainty of implementation. It is difficult for investors and consumers to know which firms are genuinely committed to sustainability, so firms may use costly sustainability initiatives to reduce information asymmetry.</td>
</tr>
</tbody>
</table>

(Connelly et al., 2011).

MARKET-ORIENTED SUSTAINABILITY

Kuosmanen and Kuosmanen (2009, p. 235) proposed, “Sustainability is nowadays generally accepted as one of the key success factors in the long term business strategy of the firm.” Porter and Kramer (2006) suggested that
corporate social responsibility creates a competitive advantage for businesses, with Nguyen and Slater (2010) reporting that two out of three companies on Fortune’s “Global 100 Most Sustainable Corporations” list outperformed their less sustainable competitors. As such, Hunt and Morgan (1995) adopted the Resource-Advantage Theory of Competitive Advantage as the theoretical foundation for the development of the market-oriented sustainability framework. Consistent with Resource-Advantage Theory, a firm that incorporates sustainability into its marketing strategy could have a differential advantage over the competition (Ferrell 2010). This differential advantage can be based on intangibles such as core ideology and dynamic capabilities related to sustainability. By incorporating sustainability into market orientation, the goal of strategic alignment of sustainability with marketing strategies is achieved to create a competitive advantage. Three constructs identified in the model are DNA, stakeholder involvement, and performance management (Crittenden et al., 2011). These three constructs are the drivers of sustainability.

- DNA is used as an extended metaphor to clarify and illustrate the workings of an organization and how sustainability may be implemented. This construct includes core ideology, dynamic capabilities, and societal engagement.

- The firm’s DNA is communicated to both internal and external stakeholders, and stakeholders’ concerns should be an influence on strategic marketing planning.

- Performance management is the third major construct in the model and includes corporate social performance and corporate financial performance metrics.

Metaphorically, a company’s tendency toward sustainability is a result of its DNA. That is, the DNA holds the deeply rooted set of values and beliefs that provide behavioral norms that trigger or shape sustainability activities. Drawing on the behavioral aspects of a market orientation, sustainability DNA captures both the culture and the climate characteristics of a market-oriented firm.

CUSTOMER-CENTRIC SUSTAINABILITY

The Customer-Centric Sustainability (CCS) concept implies that the three sustainability dimensions: environmental, social and economic, should be recast as representative of the consumption-mediated impact of marketing actions. Thus, in the CCS perspective, the environmental dimension relates to the impact of consumption on environmental well-being. That is, health and human well-being are consequences of environmental change ensuing from consumption. The social dimension relates to impact of consumption on personal well-being of the consumers, reflecting individual (and family) well-being or quality of life and associated welfare of the community. The economic dimension relates to the impact of consumption on the economic well-being of consumers associated with financial aspects such as debt-burden, earning pressures, and work-life balance. Based on these considerations, we define CCS as follows: customer-centric sustainability refers to the consumption-mediated impact of marketing actions on the environmental, personal and economic well-being of the consumer.

Seth, Sethia, and Srinivas (2011) contended that a corporate sustainability agenda can be pursued with significantly greater effectiveness by embracing customer-centric sustainability. The CCS approach to sustainability leverages business-consumer reciprocity, and it helps make sustainability an integral part of business strategy and operations. They proposed conceptualizing CCS as a metric of performance based on sustainability outcomes that are personally consequential for customers and result from customer directed business actions. As marketing is the principal customer-facing business function, marketing actions constitute the most relevant business drivers of CCS. Therefore, marketers need to consider full impact of consumption by taking a long-term view that involves marketing strategy implementation tools that encourage and lead to Mindful Consumption (MC).

MARKETING THEORY

Marketing is a mature discipline approaching its 100th year since inception. Marketing has its own theories grounded in the realities of consumer behavior and marketing strategy. Sustainability, however, is still in its infancy, or
introduction phase. Therefore, we suggest that the diffusion of innovation theory frequently applied to new product marketing is equally applicable to the diffusion of sustainability.

**SUSTAINABLE MARKETING STRATEGY FORMULATION**
Sustainability is a behavioral lifestyle-related phenomenon. Subsequently, we suggest a framework for sustainable marketing based on Consumer Behavior, Marketing Strategy, and the Diffusion of Innovation Theories. The steps of the sustainable marketing strategy formulation framework are as follows:

1. **Deploy behavioral-based “psychographic” segmentation, targeting, and positioning to initiate a marketing strategy for sustainability.**
2. **Implement marketing tactics to create, communicate, and deliver sustainable value.**
3. **Adopt the Diffusion of Innovation strategy to disseminate casts of sustainability from Innovators, Early Adopters, Early Majority, Late Majority, and finally Laggard in order of their sustainability-minded qualities.**

**For Instance: Innovators**
Innovators in the VALS II Framework are successful, sophisticated, take-charge people with high self-esteem. Because they have abundant resources, they exhibit all three primary motivations (ideals, achievement, and self-expression) in varying degrees (See Figure 3). They are change leaders and are the most receptive to new ideas and technologies. Innovators are very active consumers, and their purchases reflect cultivated tastes for upscale, niche products and services. Image is important to Innovators, not as evidence of status or power but as an expression of taste, independence, and personality. Innovators are among the established and emerging leaders in business and government, yet they continue to seek challenges. Their lives are characterized by variety. Their possessions and recreations reflect a cultivated taste for the finer things in life. Examples of a model Innovator’s favorite things may include BMW automobiles, Wired Magazine, sparkling water, and rewarding experiences.

**Figure 2:**

- **VALS (“Values, Attitudes And Lifestyles”)** is a proprietary research methodology used for psychographic market segmentation. Market segmentation is designed to guide companies in tailoring their products and services in order to appeal to the people most likely to purchase them!

- **United States Framework and VALS™ Types**
  - VALS™ segments US adults into eight distinct types—or mindsets—using a specific set of psychological traits and key demographics that drive consumer behavior. The US Framework, a graphic representation of VALS, illustrates the eight types and two critical concepts for understanding consumers: primary motivation and resources. The combination of motivations and resources determines how a person will express himself or herself in the marketplace as a consumer.
  - VALS assigns individuals a VALS type on the basis of their responses to questions in the VALS Survey. VALS—typing populations of interest, such as customers or constituents, is the first step in a VALS approach to achieving strategic marketing and communication goals.
  - Using VALS provides:
    - A fresh perspective by effectively “putting them inside the head” of their customers
    - Rich, customized, consumer profiles or personas
    - Distinctive communication styles of their best targets.

(Strategic Business Insights, 2013).
SUSTAINABLE MARKETING IMPLEMENTATION

Sustainable marketing strategy implementation plan may be configured along the lines of the traditional concept of the 4 Ps of marketing recast in terms of a contemporary relationship marketing perspective; i.e., create, communicate, and deliver the value. (Seth, Sethia, and Srinivas 2011)

1. Create the Value – (Benefit/Product). Design products with attributes that help reduce repetitive consumption. Products could be made more durable, and easier to upgrade and repair. Expand the product mix to include...
multiple use products, multi-user or shared-use products in product-service combinations, and service as product substitute.

2. **Create the Value – (Cost/Price).** Price regulates demand and, therefore, consumption. Price increases raise consumer awareness of the cost implications of excessive consumption. Pricing based on full internalization of environmental and social costs can help in a shift away from both acquisitive and repetitive consumption. Emphasis in marketing should be on quality and value.

3. **Communicate the Value – (Promotion).** Marketing communication can be used promote healthier lifestyles and for consumer education to reduce wastefulness in acquisitive and repetitive consumption.

4. **Deliver the Value – (Place).** Create easier access to service and repairs, and for “reuse.” Convenient location and attractive facilities can be important in developing markets for “product-service systems” such as rental cars for local driving, and shared-use of products.

**SUSTAINABILITY AND DIFFUSION OF INNOVATION**

Sustainable marketing is an evolutionary process akin to this diffusion of innovation. According to the “Diffusion of Innovation Theory,” consumers fall somewhere on the following gradation of the adoption of innovations: Innovators, Early Majority, Late Majority, and Laggards (See Figure 5). Earlier we suggested “psychographics” as criteria for segmenting consumer market. Also, we suggested targeting of the Innovator market segment in VALS II as the focus of the initial efforts to promote sustainable consumption. Marketers should therefore craft marketing strategy implementation programs for each segment along the lines of the five stages of the adoption process (See Figure 6 for an example):

1. **Knowledge:** In this stage the individual is first exposed to an innovation but lacks information about the innovation. During this stage of the process the individual has not been inspired to find more information about the innovation.

2. **Persuasion:** In this stage the individual is interested in the innovation and actively seeks information/detail about the innovation.

3. **Decision:** In this stage the individual takes the concept of the change and weighs the advantages/disadvantages of using the innovation and decides whether to adopt or reject the innovation.

4. **Implementation:** In this stage the individual employs the innovation to a varying degree depending on the situation. During this stage the individual determines the usefulness of the innovation and may search for further information about it.

5. **Confirmation:** In this stage the individual finalizes his/her decision to continue using the innovation. This stage is both intrapersonal (may cause cognitive dissonance) and interpersonal, confirmation the group has made the right decision.
CONCLUSION

Although the notions of marketing and sustainability appear to be in opposition in their most primal forms, there exists the possibility for constructive harmony between the two. Reconciling the consumption-based differences between the two is therefore of particular importance in creating such harmony. Marketing is a dynamic discipline, and as such the adoption of a framework-based tool may provide marketing professionals with the means to achieve its goals within sustainable means. The purpose of this paper has been to offer such a harmonious framework designed to reconcile the tasks of marketing with sustainability outcomes desired by affected parties within organizations, consumers, and the greater society. The proposed process model framework based on organizational and marketing theory may hopefully lead to economic, ecological, and social sustainability results.

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