



GRADUATE STUDENT  
RESEARCH CONFERENCE  
IN BUSINESS AND ECONOMICS  
(GRADCONF)

---

CONFERENCE PROCEEDINGS

---

**MAY 25-26, 2017**  
**Sarasota, Florida, USA**  
**Editor:**  
**Prof. Dr. Cihan Cobanoglu**

Authors are fully responsible for corrections of any typographical, technical and content errors.  
Graduate Conference Proceedings are **not** copyrighted.



# Graduate Student Research Conference in Business and Economics

May 25, 2017, University of South Florida Sarasota-Manatee, Sarasota, Florida

**Welcome, Hoşgeldiniz, Willkommen, Bienvenue, Добро пожаловать, َلاها لهُسو, 歡迎光臨, Bienvenido, Καλώς Ορίσαστε, Benvenuto, ようこそ, 환영합니다, ยิน ดีตฉ นรับ, אבהקורב** to the Graduate Student Research Conference in Business and Economics here in sunny Sarasota, Florida, USA. *The Association of North America Higher Education International (ANAHEI)* is very honored and excited to host Graduate GRADCONF. This is a special time for ANAHEI as it is the first time we are hosting this conference.

The Graduate Conference has three specific objectives of (1) providing a platform for exchange of cutting-edge research in the field of business and economics; (2) fostering healthy research culture; and (3) providing a forum for networking among and between graduate students and faculty members.

Graduate Conference received more than 60 abstracts/papers for the conference from 113 authors. Thirty-eight presentations are accepted to be presented at Graduate Conference. We would like to thank each author for submitting their research papers to Graduate Conference.

As Graduate Conference was a peer-reviewed, double blind conference, we thank the following reviewers for their service:

Dayang		Sunita	Mondal
Haszelinna	Abang Ali	Mustafa	Özer
Ali	Apali	Kubilay	Ozyer
Ang	Bao	Loris	Rubini
Vincenzo	Capizzi	Necdet	Saglam
Mahalaya	Chatterjee	Amon	Simba
Anshul	Garg	Saloomah	Tabari
Jayendra	Gokhale	Abdullah	Tanrisevdi
Raies	Hamid	Alberto	Turón
Burcin	Hatipoglu	Elena	Vetrova
Ersem	Karadag	Ning	Wang
Murat	Kizildag	Yıldırım	Yılmaz
Rupam	Konar		

We would like to thank University of South Florida Sarasota-Manatee for sponsoring Graduate Conference. Without their support, this conference would have not been possible. We would like to thank Presenting Sponsors: Bradenton Area Visitors and Conventions Bureau and IMG Golf Club. We also would like to take this opportunity to thank all of the academic and corporate sponsors for making this Conference possible. Also, we would like to extend our gratitude to our keynote speakers: Dr. Karen Holbrok and Dr. Robert Thomas.

Moreover, we sincerely express our appreciation to all students in the Conventions and Exhibitions Management class in the College of Hospitality and Tourism Leadership at the University of South Florida Sarasota-Manatee who have volunteered their time to make this Conference a success. We also thank all other volunteers.

While you are attending Graduate Conference, please do not forget to enjoy the sunny and beautiful Sarasota/Bradenton Areas. The area offers a lot of great attractions and beaches.

Congratulations to all presenters at this conference and a warm Florida Welcome!

***Yours in Hospitality,***

Chair



Dr. Cihan Cobanoglu, CHTP  
McKibbon Endowed Chair & President of  
ANAHEI  
University of South Florida Sarasota-Manatee

## TABLE OF CONTENTS

<b>Profitability in U.S Airports – A Preliminary Investigation .....</b>	<b>1</b>
Abbas Shaban .....	1
<b>Job Polarization and Skill Requirements .....</b>	<b>4</b>
Jacob Loree .....	4
<b>Absorptive Capacity, and Degree of Intra-cluster and Extra-cluster Linkages: A Study of Bengaluru High-tech Manufacturing Cluster.....</b>	<b>8</b>
C Deepak <sup>1</sup> and M H Bala Subrahmanya <sup>2</sup> .....	8
<b>How Do We React to Tipping When We Don't Come From a Tipping Culture: Case of Employee's Expectations?.....</b>	<b>28</b>
Eleanor Scanlon <sup>1</sup> and Saloomeh Tabari <sup>2</sup> .....	28
<b>Applying Universal Design Principles to Engage Online Learners .....</b>	<b>31</b>
Joshua R. Davis <sup>1</sup> and Geraldine E. Hynes <sup>2</sup> .....	31
<b>Linux Operating System and Cyber Defense .....</b>	<b>38</b>
Jennifer Wescott <sup>1</sup> and Ulku Clark <sup>2</sup> .....	38
<b>The Impact of Air Transportation on the US Economy.....</b>	<b>40</b>
Janani Thiagarajan .....	40
<b>Corporate Culture as a Means of Achieving Synergy in International Business Development: On the Example of French Companies, Operating in Russia.....</b>	<b>43</b>
Tatiana Panfilova .....	43
<b>Effects of Financial Stress on Employees' Physiological Health, Financial Hassle, and Performance .....</b>	<b>46</b>
Devalina Nag <sup>1</sup> , Caroline Smith <sup>2</sup> , Whitney Botsford Morgan <sup>3</sup> , and Sarah Singletary Walker <sup>4</sup> .....	46
<b>Heterogeneous Financial Regulatory Standards: An Analysis of their Interaction in a Global Perspective.....</b>	<b>49</b>
Doriane Intungane .....	49
<b>Examining the Impacts of Demographic Factors on Communication and Job Outcomes .....</b>	<b>52</b>
Abdulelah Al-Tokhais <sup>1</sup> and Ning-Kuang Chuang <sup>2</sup> .....	52
<b>Pursuit of Preferential Trade Agreements and the Prospects of Global Free Trade when Tariff Bindings bind .....</b>	<b>55</b>
Moïse Nken.....	55
<b>Do Differences in Investors' Culture Affect the Way They React to Managerial Payout Decisions? .....</b>	<b>58</b>
Matthew Faulkner <sup>1</sup> and Kevin Brady <sup>2</sup> .....	58

<b>Delta Airlines System Outage and Its Effects on Firm’s Value.....</b>	<b>62</b>
Abhishek Kumar Ashok Kumar Gupta.....	62
<b>The Impact of Innovative Managers for the Hospitality Industry.....</b>	<b>65</b>
Yunus Yetkin, Yasemin Yetkin <sup>1</sup> and Emine Cihangir.....	65
<b>Modelling Utility Financial Viability Using Logistic Regression: Evidence from State of Florida. ....</b>	<b>68</b>
Daniel Acheampong <sup>1</sup> and Tanya S. Benford <sup>2</sup> .....	68
<b>Analysis of Paradox Between Religion Belief and Life Satisfaction of Rural Elderly in China .....</b>	<b>70</b>
Liyong xia <sup>1</sup> , Xulin Ma <sup>2</sup> , and Wangjiang Ying <sup>3</sup> .....	70
<b>Employee Turnover Intention in the Milieu of Human Resource Management Practices .....</b>	<b>83</b>
Dharini Rengarajan <sup>1</sup> , Nivethitha Santhanam <sup>2</sup> and Prema Sankaran <sup>3</sup> .....	83
<b>Ecotourism Perceptions and Participation by University Students.....</b>	<b>86</b>
Rachel Wilson <sup>1</sup> , Ashley De Leon Torres, Daniel Spears, Kc Birendra and Bharath Josiam.....	86
<b>An Analysis of Risk Perception Amongst Millennial Aged College Students and Travel.....</b>	<b>90</b>
Kristi Ingram, Daniel Spears <sup>1</sup> and Kc Birendra .....	90
<b>Coastal Restoration Though Community-Based Tourism .....</b>	<b>95</b>
Emily Meehan, Daniel Spears <sup>1</sup> and Kc Birendra .....	95
<b>Motivation and Satisfaction of Shore and Land Based Whale Watchers.....</b>	<b>100</b>
Lewis Crary, Daniel Spears <sup>1</sup> and Kc Birendra .....	100
<b>Sustainable Consumption Behavior of Millennials: Assessment of a Study Abroad Experience .....</b>	<b>103</b>
Nathaniel Saul, Daniel Spears <sup>1</sup> , Kc Birendra and Eliecer Vargas .....	103
<b>Uncovering Dimensionality of Guest Experience at Airbnb Accommodations ...</b>	<b>108</b>
Olena Ciftci <sup>1</sup> , Cihan Cobanoglu <sup>2</sup> , Faizan Ali <sup>3</sup> and Katerina Berezina <sup>4</sup> .....	108
<b>Why Chinese Travelers Choose Airbnb? Building a Model of Customer Decision-making.....</b>	<b>110</b>
Zhongyi Ma <sup>1</sup> and Katerina Berezina <sup>2</sup> .....	110
<b>Determinants of Locations, Participants and Trial Duration for Medical Device Clinical Trials .....</b>	<b>112</b>
G Naga Rekha <sup>1</sup> and M H Bala Subrahmanya <sup>2</sup> .....	112
<b>Relationship Between Facebook Advertisements Consumer Attitude: A Case Study of Generation Y.....</b>	<b>124</b>
Ali Tehci <sup>1</sup> , Salih Yildiz <sup>2</sup> , And Emel Yildiz <sup>3</sup> .....	124

<b>Rural Tourism and its Impact on Thriving and Non-Thriving Communities in The State of Arkansas .....</b>	<b>132</b>
Dylan Martinez <sup>1</sup> , Kelly A. Way <sup>2</sup> and Zola K. Moon <sup>3</sup> .....	132
<b>Determinants of Capital Structure of Banks and Financial Institutions of Bangladesh: A Panel Data Approach .....</b>	<b>135</b>
Sumaiya Zaman.....	135
<b>Job Satisfaction, Job Stress and Healthy Eating Behavior of Hotel Employees .</b>	<b>152</b>
Bendegul Okumus <sup>1</sup> , Suja Chaulagain <sup>2</sup> and Ibrahim Giritlioglu <sup>3</sup> .....	152
<b>Entrepreneurship, Innovation, and Dynamic Growth vs. Instability in the Market .....</b>	<b>155</b>
Faraz Farhidi.....	155
<b>Differential Effects of Internal and External Remoteness on Trade Flows: The Case of Pakistan.....</b>	<b>158</b>
Salamat Ali.....	158
<b>Development of a Trust Model for P2P Accommodations for Chinese Users.....</b>	<b>183</b>
Cui Wenjing <sup>1</sup> and Chen Po-Ju .....	183
<b>Engel’s Law and Household Consumption Patterns in Sri Lanka.....</b>	<b>185</b>
Thilani Kankanamge .....	185
<b>Rat Race: Birth of Turkish Cuisine in Corporate America.....</b>	<b>188</b>
John Palabiyik.....	188

# Profitability in U.S Airports – A Preliminary Investigation

Abbas Shaban

College of Business  
Embry-Riddle Aeronautical University, USA  
Shabana@my.erau.edu

## Introduction:

The main aim of this study is to review the critical factors affecting the profitability of the airports in order to evolve a robust conception about the profitability. The commercial air transportation industry has been one of the fastest growing sectors of the world's economy. (Milan, 2013). All the industries around the world seek to maximize their profits and airports are no exception to it.

## Literature Review:

An airport is the place that provides transportation service between the air and land. Moreover, airports are extremely significant to facilitate people's lives by connecting them with other cities and making travel convenient for passengers and cargo. Furthermore, airports are an essential part of the air transport system. They provide all the infrastructure needed to enable passengers and freight to transfer from land to air modes of transport and allow airlines to take off and land (Graham, 2014). Moreover, most commercial airports in the United States enter into an agreement that determines the rights and obligations for each party. Existence of this cooperative relationship is thereby crucial not only for airports, but also for airlines given the market pressure toward liberalization and competition (Sarswati, 2014). There have been many factors affecting the airport profitability, and airports ought to consider those factors in a significant way to make the highest profit and full passenger satisfaction. This research will go deeply in explaining the factors affecting airport profitability and how the airport's management plays a key role in developing strategies and continuously monitoring their performance. For example, factors that affect profitability could be the number of passengers, area of the airport, number of airlines serving at the airport, geographical location of the airport, number of the cargo movement in the airport, debt service ratio, and others. The profitability of the airport can be measured in terms of the operating income that the airport made at the end of the fiscal year. It is obvious that there have been several factors that influence the operating income in the aviation field.

## Model:

This part provides a brief overview of the model, this section is also needed to explain the data gathered for this project. Consider an operating income function for a given airport in this study for every year from 2009 to 2015.

$$OIncome_{ij} = f(L\&T_{ij}, NPax_{ij}, Cgo_{ij}, Dbt_{ij}) \quad (1)$$

## Where:

O Income  $ij$  is the operating income for airport  $i$  at year  $j$   
L&T  $j$  is the aircraft landing and takeoffs in airport  $i$  at year  $j$   
NPax is the number of passengers in airport  $i$  at year  $j$

Cgo is the cargo in airport i at year j  
 Dbt is the debt for airport i at year j

### Hypothesis

- H1: Landing and Takeoffs have a positive impact on an airport operating income.
- H2: Number of Passengers have a positive effect on an airport operating income.
- H3: More cargo landed in any airport will generate more revenue.
- H4: Debt has a negative influence on the airport operating income.

### Data:

The airport data contain 189 observations for all the large hub airports in the USA from 2009 to 2015 the data was gathered from the Federal Aviation Administration, (WWW.FAA.ORG). Summary statistics for the merged data are as in table 2 below.

**Table 1:** Summary Statistics

	O-Income (\$)	L&T	# passenger	Cargo (lbs.)	Debt (\$)
<b>Mean</b>	38.39	0.43	18.23	1757.94	99.82
<b>S. Error</b>	7.06	0.01	0.62	119.31	7.19
<b>Median</b>	14.09	0.41	16.97	1209.11	81.13
<b>Std.</b>	97.10	0.18	8.57	1640.19	98.78
<b>Minimum</b>	-109.49	0.18	6.43	311.54	0.00
<b>Maximum</b>	903.23	0.97	46.60	7541.41	690.07
<b>Observation</b>	189	189	189	189	189

### Results:

Table three states the results from the model. All the variables are considered in the first regression while in the in the second regression, the landings and takeoffs are not considered. Also, in the third regression, the first three large hub airports with the highest operating income are not considered.

**Table 3:** The regression result

Variable	R.1	R.2	R.3	R.4
<b>L&amp;T</b>	-450.58***	-436.03***	-70.39	-495.40***
<b>Debt</b>	-0.07**		0.16***	-10.43***
<b># Passenger</b>	9.75***	9.25***	1.58	492.18***
<b>Cargo</b>	0.02***	0.02***	0.008***	50.75**
<b>F- Statistic</b>	<b>15.93</b>	<b>20.70</b>	<b>11.71</b>	<b>23.69</b>
<b>Prob (F- statis)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**H1:** In regression 1,2,3,4, it states that there is a negative relationship between the operating income and the number of landings and takeoffs. This implies that more landing and takeoffs will decrease the operating income if else is held constant. The logic behind that could be; some airports are charging airlines fixed amount every month regardless of how many landings and takeoffs occurring every month. Therefore, during the peak time, airports lose income.

**H2:** In regression 1,2,3&4, it displays that there is a positive relationship between the number of passengers at any airport and its operating income. Hence, more

enplanements indicates more operating income to any airport. This is making perfect sense since the passengers at any given airport are the main source for the operating income.

**H3:** In regression 1,2,3&4, it states that, there is a positive relationship between the cargo landed at any airport and its operating income. This means that greater cargo movement in any airport will increase the operating income.

**H4:** In regression 1&4, it shows that there is a negative relationship between the debt and the operating income. Hence, more debt means less operating income for any given airport while in regression 3, it states that, there is a positive relationship between the debt and the operating income. This could be explained since the airport's management for any airport can generate profit from the debt that exceeds the cost of the debt.

### **Conclusion**

This project derives a linear model that examine the part of change in the operating income that is explained by the number of landing & takeoffs, the number of passengers, the debt, and the cargo. Moreover, number of Landings&takeoffs, number of passengers, cargo have a significant relationship in change with operating income at a significance of 1%. It is significant to understand the factors affecting the airport profitability when reviewing projects by the airports' management.

### **References**

- Janic, Milan. (2013). Airport analysis, planning and design: demand, capacity and congestion.
- Graham, A. (2014). Managing airports: an international perspective. London: Routledge.
- Saraswati, B., & Hanaoka, S. (2014). Airport–airline cooperation under commercial revenue sharing agreements: A network approach. *Transportation Research Part E: Logistics and Transportation Review*, 70, 17-33. doi:10.1016/j.tre.2014.06.013
- Passengers, Cargo & FI (2009, July 06). Retrieved April 01, 2017, from [https://www.faa.gov/data\\_research/passengers\\_cargo\\_FI/](https://www.faa.gov/data_research/passengers_cargo_FI/)

# Job Polarization and Skill Requirements

Jacob Loree

Ryerson University, Canada  
jacob.loree@ryerson.ca

## Introduction

There is a vast literature investigating how and why wage inequality has risen over the past forty years. “Job polarization” -- the phenomenon in which jobs requiring an average level of skill have disappeared in favor of only high and low-skilled jobs -- is often pointed to as one of the driving forces of wage inequality. While there are other drivers of wage inequality (outsourcing, automation, etc.), proportionally more focus has been given to the question of how job polarization affects wage inequality.

While the impact and effect of job polarization on wage inequality is not completely understood, there are some connections that are well established. Autor, Levy, and Murnane (2003) use the “routine/non-routine” lens to demonstrate that increases in automation only impact routine jobs and have no impact on non-routine jobs. Since automation only impacts routine jobs, we should see a wage premium in non-routine jobs as humans are required to perform them. This was modeled by Autor, Katz, and Kearney (2006) who found that this wage premium in non-routine jobs was caused by the fall in the cost of computing.

This theory is able to explain the general dynamics of job polarization but is not fully able to explain the growth in low-skilled industries. If automation replaces routine jobs, shouldn't low-skilled jobs be first to be replaced? Empirically, we see that only the middle of the distribution of job skill has decreased while the tails of this distribution have increased. The primary reason for the rise in low-skilled jobs, even in the age of automation, is due to the increase of jobs within the service industry (Autor and Dorn 2013). While the service industry is among the lowest in regards to skill (as measured by education) required, it cannot be easily automated. Services involve human interactions, and those cannot be easily replaced by computers. As such, human workers are still required for these positions. As automation is biased towards eliminating low-skilled jobs, it is the jobs involving slightly more skill than service jobs that are actually being eliminated.

Job polarization is a broad literature, and as such there is still much to study regarding how both low and high-skilled jobs have evolved over time. More specifically, where middle class workers move after middle class vacancies fall has not been fully investigated. We propose that workers who have been educated enough to work in a middle class industry that has experienced contraction have two options - either accept a job for which they are overqualified or work toward a higher-skilled job. This paper will attempt to answer this question theoretically and empirically.

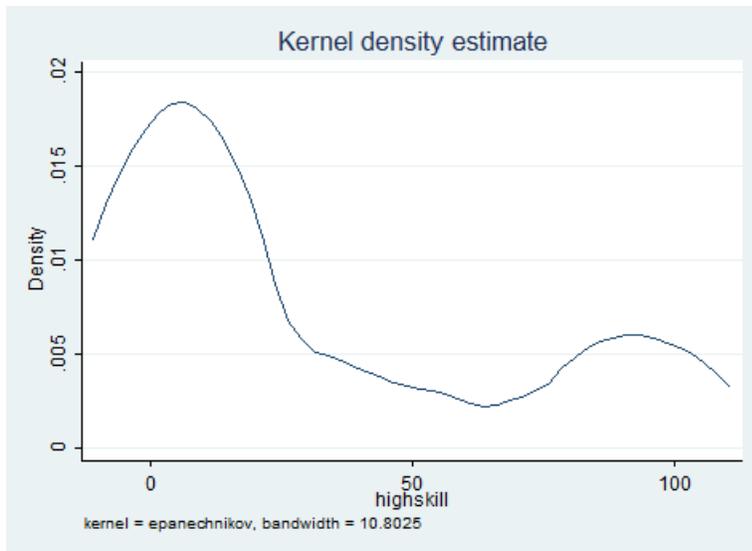
## **Methods**

We use both empirical and theoretical methods to determine the effect of job polarization on the aggregate economy. First, we develop a theoretical model to help explain what workers likely do when vacancies in their skill group begin to decline. Given a generic distribution of workers (who vary only in their innate productivity), we investigate workers in the middle of the distribution and the choice they make. This choice is binary – do they accept a low-skilled job or do they return to school to gain additional skills they can leverage into a high-skilled job? This decision is based on two things: where the worker’s original productivity is, and the tradeoff between wages and the psychic cost of additional schooling. Since workers with low productivity would have to go to school longer, we expect there to be a “cutoff” point in the distribution of worker skill. That is, at a certain innate productivity, a worker is better off going back to school than settling for a low-skill job, as the cost of schooling is lower for high skilled workers. However, since we impose no structure to the distribution of workers, we cannot tell where this cut off is theoretically. For a relatively normal distribution, this cutoff should be about halfway through the possible skill draws if the tradeoff between wages and schooling is relatively equivalent. We use empirical data to try to quantify this cutoff.

This data comes from two separate sources: The Occupation Network (ONET) and the Bureau of Labor Statistics (BLS). This data covers 2010-2015 and the 50 most popular occupations within the United States. While this seems like only a small subset of occupations, the dataset covers 30% of the total United States working population. This dataset samples workers in each occupation, and specifically determines the proportion of workers who have certain levels of education. We use this data to construct of measure of “high skill”. For the purposes of this paper, we rank all jobs in regards to “high skill” by the percent of the workers in the occupation who have a bachelors degree or higher.

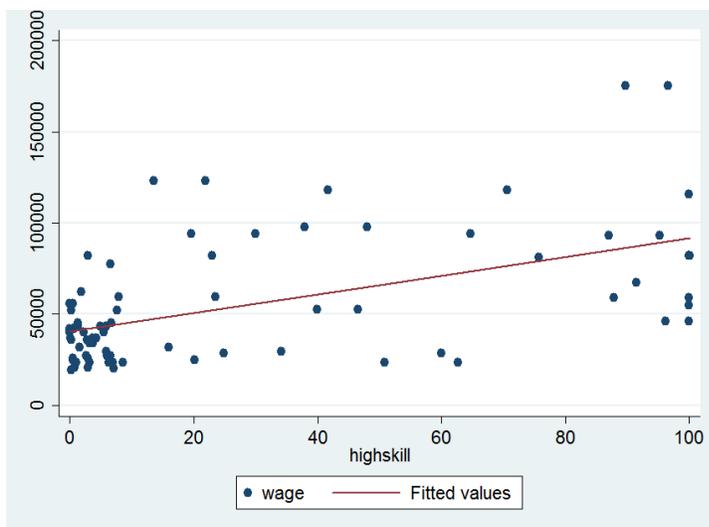
## **Findings**

We determine that the distributional “humps” in the data are far from equal. This can be interpreted from the Kernel Density function, which graphs the density of the data population by the level of skill in each occupation (Figure 1). This indicates that while it is obvious job polarization is impacting the labor market (the middle of the distribution is much smaller than the tails), these humps are not equally large. Rather, there seem to be many more workers in low-skilled jobs as opposed to high-skill jobs. There are two potential reasons for this. First, it is possible for the original distribution of workers to be extremely uneven and as such, the model as described above only impacts a small fraction of workers. However, this seems unlikely. The fact that job polarization has been described in the labor economics literature for the past 30 years seems evidence enough that this distribution divergence is relatively large. More likely, this skew is driven described by the tradeoff between school and wages not being equivalent. We find two possible mechanisms to explain this.



**Figure 1: Employment in Occupations by Skill Requirements**

First, it is possible that the disutility from schooling is far worse than the wage offered at high skilled jobs. This schooling disutility is left intentionally vague to attempt to absorb as much as possible about the schooling process. For example, this disutility includes tuition, loss of earnings over the schooling process, and the psychic cost of learning. It is possible that this combination overly dissuades workers from upgrading their skills. Second, it is possible that it is the high-skill occupation wage that is not incentivizing workers into upgrading their skills. Figure 2 plots the wage at each occupation in the dataset. While there is a positive correlation between skill and wage, it is not a very strong correlation. Rather, there are jobs requiring a high degree of skill that pay similar to very low skilled jobs. As such, workers may decide to pursue a low-skilled job as they do not believe the wage from a high skilled job would be significantly different.



**Figure 2: Wages by Skill Requirement**

## **Conclusion**

In conclusion, job polarization is an important trend in labour markets. We have found that while job polarization has pushed some workers into gaining additional skills to compete for higher-skilled jobs, it has also pushed these workers into low-skilled jobs for which they are overqualified. The possible mechanisms discussed can help policy makers incentivize middle class workers into upgrading skills instead of settling for low-skilled jobs.

## **References**

- Autor, David and David Dorn (2013). "The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market". In: *American Economic Review* 103.5, pp. 1553–1597.
- Autor, David, Lawrence Katz, and Melissa Kearney (2006). "The Polarization of the U.S. Labor Market". In: *American Economic Review* 96.2, pp. 189–194.
- Autor, David, Frank Levy, and Richard Murnane (2003). "The Skill Content of Recent Technological Change: An Empirical Exploration". In: *Quarterly Journal of Economics* 118.4, pp. 1279–1333.

# Absorptive Capacity, and Degree of Intra-cluster and Extra-cluster Linkages: A Study of Bengaluru High-tech Manufacturing Cluster

C Deepak<sup>1</sup> and M H Bala Subrahmanya<sup>2</sup>

Department of Management Studies  
Indian Institute of Science, Bangalore, India

<sup>1</sup>*deepakc@mgmt.iisc.ernet.in*

## Abstract

Of late, there has been growing interest to understand the dynamism of firms in high-tech clusters given the economic prospects they offer to themselves and regions housing these clusters. Among others, researchers and practitioners the world-over focus on quantifying the absorptive capacity of a firm in the context of a cluster which is a measure of dynamic capability of a firm. Bengaluru, being one of the highly ranked global hubs for technological innovations in Asia, houses the densely interconnected network of innovation intensive high-tech manufacturing firms forming a high-tech manufacturing cluster. It is in the context of Bengaluru high-tech manufacturing cluster that this paper attempts to quantify comprehensively the absorptive capacity of a firm considering both internal/firm-level and external/industry-level factors. Further, this paper attempts to ascertain the impact of absorptive capacity of a firm on its degree of intra-cluster and extra-cluster linkages.

**Keywords:** absorptive capacity, intra-cluster linkages, extra-cluster linkages, high-tech manufacturing cluster, Bengaluru

## Introduction:

The notion of industrial cluster has continued to gain traction of practitioners and researchers worldwide as a prospect for economic development. Industrial cluster is regarded as a phenomenon offering slew of benefits to both firms and regions housing clusters. Notably, a cluster facilitates firms to achieve higher levels of innovation and productivity (Ketels, 2003).

Further, with the advancement of Internet and Communication Technology (ICT) and globalization era, emergence of high-tech clusters characterized by a complex technology or innovation has placed a burgeoning need for firms to build dynamic capabilities and collaborate with each other to gain their competitive advantage (Rao & Klein, 2013). One of the best explanations of dynamic capability of a firm is its absorptive capacity. In turn, absorptive capacity of a firm explains various organizational phenomena (Zahra & George, 2002). Two such key outcomes of firm's absorptive capacity is degree of intra-cluster (DACL) and extra-cluster linkages (DECL). The absorptive capacity of a firm serves as important antecedent to both DACL and DECL as it improves the chances of a firm establishing nexus with external sources of knowledge (Giuliani & Bell, 2005). However, absorptive capacity being a multidimensional construct, there is no consensus among researchers about the factors determining

absorptive capacity of a firm. Hence, it is challenging to quantify an absorptive capacity of a firm comprehensively.

Furthermore, among the clusters of the globe, Bengaluru (erstwhile Bangalore) cluster occupies a unique position as it not only includes IT sector but also multitude of high-tech manufacturing industries (e.g. electronics, pharmaceutical, machine tools, electrical etc.,) forming a high-tech cluster (Nadvi, 1995). It is in the context of Bengaluru high-tech manufacturing cluster that, this paper, first, attempts to define and quantify absorptive capacity of firms holistically by taking into consideration internal/firm-level as well as external/industry-level factors. Further, this paper examines the impact of both internal and external factors of absorptive capacity of a firm on degree of intra-cluster and extra-cluster linkages.

## **Literature Review:**

### **Absorptive Capacity and High-tech Manufacturing Cluster**

To begin with, the review of multiple definitions used for absorptive capacity and then the literature dealing with its linkages to the High-tech Manufacturing sector are presented in this section.

Motivated by intra and inter-industry differential performances of the firms, researchers attempted to discern the key factors driving their performance differences. Absorptive capacity has been identified as one of the most crucial factors which provides a firm with a competitive edge over others in the same/related industry (Zahra & George, 2002).

Further, with little or no consensus on the concrete factors determining the absorptive capacity of a firm, the absorptive capacity was defined in the broadest term as the ability of a firm to use external knowledge. Later, Cohen and Levinthal (1990) defined absorptive capacity as the intra-firm ability to 'recognize the value of new, external information, assimilate it, and apply it to commercial ends'. Recognizing the importance of skillset of firm's human capital, Mowery & Oxley (1995) defined absorptive capacity as the broad array of skills required to modify the tacit or implicit components of imported knowledge to cater domestic needs. Based on the intensity of efforts put in by the firms, Kim (1997) considered absorptive capacity as the ability to learn and solve the problems. However, the definition of absorptive capacity as a dynamic capability embedded in organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge in order to gain and sustain a competitive advantage (Zahra & George, 2002) is the most widely used comprehensive definition in literature (Fosfuri & Tribo, 2008).

In the context of a high-tech cluster which is knowledge intensive, absorptive capacity of a firm assumes the key role as it further amplifies the strength of agglomeration effect and network effect thereby enabling the firm to reap the benefits of external economies greatly. This is because it facilitates the establishment of connections to external sources of knowledge (Giuliani & Bell, 2005). Further, unlike IT cluster, manufacturing

cluster adds yet another dimension, namely, physical capital intensity, besides human and financial capital intensity (Patibandla & Petersen, 2002). Hence, the notion of absorptive capacity gains pivotal importance to understand the dynamism of firms in high-tech manufacturing cluster. The influence of absorptive capacity on firms in a high-tech manufacturing cluster can be better appreciated, with an understanding of the components that define the absorptive capacity. Therefore, the review of the literature that explores absorptive capacity and its components has been brought out in the next section.

### **Absorptive Capacity and its Components**

Absorptive capacity provides wherewithal to firms to reconfigure its resource bases and quickly adapt to changing market conditions to achieve a superior performance. Further, the factors determining an absorptive capacity of a firm can be classified into internal/firm-level factors and external/industry-level factors. Internal factors comprise human capital, physical capital and financial capital. External factors (Zahra & George, 2002) include Regional Innovation System (RIS) which is a network connecting public and private agents enabling mutual interactions to foster innovation (Lau & Lo, 2015), appropriability which refers to the institutional and industry dynamics that facilitate the firms to protect benefits of innovative output. The effectiveness of Intellectual Property Rights (IPRs) and cost of replicability are the key determinants of appropriability regimes (Rao & Klein, 2013). Further, the review of literature related to key outcomes of absorptive capacity i.e., degree of intra-cluster and extra-cluster linkages is brought out in the subsequent sections.

### **Knowledge System of a Firm and its Components**

Though clusters are regarded as proponents of innovation, only some clusters emerge successful and others fail. Based on the environment surrounding them, firms and people perceive, understand and evaluate differently in the absence of interaction among the firms. However, such kind of a thought process may not yield a novel product or process meeting the needs of end users. They need an external source of cognition and competence to complement their own in order to produce highly value added novel products and services while minimising the transaction and failure costs (Nooteboom, 1999). That is the fundamental reason why knowledge system of a firm assumes a pivotal role catering innovation. Giuliani (2005) provides three important components namely knowledge base, intra-cluster linkages and extra cluster linkages that constitute knowledge system of a firm.

#### **Knowledge base**

Knowledge base is the stock of knowledge and capabilities embodied in the human capital of the firm to which the inventors draw on when looking for innovative solutions (Giuliani 2005; Giuliani & Bell, 2005). It is the result of a process of cumulative learning, which is inherently imperfect, complex and path dependent (Giuliani, 2005).

#### **Intra-cluster linkages**

Intra-cluster knowledge system is the flow of knowledge among linking firms and associated institutions in a cluster. Intra-cluster linkages are the connections between a

firm, and other firms and associated institutions in a cluster for the flow of knowledge between them. Proximity of firms enables them to access tacit knowledge which is sticky and localized in nature, and could only be captured through face-to-face informal interactions among individuals in the cluster (Baptista & Swann, 1998; Giuliani, 2005; Rosenfeld, 2005; Sonderegger & Taube, 2010). As this knowledge leaks through inter-firm mobility of skilled personnel within local institutions in a cluster, it is also freely accessed by a free rider residing in the cluster.

### **Extra-cluster linkages**

In the era of globalization, if firms are not connected with the global market, they soon go out of competition (Rosenfeld, 2005). Hence, to sustain international competition, local and global knowledge systems should be integrated. It is extra-cluster linkages which assume key role in connecting firms to global knowledge system. Extra-cluster knowledge system is the flow of knowledge between linking firms in a cluster, and firms and associated institutions residing outside the cluster. Intra-cluster linkages of a firm are the connections between a firm in a cluster, and other firms and associated institutions based outside the cluster for the flow of knowledge between them.

Further, dwelling deep, the linkages can be classified into vertical and horizontal linkages (Muskell, 2001). On the one hand, the vertical linkages are the relationship between cluster participants along the value chain. On the other hand, the horizontal linkages are linkages between cluster participants at the same level of the value chain. No matter whether they are horizontal or vertical, they could be business and/or technical linkages.

### **Absorptive Capacity, and Intra-cluster and Extra-cluster Linkages**

The degree of openness of a firm mainstays on its absorptive capacity (Giuliani 2005; Giuliani & Bell, 2005). Though all the firms in a cluster are exposed to the same amount of external knowledge, not all firms in a cluster can enjoy the benefits derived from external knowledge to the same extent because of varied levels of absorptive capacity. The stock of knowledge embodied in the human capital of a firm in terms of its knowledge base and experience determines the receptivity of a firm to external sources of knowledge.

Giuliani & Bell (2005) propounded that firms with higher absorptive capacities in a cluster are more likely to establish nexus with external sources of knowledge. They explained this on the basis of cognitive distance between firms and external knowledge. The firms with higher absorptive capacities are considered to be cognitively close to external knowledge as they value, assimilate and exploit the external knowledge the most and apply it to commercial ends. Hence, a firm with a higher level of absorptive capacity can manage the external knowledge flows more efficiently, and subsequently produce innovative outcomes. Further, higher the absorptive capacity of firms in a region, higher will be the receptivity of firms to technological change and subsequently it would attract the TNCs to corresponding regions which would also bring foreign technology or know-how along with them (Patibandla & Petersen, 2002).

Furthermore, intra-cluster and extra-cluster linkages are the functions of absorptive capacity of a firm. Higher the absorptive capacity of a firm, stronger and denser will be the intra-cluster and extra-cluster linkages forming a network. As the firm absorbs external knowledge through intra-cluster and/or extra-cluster linkages, to keep the reciprocity going, it may also diffuse knowledge accumulated within the firm. However, this exchange of knowledge takes place between the firms with similar cognitive levels. Therefore, the absorptive capacity of firms is positively linked to the flow of knowledge and information brought in by the mobile labour and co-operation network (Miguelez & Moreno, 2015).

Stronger the knowledge base of a firm in terms its absorptive capacity, denser will be the intra-cluster and extra-cluster linkages. The degree of knowledge transfer between any two firms depends on the relative cognitive distance between them. Even though reciprocity/extent of co-operation between a firm and its stakeholders seems to be one of the principal rules governing the information trading, it is likely to occur when there is a high degree of similarity between the levels of firms' (Saxenian, 1994; Schmitz, 1999; Steinle & Schiele, 2002; Giuliani & Bell, 2005).

Given the levels of firms' absorptive capacity, firms are facilitated by intra-cluster and extra-cluster linkages, identify the external source of knowledge and acquire them. The degree of knowledge acquisition depends on the quantum of assistance received by a firm in a cluster from other firms within and/or outside the cluster through intra-cluster and extra-cluster linkages respectively (Bell & Albu, 1999; Giuliani & Bell, 2005). In addition, firms also acquire knowledge from institutions such as R&D centres, universities, training centres etc. located in a cluster.

Further, to keep the reciprocity going, firms in a cluster diffuse the accumulated knowledge via same intra-cluster and extra-cluster linkages. The degree of knowledge diffusion depends on the quantum of assistance provided by a firm in a cluster to other firms within and/or outside the cluster through intra-cluster and extra-cluster linkages respectively (Bell & Albu, 1999; Giuliani & Bell, 2005). In addition, firms also disseminate the acquired knowledge to academia by publishing papers, carrying out workshops and conferences etc.

Both, the acquisition of external knowledge and diffusion of intra-cluster knowledge are facilitated by three types of networks namely: production, development and innovation networks which are surrounded by mechanistic, organic and dynamic knowledge environments respectively (Smedlund, 2004). Each type of network contributes in its own way to enhance the knowledge base of the firm and ultimately improves the innovative capability of a firm. Production network (vertical linkage) integrates the cluster participants vertically to co-ordinate and develop network activities. Development network (horizontal linkage) integrates the cluster members horizontally thereby facilitate the mutual exchange of knowledge. Innovation network aims at combining diverse resources and knowledge to bring innovation.

On acquisition of external knowledge, firms analyze and understand the information obtained from the imported knowledge (Zahra & George, 2002). Later, they develop a new routine or refine an existing routine which facilitates collation of existing knowledge and acquired knowledge to create new/transformed knowledge. Ultimately, the new/transformed knowledge is put into operation giving rise to innovative outcomes in terms of new/improved products or processes.

The nature and strength of intra-cluster and extra-cluster linkages reflect the degree of knowledge integration and subsequently knowledge creation within the firm. Predominantly, the two key dimensions of knowledge creation namely horizontal and vertical deepen the knowledge base of firms in a cluster (Muskell, 2001). Horizontal dimension of knowledge creation among firms within a cluster creates enhanced knowledge as a result of ongoing sequence of variation, monitoring, comparison, selection and imitation of identified superior solutions. It promotes benchmarking with the competitors and serves as a means to self-assess the competitiveness of the firm. Vertical dimension of knowledge creation gives rise to partnerships and collaborations as firms involve in complementary activities, and supports division of labour.

Further, in addition to nature of linkages (horizontal/vertical), the degree of knowledge creation also depends on the channel for external sourcing, language proficiency, and intra-cluster and extra-cluster mobility of skilled labours (Bell & Albu, 1999; Muskell, 2001; Morosini, 2004).

Furthermore, the varying degrees of knowledge acquisition, diffusion and creation among firms in a cluster gives rise to (1) differences in the complexity of technologies used (2) varying distances from international technological frontier, and (3) differing effectiveness in sustaining the technological dynamism of clusters with similar distances from international frontier (Bell & Albu, 1999). In essence, these differences primarily stemmed from varied levels of firms' absorptive capacity.

### **Gaps in Literature**

Absorptive capacity being the most critical success factor explains various diverse and complex organizational phenomena. Although, researchers have put in efforts to conceptualise the absorptive capacity of a firm over the last few decades, there exists an ambiguity in the definition, components and antecedents to absorptive capacity (Fosfuri & Tribo, 2008; Zahra & George, 2002). Although absorptive capacity of a firm comprise both internal (firm-level) and external (industry-level/ecosystem) factors, researchers have largely focussed on internal factors and over looked external factors impacting absorptive capacity of a firm. Further, in most cases, researchers have used several proxies such as R&D expenditure, proportion of skilled employees to total employees, number of graduates, post graduates and doctorates, number of patents etc., to quantify the absorptive capacity of a firm (Giuliani, 2005; Lau & Lo, 2015). However, none of these metrics individually captures the multi-dimensional construct 'absorptive capacity' holistically. Hence, there is a need to develop an index which factors in all the key determinants of absorptive capacity in order to measure the absorptive capacity of a firm comprehensively.

Further, several researchers have made theoretical contributions to conceptualise the degree of intra-cluster and extra-cluster linkages largely capturing the interactions among firms within and outside a cluster respectively. Further, they have proposed that the absorptive capacity of a firm is one of the key antecedent to degree of intra-cluster and extra-cluster linkages (Bell, 1999, Giuliani 2005; Giuliani & Bell, 2005). However, the impact of absorptive capacity on the degree of intra-cluster and extra-cluster linkages of a firm covering gamut of interactions between a firm, and other firms and associated institutions within and outside a cluster respectively, has not been empirically validated. It is against this backdrop that we propose our research objectives.

## **Objectives, Scope, Sampling and Methodology**

### **Objectives**

1. To define absorptive capacity and measure it at the firm level.
2. To ascertain the impact of internal and external factors of absorptive capacity on the degree of intra-cluster and extra-cluster linkages of a firm.

### **Scope**

This study is confined to Bengaluru high-tech cluster. Further, Bengaluru being one of the 46 global hubs of technological innovations is the highest ranked global hub in Asia (UNDP, 2001). In addition, Bengaluru is also a destination for innovation intensive firms belonging to biosciences, electronics and machine tools industry, and research institutions (Nadvi, 1995; Okada & Siddharthan, 2007; BalaSubrahmanya, 2013; BalaSubrahmanya, 2011). The study is cross-sectional in nature, and it covers small (S), medium (M) and large (L) firms belonging to high-tech manufacturing industries such as electronics (EC), electrical (EE), machine tools (MT) and pharmaceutical (P) industries located in Bengaluru.

### **Sampling and Specifics of Data Collection**

We sourced the list of firms belonging to industries under consideration from multiple industry associations [Indian Machine Tools Manufacturers' Association (IMTMA), Karnataka Drugs and Pharmaceutical Manufacturers' Association (KDPMA), Indian Electronics and Semiconductor Association (IESA), Consortium of Electronics Industries in Karnataka (CLIK), Indian Electronics and Electrical Manufacturers Association (IEEMA) etc.,] and government agencies. For a population of 186 high-tech manufacturing firms, with a confidence interval of 10 at 95% confidence level, the required minimum sample size is 64 firms. Further, we identified four strata corresponding to each of the industry sectors under consideration. We adopted Stratified Random Sampling technique to choose sample firms from our population. Based on the population size of each of the strata, total sample size and total population size, the minimum sample size required for each of the strata (20 for EC, 20 form MT, 13 for P and 12 for EE) was determined. Finally, we chose 31, 30, 20 and 20 firms belonging to EC, MT, P and EE respectively, from our population.

Primary data were collected from identified high-tech manufacturing firms across four industries under study through semi-structured questionnaires and in-depth interviews with the representatives (executives from the higher level management) of high-tech manufacturing firms. Further, PROWESS Centre for Monitoring Indian Economy (CMIE) database was used to validate the firm-specific financial data (for the year 2015-16) which were collected through primary data collection method.

### Dimensions, Variables and Measures:

Absorptive Capacity of a firm:

Based on the literature review, our definition of absorptive capacity of a high-tech firm encompasses following eight dimensions categorized into internal (firm-level) factors and external (eco-system) factors (Table. 1).

a. Internal (firm-level) factors of absorptive capacity:

**Table.1:** Internal Factors of Absorptive Capacity of a Firm

Sl. No	Internal factors	Dimension	Variables
1	Human Capital	Skill/Knowledge levels (D <sub>1</sub> ) (Giuliani & Bell, 2005; Lau & Lo, 2015)	Proportion of skilled employees with diploma/PUC (v <sub>11</sub> ) Proportion of skilled employees with bachelor's degree(v <sub>12</sub> ) Proportion of skilled employees with master's degree(v <sub>13</sub> ) Proportion of skilled employees with doctorate degree(v <sub>14</sub> )
2		Experience (same/related industry)(D <sub>2</sub> ) (Fosfuri & Tribo, 2008; Giuliani & Bell, 2005; Lau & Lo, 2015)	Proportion of skilled employees with prior work experience in other companies belonging to same industry: <2 years(v <sub>21</sub> ), between 2-5 years(v <sub>22</sub> ) and 5+ years (v <sub>23</sub> )
3		Experience (Current firm) (D <sub>3</sub> ) (Fosfuri & Tribo, 2008; Giuliani & Bell, 2005; Lau & Lo, 2015)	Proportion of skilled employees with work experience in the current company: <2 years(v <sub>31</sub> ), between 2-5 years(v <sub>32</sub> ) and 5+ years (v <sub>33</sub> )
4		R&D personnel (D <sub>4</sub> ) (Lau & Lo, 2015)	Proportion of skilled employees deployed in R&D (v <sub>41</sub> )
5	Physical capital	Exclusive in-house centres (D <sub>5</sub> ) (Lau & Lo, 2015)	Presence of R&D centre (v <sub>51</sub> ) Presence of Design/Formulation office (v <sub>52</sub> ) Presence of Export Division (v <sub>53</sub> ) Presence of Training Centre (v <sub>54</sub> )
6	Financial Capital	R&D expenditure (D <sub>6</sub> ) (Lau & Lo, 2015)	Proportion of R&D expenditure to sales (v <sub>61</sub> )

All the variables except variables related to exclusive in-house centres were measured on a ratio scale. However, the variables under the dimension of exclusive in-house centres were standardised to arrive at a proportion value. Further, the weighted score for each dimension and variable was calculated using standardised weights derived from the importance rating and the actual score of the absorptive capacity variables and dimensions (Table. 1a). The weighted average for each dimension and variable was calculated using following equations:

(1) Weighted average for each dimension:

$$w_p = \sum_{k=1}^m \frac{W_k X_{kp}}{n} \quad (1)$$

(2) Weighted average for each variable of multivariate dimension:

$$w_{pq} = \sum_{k=1}^m \frac{W_k X_{kpq}}{n} \quad (2)$$

Where,

$w_p$  is the weighted average of  $p^{\text{th}}$  dimension of absorptive capacity,

$w_{pq}$  is the weighted average of  $q^{\text{th}}$  variable of  $p^{\text{th}}$  dimension of absorptive capacity,

$W_k$  is the weight of  $k^{\text{th}}$  importance rating,

$X_{kp}$  is the number of responses of  $k^{\text{th}}$  importance rating for  $p^{\text{th}}$  dimension of absorptive capacity,

$X_{kpq}$  is the number of responses of  $k^{\text{th}}$  importance rating for  $q^{\text{th}}$  variable of  $p^{\text{th}}$  dimension of absorptive capacity

$p$  is the number of dimensions,

$q$  is the number of variables in  $p^{\text{th}}$  dimension,

$m$  is the total number of importance rating,

$n$  is the total number of respondents.

Subsequently, the index number of internal (firm-level) factors of absorptive capacity (iACAP) for each firm was calculated using the following equation:

$$iACAP = w_1 * [(w_{11} * v_{11}) + (w_{12} * v_{12}) + (w_{13} * v_{13}) + (w_{14} * v_{14})] + w_2 * [(w_{21} * v_{21}) + (w_{22} * v_{22}) + (w_{23} * v_{23})] + w_3 * [(w_{31} * v_{31}) + (w_{32} * v_{32}) + (w_{33} * v_{33})] + w_4 * (w_{41} * v_{41}) + w_5 * [(w_{51} * v_{51}) + (w_{52} * v_{52}) + (w_{53} * v_{53}) + (w_{54} * v_{54})] + w_6 * (w_{61} * v_{61}) \quad (3)$$

b. External (industry-level) factors of absorptive capacity:

**Table.2:** External Factors of Absorptive Capacity of a Firm

Sl. No.	Dimension	Variables
7	Regional innovation system (D <sub>7</sub> ) (Lau & Lo, 2015)	Effectiveness of industry associations (v <sub>71</sub> ), effectiveness of research/training institutes (v <sub>72</sub> )
8	Appropriability (D <sub>8</sub> ) (Rao & Klein, 2013; Zahra & George, 2002)	Strength of IPRs (v <sub>81</sub> ), cost of replicability (v <sub>82</sub> )

All the variables were measured on a 5-point interval scale. However, the variables were standardised to arrive at a proportion value at a firm-level. Further, as explained in the previous section, similarly the weighted score for each of the dimensions and variables was calculated (Table. 2a).

Subsequently, the index number of external (industry-level) factors of absorptive capacity of a firm (eACAP) was calculated using the following equation:

$$eACAP = w_7 * [(w_{71} * v_{71}) + (w_{72} * v_{72})] + w_8 * [(w_{81} * v_{81}) + (w_{82} * v_{82})] \quad (4)$$

(1) Degree of Intra-cluster Linkages:

The factors determining the degree of intra-cluster linkages is presented in the Table.3.

**Table.3: Factors Determining the Degree of Intra-cluster Linkages Of A Firm**

Sl. No.	Factors	Dimensions	Variables
1	Degree of knowledge acquisition (Bell & Albu, 1999; Giuliani & Bell, 2005)	Extent of co-operation (Bell & Albu, 1999; Ketels, 2003; Morosini, 2004) Frequency of assistance sought (Bell & Albu, 1999; Giuliani & Bell, 2005)	Extent of co-operation between a firm and stakeholders such as competitors, suppliers, corporate customers, academic institutions, industry associations and government agencies. Frequency of assistance sought by a firm from other firms in Bengaluru to solve technical/business problems. Frequency of active involvement in knowledge sharing sessions such as workshops, skill development programs, seminars, conferences, certification courses offered by academic institutions and industry associations in Bengaluru to gain knowledge.
2	Degree of knowledge diffusion (Bell & Albu, 1999; Giuliani & Bell, 2005)	Extent of co-operation (Bell & Albu, 1999; Ketels, 2003; Morosini, 2004) Frequency of assistance provided	Extent of co-operation between a firm and stakeholders such as competitors, suppliers, corporate customers, academic institutions, industry associations and government agencies. Frequency of assistance provided by a firm to other firms in Bengaluru to solve technical/business problems. Frequency of carrying out knowledge sharing sessions such as workshops, skill development programs, seminars, conferences, certification courses to disseminate the updated or new knowledge to other stake holders (peer companies, competitors, academic institutions, industry associations etc..) in Bengaluru.
3	Degree of knowledge creation (Bell & Albu, 1999; Muskell, 2001; Morosini, 2004)		Channel for external sourcing (formal/informal linkages), horizontal/vertical linkages, language proficiency and intra-cluster mobility of skilled labour.

All the variables were measured on a 5-point interval scale. Further, the degree of knowledge acquisition and the degree of knowledge diffusion of a firm were separately calculated with respect to each stakeholder with whom a firm is connected through intra-cluster linkages using the following equation:

*Degree of Knowledge Acquisition (f, i, j) = (Extent of co-operation between a firm f and stakeholder i)\*(Frequency of assistance sought by a firm f from a stakeholder i residing inside Bengaluru to solve problem(s) related to j)*

Degree of Knowledge Acquisition of a firm ( $DKA_{f-in}$ ) is calculated using the following equation:

$$DKA_{f-in} = \sum_{1 \leq i \leq 2} DKA(i, j) + \sum_{i=3}^5 DKA(i) \quad (5)$$

*Degree of Knowledge Diffusion (f, i, j) = (Extent of co-operation between a firm f and stakeholder i)\*(Frequency of assistance provided by a firm f to a stakeholder i residing inside Bengaluru to solve problem(s) related to j)*

Degree of Knowledge Diffusion of a firm ( $DKD_{f-in}$ ) is calculated using the following equation

$$DKD_{f-in} = \sum_{\substack{2 \leq i \leq 3 \\ 1 \leq j \leq 2}} DKD(i, j) + \sum_{i=3}^5 DKD(i) \quad (6)$$

Where,

$f$  is a firm in a cluster whose degree of intra-cluster linkages is to be calculated

$i$  is a stakeholder with whom a firm is connected via intra-cluster linkage ( $i=1$  (suppliers), 2 (peers and competitors), 3 (corporate customers), 4 (academic institutions\*), 5 (industry associations\*) and 6 (government agencies\*))

$j$  is a nature of assistance sought

( $j=1$  (technical), 2 (business))

\* $j$  is not applicable for associated institutions such as academic institutions, industry associations and government agencies

The Degree of Knowledge Creation of a firm ( $DKC_{f-in}$ ) was calculated by adding all the variables determining the degree of knowledge creation.

Furthermore, the degree of intra-cluster linkages of a firm was computed by adding degree of knowledge acquisition, degree of knowledge diffusion and degree of knowledge creation of a firm involved in intra-cluster cluster interactions.

$$DICL_f = DKA_{f-in} + DKD_{f-in} + DKC_{f-in} \quad (7)$$

(2) Degree of Extra-cluster Linkages:

The factors determining the degree of extra-cluster linkages is presented in the Table.4.

All the variables were measured on a 5-point interval scale. Further, the degree of knowledge acquisition and the degree of knowledge diffusion of a firm were separately calculated with respect to each stakeholder with whom a firm is connected through extra-cluster linkages using the following equation:

**Table.4:** Factors Determining the Degree of Intra-cluster Linkages of a Firm

Sl. No.	Factors	Dimensions	Variables
1	Degree of knowledge acquisition (Bell & Albu, 1999; Giuliani & Bell, 2005)	Extent of co-operation (Bell & Albu, 1999; Ketels, 2003; Morosini, 2004) Frequency of assistance sought (Bell & Albu, 1999; Giuliani & Bell, 2005)	Extent of co-operation between a firm and stakeholders such as competitors, suppliers, corporate customers, academic institutions, industry associations and government agencies. Frequency of assistance sought by a firm from other firms outside Bengaluru to solve technical/business problems.
2	Degree of knowledge diffusion (Bell & Albu, 1999; Giuliani & Bell, 2005)	Extent of co-operation (Bell & Albu, 1999; Ketels, 2003; Morosini, 2004) Frequency of assistance provided	Extent of co-operation between a firm and stakeholders such as competitors, suppliers, corporate customers, academic institutions, industry associations and government agencies. Frequency of assistance provided by a firm to other firms outside Bengaluru to solve technical/business problems.
3	Degree of knowledge creation (Bell & Albu, 1999; Muskell, 2001; Morosini, 2004)		Horizontal / vertical linkages, language proficiency and extra cluster mobility of skilled labour.

*Degree of Knowledge Acquisition (DKA (i, j)) = (Extent of co-operation between a firm f and stakeholder i)\*(Frequency of assistance sought by a firm f from a stakeholder i residing outside Bengaluru to solve problem(s) related to j)*

Degree of Knowledge Acquisition of a firm ( $DKA_{f-ex}$ ) is calculated using the following equation

$$DKA_{f-ex} = \sum_{\substack{1 \leq i \leq 2 \\ 1 \leq j \leq 2}} DKA(i, j) \quad (8)$$

*Degree of Knowledge Diffusion (DKD (i, j)) = (Extent of co-operation between a firm f and stakeholder i)\*(Frequency of assistance provided by a firm f to a stakeholder i residing outside Bengaluru to solve problem(s) related to j)*

Degree of Knowledge Diffusion of a firm ( $DKD_{f-ex}$ ) is calculated using the following equation

$$DKD_{f-ex} = \sum_{\substack{2 \leq i \leq 3 \\ 1 \leq j \leq 2}} DKD(i, j) \quad (9)$$

Where,

$f$  is a firm in a cluster whose degree of extra-cluster linkages to be calculated  
 $i$  is a stakeholder with whom a firm is connected via intra-cluster linkage

( $i=1$  (suppliers), 2 (peers and competitors), 3 (corporate customers))  
 $j$  is a nature of assistance sought  
( $j=1$  (technical), 2 (business))

The Degree of Knowledge Creation of a firm ( $DKC_{f-ex}$ ) was calculated by adding all the variables determining the degree of knowledge creation.

Furthermore, the degree of extra-cluster linkages of a firm was computed by adding degree of knowledge acquisition, degree of knowledge diffusion and degree of knowledge creation of a firm involved in extra-cluster interactions.

$$DECL_f = DKA_{f-ex} + DKD_{f-ex} + DKC_{f-ex} \quad (10)$$

(3) Control variables:

Age of a firm, size of a firm and industry type were used as control variables. Further, the impact of size of a firm and industry type on DICL and DECL were captured using two (M, L) and three (MT, P, EE) dummy variables respectively. A dummy variable for 'origin of a firm' indicating whether a firm is based out of Bengaluru or a subsidiary of externally based firm was used to understand its possible impact on DICL and DECL of a firm.

### Method of Analysis

Multiple Linear Regression (MLR) was used to determine the impact of the index number of internal (iACAP) and external (eACAP) factors of absorptive capacity of a firm on degree of intra-cluster and extra-cluster linkages. In addition, the iACAP was decomposed to its constituent factors. MLR was used to ascertain the impact of each of the factors of iACAP on degree of intra-cluster and extra-cluster linkages.

### Results and Discussion

#### Absorptive capacity (ACAP) and degree of intra-cluster linkages (DICL)

The results of Multiple Linear Regression (MLR) indicate that both the index numbers of internal (iACAP) and external (eACAP) factors of absorptive capacity significantly impact the degree of intra-cluster linkages (DICL) of a firm positively (Table.5). However, the influence of eACAP on DICL of a firm is much higher than that of iACAP. This signifies that the perception of firms about the effectiveness of RIS (elements of ecosystem such as industry associations and research/training institutes specific to an industry) and secureness to connect to other firms in an industry in Bengaluru has strengthened the DICL of a firm connecting to various stakeholders in an ecosystem.

Further, the iACAP was broken down into index numbers of human capital (iACAP\_HC), physical capital (iACAP\_PC) and financial capital (iACAP\_FC) to understand the impact of each of the factors of iACAP on DICL. The results reveal that while the index number of physical capital of a firm has significant impact on DICL, the index numbers of human capital and financial capital have no significant impact on the same. This is because the investment in physical capital to set up exclusive centres such as R&D centre, design/formulation office, export division and training division to bring structuredness to

a firm supports specialization of labour. This has prompted firms to interact and derive/share insights addressing specific issues among themselves in Bengaluru.

**Table. 5:** Regression Model Results- Degree of Intra-cluster Linkages of a Firm

Model 1				Model 2			
Dependent variable: Degree of Intra-cluster Linkages (DICL)							
Model Variables	Model Coefficients	P-value	VIF	Model Variables	Model Coefficients	P-value	VIF
Constant		.809		Constant		.691	
iACAP	.187	.075*	1.237	iACAP_HC	.049	.660	1.518
eACAP	.354	.004**	1.634	iACAP_PC	.376	.004**	1.919
		*				*	
Age of a firm	.210	.041	1.184	iACAP_FC	.076	.486	1.437
Origin of a firm	.123	.280	1.460	eACAP	.290	.016**	1.703
MT	.298	.018**	1.752	Age of a firm	.182	.072	1.227
P	.085	.465	1.540	Origin of a firm	.146	.189	1.486
EE	.265	.050*	2.034	MT	.284	.021**	1.774
M	.000	.997	1.302	P	.097	.391	1.547
L	.017	.882	1.463	EE	.290	.027**	2.045
				M	-.142	.222	1.627
				L	-.213	.125	2.311
Model Statistics							
Number of Observations	101			101			
R <sup>2</sup>	.207			.269			
Adjusted R <sup>2</sup>	.128			.179			
F-Statistics	2.637 with p-value = .009			2.984 with p-value = .002			

\*\*\*p<.01, \*\*p<0.05, \*p<0.1

Furthermore, the control variables such as age of a firm and industry-type significantly influence the DICL. Notably, as the age of a firm increases the extent to which it interacts with other stakeholders in Bengaluru increases significantly. This is because, with time, firms explore the ecosystem and then build a perception about the effectiveness of each of the elements in an ecosystem. At later stage, based on the perception firms actually establish and strengthen their connections with other firms and associated institutions steadily and gradually.

### **Absorptive capacity (ACAP) and degree of extra-cluster linkages (DECL)**

The results of Multiple Linear Regression (MLR) reveal that the index number of internal factors of absorptive capacity (iACAP) has a significant positive impact on the degree of extra-cluster linkages (DECL) of a firm (Table.6). However, the influence of eACAP has no significant impact on DECL of a firm. This indicates that the perception of firms about local ecosystem has no significant role to play in establishing connections with others firms and associated institutions located outside Bengaluru cluster.

Further, the iACAP was disintegrated into index numbers of human capital (iACAP\_HC), physical capital (iACAP\_PC) and financial capital (iACAP\_FC) to understand the impact of each of the factors of iACAP on DECL. Like DICL, the index number of physical capital also significantly impacts DECL of a firm positively.

**Table. 6:** Regression Model Results- Degree of Extra-cluster Linkages of a Firm

Model 1				Model 2			
Dependent variable: Degree of Extra-cluster Linkages (DECL)							
Model Variables	Model Coefficients	P-value	VIF	Model Variables	Model Coefficients	P-value	VIF
Constant		.054		Constant		.063	
iACAP	.195	.059*	1.237	iACAP_HC	.147	.185	1.518
eACAP	.016	.894	1.634	iACAP_PC	.351	.006***	1.919
Age of a firm	.046	.647	1.184	iACAP_FC	-.030	.779	1.437
Origin of a firm	.367	.001***	1.460	eACAP	-.029	.806	1.703
MT	.088	.469	1.752	Age of a firm	.007	.941	1.227
P	.102	.372	1.540	Origin of a firm	.399	.000***	1.486
EE	.047	.718	2.034	MT	.064	.593	1.774
M	.021	.840	1.302	P	.118	.292	1.547
L	.162	.148	1.463	EE	.069	.595	2.045
				M	-.095	.410	1.627
				L	-.016	.907	2.311
Model Statistics							
Number of Observations	101			101			
R <sup>2</sup>	.236			.284			
Adjusted R <sup>2</sup>	.160			.196			
F-Statistics	3.118 with p-value = .003			3.214 with p-value=.001			

\*\*\*p<.01, \*\*p<0.05, \*p<0.1

Furthermore, the control variable, origin of a firm, has a significant influence on DECL of a firm. This indicates that the firms located in Bengaluru as subsidiaries of externally based firms have higher DECL compared to those firms which are based in Bengaluru. This is attributed to the fact that the externally based firm regularly interact with their parent firms located outside Bengaluru. However, they are located in Bengaluru cluster to take advantage of location specific externalities that emerge out of the cluster.

### Conclusion:

This paper has ascertained the internal and external factors determining the absorptive capacity of firms in a high-tech manufacturing cluster. Further, the index numbers of internal (iACAP) and external (eACAP) factors of absorptive capacity for each firm were calculated. Furthermore, the impact of index numbers of internal and external factors of absorptive capacity of a firm on degree of intra-cluster and extra-cluster linkages was ascertained.

Probing the impact of iACAP and eACAP, it can be recapitulated that both DICL and DECL of a firm are primarily driven by internal capabilities (iACAP) of a firm. In addition, the external factors (eACAP) of a firm at industry level play a vital role in determining DICL but not DECL. This is primarily because local ecosystem factors play an important role in binding all the stakeholders of an industry to each other in the cluster. However, it has played insignificant role in integrating the local knowledge system with the global knowledge system. When iACAP broken down into its constituent factors such as human capital, physical capital and financial capital, only the index number of physical

capital of a firm had significant impact on both DICL and DECL. This indicates that investment in terms of physical capital supports specialization of labour and in turn, specialization of labour drives the interaction among firms to resolve glitches related to specific issues. In addition, the subsidiaries of externally based firms located in Bengaluru predominantly involve in exchange of knowledge with firms and associated institutions located outside Bengaluru. This is largely attributed to connections with their parent firms based outside Bengaluru.

This paper has made two key contributions to the literature. Firstly, it has holistically quantified a multidimensional construct for absorptive capacity of a firm considering both internal (firm-level) and external (industry-level) factors. Secondly, in the context of a developing economy, it has empirically validated the impact of a firm's absorptive capacity on its degree of intra-cluster and extra-cluster linkages.

## References

- Bala Subrahmanya, M. H. (2011). Technological Innovation and Growth of SMEs in Bangalore: Does Innovation Facilitate Growth of Firm Size? *The Asian Journal of Technology Management*, 4(1): 41-55.
- Bala Subrahmanya, M. H. (2013). External Support, Innovation And Economic Performance: What Firm Level Factors Matter For High-tech SMEs? How? *International Journal of Innovation*, 17(5): 1-26.
- Baptista, R., & Swann, P. (1998). Do firms in clusters innovate more? *Research Policy*, 27(5): 525-540.
- Baptista, R., & Swann, P. (1998). Do firms in clusters innovate more? *Research Policy*, ELSEVIER, 27(5): 525-540.
- Becheikh, N., Landry, R., & Amara, N. (2006). Lessons from innovation empirical studies in the manufacturing sector: A systematic review of the literature from 1993–2003. *Technovation*, 26:644-664.
- Bell, M., & Albu, M. (1999). Knowledge Systems and Technological Dynamism in Industrial Clusters in Developing Countries. *World Development*, 27(9): 1715-1734.
- Bergman, E. M. (2008). Cluster life-cycles: an emerging synthesis. In C. Karlsson, *Handbook of Research on Cluster Theory* (pp. 114-132). Northampton, MA: Edward Elgar.
- Brenner, T., & Gildner, A. (2006). The Long-term implications of Local Industrial Clusters. *European Planning Studies*, 1315-1328.
- Carlsson, B. (2010). Creation and Dissemination of Knowledge in High-tech Industry Clusters. *Working Paper, Case Western Reserve University*. Cleveland, Ohio.
- Chiu. (n.d.).
- Cohen, W., & Levinthal, D. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35(1): 128-152.
- Commission, N. K. (2007). *Innovation in India*. New Delhi: Government of India.
- Cooper, C. (1980). Policy Interventions for Technological Innovation in Developing Countries. Washington DC: World Bank Staff Working Paper, No. 441.
- Cruz, S. C., & Teixeira, A. A. (2007). A new look into the evolution of cluster literature: A bibliometric exercise. *FEP working paper*, 257.
- CSO. (2008). *NIC*. New Delhi: Ministry of Statistics and Programme Implementation. Govt. of India.
- DeVol, R., & Wong, P. (1999). *America's High-Tech Economy: Growth, Development and Risks for Metropolitan Areas*. Milken Institute.
- Do, G., Jaesoo, & Lee, B. (2015). Evaluating the Development of Government-led High-tech Clusters: A Comparative Study Between Daedeok Innopolis and Hsinchu Science. *ASIP 2015 Korea Conference*. Jeju: Asian Society of Innovation and Policy.
- Fabrizio, K. R. (2009). Absorptive capacity and the search for innovation. *Research Policy*, 38(2): 255-267.
- Fosfuri, A., & Tribo, J. A. (2008). Exploring the antecedents of potential absorptive capacity and its impact on innovation performance. *The International Journal of Management*, ELSEVIER, 36: 173-187.

- Fosfuri, A., & Tribo, J. A. (2008). Exploring the antecedents of potential absorptive capacity and its impact on innovation performance. *The International Journal of Management, ELSEVIER*, 173-187.
- Gildner, T. B. (2006). The Long-term Implications of Local Industrial Clusters. *European Planning Studies*, 14(9): 1315-1328.
- Giuliani, E. (2005). Cluster Absorptive Capacity: Why do some clusters forge ahead and others lag behind. *European Urban and Regional Studies*, 269-288.
- Giuliani, E. (2011). Role of Technological Gatekeepers in the Growth of Industrial Clusters: Evidence from Chile. *Regional Studies*, 45:10, 1329-1348.
- Giuliani, E., & Bell, M. (2005). The micro-determinants of meso-level learning and innovation: evidence from a Chilean wine cluster. *Research Policy*, 47-68.
- Giuliani, E., & Bell, M. (2005). The micro-determinants of meso-level learning and innovation: evidence from a Chilean wine cluster. *Research Policy*, 34(1): 47-68.
- Hall, B., Helmers, C., Rogers, M., & Sena, V. (2014). The Choice between Formal and Informal Intellectual Property: A Review. *Journal of Economic Literature*, 52(2): 1–50.
- Harshim, S., Murthy, M., & Roy, S. (2010). *SME CLUSTERS IN INDIA: Identifying Areas of Intervention for Inclusive Growth*. New Delhi: Institute for Studies in Industrial Development.
- Hathaway, I. (2013). *Tech Starts: High-Technology Business Formation and Job Creation in the United States*. Kauffman Foundation.
- He, J., & Fallah, M. H. (2011). The typology of technology cluster and its evolution- Evidence from hi-tech industries. *Technology Forecasting & Social Change*, 945-952.
- Huang, K.-F., & Cheng, T.-C. (2015). Determinants of firms' patenting or not patenting behaviors. *Journal of Engineering and Technology Management*, 36: 52-77.
- Hudson, J., & Minea, A. (2013). Innovation, Intellectual Property Rights, and Economic Development: A Unified Empirical Investigation. *World Development*, 46: 66–78.
- IPO UK. (2013). *Innovation, Patenting and Licensing in the UK: Evidence from the SIPU survey*. Newport: Intellectual Property Office.
- Kakati, M. (2003). Success criteria in high-tech new ventures. *Technovation, ELSEVIER*, 447-457.
- Ketels, C. H. (2003). The Development of the cluster concept- present experiences and further developments. *NRW conference on clusters*. Duisburg, Germany.
- Kostopoulos, K., Papalexandris, A., Papachroni, M., & Loannou, G. (2011). Absorptive capacity, innovation, and financial performance. *Journal of Business Research*, 64(12): 1335-1343.
- Krugman, P. (1991). Increasing Returns and Economic Geography. *Journal of Political Economy*, 99(3): 483-499.
- L, K. (1995). *Absorptive capacity and industrial growth: A conceptual framework and Korea's experience*. St. Martin's Press.
- Lau, A. K., & Lo, W. (2015). Regional innovation system, absorptive capacity and innovation performance; An empirical study. *Technological Forecasting & Social Change*, 92: 99-114.
- Lau, A. K., & Lo, W. (2015). Regional innovation system, absorptive capacity and innovation performance; An empirical study. *Technological Forecasting & Social Change*, 99-114.
- Liu, C. Y., Painter, G., & Wang, Q. (2014). *LESSONS FOR U.S. METRO AREAS: Characteristics and Clustering of High-Tech Immigrant Entrepreneurs*. Kauffman Foundation.
- Macdonald, S. (2004). When means become ends: considering the impact of patent strategy on innovation. *Information Economics and Policy*, 135–158.
- Markusen, A. (1996). Sticky places in slippery space: a typology of industrial districts. *Economic Geography*, 72(3): 293-313.
- Marshall, A. (1925). *Principle of Economics (eighth edition)*. UK: Macmillan and company.
- Miguelez, E., & Moreno, R. (2015). Knowledge flows and the absorptive capacity of regions. *Research Policy, ELSEVIER*, 44(4): 833-848.
- Miguelez, E., & Moreno, R. (2015). Knowledge flows and the absorptive capacity of regions. *Research Policy, ELSEVIER*, 833-848.
- Monecke, A., & Leisch, F. (2012). Structural Equation Modeling Using Partial Least Squares. *Journal of Statistical Software*, 48:3.
- Morosini, P. (2004). Industrial Clusters, Knowledge Integration and Performance. *World Development, ELSEVIER*, 305-326.
- Mowery, D. C., & Oxley, J. E. (1995). Inward technology transfer and competitiveness: The role of innovation systems. *Cambridge Journal of Economics*, 19: 67-93.

- Muskell, P. (2001). Towards Knowledge-based Theory of the Geographical Cluster. *Industrial and Corporate Change*, 921-941.
- Mytelka, L. K. (2000). Local Systems of Innovation in a Globalized World Economy. *Industry and Innovation*, 7(1): 33-54.
- Nadvi, K. (1995). Industrial Clusters and networks: case studies of SME growth and innovation. *UNIDO, Small Medium Enterprises Programme*.
- Nooteboom, B. (1999). Innovation and inter-firm linkages: new implications for policy. *Research Policy*, 28: 793–805.
- OECD. (2004). NETWORKS, PARTNERSHIPS, CLUSTERS AND INTELLECTUAL PROPERTY RIGHTS: OPPORTUNITIES AND CHALLENGES FOR INNOVATIVE SMEs IN A GLOBAL ECONOMY. (p. 78). Istanbul, Turkey: OECD.
- Okada, A., & Siddharthan, N. (2007). Industrial Clusters in India: Evidence from Automobile Clusters in Chennai and the National Capital Region. *Institute for Studies in Industrial Development, JETRO*. Chiba, Japan.
- Parathasarthy, B. (2004). India's Silicon Valley or Silicon Valley's India? Socially embedding the computer software industry in Bangalore. *International Journal of Urban and Regional Research*, 664-685.
- Patibandla, M., & Petersen, B. (2002). Role of Transnational Corporations in the Evolution of a High-Tech Industry: The Case of India's Software Industry. *World Development*, 30(9): 1561-1577.
- Patibandla, M., & Petersen, B. (2002). Role of Transnational Corporations in the Evolution of a High-Tech Industry: The Case of India's Software Industry. *World Development*, 1561-1577.
- Peltoniemi, M. (2008). Intra-industry variety as an outcome of intellectual capital. *Journal of Intellectual Capital*, 395-408.
- Porter, M. E. (1990). The Competitive of Nations. *Harvard Business Review*.
- Purgał-Popiela, J. (2012). *Dimensions of Foreign Subsidiary's Absorptive Capacity in the Context of Knowledge Transfer through Expatriation*. National Science Center.
- Pyke, F., Becattini, G., & Sengerberger, W. (1990). *Industrial Districts and Inter-firm Co-operation in Italy*. Geneva: International Institute for Labor Studies.
- Rao, P., & Klein, J. A. (2013). Inter-Firm Technology Transfers and Collaboration. In P. Rao, & J. A. Klein, *Strategies for High-Tech Firms* (pp. 107-120). New York: M.E. Sharpe.
- Rao, P., & Klein, J. A. (2013). Sustaining Competitive Advantage in a High-Tech Environment. In P. Rao, & J. A. Klein, *Strategies for High-Tech Firms* (pp. 3-28). New York: M.E. Sharpe.
- RBI. (2014). *Industrial Performance*. Reserve Bank of India.
- Rosenfeld, S. (2005). Industry Cluster: Business Choice, Policy Outcome, or Branding Strategy. *New Business Ideas and Trends*, 3(2): 4-13.
- Rylková, Ž., & Chobotová, M. (2014). Protection of intellectual property as a means of evaluating innovation performance. *Procedia Economics and Finance. ELSEVIER*, 14: 544 – 552.
- Saxenian, A. L. (1994). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, MA: Harvard University Press.
- Schmitz, H. (1999). From ascribed to earned trust in exporting clusters. *Journal of International Economics, ELSEVIER*, 139-150.
- Schumpeter, J. A. (1934). *The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest, and the Business Cycle*. Transaction Publishers.
- Smedlund, A. P. (2004). Assessing intellectual capital creation in regional clusters. *Journal of Intellectual Capital*, 351-365.
- Sonderegger, P., & Taube, F. (2010). Cluster life cycle and diaspora effects: Evidence from the Indian IT cluster in Bangalore. *Journal of International Management, ELSEVIER*, 16(4): 283-397.
- Song, C., & Oh, W. (2015). Determinants of patent application and policy implications in Korea. *ASIP 2015 Korea Conference*. Jeju: ASIP.
- Steinle, C., & Schiele, H. (2002). When do industries cluster? A proposal on how to assess an industry's propensity to concentrate at a single region or nation. *Research Policy, ELSEVIER*, 849-858.
- Subrahmanya, M. H. (2011). Technological Innovation and Growth of SME's in Bangalore: Does Innovation Facilitate Growth of Firm size? *The Asian Journal of Technology Management*, 41-55.
- Subrahmanya, M. H. (2011). Technological Innovation and Growth of SMEs in Bangalore: Does Innovation Facilitate Growth of Firm Size? *The Asian Journal of Technology Management*, 41-55.
- Subrahmanya, M. H. (2013). External Support, Innovation And Economic Performance: What Firm Level Factors Matter For High-tech SMEs? How? *International Journal of Innovation*, 17:1-26.

- Subrahmanya, M. H. (2014, November). Technological Innovation in Manufacturing SMEs: A Decisive Means of Competitiveness. *Yojana*, pp. 4-9.
- Sweet, C. M., & Maggio, D. S. (2015). Do Stronger Intellectual Property Rights Increase Innovation? *World Development, ELSEVIER*, 66: 665-677.
- Tappi, D. (2001). The Neo-Marshallian Industrial District: A Study on Italian Contributions to Theory and Evidence. Jena: Max-Planck-Institute for Research into Economic Systems.
- Tholons. (2010). *www.tholons.com*. Retrieved from The Bangalore Story: Becoming the Outsourcing Capital of the World.
- Tidström, M. S. (2010). Competitive flows of intellectual capital in value creating networks. *Journal of Intellectual Capital*, 23-38.
- UNDP. (2001). *Human Development Report*. New York: Oxford University Press.
- Wang, W., & Yang, J. (2012). Empirical Study of High-tech Industry Cluster in Shaanxi Province. *National Conference on Information Technology and Computer Science*.
- Wong, K. K.-K. (2013). Partial Least Square-Structural Equation Modelling (PLS-SEM) Using SmartPLS. *Marketing Bulletin*, 24.
- Xie, X., Zeng, Z., & Tam, C. (2011). Towards continuous innovation for regional high-tech industrial clusters. *Innovation: Management, policy & practice*, 361-375.
- Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, And Extension. *Academy of Management Review*, 27(2): 185-203.
- Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, And Extension. *Academy of Management Review*, 2: 185-203.
- Zemplinerová, A., & Hromádková, E. (2012). Determinants of Firm's Innovation. *Prague Economic Papers*, 4: 487-502.
- Zhou, Y. (2011). High-tech Industry. *International Encyclopedia of Human Geography, ELSEVIER*, 120-127.

## ANNEXURES

**Table.1a:** Weighted Averages and Standardized Weights for the Dimensions and Variables of Internal Factors of Absorptive Capacity of a Firm

Dimension	Weighted Average	Standardised Weights	Variable	Weighted Average	Standardised Weights
D1	3.9208	0.16758358	v11	3.7921	0.2850
			v12	3.9703	0.2984
			v13	3.3564	0.2522
			v14	2.1881	0.1644
D2	3.6535	0.156157427	v21	4.1782	0.3576
			v22	4.1584	0.3559
			v23	3.3465	0.2864
D3	4.4554	0.190435887	v31	3.7921	0.3011
			v32	4.7327	0.3758
			v33	4.0693	0.3231
D4	3.6832	0.157427	v41	-	-
D5	3.8911	0.166314008	v51	4.1188	0.2631
			v52	4.2475	0.2713
			v53	3.5347	0.2258
			v54	3.7525	0.2397
D6	3.7921	0.162082099	v61	-	-

**Table.2a:** Weighted Averages and Standardised Weights for the Dimensions and Variables of External Factors of Absorptive Capacity of a Firm

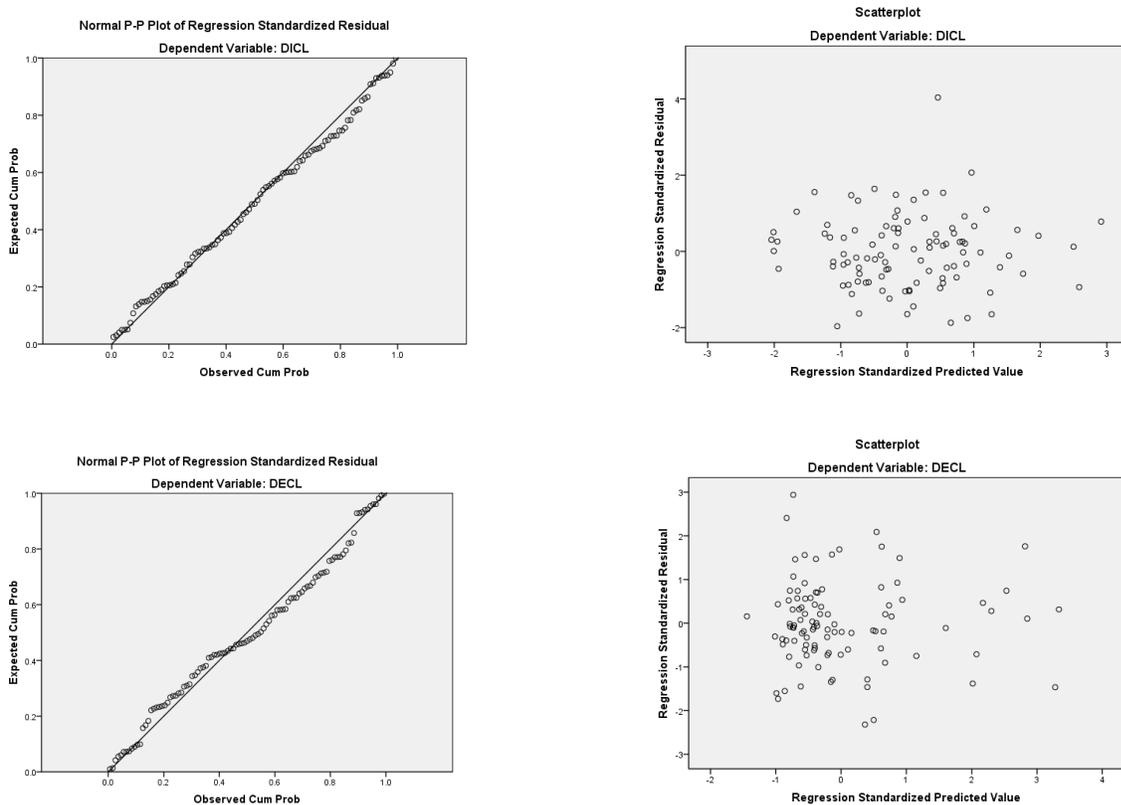
Dimension	Weighted Average	Standardised Weights	Variable	Weighted Average	Standardised Weights
D7	3.8119	0.483061481	V71	3.613861386	0.4913
			V72	3.742574257	0.5087
D8	4.0792	0.516938519	V81	3.732673267	0.5310
			V82	3.297029703	0.4690

**Table.3a:** Descriptive Statistics of iACAP and eACAP

	N	Minimum	Maximum	Mean	Std. Deviation
iACAP	101	.16580720	.36723638	.2284156509	.04040325475
eACAP	101	.30338770	.80000000	.5849224547	.11161544882
Valid N (listwise)	101				

**Table.4a:** Descriptive Statistics of DICL and DECL

	N	Minimum	Maximum	Mean	Std. Deviation
DICL	101	41	260	122.05	35.566
DECL	101	27	121	65.37	18.665
Valid N (listwise)	101				



**Figure. A1:** Normal P-P Plot and Scatterplot- DICL and DECL

# How Do We React to Tipping When We Don't Come From a Tipping Culture: Case of Employee's Expectations?

Eleanor Scanlon<sup>1</sup> and Saloomeh Tabari<sup>2</sup>

Sheffield Hallam University, United Kingdom

<sup>1</sup> elliescanlon@rocketmail.com

<sup>2</sup> s.tabari@shu.ac.uk

## Introduction

Lui (2008) highlights the fact that tipping practices differ from culture to culture, and country to country; tipping is a global phenomenon and it being a large aspect of employees in many service industries. Generally there are many reasons behind tipping these being; social approval, equitable service exchange (Saayman and Saayman, 2015), value of the meal (Koku and Savas, 2016) as well as the interpersonal connection between the server and the customer as interpersonal similarity, in respect of the food service experience provided (Parrett, 2011).

The aim of this paper is to investigate employee expectations, especially those who are working in a different country with different cultural values and where tipping is the norm. As well as trying to understand the impact of not receiving tip, when tipping culture is a norm, on their satisfaction and motivation from job under the circumstances that the employee does not come from a natural tipping culture. Much research has been carried out to examine the motivations of tipping, the racial and ethical difference of tipping but still it all a lack of study on employees perspective and if their expectations regarding the amount of tip they are receiving are not met how it affects their working ethic.

## Literature Review

This research paper delved into a nation cultures and characteristics including race and ethical differences to see whether or not this is a factor affecting a tipping perspective of employees.

## Tipping customs

There are cultures in the world like the United States and Egypt where tipping is seen as a necessary action to conform to, however in places like the United Kingdom, New Zealand and Denmark tipping is less of a common conformity (Whaley et al., 2014) and (Lynn, 2000). More to the fact that confusion as to whether or not to tip for a certain service is a bit foggy. People from global destinations such as Las Vegas where there is a high percentage of hospitality staff often rely on having successful intercultural encounters but first they must overcome such things as language barriers and cultural biases (Abraham, 2014) as well as the global confusion of tipping.

Rokou (2014) identifies that American's are amongst the most gratuitous when it comes to tipping, having found that 56% of a Trip Advisor survey think that tipping is expected and one-third feeling obligated to tip even when the service was poor.

## **Race and Ethical Differences**

McCall and Lynn (2009) survey on servers indicates that 65% rated African Americans as below average tippers. An issued resulted from this result makes restaurant managers struggle when it comes to retaining and hiring staff in predominantly black neighborhoods (Lynn, 2011) and (Amer, 2002). In addition their research state that in black neighborhoods it has been less educated in the sense of tipping and the 'average America tip' of 15-20% is not as commonly known. Meanwhile, Noll and Arnold (2004) state that on average black parties would almost always tip below 15% when white parties would tip above 15%.

Also, in different research by Lynn and Brewster (2016) the mediators between a tipping norm and race and ethical differences are; Sex, age, education, income, experience working for tips and counterbalance order. It is identified that servers who perceive low levels of workplace autonomy or low-wage security will receive smaller tips from their black customers compared with their white customers. The relationship will be mediated by the amount and degree to which servers withhold or extend subtle behaviours such as smiling, entertaining, touching, etc. during the service interaction. Servers go to less effort toward such people such as 'rednecks', women and seniors who by servers are perceived to be below-average tippers by withholding subtle behaviours such as smiling, touching, etc. which are common actions associated with male customers (Brewster and Mallinson, 2009).

## **Employee Perspective**

Many employees who are in a tipped position, for instance, those who work as a waiter/waiters rely on their tips as a significant portion of their income. So when a tip becomes inadequate due to reasons such as uneducated about a tip, unsure of what and when to tip and possible demographic differences it can create a negative impact on the server, restaurant and management team (Abraham, 2014).

Azar (2011) highlights the fact that only in the US \$47 billion a year is made in tipping in the food industry. Saunders (2015) suggests a tip gap approach, which represents the effects on the differences between the perceived/expected tip and the actual tip received. Identifying that employees effective state will become negative the lower the tip. From a managerial perspective motivations to tip can significantly affect the performance of a server (Whaley et al., 2014).

## **Methods**

Quantitative approach has been chosen for this study to investigate the impact of tipping culture on employee's expectations, which they are not coming from countries that tipping culture is norm. Authors will conduct 20 in-depth interviews. The research will be conducted in the UK and from local and international students, who they are studying hospitality management and they have been in the USA for their placement and worked there (10 participants) and those who are going there soon (10 participants). All participants are come from a background where tipping is not the norm. Thematic Analysis will be used for analysing data and find out the themes of this

research. Finally authors aim is to provide a conceptual framework based on the finding of this research to highlight the gap between tipping culture and employee expectations.

## Discussion

Tipping is becoming more and more relied on from an employee perspective when working in the hospitality industry but has it ever occurred where an employee no longer receives a tip and are left to live from a regular wage; does this demotivate them and leave them in a need to search for a new job or this now seen to be expected. This situation is becoming more and more apparent with students when they seek placement roles for university.

## References

- Abraham, Z. (2014). The Influence of National Culture on Tipping Behaviour. *UNLV Theses, Dissertations, Professional Papers, and Capstones*.
- Amer, S. (2002). *Minority Report. Restaurant business*, 27-38.
- Azar, O. H. (2011). Business strategy and the social norm of tipping. *Journal of Economic Psychology*, 32(3), 515-525. doi:10.1016/j.joep.2011.03.018
- Brewster, Z. W., & Mallinson, C. (2009). Racial differences in restaurant tipping: A labour process perspective. *The Service Industries Journal*, 29(8), 1053-1075. doi:10.1080/02642060902764343
- Liu, C. (2008). The perceptions of waiters and customers on restaurant tipping. *Journal of Services Marketing*, 22(2), 95-103.
- Lynn, M. (2000). National personality and tipping customs. *Personality and Individual Differences*, 28(2), 395-404. doi:10.1016/s0191-8869(99)00109-9
- Lynn, M., & Brewster, Z. W. (2015). Racial and Ethnic Differences in Tipping: The role of perceived Descriptive and Injunctive Tipping Norms . *Cornell Hospitality Quarterly*, 56(1), 68-79. doi:10.1177/1938965514553466
- Mccall, M., & Lynn, A. (2009). Restaurant servers' perceptions of customer tipping intentions. *International Journal of Hospitality Management*, 28(4), 594-596. doi:10.1016/j.ijhm.2009.03.010
- Noll, E. D., & Arnold, S. (2004). Racial Differences in Restaurant Tipping: Evidence from the Field. *The Cornell Hotel and Restaurant Administration Quarterly*, 45(1), 23-29. doi:10.1177/0010880403260104
- Parrett, M. (2011). Do people with food service experience tip better? *The Journal of Socio-Economics*, 40(5), 464-471.
- Rokou, T. (21014). Americans Most Gratuitous When It Comes To Tipping On Vacation, According To TripAdvisor Survey. Retrieved January 24, 2017, from [https://www.tripadvisor.com/PressCenter-i6820-c1-Press\\_Releases.html](https://www.tripadvisor.com/PressCenter-i6820-c1-Press_Releases.html)
- Saayman, M., & Saayman, A. (2015). Understanding tipping behaviour – an economic perspective. *Tourism Economics*, 21(2), 247-265. doi:10.5367/te.2014.0448
- Saunders, S. G. (2015). Service employee evaluations of customer tips: an expectations-disconfirmation tip gap approach. *Journal of Service Theory and Practice*, 25(6), 796-812. doi:10.1108/jstp-07-2014-0148
- Whaley, J. E., Douglas, A. C., & O'Neill, M. A. (2014). What's in a tip? The creation and refinement of a restaurant-tipping motivations scale: A consumer perspective. *International Journal of Hospitality Management*, 37, 121-130. doi:10.1016/j.ijhm.2013.11.005

# Applying Universal Design Principles to Engage Online Learners

Joshua R. Davis<sup>1</sup> and Geraldine E. Hynes<sup>2</sup>

College of Business Administration  
Sam Houston State University, USA

<sup>1</sup>stdjrd21@shsu.edu

<sup>2</sup>hynes@shsu.edu

## Abstract

Fostering student engagement is a major concern of educators. The importance of engagement for learning is well established, yet the ever-increasing diversity of our student population mandates that educators continue to search for new strategies and best practices that will maximize engagement. The challenge is especially great with distance learners. While students are drawn to online classes because of their perceived convenience and flexibility, engagement often suffers. This paper draws from the literature on engaging students with disabilities, suggesting that online educators should adopt strategies for student engagement that were originally intended to assist students with special needs. The goal is to make course content more accessible to all online learners, not just those identified as having disabilities. In other words, many accommodations that make an online learning platform accessible for disabled learners will enhance its use for all students. The principles of Universal Design for Learning (UDL) encapsulate this concept. The purpose of this paper is to describe UDL guidelines that instructors can apply to online courses in order to enhance all students' engagement and success.

## Introduction

Student engagement is a major goal of educators, particularly when teaching online courses. An estimated 5.5 million post-secondary students take classes online in the U.S. (NCES, 2013). Completion rates and levels of satisfaction for online students are often lower than for students in traditional, on-campus courses, yet online programs continue to be popular. Their perceived flexibility and convenience have appeal for a number of demographic groups, including students with family responsibilities and fulltime employment. Another group that is drawn to online courses is students with disabilities. In fact, 11% of online students self-identify as having a disability (Betts et al, 2013), which means that approximately 605,000 online students have special needs that, by federal law, must be accommodated. However, there is evidence that typical accommodations are insufficient; 33% of students who used assistive technology to access online education rated the experience as unreliable or inconsistent (Kelly, 2008). Furthermore, a study comparing 196,000 students with and without disabilities in online courses in the UK showed significantly lower pass rates and significantly lower completion rates for students with a range of disabilities (Richardson, 2014).

This paper suggests that instructors should seek strategies for student engagement that go beyond the typical. Making assistive technology available is a start, but such technology operates from a deficit-based, medical model orientation, resulting in an

“apartheid of special needs” (Goggin and Newell, 2003). That is, technology used in online learning environments is considered either “regular/generic” or “assistive.”

An alternative view is to ensure that the technology available to online learners is “accessible,” thereby ensuring all students access to online information, not just those with special needs (Foley and Ferri, 2012). In other words, many accommodations that make an online learning platform accessible for disabled learners will enhance its use for all students. The principles of Universal Design for Learning encapsulate this concept. This paper describes UDL principles that instructors can apply to online courses in order to enhance all students’ engagement and success.

### **Rationale**

In its broadest sense, the term “disability” encompasses substantial impairments, limitations on activity and restrictions to participation in society. These restrictions might be physical or mental, visible or invisible. Although exact statistics are hard to find because of the inexact definition of “disability,” the Centers for Disease Control and Prevention estimates that one in five adults in the U.S. is living with a disability. The National Organization on Disability estimates that 56 million people in the U.S. are disabled, making them the largest minority group. Rosemarie Garland-Thomson, a founding director of Emory University’s Disability Studies Initiative, points out that “most of us will move in and out of disability in our lifetimes, whether we do so through illness, an injury, or merely the process of aging” (2016, p. 6).

Given the size of this community, and given the fact that any of us can experience disability as we go through life, it seems appropriate that online educators become conscious of the likelihood that their classes will include learners with disabilities, whether or not they have been officially identified, and take measures that ensure all learners can access all resources. By doing so, the disabled learners will move from segregation to community, from exclusion to access.

As online attendance of courses becomes more prevalent, accessibility issues impact more students. According to the U.S. Department of Education (2016), 32% of students were taking online classes in 2011 to 2012. While distance learning provides more opportunities to many scholars, accessibility issues for online classes present unique difficulties to others. Online courses in the U.S. are mandated to comply with the Americans with Disabilities Act. Guidelines for compliance with ADA rules are available from the federal government and include recommendations for visual elements such as font usage, color usage, and use of typesetting conventions such as a single space after a period in text documents. Despite these rules, students with disabilities may encounter barriers depending on the type and level of impairment (Crow, 2008). A study on disabilities and e-learning problems by Fichten et al. (2009) revealed that as many as one in three disability-related e-learning problems go unresolved.

Clearly, a “one-size-fits-all” educational framework is not equipped to meet the needs of all students, whereas a Universal Design approach can help individuals with and without disabilities reach their potential (Al-Azawei, Serenelli, & Lundqvist, 2016).

## What is UD?

The principles of “universal design” constitute a philosophy advocating accessibility for all. The concept was first used in architecture. Ronald Mace coined the term “universal design” in the 1970s to refer to “the design of products and environments to be usable by all people...without the need for adaptation or specialized design” (Center for Universal Design, 2015). Products and environments were designed to be usable by all people without the need for adaptation. An example is a curb cut, which allows not only people using wheelchairs to navigate from a sidewalk to a street, but also people using bicycles, pushing baby strollers, or simply preferring to walk down a ramp rather than stepping down from a curb. Another example is a grab bar in a shower.

There are seven basic principles of universal design:

- Equitable use – people’s ability should be taken into account during the design process
- Flexibility in use – individual preferences should be served.
- Simple and intuitive use – design should be easily understood by all.
- Perceptible information – design should communicate information effectively to all users.
- Tolerance for error – design should reduce risks and errors of actions.
- Low physical effort – design should minimize required physical efforts to be used comfortably.
- Size and space for approach and use – design should provide appropriate size and space irrespective of user’s size and/or mobility (Al-Azawei, Serenelli, and Lundqvist, 2016).

## What is UDL?

The framework called “universal design for learning” (UDL) is based on UD concepts (Rao et al., 2014). It was first articulated at the Harvard Graduate School of Education. The Center for Applied Special Technology defines UDL as “a framework that addresses the primary barrier to fostering expert learners within instructional environments: inflexible, one-size-fits-all curricula. It is inflexible curricula that raise unintentional barriers to learning” (CAST, 2011, p. 4). UDL calls for a curriculum that lets students use “multiple means” to express what they know. A simple way of describing the philosophy is that UDL attempts to tackle the limitations of a learning environment rather than addressing learner limitations (Al-Azawei, Serenelli, & Lundqvist, 2016). An example is allowing students who have been assigned to write a term paper to create a wiki online, or even to give an oral presentation, instead of a term paper. That flexibility would be welcomed not only by students whose disabilities (like ADHD) make it difficult to write, but also by any students who prefer more creative outlets of expression.

Three key principles underlie UDL:

- *multiple means of content delivery* – present learning content as videos, audio files, text, graphs, and other multimedia.
- *multiple methods of expression and assessment* – assess learning through exams, assignments, interviews, quizzes, scientific papers, and multimedia presentations.

- *different means of engagement* – use lecture, active learning, discussion, Q&A sessions, peer-tutoring, and applied problem-solving (Rose & Meyer, 2001).

Predictably, this level of flexibility has been met with skepticism. While educators are usually well-intentioned, they have expressed concern about the implications of UDL for assessment of learning outcomes, particularly the danger of widespread cheating on exams. They also have questioned whether the investment of time and resources implied by UDL principles would be worthwhile. A third concern is whether the responsibility for ensuring accessibility is the faculty's, rather than the administration's (Rice & Carter, 2015). On the other hand, the merits of creating a welcoming and accessible learning environment for every student outweigh the potential disadvantages (King & Thompson, 2011), and UDL is progressively gaining consensus, particularly in the U.S.

A coalition of over 40 organizations has been formed to advocate the use of universal design concepts in educational settings. Members include the National Education Association as well as associations specifically supporting students with disabilities (Gose, 2016). In addition, a number of universities and colleges have established offices and committees that promote universal design. For instance, Salt Lake Community College's Universal Access Committee advocates UDL throughout the campus with a goal of making all courses "open and accessible from the get-go" (Gose, 2016, p. 5).

A growing body of research on the impact of UDL application in different learning settings concludes that UDL is a powerful pedagogical approach that can minimize learning barriers and equalize learning opportunities. Further, the literature shows that students who take UDL-based courses express high satisfaction, positive attitude, and engagement in comparison to other peers. Such attitudes can encourage course completion rates (Al-Azawei et al, 2016).

Another finding is that UDL adoption is particularly successful in online environments, where students often express higher levels of dissatisfaction and disinterest, resulting in high rates of incompleteness, regardless of whether they are disabled. In a study by Hall et al (2015), learners with and without disabilities in an online treatment benefited from the adoption of UDL and achieved significantly higher scores than those in the traditional setting. The online students who were disabled also indicated significantly higher satisfaction and engagement in a survey.

Many online courses that have begun to utilize UDL are adhering well to its guidelines. It should be noted, however, that two of the weakest areas of UDL adoption for online courses are providing "options for language and symbols" and offering "options for self-regulation" (Perez-Mira et al, 2014). Language and symbols require special attention as what is easily understood by one learner may seem unintuitive for a learner with a different primary language. Because of this, course content should be clear and simple to decode (Center for Applied Special Technology, 2011). Providing means for students to self-regulate is also critical and can be accomplished by providing constructive

feedback, checklists that emphasize self-reinforcement, and tools that allow learners to examine their own progress.

### **Strategies for making online courses more accessible**

There are many strategies that faculty can apply when developing online courses to ensure that all students, regardless of their physical and psychological needs, have access to available content. Adopting these strategies will maximize engagement, enhance the learning experience, and increase academic achievement. At virtually all universities, resources are available to support faculty as they deal with student disabilities. However, UDL strategies go beyond mandated accommodations. Thomas Tobin, Coordinator of Learning Technologies at Northeastern Illinois University, suggests that online educators can start developing a UDL “mindset” by making five basic changes to their course sites:

- Identify course elements that are “single stream,” such as lecture notes and syllabi in text format, and expand them into different media, methods, or expressions.
- Create alternatives for all multimedia, such as videos, podcasts, and study guides in still images.
- Design alternate ways for learners to demonstrate skills & interact with staff, such as term papers, YouTube videos, and photo essays.
- Break up tasks into separate components, going step by step.
- Expand, document, and share interactions to go around format and time requirements (Tobin, 2016).

Other UDL specialists have identified additional strategies to increase online students’ success, many with an emphasis on student feedback. These strategies include the following:

- Ensure course completion through extensive monitoring of performance and pace
- Convey curriculum to students (by multiple media) repeatedly
- Instruct on how to access the course’s content
- Maintain a highly structured virtual environment
- Provide links to other online resources
- Build and maintain relationships with students
- Embed captions in the content of PowerPoint presentations rather than a separate printed text transcript.
- Provide interpreters for group projects when students are required to present audio content.
- Allow students to participate in setting personal learning objectives and modes of delivery that best suit their needs.
- Create platforms that promote various delivery methods for discussion, such as written text, video, and voice. (Betts, et al., 2013; Rice & Carter, 2015)

Additional UDL guidelines that will ensure that the content in online courses is accessible to all, particularly on the Blackboard LMS platform are:

- Syllabus and other docs viewable within the browser, formatted in html, not as attached MS Word files or scanned images

- All images with alternative text display
- No blinking images, animation, or clutter
- .pdf files tagged for accessibility (Adobe Acrobat Pro)
- Captions in videos (Camtasia, YouTube)
- High contrast colors (4.5/1 ratio)
- Notifications in audio and visual formats
- No color change for emphasis
- Consistent, single font with modern typesetting conventions
- No links labeled “Click here” or “More”
- Structured headings in MS Word and PowerPoint (Hunt, 2016)

Educators who adopt some or all of the strategies identified above may be interested in researching their effectiveness. Tobin (2016) suggests a methodology for measuring the impact of a UDL approach to online course design. To begin, instructors should ask students to share their use cases about how, when, and where they interact with the content in the online course. For example,

- What devices do they use to view and interact with tools and content?
- How much time do they spend learning how to use course elements?
- What elements of the course gave students problems? Did any cause students not to use specific items?
- Were students unable to get to or use any parts of the course?

Next, instructors should map and build one alternative path through an existing online course, beyond the “text only” and “audio/video only” paths that already exist. Instructors should then share the possible paths through the course with current students, and ask for their feedback about which parts need multiplying soonest.

Finally, instructors should collect completion and usage statistics about the resources in the UDL augmented online course, for a pre- and post-change analysis.

## **Conclusions**

Online educators agree that course content should be accessible to all learners, regardless of their special needs or challenges. Content should be available to the senses; it should be formatted so that learners can interact with all elements; it should be clear, with minimal ambiguity; and it should be available through a wide range of technologies (Web Content Accessibility Guidelines 2.0, 2008). Adopting the principles of UDL when creating online courses will represent information in understandable ways, allow students to demonstrate their learning in multiple ways, and, perhaps most importantly, increase student engagement. Such considerations must be at the forefront when universities design online programs, so that their commitment to accessibility crosses all divisions (Betts et al., 2013).

## **References**

- Al-Azawei, A., Serenelli, F., & Lundqvist, K (2016). Universal design for learning (UDL): A content analysis of peer-reviewed journal papers from 2012 to 2015. *Journal of the Scholarship of Teaching and Learning*, 16(3), 39-56.

- Betts, K., Cohen, A. H., Veit, D. P., Alphin, H. J., Broadus, C., & Allen, D. (2013). Strategies to increase online student success for students with disabilities. *Journal of Asynchronous Learning Networks*, 17(3), 49-64.
- Burgstahler, S., Corrigan, B., & McCarter, J. (2004). Making distance learning courses accessible to students and instructors with disabilities: A case study. *The Internet & Higher Education*, 7(3), 233-246. doi:10.1016/j.iheduc.2004.06.004
- Center for Applied Special Technology (2011). *Universal Design for Learning Guidelines Version 2.0*. Wakefield, MA: Author.
- Center for Universal Design (2015). Retrieved from [http://www.ncsu.edu/ncsu/design/cud/about\\_ud.htm](http://www.ncsu.edu/ncsu/design/cud/about_ud.htm)
- Crow, K. L. (2008). Four types of disabilities: Their impact on online learning. *Tech Trends: Linking Research & Practice to Improve Learning*, 52(1), 51-55. doi:10.1007/s11528-008-0112-6
- Fichten, C. S., Ferraro, V., Asuncion, J. V., Chwojka, C., Barile, M., Nguyen, M. N., Klomp, R., & Wolforth, J. (2009). Disabilities and e-Learning problems and solutions: An exploratory study. *Journal of Educational Technology & Society*, 4, 241.
- Foley, A., & Ferri, B. A. (2012). Technology for people, not disabilities: Ensuring access and inclusion. *Journal of Research in Special Education Needs*, 12(4), 192-200.
- Garland-Thomson, R. (2016, August 21). Becoming disabled. *The New York Times*, pp. 1, 6.
- Gose, B. (2016, September 18). Disability experts debate merits of universal design. *The Chronicle of Higher Education*. Retrieved from [http://www.chronicle.com/article/Disability-Experts-Debate/237780?cid=wb&utm\\_source](http://www.chronicle.com/article/Disability-Experts-Debate/237780?cid=wb&utm_source)
- Hall, T.E., Cohen, N., Vue, G., & Ganley, P. (2015). Addressing learning disabilities with UDL and technology: Strategic reader. *Learning Disability Quarterly*, 38(2), 72-83.
- King, K. P., & Thompson, G. M. (2011). Including “anyone” in the “anytime, anywhere” paradigm: Strategies to build access to distance education. Conference Proceedings of the *Florida Distance Learning Association*. Retrieved September 15, 2016, from <http://insuworks.nova.edu/fdlaconference/2011/proceedings/5/>
- Lazar, J., & Jaeger, P. (2011). Reducing barriers to online access for people with disabilities. *Issues in Science and Technology*, 2, 68.
- Perez-Mira, B., Hanson, B., Kilcoyne, M., Hasson, T., Champion, S. Wright, S., & Williams, J. (2014). UDL 2.0: A new challenge for online higher education. *International Journal of Business Disciplines*, 25(2), 41-49.
- Radford, A. W. (2011). Learning at a distance: Undergraduate enrollment in distance education courses and degree programs. Stats in Brief. NCES 2012-154. *National Center for Education Statistics*.
- Rice, M. F., & Carter, R. J. (2015). “When we talk about compliance, it’s because we lived it”: Online educators' roles in supporting students with disabilities. *Online Learning*, 19(5), 18-36.
- Richardson, J. E. (2014). Academic attainment of students with disabilities in distance education. *Journal of Postsecondary Education and Disability*, 27(3), 291-305
- Rose, D.H., & Meyer, A. (2001). *Teaching Every Student in the Digital Age: Universal Design for Learning* (V.A. Alexandria, Ed.)
- Tobin, T. (2016) Universal design for learning: How to improve satisfaction and retention for students at all learning levels. Magna Publications, Inc.
- U.S. Department of Education, National Center for Education Statistics. (2016). Digest of Education Statistics, 2014 (NCES 2016-006), Table 311.15. Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=80>
- Web Content Accessibility Guidelines (WCAG) 2.0. (2008). Retrieved from <http://www.w3.org/TR/WCAG20/>

# Linux Operating System and Cyber Defense

Jennifer Wescott<sup>1</sup> and Ulku Clark<sup>2</sup>

Computer Science and Information Systems  
University of North Carolina Wilmington, USA

<sup>2</sup>jar2569@uncw.edu

<sup>2</sup>clarku@uncw.edu

As the world gets more connected through Internet of Things (IoT) devices, the higher the risk for cybercrime at the fingertips of each mobile phone, tablet, computer, and other networked gadgets. It is more important than ever to become knowledgeable to combat cyber criminals and keep information contained and protected. Learning how to install and the fundamentals of a hypervisor, virtual machine, and Linux Operating System and its various distributions is a good start for someone interested in diving into this subject matter.

There are new educational programs and virtual labs available through National Cyber Watch Center ranging from Networking Fundamentals to Ethical Hacking and Systems Defense. This particular student will be exploring the educational virtual labs available to her and creating a manual for learning Linux, which is the operating system of choice for those in cyber security.

As a club member of the Cyber Defense Club, she noticed many students from diverse programs that were interested in educating themselves on security, but they did not already have the terminology or background as a typical Informational Technology (IT) student, herself being one of them. When going to look up “cyber security education” online, one can go into information overload and end up with “analysis paralysis”.

It is this particular student’s mission to create a starting point for anyone, from any field, interested in learning something about cyber security. The starting point of this manual will be the installation of a hypervisor, which is a platform that hosts and monitors virtual machines. Virtualbox will be the hypervisor of choice as it is free and easy to use. Through researching online and making inquiries, it is apparent that the Ubuntu distribution of Linux will be the best operating system for beginners. There will be some basics to learn how to create directories, manage and mount file systems, manage text files, use BASH (Born Again Shell, which is similar to command prompt in Windows), and monitor processes.

Although she is in the Computer Science and Information Systems (CSIS) graduate program, this student is starting from scratch with Linux. She is taking the virtual Linux labs and cross-referencing against other educational sites while concurrently writing the manual that a beginner, with absolutely no knowledge of this operating system, can pick up and easily learn. Upon completion of the manual, the goal is that a student from any department can walk in to a Cyber Defense Club meeting, pick up this educational material, and be able to contribute at the next club session.

One may not be able to teach the world about any one subject, but if there are incremental steps and a person can teach just one other, there stands progress. This manual will be her progress and contribution to making each person more aware of their cyber surroundings. This manual will be her answer to this problem and thought to be best presented in the presentation format.

**Keywords:** cyber defense, security, student, education, Linux

# The Impact of Air Transportation on the US Economy

Janani Thiagarajan

College of Business  
Embry-Riddle Aeronautical University, USA  
thiagarj@my.erau.edu

## Introduction

Air transportation has historically been a service commodity for the 'elite' market or developed nations rather than for all. Researchers have provided empirical evidence through their research that suggests air transportation is a derived demand of the economy. This is because; high GDP has always increased demand for air travel. The primary focus of this study is to see if air transportation sector can significantly stimulate or contribute to the growth of the economy. According to IATA, the industry's direct economic contribution would place the air transportation industry in 19th position (Johanson, 2014).

## Literature Review

Oxford Economics researchers and Ramboll have published a white paper measuring 'the impacts on the UK economy through the provision of international connectivity' (Oxford Economics, 2015). In this paper, they have updated their econometric analysis underlying the 2006 connectivity model and have made improvements in the measurement of productivity performance for over 30 industrial service sectors. They have measured 55% of UK's manufactured goods by value of exports to countries outside the EU are transported by air. Air services are important for the growth of financial & business service sectors on which the UK's future economic success will rely on. It also helped to improve the competitiveness of almost all aspects of various companies' operations, including sales, logistics, inventory management, production and customer support. They conclude that, air transport would generate substantial wider economic benefits from improvements in productivity throughout the UK economy that would result from increased business use of air services. IATA (IATA, 2006) formulated a connectivity index to measure the statistical link between connectivity and long-run investment and productivity for a wide range of 48 different countries (both developed and developing countries) for a ten-year period, 1996 to 2005. The analysis concluded; among developing economies there is a positive relationship between higher levels of connectivity and higher levels of labour productivity while, for developed countries, there is a smaller incremental impact once a threshold level of connectivity as a proportion of GDP is reached. In the journal article 'International air transportation and economic development' (Kenneth & Samantha, 2000), the authors perform macro analysis of the impact of European international services for 41 of the Metropolitan Standard Areas of international air transportation in US. The results conclude that, international air transportation is likely to stimulate growth in the economy up to certain limit.

## Methods

This section provides a brief overview of the empirical model. Initially, four different air transportation related independent variables' effects on the dependent variable are observed.

$$GDP_{ST} = f(GDP\_AT_{ij}, Enpl_{ij}, Exp_{ij}, AirCar_{ij}) \quad (1)$$

Where,

$GDP_{ST}$  is the real GDP by state

$GDP\_AT_{ij}$  is the GDP from Air Transportation for state 'i' at year 'j'

$Enpl_{ij}$  is the number enplanements for state 'i' at year 'j'

$Exp_{ij}$  is the expenditure made by the state 'i' on transportation industry sector in year 'j'

$AirCar_{ij}$  is the Air Cargo revenue for state 'i' at year 'j'

## Hypothesis:

H1: GDP from Air Transportation will have a positive impact on GDP of State.

H2: Number of enplanements will have a positive effect on the GDP of State.

H3: The expenditure made by the state on transportation sector will have a positive effect on the GDP of State.

H4: Air Cargo revenue will have a positive effect on the GDP of State.

All of the data have been collected for 49 states across the US excluding the union territories (due to inconsistent data) and Delaware (due to lack of commercial service airport). The period under consideration ranges from 2003 to 2014. State specific dummy variables were included to observe their significance. State of Alabama is the reference state because it has moderate amount of aviation activity (neither very high like New York nor very low like New Mexico). Time trend dummy variable was also included to study its significance. A sample size of 588 observations for each independent variable is collected.

## Data Source

Bureau of Economic Analysis (BEA, 2016) was used for obtaining the data for GDP variables, Federal Aviation Administration (FAA, 2016) for obtaining the data for enplanements and air-cargo details. Bureau of Transportation Statistics (BTS, 2016) for obtaining the data for the transportation expenditure by state.

## Findings

Final Model Equation

$$\text{Log}(\text{GDP})_{ST} = 6.63_{0.253072}^{***} + 0.457701 \text{Log}(\text{GDP}_T)_{0.024013}^{***} + 0.056494 \text{Log}(\text{Enpl})_{0.012651}^{***} - 0.00007 \text{Log}(\text{T}_{Exp})_{0.001078}^* - 0.000151 \text{Log}(\text{Air}_{Car})_{0.002424}^* \quad (2)$$

Note: \*\*\* p<0.01

\* p<0.10

Where,

$\text{Log}(\text{GDP})_{ST}$  is the log of real GDP by state

$\text{Log}(\text{GDP}_T)$  is the GDP from Transportation

$\text{Log}(\text{Enpl})$  is the number enplanements

$\text{Log}(T_{\text{Exp}})$  is the expenditure made by the state on transportation industry sector

$\text{Log}(\text{Air}_{\text{Car}})$  is the Air Cargo revenue per state

## Conclusion

The initial regression model could not predict the contribution of GDP from air transportation sector when considered exclusively since the results were statistically insignificant. However, when we considered the transportation industry as a whole, we observe that, 1% increase in GDP from transportation causes 45% increase in GDP of state thereby validating the hypothesis H1. Similarly, enplanements caused 5% increase in GDP for every 1% increase in enplanements thereby validating hypothesis H2. However, transportation expenditure by state and airfreight have become statistically insignificant and could not validate the hypothesis H3 and H4. This is once again attributed to data limitations in the collected sample. An extension of this research would be to translate this effect onto developing economies of the world.

## References

- BEA. (2016, November). Regional Economic Accounts. Retrieved from Bureau of Economic Analysis: <http://www.bea.gov/regional/index.htm>
- BTS. (2016, November). State Transportation Statistics. Retrieved from Bureau of Transportation Statistics: [http://www.rita.dot.gov/bts/publications/state\\_transportation\\_statistics](http://www.rita.dot.gov/bts/publications/state_transportation_statistics)
- FAA. (2016, November). Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports - Previous Years. Retrieved from Federal Aviation Administration: [https://www.faa.gov/airports/planning\\_capacity/passenger\\_allcargo\\_stats/passenger/previous\\_years/](https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/previous_years/)
- IATA. (2006). Aviation Economic Benefits. Retrieved from IATA economics briefing No.8: [http://www.iata.org/whatwedo/Documents/economics/aviation\\_economic\\_benefits.pdf](http://www.iata.org/whatwedo/Documents/economics/aviation_economic_benefits.pdf)
- JOHANSON, M. (2014, January 1). How The Airline Industry Has Evolved In 100 Years Of Commercial Air Travel. Retrieved from ibtimes: <http://www.ibtimes.com/how-airline-industry-has-evolved-100-years-commercial-air-travel-1524238>
- Kenneth, J. B., & Samantha, T. (2000, September). International air transportation and economic development. *Journal of Air Transport Management*, 6(4), 209-222. doi:DOI: 10.1016/S0969-6997(00)00015-6
- Oxford Economics. (2015, September 09). Impacts on the UK economy through the provision of international connectivity. Retrieved from Oxford Economics: <http://www.oxfordeconomics.com/my-oxford/projects/313344>

# **Corporate Culture as a Means of Achieving Synergy in International Business Development: On the Example of French Companies, Operating in Russia**

Tatiana Panfilova

Department of Strategic Management and Corporate Governance  
National Research University Higher School of Economics, Russia  
<sup>1</sup>tatiana.panfilova@edu.escpeurope.eu

## **Introduction**

Today in the age of globalization, more and more companies undertake international business development in different forms. (Lemaire, 2013). But every company installing in a foreign country is a bearer of its own corporate culture and of the national culture of its country of origin. At the same time, it is exposed to the national culture of the host country, which may create a dissonance between these different types of culture. Meanwhile, corporate culture and its successful implementation in a host country contribute to the company's efficient operations and may even increase its productivity by creating synergy with its local subsidiary. (Weber et al., 2011). The main objective of this research is to determine how to achieve this synergy and what factors are the most important in the success of a corporate culture in a foreign host country.

## **Literature Review**

International business development represents all the processes of a company's international expansion and can be undertaken in various forms. There are four types of companies in terms of international business development, defined by Perlmutter (1969): ethnocentric, polycentric, regiocentric or geocentric. The notion of synergy is related to the phenomenon "one plus one equals three". The main sources of synergy are improved operating efficiency, skill or talent transfer and increased market power (Harrison et al., 1991).

For the purposes of the research, cultural synergy is defined as cultural effectiveness of the company in a foreign country. According to Rozkwitalska (2009), there are a number of determinants of a company's cultural effectiveness, including internal and external factors. The internal factors are the company's strategic attitudes, organizational model and cross-cultural model of management, while the external factors include the pressures of global integration versus local responsiveness and the attributes of the national culture that the company deals with.

Weber et al. (2011) claims that companies from cultures with high power distance and high uncertainty avoidance, like France, tend to exert greater centralized formal control on acquired local companies and build their corporate cultures in foreign countries accordingly. In addition to that, Child et al. (2001) proved that French acquirers tend to impose high strategic and low operational control on the acquired companies in other countries.

## Methods

Five hypotheses of the study were formulated and tested in order to define the main factors of achieving cultural effectiveness in international business development on the example of French companies represented in Russia. The five hypotheses are formulated below:

- **H1.** Corporate culture in Russian subsidiaries of French companies is very different from that of their headquarters in France.
- **H2.** A French company installing in Russia should have a strong corporate culture in order to succeed and achieve synergy in its international business development.
- **H3.** Having a strong corporate culture is more important than adjusting it by taking into account Russian national peculiarities for a French company, installing in Russia.
- **H4.** French companies using geocentric approach in their international development are more successful in Russia than the companies using polycentric or ethnocentric approach.
- **H5.** Implementing high strategic and low operational control on the subsidiary is the best way for a French company to achieve synergy with its Russian subsidiary.

The study was conducted in two stages. On the first stage, the Delphi method was used. It comprised carrying out deep interviews with experts from industries as well as from public bodies, who deal with the analyzed issues in their daily work. This method allowed to see the whole picture of the analyzed issues from different perspectives and to gain valuable insights on the subject. On the second stage of the research, in order to complete the empirical analysis, a survey of Russian employees of French companies represented in Russia was conducted and its results were used to further confirm the conclusions of the study.

## Findings

The application of the two research methods described above led to the following results: the hypotheses H1, H2 and H3 were confirmed, while the hypotheses H4 and H5 were not confirmed.

The implications of these results include the following: first of all, there is indeed a certain cultural distance between the headquarters of French companies and their Russian subsidiaries what can be a potential source of difficulties in establishing a company's corporate culture on the Russian ground. Secondly, the study proved that the success in cultural synergy realization of the company in Russia largely depends on the strength of its corporate culture, meaning easily definable corporate culture with specific working methods and other distinguishing features. Thirdly, the geocentric approach did not prove to be a very important factor of cultural effectiveness in Russia. Some of the companies under study used other approaches in international business development and still proved to be very culturally successful in Russia as long as they established a strong corporate culture. Finally, there is no universal recipe for the best level of strategic and operational control over the subsidiary. This choice should depend on the company's strategy and possibly on its chosen type of international expansion.

## Conclusions

The main conclusion and managerial implication of the study lies in the fact that unlike a common opinion, adapting the corporate culture in compliance with the local cultural values and peculiarities is not always the best strategy to achieve cultural effectiveness and synergy with a local subsidiary.

What is more important is to have a strong and easily definable corporate culture, understood and shared by local employees, which creates a sense of belonging and job satisfaction. It is also less important for the company's success locally, if it has an ethnocentric or a geocentric corporate culture, both can be successfully implemented in case of a strong corporate culture.

One of the main reasons for this unobvious conclusion may be the fact that local employees are more likely willing to appreciate the values of foreign employers than their own national values in their career choice. For example, even if they are accustomed to high power distance, they may want to work in a flat structure organization because it gives them more opportunities to express and implement their ideas and initiatives. Local employees may choose to work for a foreign company exactly because it has different values; it is considered to be more efficient and provides better career prospects for employees.

The main limitations of the research include the limitations of the Delphi method and country- and industry-specific limitations, as well as organizational characteristics of the companies under study, what opens possibilities for future research.

## References

- Child, J., Faulkner, D., & Pitkethly, R. (2001). *The Management of International Acquisitions*. New York: Oxford University Press.
- Harrison, J., Hitt, M., Hoskisson, R., & Ireland, R. D. (1991). Synergies and Post-Acquisition Performance: Differences versus Similarities in Resource Allocations. *Journal of Management*, 17(1), 173-190.
- Lemaire, J.-P. (2013). *Stratégies d'internationalisation, 3ème édition*. Paris: Dunod.
- Perlmutter, H.V. (1969). The Tortuous Evolution of the Multinational Corporation. *Columbia Journal of World Business*, 4(1), 9-18.
- Rozkwitalska, M. (2009). Cultural Dilemmas of International Management. *Journal of Intercultural Management*, 1(1), 91-99.
- Weber, Y., Tarba, S. Y., & Reichel, A. (2011). A Model of the Influence of Culture on Integration Approaches and International Mergers and Acquisitions Performance. *International Studies of Management & Organization*, 41(3), 9-24.

# Effects of Financial Stress on Employees' Physiological Health, Financial Hassle, and Performance

Devalina Nag<sup>1</sup>, Caroline Smith<sup>2</sup>, Whitney Botsford Morgan<sup>3</sup>, and Sarah Singletary Walker<sup>4</sup>

College of Business  
University of Houston-Downtown  
Houston, TX 77002

<sup>1</sup>nagd1@gator.uhd.edu

<sup>2</sup>caroline1234@msn.com

<sup>3</sup>morganw@uhd.edu

<sup>4</sup>walkersa@uhd.edu

## Introduction

Research on *financial stress* and its simultaneous impact on workplace behavior is scarce and far from being comprehensive, despite the prevalence of the issue that has become a public policy concern (George & Kane, 2016). In the current paper, we conducted two studies to examine the impact of financial stress on a variety of short-term outcomes that affect employees and organizations.

## Literature Review

In the present study, we used Conservation of Resources (COR) to investigate how stress is evoked from finance-related stressors by assessing the impact of financial stress the participant's health, perception and performance via two studies. The COR theory by Hobfoll (1989; 2002) explains that individuals are motivated to safeguard their resources and strive to gather additional resources.

## Methods

### Study 1

We used Experience Sampling Method (ESM) to examine the relations between financial stress and self-reported physiological health, financial well-being, and performance. Participants received an email with a link to a survey (After Work survey) late in the evening for a period of 10 days. Participants took the After Work survey right before going to bed in exchange of extra credit. Aside from serving as reminders, these emails contained a link to the survey that the participants were to complete. The surveys were constructed and conducted on Survey Monkey.

We expected to find that financial stressors influence individuals on a daily basis, and impact an individual's physiological outcome and hassle perception. We proposed:

*Hypothesis 1:* Participants who experience high financial stress report more negative physiological outcomes than participants who experience low financial stress.

*Hypothesis 2:* Participants who experience high financial stress report more negative financial hassle perception than participants who experience low financial stress.

## Study 2

We conducted a laboratory study to understand whether financial stress observed in Study 1 can be a determinant of performance and physiological outcomes in a workplace context. We designed the study to investigate the extent to which financial stress induced by a perceived loss of money would affect the participant's (1) blood pressure and heart rate, (2) cognitive ability (measured via STROOP), and (3) Performance (evaluated by the participant's coded response to an in-basket task). Our aim was to examine whether the impact of financial stress affected physiological outcomes, as found in Study 1, and performance in a workplace context. Thus, we proposed:

*Hypothesis 1:* Participants who experience high financial stress exhibit negative physiological reactions than participants who experience low financial stress.

*Hypothesis 2:* Participants who experience high financial stress perform worse than participants who experience low financial stress.

## Findings

### Study 1

We utilized Hierarchical Linear Modeling (HLM) to conduct the analyses for Study 1. Specifically, we conducted a multi-level random coefficient model to analyze our results. Financial stress was mean centered and our results estimate the within-effects across the ten-day period of time. *Hypothesis 1* states that participants who experience high financial stress report increased amounts of negative physiological outcomes than participants who experience low financial stress. After controlling for Race, Gender, and Income, results revealed that individuals who experience high Financial Stress reported greater amounts of negative physiological outcomes. The results support *Hypothesis 1*. *Hypothesis 2* states that participants who experience high Financial Stress report more negative financial hassle perception than participants who experience low Financial Stress. After controlling for Race, Gender, and Income, we found that individuals who experience high financial stress report greater instances of negative financial hassle perception than their counterparts who report having low levels of Financial Stress. Thus, results support *Hypothesis 2*.

### Study 2

Hypotheses were tested using one-way MANOVAs with the following covariates: income, finances, and risk. *Hypothesis 1* was tested using physiological reactions. Results revealed a nonsignificant effects of physiological reactions for each of the indicators assessed at T2 including heart rate,  $F(1, 113) = 1.36, p = .25$ , and blood pressure,  $F(1, 124) = .45, p = .51$ . In summary, *Hypothesis 1* was not supported. For *Hypothesis 2*, participants who experience financial stress have worse Performance than Participants who do not experience financial stress, were tested on processing speed and task Performance. Hypothesis 2 was supported such that results revealed a significant effect on processing speed (T3 STROOP),  $F(1, 113) = .21, p = .65$ , and also a significant effect on task Performance,  $F(1, 109) = 6.36, p < .01, \eta^2 = .06$ . As

hypothesized, participants who experienced financial stress (i.e., Stress manipulation—present, financial consequence) performed worse on the in-basket task ( $M = 3.30$ ,  $SD = .88$ ) than participants in the Stress manipulation—absent, no consequence condition ( $M = 3.49$ ,  $SD = .90$ ) and the Stress manipulation—present, no consequence ( $M = 3.55$ ,  $SD = .78$ ) condition.

## Conclusions

Our aim in this study was to investigate the extent to which financial stress impacts physiological outcomes, financial hassle perception, and performance. Results indicate that financial stress leads to poor physiological outcomes, negative financial hassle perceptions and deteriorated performance. These outcomes can potentially hamper workplace productivity (e.g., Cotton, & Hart, 2003; George & Kane, 2016). Thus, consequences of short-term outcomes of financial stress on an organization's profitability can be detrimental.

## Implication

Therefore, the chief implication of this study is that organizations may consider providing employees resources to better manage their finances by offering them financial literacy courses on budgeting, retirement, credit and savings as proactive measures. Sonnentag (2003) discusses that recovery is a technique to cope with job demands as explained by COR theory. Recovery can be accomplished by taking time off for vacations and by being in control during leisure times, for instance (Sonnentag 2003). Also, it was further found that providing options of recovery to employees led to increased productivity when during recovery individuals are not engaging in negative thoughts pertaining to work (Fritz & Sonnentag, 2006). We also suggest that organizations educate employees on techniques to heal from stress-related feelings. Galantino, Baime, Maguire, Szapary, and Farra (2005) conducted an eight-week mindfulness-meditation intervention. The stress-level of the participants in the study was significantly reduced at the end of the 8-weeks. Thus, we encourage organizations to arrange for stress management interventions related to finances for employees who are suffering from financial stress.

## References

- Cotton, P., & Hart, P. M. (2003). Occupational wellbeing and performance: A review of organisational health research. *Australian Psychologist*, 38: 118-127.
- George, A., & Kane, M. (2016). Financial stress: The impact on individuals, employees, and employers. *Journal of Pension Benefits: Issues in Administration*, 24(1), 35-38.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513–524.
- Hobfoll, S. E. 2002. Social and psychological resources and adaptations. *Review of General Psychology*, 6: 302-324.
- Levine, H. (2016). Your Heart: A user's manual. *Health*, 30(1), 101-104.
- Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology*, 88(3), 518.

## Acknowledgments

This research study was fully supported by grants offered by the Minorities and Retirement Security Program and the High-Impact Practices Award.

# Heterogeneous Financial Regulatory Standards: An Analysis of their Interaction in a Global Perspective

Doriane Intungane

Economics Department  
Ryerson University,  
dintunga@ryerson.ca

## Abstract

Following the failure of financial policies to prevent the 2008 financial crisis, many researchers and policymakers have highlighted the inability of financial regulators to understand system wide risks and prevent financial crises (see for example Bernanke, 2010; Blanchard et. al., 2010; Catte et al., 2011; Mishkin, 2011; Obstfeld and Rogoff, 2009, and Rogoff and Reinhart, 2009). New policies and regulation tools are being implemented in many countries to prevent future financial crises of the same magnitude. Among the new instruments used to reduce global financial instability are so-called macroprudential policies. Their main objectives are to strengthen the resilience of the financial system to aggregate shocks and to constrain excessive credit build up in normal times.

This paper analyzes quantitatively the interaction of macroprudential policies, such as the loan-to-value ratio and capital requirement regulations, which are heterogeneous across countries in a world where cross-border bank lending is permitted. Specifically, it looks at how the differences in financial regulations affect the efficiency of macroprudential tools when there is cross-border lending. In this case, credit growth does not depend only on the national credit availability but rather depends on both the national and foreign credit supplies. The aim of the paper is to examine the usefulness of international coordination of the loan-to-value ratio and capital requirement regulations in reducing the magnitude of credit growth in countries linked through the banking sector.

This paper is related to the literature studying the importance of coordination of regulation tools between countries (see for example, Bengui, 2014; Kara, 2016; Rubio, 2014; Dell'Arizza & Marquez, 2006). For example, Bengui (2014) focuses on the analysis of liquidity regulation in a global market with domestically minded financial regulators who do not consider externalities from other countries. The results show that the absence of cooperation among regulators is welfare reducing because national regulators do not consider credit shocks from abroad. Unlike Bengui (2014), this paper assumes that housing preference shocks and technology shocks trigger the excessive credit growth and examines how coordination of macroprudential policies across countries can help to mitigate the excessive build-up of credit. This paper also contributes to the literature on the quantitative assessment of capital regulation tools. It tackles the issues related to cross-border banking activities and to global effects of macroprudential policies quantitatively. For example, Bianchi (2011) uses a dynamic stochastic general equilibrium model and finds that a social planner can increase

welfare with macroprudential instruments during a time of credit growth at the national level because a social planner internalizes prices effects of its borrowing decisions, which reduces debt increase.

This paper focuses on the effect of macroprudential policies at the international level. A two-country dynamic stochastic general equilibrium model with housing and heterogeneous agents (borrowers, savers, and banks) is used to evaluate the effect of macroprudential policies on home country credit demand when cross-border lending is permitted. The following macroprudential tools are considered: the loan-to-value ratio imposed on borrowers and capital requirements imposed on banks. These policies are formulated in the Taylor-type rules. Different experiments are used to analyze the dynamic responses of asymmetric shocks across countries under heterogeneous macroprudential policies. Three types of shocks are considered: a productivity shock, a housing demand shock, and a borrowing capacity shock.

The main results show that, for all the shocks considered, homogeneous and heterogeneous loan-to-value ratios can reduce a credit boom at all levels of cross-border lending. However, a high level of cross-border lending undermines the effects of heterogeneous capital requirements across countries, as credit can still increase when only home banks are restricted to higher capital requirements. For loan-to-value ratios, home and foreign banks use the same collateral value of housing, which adjusts with the shock a country is experiencing. Thus, cross-border lending does not affect their effectiveness. On the contrary, changes in capital requirements affect mainly the amount of funds available for credit in the country experiencing the shock, which encourage investors to borrow from the foreign banks.

To evaluate how the international spillover of macroprudential policies can be reduced, two alternative solutions are considered in this paper: the coordination of home and foreign country's capital requirements and the implementation of loan-to-value ratio to complement home country's capital requirement. The results suggest that the coordination of banks' capital requirements across countries reduces the credit boom in the home country resulting from a home country positive productivity shock because the loan interest rate slightly increases with coordinated capital requirements. For housing and borrowing capacity shocks, the loan interest rate does not increase (for a housing shock) or decrease (for a borrowing capacity shock) with the coordination of capital requirements. Therefore, credit growth can still increase. In turn, the implementation of loan-to-value ratios, in the home country, to complement capital requirement regulations helps to reduce credit build-up for all types of shocks. Having loan-to-value ratio and capital requirement regulations in the home country that are reacting to the shock means that credit is constrained at the lending and borrowing levels for all shocks. However, the foreign country is unable to reduce its credit boom in this case because the foreign country's capital requirement does not change with the home country shock

In conclusion, a high cross-border lending level undermines the effects of capital requirement regulations. The coordination across countries and the implementation of different types of prudential requirements within the economy are useful at different

levels. International coordination of capital requirement regulations helps to mainly reduce the cross-country propagation of the shock but does not necessarily reduce the credit boom and does not improve welfare of all agents in the economy. The complementarity of loan-to-value ratios and capital requirement regulations is useful in reducing credit boom within the home country for all types of shocks. Home investors and banks increase welfare with the complementarity of loan-to-value ratio and capital requirements. Also, home banks increase welfare with the international coordination of capital requirements with a home country positive production shock. There is a slight increase of welfare for savers.

**Keywords:** macro prudential policies, international banking system, systemic risk, policy coordination, policy complementarity

## References

- Bengui, J. (2014): Macroprudential Coordination (Manuscript)
- Bengui, J. and Bianchi, J. (2014): Capital Flow Management when Capital Controls Leak. (Manuscript)
- Benigno, G. et al (2012): Financial crises and macro-prudential policies. *Journal of International Economics* 89 (2013) 453-470.
- Bernanke, B.S. (2010): Monetary Policy and the Housing Bubble. *Annual Meeting of the American Economic Association* (January 2010).
- Bernanke, B.S and Gertler, M. (1989): Agency Costs, Net Worth, and Business Fluctuations. *AER*, Vol 79, # 1, (Mar. 1989), pp 14-31.
- Bianchi, J. (2011): Overborrowing and Systemic Externalities in the Business Cycle. *The American Economic Review*, Vol 101 N 0 7, pp 3400-3426.
- Bianchi, J. (2011): Macro-prudential Policy in a Fisherian Model of Financial Innovation. *12th Jacques Polak Annual Research Conference*. November, 2011
- Bianchi, J. and Mendoza, E. (2011): Overborrowing, Financial crises and Macroprudential policy, *IMF Working paper WP /11/24*.
- Blanchard, O., Dell’Ariccia, G. & Mauro, P. (2010): Rethinking Macroeconomic Policy. *IMF Staff position note SPN/10/03*, International Monetary Fund.
- Catte, P., Cavo, P., Pagano, P., Visco, L. (2011): The role of macroeconomic policies in the global crisis. *Journal of Policy Modeling* 33 (2011) 787-803.
- Dell’Ariccia, G. & Marquez, R. (2006): Competition among regulators and credit market integration. *Journal of Financial Economics* 7, 401-430
- Kara, Gazi I. (2016): Systemic Risk, International Regulation, and the Limits of Coordination. *Journal of International Economics* 99,192–222
- Mishkin, F.S. (2011): Monetary Policy Strategy: Lessons from the Crisis. *NBER Working Paper Series. Working Paper # 16755*
- Obstfeld, M. & Rogoff, Kenneth S. (2009): Global Imbalances and the Financial Crisis: Products of Common Causes. *CEPR, Discussion Papers # 7606*.
- Reinhart, Carmen M. & Rogoff, Kenneth S. (2009): *This Time is Different: Eight Centuries of Financial Folly*. Princeton, New Jersey; Princeton University Press.
- Rubio, M. (2014): Macroprudential Policy Implementation in a Heterogeneous Monetary Union. (Manuscript)

# Examining the Impacts of Demographic Factors on Communication and Job Outcomes

Abdulelah Al-Tokhais<sup>1</sup> and Ning-Kuang Chuang<sup>2</sup>

University of Florida, US  
<sup>1</sup>atokhais@ufl.edu

Kent State University, US  
<sup>2</sup>nchuang@kent.edu

## Significance of the study

While the benefits are well documented, an ineffective managerial communication presents a considerable challenge especially in diverse work setting (Verčič, Verčič & Sriramesh, 2012). There is a serious communication problem affecting the homogeneity of culturally diverse workforce, which negatively reduce achievement of organizational goals (Dawson, Madera, Neal, & Chen, 2014). White (1999) stated that “Communication is the weak link in diverse organizations and research needs to focus on facilitating both external and intra organizational communication” (p. 485). The hospitality industry is one of the oldest international businesses in the world and is well known for its diverse workforce. Having a multicultural workforce raises concerns regarding their job engagement and overall well-being (Dawson, Madera et al., 2014; Jain, 201). However, there is little known about the impact of effective communication on a multicultural workforce (Dawson et al., 2014; Fragouli & Ibidapo, 2015). It is important for hospitality and tourism managers and organizations to pay close attention to cultural aspects of an organization in order to promote efficient management when working with a diverse workforce (Vasquez, 2014).

Managerial communication is an important issue affecting the relationship of leadership, organizational culture, and employees' job outcomes (Qubaisi, Elanain, Badri & Ajmal, 2015), all of which determine the success of each organization, leader, manager, supervisor, and employee (Erickson, 2016). For this reason, this study aims to advance the understanding of the impact of effective communication on employees' job outcomes, especially when the industry is a multi-diverse workforce.

There is a need to examine the characteristics of the Saudi hospitality and tourism workforce in terms of the direct relationship between managerial communication and employee job outcomes as Saudi nationals are considered to be one of the minorities within the industry workforce, representing only 27% of the total labor force (SCTNH, 2016). This research study aims to provide insight into the workplace with respect to people's interactions within organizations and to offer timely information about the recent communication issues that have emerged.

## Literature Review

Managerial communication can be defined as “the downward, horizontal, or upward exchange of information and transmission of meaning through informal or formal channels that enables managers to achieve their goals” (Bell & Martin, 2008, p.130).

Failures in effective communication have direct and indirect impacts on individuals and organizations (Rudd & Mills, 2015). Madera and Kapoor (2011) indicated that there are complex management issues such as job engagement and turnover intention facing human resources in organizations regarding communication matters because of the diverse workforce found in the hospitality industry. Examples of diversity, such as religion, ethnic origins, and cultural backgrounds not only shift the understanding of communication (Madera & Kapoor, 2011) but also cause conflict regarding work responsibilities due to people's identities and various perceptions.

Job engagement is associated with the success of an organization business as it contributes to productivity, profitability, and boost employees' performance (Karatepe, 2013). According to Gerst (2013), communication between managers and employees is a major driver of employee engagement in the workplace. Hence, employees who are engaged in their workplace have a desire to stay with their current employers (Christensen, 2014). On the other hand, disengaged employees found to experience negative emotion and overall well-being concerns (Hart, 2016). Unhealthy working environment is a reason for employee turnover (Iqbal, 2010). Improper supervisory practices have also been reported to be one of the most common reasons influencing employee turnover in the industry (Haven-Tang & Jones, 2012).

## **Methods**

Employees from three stars and above hotels in Riyadh, capital of the Kingdom of Saudi Arabia, were surveyed on their experiences with managerial communications (Jain & Mukherji, 2015; Spitzberg & Phelp, 1982), job engagement (Gallup Workplace Audit, 1992-1999), and turnover intention (Suar, Tewari & Chaturbedi, 2006) on a 5-point Likert-type scale (1= strongly disagree; 5= strongly agree). The reliability and validity of the questionnaires was first evaluated for this study. Descriptive statistics, t-test, and one way ANOVAs were performed to measure the effects of background and job related information (e.g., race, part- or full-time status, and work hours) on communication and job outcome related variables (e.g., job engagement and turnover intention).

## **Conclusion and Managerial Implications**

According to the data, Saudi nationals showed greater mean scores than foreign workers on their turnover intention due to management communication barriers. This result suggested that Saudi nationals perceive management communication as key role in their employment retention. In addition, *t* test indicated that there is a statistically significant differences between male and female employees regarding employees' perceptions of interpersonal communication in the organization. The results suggested that female employees were dissatisfied with the interpersonal communication in their organizations.

To increase employee engagement and reduce turnover intention, managers are recommended to practice mutual understanding and support by means of establishing friendly and trustworthy relations. Also, managers should take into consideration the characteristics of Saudi employees while communicating with them. In addition, organizations are in need to create personal development plans for female employees

within the context of career, education, and self-improvement to fulfil employees' needs, and help them with reaching their professional goals in the hospitality and tourism industry.

## References

- Bell, R.L., & Martin, J. (2008). The promise of managerial communication as a field of research. *International Journal of Business and Public Administration*, 5(2), 125-142.
- Christensen, M. (2014). Communication as a strategic tool in change processes. *International Journal of Business Communication*, 7, 1-27.
- Dawson, M., Madera, J. M., Neal, J. A., & Chen, J. (2014). The influence of hotel communication practices on managers' communication satisfaction with limited English-Speaking employees. *Journal of Hospitality & Tourism Research*, 38(4), 546-561.
- Erickson, M. (2016). *Science, culture and society: understanding science in the 21st century*. John Wiley & Sons.
- Fragouli, E., & Ibdapo, B. (2015). Leading in crisis: Leading organizational change & business development. *International Journal of Information, Business and Management*, 7(3), 71.
- Gerst, R. (2013). Understanding employee engagement and trust: The new math of engagement surveys. *The Journal for Quality and Participation*, 35(4), 32.
- Hart, A. J. (2016). Exploring the influence of management communication behaviors on employee engagement (Doctoral Thesis). Retrieved from Walden Dissertations and Doctoral Studies.
- Haven-Tang, C., & Jones, E. (2012). Local leadership for rural tourism development: A case study of Adventa, Monmouthshire, UK. *Tourism Management Perspectives*, 4, 28-35.
- Iqbal, A. (2010). Employee turnover: Causes, consequences and retention strategies in the Saudi organizations. *The Business Review, Cambridge*, 16(2), 275-281.
- Jain, D. (2015). Development of a scale to assess communication effectiveness of managers working in multicultural environments. *Global Advances in Business and Communication Conference & Journal*, 4(1) 2.
- Karatepe, O. M. (2013). High-performance work practices and hotel employee performance: The mediation of work engagement. *International Journal of Hospitality Management*, 32, 132-140.
- Madera, J. M., & Kapoor, C. E. (2011). *What are the challenges of diversity management in the US hospitality industry?* Bingley, England: Emerald Group Pub.
- Qubaisi, A., Elanain, H. M. A., Badri, M. A., & Ajmal, M. M. (2015). Leadership, culture and team communication: analysis of project success causality-a UAE case. *International Journal of Applied Management Science*, 7(3), 223-243.
- Rudd, D., & Mills, R. (2015). Communication, climate and culture in the hospitality industry. *American Journal of Management*, 15(4), 11.
- SCTNH, (2016). *Tourism Information and Research Center*. Retrieved 14 December 2016 from <https://sctn.gov.sa/en/Pages/default.aspx#2>
- Suar, D., Tewari, H. R., & Chaturbedi, K. R. (2006). Subordinates' perception of leadership styles and their work behaviour. *Psychology and Developing Societies*, 18(1), 95-114.
- The Gallup Organisation (1992-1999) *Gallup Workplace Audit*, Washington, DC: US. Copyright Office.
- Vasquez, D. (2014). Employee retention for economic stabilization: A qualitative phenomenological study in the hospitality sector. *International Journal of Management, Economics and Social Sciences*, 3(1), 1-17.
- Verčič, A. T., Verčič, D., & Sriramesh, K. (2012). Internal communication: Definition, parameters, and the future. *Public relations review*, 38(2), 223-230.
- White, R. D. (1999). Managing the diverse organization: The imperative for a new multicultural paradigm. *Public Administration & Management: An Interactive Journal*, 4(4), 469-493.

# Pursuit of Preferential Trade Agreements and the Prospects of Global Free Trade when Tariff Bindings bind

Moïse Nken

Ryerson University, Canada  
moise.nken@ryerson.ca

## Introduction

Trade liberalization at the World Trade Organization (WTO) occurs through two major channels: (i) periodic rounds of multilateral negotiations that are open to all member countries leading to bound Most Favoured Nation (MFN) tariff rates and (ii) the formation of preferential trade agreements (PTAs) that entail the exchange of trade policy concessions amongst only a subset of WTO members. Following the last successful round of multilateral negotiations (Uruguay Round), world economy has experienced an unabated proliferation of Preferential Trade Agreements (PTAs). As of July 2016, some 635 notifications of PTAs had been received by the WTO and 423 of them were in force. Free trade agreements (FTAs) account 90% of all PTAs while customs unions (CUs) account for only 10% while some of the CUs include major economies. As Bhagwati (1991) indicates, the trade network today is like a Spaghetti Bowl with increasingly complex linkages. It is also important to note that world economy has witnessed substantial reductions in MFN tariff rates from more than 40 percent in 1947 to less than 5 percent today. Under all trade negotiations countries are bound with certain level of tariffs. The Bound tariff rate is the MFN tariff rate resulting from multilateral negotiations and incorporated as an integral component of a country's schedule of concessions or commitments to other WTO members.

The nature of today's multilateral trading system is reflected by conflicting rules of the General Agreement for Tariffs and Trade (GATT): while Article I of GATT is about symmetric treatment and requires member countries to undertake trade liberalization on a non-discriminatory basis, Article XXIV of the very same agreement permits a subset of WTO members to pursue PTAs under which they can grant tariff concessions to each other that they do not have to extend to others. The existence of these conflicting rules raises the following questions: would the formation of PTAs under Article XXIV help the achievement of global free trade? How does the role of PTAs for the prospect of global free trade change as the bound tariff rates decline and what are the welfare implications? To address these questions, we build a three-country, three-good competing exporters model where the formation of free trade agreements (FTAs) is endogenous. In the model, each country's import market is served by two competing exporters and both the degree and the nature of trade liberalization are endogenously determined with the binding bound MFN tariff rates. Formally, we focus on the coalition proof (or stable) Nash equilibria of a game of trade liberalization between three countries. We consider two distinct scenarios in this paper: symmetric and asymmetric comparative advantage.

## Literature Review

The broad concern in the existing literature is to address whether the formation of PTAs acts as stumbling or building blocks for the prospect of global free trade. Theoretical models have shown that PTAs can act either as a 'building block' (Saggi and Yildiz, 2010 and Missios et. al, 2016) or a 'stumbling block' (Limão, 2006) for the achievement of global free trade. However, there exists a literature that examines this question from the opposite perspective. As an example, Freund (2000) builds a theoretical model where PTA formation is an endogenous response to the multilateral trading system. Freund (2000) claimed that for every round of multilateral tariff reductions should be met with an expansion in the number of PTAs. Similar to this paper, Lake and Roy (2017) uses a competing exporters model where FTA formation may or not be preceded by global tariff negotiations. They come to the conclusion that in presence of global tariff negotiations, a tariff ridden world emerges with globally negotiated tariff bindings above zero and at most a single bilateral FTA forms; while in the absence of global tariff negotiations, FTA formation leads ultimately to global free trade. Our modeling approach follows that of Saggi and Yildiz (2010) under which FTAs emerge endogenously as the outcome of a game of trade liberalization between three countries that are free to pick their PTA partners as well as their tariff levels. Unlike many endogenous PTA formation models, the present paper utilizes an environment where countries are constrained by the bound MFN tariff rates.

## Methods

We employ an endogenous formation of FTAs in a scenario where we allow exogenously given multilaterally negotiated tariff bindings to change. To this end, we start with an announcement game of trade liberalization in which each country simultaneously announces whether or not it wants to sign a FTA with each of its trading partners and where each country is free to negotiate a trade agreement with only one of its trade partners (i.e. bilateral FTA), or both of them (i.e. practice free trade), or none of them (i.e. opt for the status quo under which all countries impose their optimal Nash tariffs on each other). We first obtain multiple Nash equilibria in this announcement game. Then, in order to solve the multiplicity problem and capture coalition formation in a more realistic fashion, we allow for coalitional deviations that are self-enforcing and find coalition proof Nash equilibrium (we call stable agreement). This process is replicated for both symmetric and asymmetric comparative advantage scenarios. It is important to note that the strength of this model is that both trade liberalization and the nature of trade agreements are endogenously determined as in Saggi and Yildiz (2010, 2016) and Stoyanov and Yildiz (2015).

## Findings

We first consider a symmetric scenario where all countries have the same degree of comparative advantage. Then, we extend our analysis to a scenario where one country (called country *s*) has a weaker comparative advantage than the other two (called *l* and *l'*). Under symmetry, we find that global free trade is the only stable agreement irrespective of the binding MFN tariff levels. However, we show that, free trade is more likely to be stable as the multilaterally negotiated bound MFN rates decline. The intuition behind this result is as follows: as the multilaterally negotiated bound MFN tariff rates

decline, free riding incentives get weaker while exclusion incentive gets stronger. The flexibility nature of FTA formation implies that the exclusion incentive goes unexercised in the equilibrium. This result argues in favor of the idea that, multilateral tariff reduction complements FTA formation in achieving global free trade, making gated globalization less likely to occur.

## Conclusions

In this paper, we provide an analysis of the interaction between multilaterally negotiated tariff bindings and endogenous FTA formation in achieving global free trade. To the best of our knowledge, this paper is the first one that takes the bound MFN tariff rates into account within the endogenous FTA formation process. This approach has several advantages. First, we can address whether multilateral trade liberalization efforts are complementary to the preferential trade liberalization for the prospect of global free trade. Second, unlike the earlier literature, it is more realistic to examine the incentives of countries to form FTAs when they are constrained by bound tariff rates while setting their external tariffs. The results provide support for the idea that multilateral trade liberalization via reducing the bound MFN tariff rates acts as a complement for the building bloc role of FTA formation in achieving global free trade. Our results also imply that, lower MFN bound tariff rates makes gated globalization less likely to occur.

## References

- Bhagwati, J. (1991). *The World Trading System at Risk*. Princeton: Princeton University Press.
- Freund, C. (2000). Multilateralism and the endogenous formation of preferential trade agreements. *Journal of International Economics*, 52, 359-376.
- Lake, J., Roy, S. (2015). Are global trade negotiations behind a fragmented world of "gated globalization"? *Revised and Resubmitted at Journal of International Economics*.
- Limão, N. (2006). Preferential trade agreements as stumbling blocks for multilateral trade liberalization: Evidence for the United States. *American Economic Review*, Volume 96 (3), 896-914.
- Missios, P., Saggi, K., Yildiz, M. H. (2016). External trade diversion, exclusion incentives and the nature of preferential trade agreements. *Journal of International Economics*, 99, 105-119.
- Saggi, K., Yildiz, M. H. (2010). Bilateralism, multilateralism, and the quest for global free trade. *Journal of International Economics*, 81, 26-37.
- Stoyanov, A., Yildiz, M. H. (2015). Preferential versus multilateral trade liberalization and the role of political economy. *European Economic Review*, 81, 140-164.

# Do Differences in Investors' Culture Affect the Way They React to Managerial Payout Decisions?

Matthew Faulkner<sup>1</sup> and Kevin Brady<sup>2</sup>

Florida Atlantic University, USA

<sup>1</sup>mfaulkner2015@fau.edu

<sup>2</sup>kbrady9@fau.edu

## Introduction and Literature

The factors that influence a firm's payout policy choices, and investors' reactions to dividend and share repurchase announcements, occupy a large part of the finance literature. A recent strand of research in dividend policy suggests that the implications of prominent dividend theories may be altered by culture's effect on the way individuals perceive the issues underlying these theories. For example, Shao, Kwok, and Guedhami (2010, p. 1391) write "dividend policy may be determined not only by an *objective assessment* of the severity of agency and asymmetric information problems within a firm, but also by management's and investor's *subjective perceptions* of these problems, which hinge on their national culture". While not explicitly discussed in the literature, a similar argument can be made for share repurchase policy, which represents another common way to return cash to shareholders.

This research explores how culture affects the perception of payout policy decisions from the investors' perspective by testing whether their reactions – as measured by abnormal volume and abnormal returns – to dividend initiations and open market share repurchase announcements vary with different aspects related to national culture. One aspect of culture, societal trust, has received very little attention in the payout literature despite its intuitive link with how investors may assess the likelihood of managers honoring the implicit commitment created when a firm initiates a dividend for the first time or announces an open market share repurchase plan. This paper also develops hypotheses that address how other aspects of culture identified by Hofstede (1980, 2001), such as individualism, uncertainty avoidance, and long-term orientation, affect investors' reactions to payout policy announcements. Some of the Hofstede dimensions of culture have been included in models of the firm's dividend policy choices, but the authors are unaware of a paper that investigates whether investors' reactions to dividend initiations or share repurchases vary with their cultural attributes.

Trust is associated with the expectation that a counterparty will fulfill implicit or explicit obligations (e.g., Dasgupta (1988), Gambetta (1988), Fukuyama (1995), Ahern et al. (2015), and Wei and Zhang (2016)). Managers have discretion over payout policy decisions in most countries around the world. Once dividends are announced, however, they may be viewed as an implicit commitment to continue for the foreseeable future (e.g., Lintner (1956) and Brav et al. (2005)). Open market share repurchase announcements represent more of an implicit commitment because managers are not obligated to purchase shares even after publicly announcing a stock buyback (Stephens and Weisbach (1998)). Because of the nonbinding features of dividends and share

repurchases, it may be the case that investors' reactions to payout policy announcements vary with their trust levels.

It is unclear a priori how trust affects investors' reaction to payout policy announcements. Several theoretical models assert that dividends and share repurchases can effectively signal information to the market (for dividends, see Bhattacharya (1979), Miller and Rock, (1985), Kumar (1988), Allen, Bernardo, and Welch (2000), and Guttman, Kadan, and Kandel (2010); for repurchases, see Vermalen (1984), Ofer and Thakor (1987), Persons (1997), and Bhattacharya and Dittmar (2003)). On the one hand, investors in high trust countries may perceive the information content in payout choices as more credible and react to them with greater intensity. Alternatively, in high trust countries investors may react with less intensity as their inherent trust reduces their demand for information and they pay less attention to payout announcements.

The agency theory of Jensen and Meckling (1976) also suggests that trust may affect investors' reaction to payout announcements. Dividends can reduce agency problems between managers and shareholders (e.g., Easterbrook (1984)) and controlling vs. minority shareholders (e.g., La Porta et al. (2000)) by committing management to distribute cash at regular intervals, which reduces the free cash flow problem (e.g., Jensen (1986)) and allows for more frequent monitoring (Easterbrook (1984)). Share repurchases can also address agency problems (e.g., Jensen (1986), Nohel and Tarhan (1998), Dittmar (2000)). This paper argues that trust may affect the way investors' perceive the usefulness of payouts in alleviating the agency problem. It may be the case that investors in high trust countries perceive management's commitment to alleviating agency issues as more credible and react with more intensity to payout announcements. Alternatively, investors in high trust countries may be less concerned with managerial malfeasance, leading investors to react to payout announcements with less intensity.

## **Methods**

The initial empirical specification includes a proxy for trust as an independent variable in a model predicting the market reaction to a global sample of firm's announcing a dividend initiation or an open market share repurchase plan. This study follows other recent papers in the finance and economics literature that use transformed responses to the World Values Survey (WVS) question "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" (e.g., Pevzner et al. (2015)). In the models that control for other factors that may affect investors' reaction to payout announcements, the results are generally supportive of the hypothesis that investors in higher trust countries react more vigorously to dividend initiations and repurchase announcements, especially when measured by abnormal trading volume. This paper also find that trust plays a more significant role in reactions to repurchases compared to dividends, which is consistent with the expectations because that the repurchase contract has a greater degree of implicitness.

In order to provide evidence on whether trust affects investors' reactions through the theoretical channels discussed above, This paper includes interaction terms between trust and proxies for information asymmetry and agency problems, while controlling for other factors that may affect investors' reaction to payout announcements. This study expects that the effect of trust on investors' reaction to payout announcements will be altered depending on firm- and country-level information asymmetry and agency problems.

The paper then develops and test hypotheses in a similar manner for other aspects of culture that may affect investors' reactions to payout announcements. As the main proxies for other aspects of culture, This paper uses Hofstede's country-level indexes for cultural dimensions, such as individualism, uncertainty avoidance, and long-term orientation. Chui, Titman, and Wei (2010, p.362) write "according to Hofstede (2001), [individualism] reflects the degree to which people focus on their own internal attributes, such as their own abilities, to differentiate themselves from others."

### **Results and Implications**

The results generally do not support the hypotheses surrounding country-level information asymmetry, although This study finds some evidence consistent with the idea that the effect of culture on reactions to repurchase announcements is lower in countries likely to have more agency problems. Generally speaking, the results show that the aspects of Hofstede's culture are important in explaining the variation in abnormal volume and stock returns around dividend initiations and repurchase announcements.

The study extends several strands of the finance literature and may be useful to corporate financial managers. First, the tests on how investors' react to payout policy announcements adds to the knowledge of the factors affecting valuation consequences of payout policy decisions (e.g., Asquith and Mullins (1983)), and because the empirical tests to distinguish between the agency and signaling theories of payouts, This paper add to these strands of the payout literature specifically.

Second, this paper adds to the emerging cultural finance literature. This paper is not the first to link payout policy and culture. Studies have found differences between cultures in propensity to pay dividends (Fidrmuc and Jacob, 2010; Shao et al., 2010; Bae, Chang and Kang, 2012; Ucar, 2016), smooth dividends (Javakhadze, Ferris and Sen, 2014), and the relative valuations of dividend payers to non-payers (Kelly, 2015). However, these studies do not address how market reactions may vary to payout policy announcements based on cultural differences.

Finally, by studying culture's effects on both dividend initiations and open market repurchase announcements in the same paper, this paper can learn about how investors perceive and react to these different forms of distribution cash to investors. For example, in countries with higher scores on Hofstede's masculinity index are associated with higher share price reactions to repurchase announcements, but lower share price reactions to dividend initiations. Findings such as these may help guide

corporate financial managers in choosing a payout policy that is beneficial for their shareholders.

### **References**

List of references for this study is too long for this 3 page limit. It can be received by simple request to the author.

# **Delta Airlines System Outage and Its Effects on Firm's Value.**

Abhishek Kumar Ashok Kumar Gupta.

College of Business  
Embry Riddle Aeronautical University, USA  
Guptaa12@my.erau.edu

## **Introduction**

Delta Airlines is one of the major U.S. airline. It was founded in 1924; with its current headquarter in Atlanta, Georgia. It is the second largest airline in the world with a very wide network structure; it operates more than 5,400 daily flights and serve both domestic and international market. It serves 61 countries with 335 destinations.

8<sup>th</sup> August 2016 was marked as the unfortunate day for Delta Airlines as the computer system crashed at 2.30am Eastern Zone in Atlanta, Georgia headquarter. The main computer outage through which many important systems like Check-in systems, airport screens, even the airlines website and smartphones apps were affected. When the outage happened the critical system and network equipment didn't switch to its backup system. It took only few hours to rectify the problem but its effect lasted for three days. Nearly 2,300 flights were cancelled and more than 1,932 were delayed in three days starting the day of system outage leaving hundreds of thousands of passengers stranded at the airport.

## **Literature**

Many research has been performed on the impact of IT on firm value. For example, it has been used as (a) Knowledge management using Information Technology: Determinants of Short – Term Impact on Firm Value (Sabherwal and Sabherwal 2005), found firm's efficiency, firm diversification, had a positive effect on cumulative abnormal returns (CAR) and firm instability had a negative effect on CAR. (b) Information Technology Effects on Firm Performance as Measured by Tobin's q (Bharadwaj, Bharadwaj and Konsynski 1999), found positive relation between Tobin's q and IT investment (c) The Impact of Information Technology Investment Announcements on the Market Value of the Firm (Santos, Peffers, and Mauer 1993), found that IT announcement no excess returns on firm value.

## **Theory**

The airline industry invests heavily in IT system for smooth operation. Airline industry is an industry with relatively low-profit margins. The research paper suggests that the firm value is not significantly affected with the failure of the IT system. The study is performed on the stock price behavior of the Delta airlines when the failure of IT system occurred and the information was available to the public. We observed data on stock price for a period of 250 days prior, which is one year from February 1st 2016 to January 27th 2017 for Delta airlines. The data are available at yahoo finance website (<https://finance.yahoo.com/>).

## Method & Model

The impact of IT failure on Delta airlines, common stock is computed using the event-study method. Determining the impact of IT failure that affects the stock price of the firm, which ultimately effects the firm value and then determining the value of the stock price of the firm if the failure would not have occurred. The returns on daily common stock is described by market model.

The below is the given equation for market model:

$$\widehat{R}_{it} = \widehat{\alpha}_i + \widehat{\beta}_i R_{mt} \quad (1)$$

Where,

$R_{it}$  = Rate of return for firm on day t;

$R_{mt}$  = Rate of return on the market portfolio on day t;

$\alpha_i, \beta_i$  = are intercept for market model and slope for the firm.

The below equation gives the method used for computing returns on stock.

$$\text{Return on stock} = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$$

Where,

$P_t$  = Ending stock price at period t

$P_{t-1}$  = Initial stock price

$D_t$  = Dividends paid at period t

EVIEWWS is used for calculating the  $\alpha_i, \beta_i$ . The  $\alpha_i$  is -0.00054 while the  $\beta_i$  is 1.590374. The event window used for the research study are (-3, +3), (0, 7), (0), (-5, +5), and (0, +4).

The expected excess return is calculated by the below formula for the common stock of Delta Airlines on event day  $t$

$$AR_{it} = R_{it} - \widehat{R}_{it} \quad (2)$$

Where,

$AR_{it}$  = abnormal returns of firm on day t

$R_{it}$  = actual return of the firm on day t

$\widehat{R}_{it}$  = expected return if the failure would have not happened from (1)

The CAR for each event window is calculated. It is the sum of all the abnormal returns of the firm for that event window. For instance, the event window (-3, +3) is calculated by given the formula,

$$CAR_{it} = \sum_{t=-3}^3 AR_{it} \quad (3)$$

Where,

$CAR_{it}$  = Cumulative abnormal return for the firm

## Findings

Event Window (days)	CARit Yield
(-3, +3)	-0.027144391
(0,7)	-0.000866
0	-0.004619
(-5, +5)	-0.023127
(0, +4)	-0.034760367

Looking at the result values in the above table, we found that on the event day i.e. (0) window it yields at -0.46% which means that, the firm stock value was negatively affected by only 0.46% when the information of system failure was out in the market. Whereas, the result for the seven-day event failure yields at -0.09%, which means the stock value of the firm, was negatively affected by only 0.09%. If we look at four days' event window (-3, +3) we observe that the returns yield at -3.48% i.e. because the effect of failure lasted for three days causing delays and cancellation of flights. Within seven days the return was minimized to -0.09. %. Similarly, other event window had a negative impact on the stock value by the given percentage computed for that event window. Which shows that the firm value is not affected significantly in a short run with a system failure.

## Conclusion.

The results show that the firm value is not affected by the event failure. The impact maybe for a short run but the long run value of the firm is not affected significantly.

After we looked at the quarterly report for Delta Airlines, we see that the net income for the third quartered 2016 was reduced to \$1,259 million, compare to third quarter 2015, which was \$1,315 million. But if we look at the net income for nine months i.e., from January 2016 to September 2016 which includes the month of failure and the third quarter we mentioned before, we found that that the net income increased by 205 million compared to the year 2015 for same length of period. This shows that the Delta Airlines value was relatively less affected by the failure in the IT systems.

## Reference

- Jansen, B. (2016, September 6. Delta lost \$100M on computer outage.  
<http://www.usatoday.com/story/travel/flights/todayinthesky/2016/09/06/delta-computer-outage/89903948/>
- Sabherwal, R., & Sabherwal, S. (2005). Knowledge Management Using Information Technology: Determinants of Short-Term Impact on Firm Value. *Decision Sciences*, 36(4), 531-567.
- Bharadwaj, A. S., Bharadwaj, S. G., & Konsynski, B. R. (1999). Information technology effects on firm performance as measured by Tobin's q. *Management science*, 45(7), 1008-1024.
- Dos Santos, B. L., Peffer, K., & Mauer, D. C. (1993). The impact of information technology investment announcements on the market value of the firm. *Information Systems Research*, 4(1), 1-23.

# The Impact of Innovative Managers for the Hospitality Industry

Yunus Yetkin, Yasemin Yetkin<sup>1</sup> and Emine Cihangir

Gazi University, Turkey  
<sup>1</sup>yetkinyasemin@gmail.com

## Introduction

As the world becomes more innovative, hospitality industry and tourism become to be one of the most important area to be develop regarding to gain more competitiveness advantage. Hospitality industries are compelling the companies to adapt to new accelerated and discontinuous environment. The traditional management ways are no more providing solutions, which granted success for a long time. Innovation has been spread over the entire business environment; nowadays new and innovative ways of managements are imperative. Organizations need flexibility, to face the unexpected changes, in addition to efficiency, to maintain successful routines (Basadur 1997). Furthermore, Management organizations should be able to find new ways for developing industry within the demand with more innovative ways, in order to comply with environmental changes and adaptation of creating new products, services, or processes.

Management Leaders, in every level, are implementation actor to find his/her own way to manage company. They are also the one who can motivate their team member to be part of innovation. Hospitality industry is human base industry therefore industry staffs are the main starting button for commitment and improvement in terms of sustainability. Managers have the responsibility of identifying talent and qualification within their teams. As Hartel, Schmidt & Keyes (2003) stated talented people are more committed to develop and produce creative ideas regarding to improve ways of works needs to be done.

It is the general aim of this paper is to show the picture of hospitality industry and contribute to the study of innovation in hospitality industry within the scope of innovation make some description regarding to role of leaders in hospitality industry.

## Literature Review

### Hospitality industry Innovation

The inside of innovation creativity and innovation by itself are usually used as an indistinctly. This research has been focusing on creativity as a process Stein"s (1994) definition: "...a process results novelty, useful, improvement or satisfying by a significant group of others at some point in time" and innovation as, "the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization or wider society" (West and Farr, 1990).

Innovation is complexity processes of implementation of creations, relying mainly on organizational communication and power (Spence, 1994); creativity remains exclusive to the relation established between the creator and his product, the “trying to do better”, connected to cognitive and emotional processes (Sousa, 2007). In these descriptions, creativity is the processes of creation, taking place at an individual level, and innovation is related to the process of implementation, occurring at a social level.

There is a difference between creativity and innovation also from the management point of view. In the hospitality industry individuals can not be the only one who has innovation idea. It is just like a management organization starts from leaders to the bottom level employee. In this paper managers will not be focused on individual ideas. Research will be focusing on departmental organization as well as innovation.

### **Methods**

In the pre study stage this paper is focused to do semi-structured. Then there will be qualitative detailed research. The qualitative research have been with 5 hotels in order to implement an interview to the employee to find out innovative and non innovative capacity of the industry.

The main aim of the interviews was to gain a deeper understanding of the construct of innovation in the hospitality industry. The questions designated to realistic questions: “Why do you think you innovative or not innovative manager?” and “How do you describe yourself, as a manager” The interviews were submitted to a thematic content analysis, keeping in mind the definition of the innovative leadership when extracting the categories.

### **Findings**

Summarizing the results, the more innovative leaders defined their role as team coaches, responsible for creating good relationships between the members which is a condition to guarantee the quality of service. More innovative managers insist on the importance of empowering people at all levels. They are tolerant and accept mistakes as a way of learning and improving continuously the service quality. They emphasize the importance of open communication and trust and seem to achieve it building more equalitarian relationships with all their co-workers. The leader acts as a role model, setting an example of the importance of the client. He or she is able to help the team members in their operational tasks if the situation requires it, thus helping to build cohesion and cooperation. They keep a permanent focus on the client, they insist on little details and on service continuous improvement. They motivate the team to listen to the client’s complains and suggestions. The active listening capacities are recurrent in these managers’ interviews.

### **Conclusions**

The research has clarified significant differences between more and less innovative managers. Both of the managers supports the idea of managing people is very difficult. They both consider that technical skills are important, but easily gained by training or experience. On the other hand, when less innovative managers talk about their role as

leaders, hierarchy category becomes salient: they identify themselves as members of a chain of command, responsible for a team or a hotel, according to their organizational level and insist on how difficult it is to manage different personalities who resist change. Furthermore, for these managers, an innovative leader is someone who has good ideas not always implemented, due to the difficulties in convincing their hierarchy.

The more innovative manager analyses the environment, the organizational context and the followers' potential in order to guarantee an adequate relationship with the team. The innovative leadership consists in developing the co-workers' creativity and innovation, with the purpose of continuously improving quality and clients' satisfaction. They have a client-centred approach to work and manage to align the co-workers with the organizational goals and strategy.

## References

- Basadur, M. (1997), "Organizational development interventions for enhancing creativity in the workplace", *The Journal of Creative Behavior*, 31, 59-73.
- Hartel, J., Schmidt, F., & Keyes, L. (2003), *Well-being in the workplace and its relationship with business outcomes: A review of the Gallup studies (205-224)*, American Psychological Association, Washington D.C.
- Stein, M. I. (1994), *Stimulating creativity*, The Mews Press, Ltd, New York, (Originally published in 1974, by Academic Press).
- West, M. A., & Farr, J. L. (1990), "Innovation at Work", in West, M. A., & Farr, J. L., (Eds.) *Innovation and creativity at work, psychological and organizational strategies*, John Wiley & Sons, Chichester, 3-13.
- SPENCE, W. R. (1994), *Innovation: The communication of change in ideas, practices and products*, Chapman & Hall, London.

# Modelling Utility Financial Viability Using Logistic Regression: Evidence from State of Florida.

Daniel Acheampong<sup>1</sup> and Tanya S. Benford<sup>2</sup>

Muma College of Business  
University of South Florida, USA  
<sup>1</sup>dacheamp@mail.USF.edu

Lutgert College of Business  
Florida Gulf Coast University  
<sup>2</sup>tbenford@fgcu.edu

## Introduction

The increase in housing development combined with existing dilapidated infrastructures (e.g. wells and distribution lines) have increased the financial requirements of water and wastewater utilities. Practical steps to assess the viability of existing utilities and requirements for replacement and upgrades of the water and wastewater facilities are necessary to keep pace with growing demand. The need for additional external funding will depend on the financial resources these utilities command. There are no known industry standards to measure the viability of water and wastewater utilities. The established models for regulating utilities focus on managing and reducing the risks associated with market failures, ensuring the continuity of operations, and satisfying certain social and political objectives, such as addressing public safety and health concerns.

This study compares the National Regulatory Research Institute's (NRRI) financial viability model to an alternative model based on logistic regression to assess utility viability. The NRRI model is currently used to determine viability in the water and wastewater industry. However, the NRRI model is not consistent with regulatory ratemaking since different regulatory bodies have different ratemaking approaches. This study modifies the existing NRRI model and extends it to include a two-step assessment process using logistic regression.

## Literature Review

The NRRI in its 1992 annual report outlined seven ratios that may be considered together to determine the financial viability of water and wastewater utilities. Wirick, Borrows, and Goldberg (1997) used the seven ratios in a discounted cash flow models to determine the viability of water and wastewater utilities. Wirick, et al. (1997) assert that prior multivariate models failed in the evaluation of water and wastewater utilities because they were not developed specifically for the water industry, but rather for general business performance

Platt and Platt (2006) developed a financial sector viability model based on Logistic regression analysis. The Platt and Platt (2006) model identifies specific key variables and compares them to their industry-specific counterparts. However, Beecher et al.

(1992) warn that, when industry data is not available, it is difficult to establish the estimated coefficient for the model.

There are no known established industry ratios for water and wastewater utilities. The NRRI in its 1992 report recommended the use of efficiency ratios, solvency ratios, and profitability ratios to assess the financial viability of water systems. Wirick, et al. (1997) assert that prior multivariate models have failed because they were not developed specifically for water and wastewater utilities. Additionally, the NRRI did not have any known benchmark to measure the viability or non-viability of utilities. This study proposes flexible approach using logistic regression

### **Methodology**

This study will use utilities classified by the Florida Public Service Commission (FPSC) as “Class C” utilities to examine how well the NRRI model and the research model predict utility viability. Class C utilities are the smallest utilities regulated by the FPSC and are more prone to failure due to their size. The FPSC does not allow utilities to fail; utilities that are not viable are acquired by another entity. To determine the efficacy of these models, we will compare model predictions to actual outcomes (i.e. whether utilities are still in existence and operating at a profit). We will employ the financial ratios specified by the NRRI in its 1992 annual report. We will use the NRRI model to determine the viability of Class C utilities from the State of Florida; we will then use the logistic regression to determine the viability and compare the two results.

### **Discussion of Results**

So what” conclusion will be employed in the analysis of the results to reach a conclusion. Specifically, we will be looking at the implications of the viability of these utilities the impact on the catchment area if they fail. What variables in the current ratemaking models’ needs improvement and what existing regulations need to be revised to ensure the viability of these utilities.

### **References**

- Beecher, J. A., Dreese, G. R., & Landers, J. R. (1992). Viability policies and assessment methods for small water utilities. Retrieved from [http://www.nrri.org/web/guest/research-papers?\\_id=6740](http://www.nrri.org/web/guest/research-papers?_id=6740)
- National Association of Regulatory Utility Commissioners. (1996). Uniform systems of accounts for class C water utilities. Washington, DC: Author.
- National Association of Regulatory Utility Commissioners. (2007). Recommended by the NARUC: Retention policies. Retrieved from <http://www.naruc.org/resolutions/2007AnnualResolutions.pdf>
- National Regulatory Research Institute. (2009). Effective regulation: Guidance for public-interest decision makers. Columbus, OH: Author.
- Platt, H. D., & Platt, M. B. (2006). Understanding differences between financial distress and bankruptcy. *Review of Applied Economics*, 2(2), 141-157. Retrieved from <http://ageconsearch.umn.edu/bitstream/50146/2/1-Harlan%20D%20Platt.pdf>
- Wirick, D. W., Borrows, D. J., & Goldberg, S. (1997). *Evaluating water utility financial capacity with ratio analysis and discounted cash flows*. Retrieved from <http://www.nrri.org/documents/317330/99d2745f-aa19-4ed5-b20c-203189e39906?version=1.3>

# Analysis of Paradox Between Religion Belief and Life Satisfaction of Rural Elderly in China

Liying xia<sup>1</sup>, Xulin Ma<sup>2</sup>, and Wangjiang Ying<sup>3</sup>

<sup>1,2,3</sup>Shanghai University of Finance and Economics

<sup>1</sup>University of Kansas

<sup>1</sup>xialysufe@126.com

<sup>2</sup>maxlsufe@126.com

<sup>3</sup>wjying@sufe.edu.cn

## Abstract

Based on the “thousands villages” survey data of Shanghai University of Finance and Economics, we finds the elderly people who believe in religion while their life satisfaction are relatively low. Then we use propensity score matching (PSM) to prove it. Then we analyze the causes of this paradox, and explore the group characteristics of the religious belief of Chinese rural elderly. If the elderly people have the following feathers such as: feeling psychological loneliness, being Communist Party members, closely linked to clan, not being participated in new rural cooperative medical system (NCMS) are more likely to believe in religious in the rural areas. And our study shows that the reason why there exist the paradox of believe in religion and life satisfaction, and the government could take correspond measures such as improving psychological care and promoting the NCMS to increase the rural elderly's life satisfaction.

**Keywords:** rural elderly people, religion, happiness, paradox, PSM, propensity score matching

## Introduction

With the rising of rural “religious fever” in China, many Chinese scholars has interested in this subject. In the investigation of religious beliefs in china, we find that the number of people who had religious beliefs had exceeded the number of atheists. Besides, the number of people who have religious beliefs rise sharply (Zheng et al., 2010).Furthermore, the rural residents occupy the majority of the group of religious beliefs (Zheng et al., 2010; Kanazawa and Qiu, 2008). Because there exist the urban-rural dualistic economic structure in China, the life of Chinese rural elderly have still exist a series of imperfect factors: poorly developed social security and medical security system, the lack of spiritual and cultural life, and the labor outflow in rural area.

According to the reality of Chinese rural elderly life, scholars study why the rural residents have such a high proportion of religious belief. Some scholars believe that the government imply the easing religion policy to promote the growth the religious groups (Wei Dedong, 2010).Some scholar believe that the religion group could be the rural informal social security organization, and play an important role in the rural area(ruan, 2011).Believing in religion is good for rural elderly’s health(jiang and zhang, 2013),or the rural residents hope to be healthy by believing in religion (Qiu, 2007; Du, 2004).Besides, based on the utilitarianism, the rural residents could pursues the maximum of their own utility by believing in religion, and the religion substitute the tradition culture and secular

culture(Ruan,2010).And other researches indicate that the happiness of religion group is higher than the others(Le and Ye,2012).Above all these study, we assume that most study from individual aspect emphasize whether the religion can lead to improve the utility of rural residents, in another words, improve the life satisfaction or happiness<sup>1</sup>.

In conclusion, according to the reality of Chinese rural elderly and previous research conclusions, we analyze the “thousand village survey” data of Shanghai University of Finance and Economics of 2014, and find that the happiness or life satisfaction rural elderly who believe in religion across the country is not high. After we use Logistic model we found that the rural elderly who believe in religion has low life satisfaction, which is the opposite conclusion to other research. We dig the reason for this paradox, maybe there exist the utilitarian in Chinese religion belief (Le and Ye, 2012).And maybe it is determined by the personal trait of individual, so we do the study to explore the specific trait of Chinese rural elderly, and this paper could also give suggestion of government policy.This paper try to infer that believing in religion could not rise the happiness or life satisfaction of Chinese rural elderly. We try to figure out whether the religion group itself is happy and the trait of the religion group.

This paper have the following innovation: Firstly, the “thousand village survey” data is a nationwide data of Chinese rural elderly, and this data is a large-scale survey date which has 9679 samples (after screening) and covers 30 provinces (including municipalities), 223 City, 530 townships, 578 villages. This data can reflect the situation of Chinese rural elderly thoroughly. Secondly, we use propensity score matching to analyze the data. This method is more accurate description of the trait of religion group and infidel group. Thirdly, we find the paradox of happiness and religion belief and the trait of Chinese rural elderly who believe in religion. These findings can make up the deficiency of previous research.The rest parts of this paper is as following: the second part is the literature review; the third part is the empirical model, data sources, and variables; the fourth part is the empirical results and analysis; the fifth part is the conclusions.

## **Literature Review**

### **Religious economics**

Azzi et al. (1975) first analyze religious motives and motivations for family involvement in religious activities (Azzi and Ehrenberg, 1975). And the subsequent study of religious economics can be divided into three main lines: first, from economics aspect to analyze the religion behavior; Second, to explain the impact of religious beliefs; third, to find an improved economic policy from religious view (Iannaccone, 1998).

The definition of happiness or life satisfaction can be measured by the utility of microeconomic theory. From the perspective of religious economics to study the relationship between religion and happiness, scholars usually believe that religious belief can enhance happiness (Green and Elliott, 2010; Strawbridge et al, 2001; Ellison et al, 2001; Franci and Kaldor, 2002; Keyes and Reitzes, 2007)).While there exist the

---

<sup>1</sup> We use happiness and life satisfaction to describe the subject well-being, and they are equal.

cultural difference between China and western countries, so the motivation of religion belief may be different. In the study of the religious belief and happiness in China, Le et al. (2012) obtained the conclusion that the rural residents who believe in religion could raise their income and enhance their happiness through the analysis of China Household Income Survey (CHIPs) data of 2002. They believe the reason of this basing on pursuing the maximization of utility (Le and Ye, 2012).

## **The Characteristics of Religious Belief**

### **Health and Religion**

For the impact of religion on health, previous scholars argue that religion has a positive impact on health: Jiang et al. (2013) has analyzed the two-way causality between religion and health by analyzing the panel data of the elderly in the China from 2002 to 2005. They argue that the believing in religion improve the health of elderly and it maybe through the participation in religious activities (Jiang and Zhang, 2013). Zheng et al. (2010) study the rural “religious fever” problem in rural areas, which health problems are the cause of rural people who believe in religious (Zheng et al., 2010).

In western countries, the influence of religion induce the scholars have a widely study of the religion impact on health. However, there is no determined conclusion of the impact between religious belief and health yet. Some scholars believe that religious behavior can have a positive effect on health (Iannaccone, 1998), and reduce the mortality rate of the elderly (Strawbridge et al, 2001; Koenig et al., 2001). And for the mental health aspect, believing in religion can ease the stress of life (Ellison et al, 2001; Wink et al, 2005). Other scholars argue that there is no relationship between religion and health (Schnitzel, 2001; Powell et al., 2003; Dezuttera et al., 2006).

### **(2) Social security and religion**

It is widely believed that security insurance is the main propose of joining religious organizations (Gruber and Hungerman, 2007; Chen, 2010; Dehejia et al, 2007; Gruber, 2004; Hungerman, 2005). Zheng et al. (2010) study the relationship between social security and religion belief in rural areas of China, and they believe that the current level of rural social security have a significant negative impact on religious beliefs. And the development of “new rural cooperative medical system (NCMS)” could reduce the growth rate of rural religious belief in China effectively (Zheng Fengtian et al., 2010). Jiang et al. (2011) argue that the government's inadequate supply of rural health care has increased farmers' medical burden, which induce a higher proportion of religious beliefs (Jiang et al., 2011). Ruan argue that the organizational effect of rural religious group for the rural residents is greater than the faith effect (Ruan, 2011). In addition, rural residents seek religious organizations as an interactive platform because of the lack of spiritual and cultural life (Du, 2004). But our data show that religion has a negative impact on happiness, which is contrary to the conclusions of other scholars.

However, the object of this paper----the Chinese rural elderly, is different from the study of other scholars. And our research focus on a smaller group, so it may come to more accurate results. Compared to the formal study which is simple, this paper has a more

comprehensive analysis of the relationship between trait factors and religious belief. In addition, we will study the effect of clan relations to the religious belief which is not mentioned by scholars previously

## Empirical Model, Data Sources and Variables

### Empirical Model

Based on the research of the former scholars, we use the order logistic model to analyze the Chinese rural elderly, and verify the specific influence of many factors that affect the group's life satisfaction. The order logistic model settings are as follows:

$$happiness_i = \beta_0 + \beta_1 religion_i + \gamma^T Control Variables_i + \varepsilon_i$$

The explanatory variable  $happiness_i$  indicate that the life satisfaction of rural elderly, and it is the discrete variables, and it divided into five grades, 1 is very dissatisfied, 5 is very satisfied. The variable  $religion_i$  means whether the Chinese rural elderly believe in religion. And the control variables, including individual characteristics, medical condition, consumption, health status and social relations, the specifications of the control variables are as following: divorced and widowed factor(John Knight et al., 2014),age factor(Chen et al., 2014) will have negative effect on the life satisfaction. While the factors which have positive effect are as following: being healthy and living with more family members(Xue et al., 2012),to participate in medical insurance and to be health in mental status(Qi et al., 2010),believing in religion(Le et al., 2012),being a Communist party member(Chen et al.,2014),well educated(Knight,2014;chen et al,2014),the support from children(Wang et al.,2001; Zhang et al., 2005).

In terms of the explanatory variables, since it is a discrete and hierarchical variable, the maximum likelihood estimator can be derived using the latent variable method. Specifically, when the life satisfaction of Chinese rural elderly is lower than  $r_0$ , it will choose 1; when the life satisfaction is greater than  $r_0$  but lower than  $r_1$ , it will choose 2; and so on, when life satisfaction is higher than  $r_3$ , it will choose 5, which is "very satisfied". Since these thresholds of  $r_1$  to  $r_3$  can not be observed, but it can be observed the specific selection by represented of the following equation:

$$happiness = \begin{cases} 1, & \text{if } happiness^* \leq r_0 \\ 2, & \text{if } r_0 < happiness^* \leq r_1 \\ 3, & \text{if } r_1 < happiness^* \leq r_2 \\ 4, & \text{if } r_2 < happiness^* \leq r_3 \\ 5, & \text{if } r_3 < happiness^* \end{cases}$$

Assuming that the perturbation term is subject to the logistics distribution in the regression model, if the cumulative distribution function is represented by  $\Lambda(\cdot)$  and  $x$  is the set of vectors for all explanatory variables, the satisfaction of life can be expressed by:

$$\begin{aligned} \text{Prob}(happiness = 1|x) &= \Lambda(r_0 - x'\beta) \\ \text{Prob}(happiness = 2|x) &= \Lambda(r_1 - x'\beta) - \Lambda(r_0 - x'\beta) \\ \text{Prob}(happiness = 3|x) &= \Lambda(r_2 - x'\beta) - \Lambda(r_1 - x'\beta) \\ \text{Prob}(happiness = 4|x) &= \Lambda(r_3 - x'\beta) - \Lambda(r_2 - x'\beta) \\ \text{Prob}(happiness = 5|x) &= 1 - \Lambda(r_3 - x'\beta) \end{aligned}$$

In this way, we can construct the likelihood function of each option (1 to 5), and get the MLE estimator by the maximum likelihood estimation method. As long as the random perturbation term is uncorrelated with the explanatory variable, the estimated amount is consistent which is the ordered logistics model used in this paper.

At the same time, we notice that the self-selection between religion and happiness, the rural elderly may be unhappy because of faith, and also may be unhappy by themselves. In order to eliminate this self-selection process, we use Propensity Score Matching (PSM) to verify the conclusion.

The method of Propensity Score Matching (PSM) is as follows: Let the dummy variable  $D_i = \{0,1\}$  indicate whether the individual  $i$  participates in some activities, such as religion and so on.

We indicate the  $y_i$  as a depend variable, and we would like to know the whether  $D_i$  have the causal relationship with  $y_i$ , such as  $\begin{cases} y_{1i}, & D_i = 1 \\ y_{0i}, & D_i = 0 \end{cases}$ .  $y_{1i}$  means the result of the individual participating in an activity,  $y_{0i}$  means the result of the individual not participating in an activity. So the  $y_{1i} - y_{0i}$  means the causal effect of the individual participating in an activity. We define the average causal effect  $ATE = E(y_{1i} - y_{0i})$ , and the participant's processing effect is  $ATT = E(y_{1i} - y_{0i} | D_i = 1)$  which measure the net payoff of participating in an activity. In practice, because  $y_{0i}$  is unobservable, so we use this method to find the approximate  $y_{0i}$ . The basic idea of this matching is to find an individual  $j$  which belongs to the control group, and it is as similar as possible to the individual  $i$ . In this case, we use the  $j$  as the estimator of  $i$ . The propensity score of individual  $i$  is the conditional probability of the individual's entry into the processing group, such as  $p(x_i) = P(D_i | x = x_i)$ . The method of matching the distance as the score is the Propensity Score Matching (PSM).

### Data Source

The data of this paper is from the “thousand village survey” data of Shanghai University of Finance and Economics of 2014. This data is a national-wide survey data which covers 30 provinces (including municipalities), 223 cities, 530 towns and 578 villages and contains 11097 samples initially. It can be a universal representative of the Chinese rural samples. The samples of this data are obtained by multi-stage systematic probability profiling sampling and simple random sampling. And fixed-point tracking survey and random return survey are used as the survey methods.

In particular, as the sample multi-stage systematic probability profiling sampling, so each sample is chosen from four levels: province, county, town, village, and person. The probability of the sample to be chosen into the data is equal. We use 9679 samples by screening the sample who younger than 50 years old and also the samples which miss the important information.

As the explanatory variable of this article, the question of life satisfaction in the questionnaire is “Are you satisfied with the current situation?” The multiple choice option

is “A, very satisfied; B, more satisfied; C, general; D, not satisfied; E, very dissatisfied;” This paper corresponds to” 5,4,3,2,1”. The specific proportion of the options are as following: “very satisfied” accounts for 20.74%; ”satisfied” accounts for 58.84%; “general” accounts for 16.84%; “not satisfied” accounts for 3.24%; “very dissatisfied” accounts for 0.34%. Other variables are described as follows:

**Table 1:** Description of Variables

Variable	Variables Description	Mean	Standard Deviation	Minimum	Maximum
Explain variable : life satisfaction	1 is very dissatisfied, 5 is very satisfied	3.96	0.73	1	5
Total consumption excluded Medical expenses	total consumption- medical expenses unit: RMB	9054.04	13401.93	50	500000
Average of expenditure difference with others (remove the consumption of medical care)	the village average of the village unit: RMB	1.17	11462.62	-71666.67	434373.3
Individual feature group					
Gender	1:male,0:female	0.51	0.50	0	1
Age	unit: year	69.10	7.62	50	116
Education	primary school 1, others 0; high school 1, others 0; above college 1, others 0; illiterate ,when other three are 0	N/A	N/A	1	0
Number of children	unit: person	2.84	1.01	0	4
Resident population	unit: person	3.60	2.26	0	30
Political	1:the party members;0:the mass	0.12	0.32	0	1
Religion	1:has religion belief;0:no religion belief	0.18	0.39	0	1
Served as a cadre	1:yes;0:never	0.21	0.40	0	1
Health status group					
Health	very unhealthy1, others ;very healthy 1, others 0;average , others 0	N/A	N/A	0	1
lonely	very lonely1, others 0;nerve lonely 1, others 0; average others 0.	N/A	N/A	0	1
Social life group					
Whether the child is filial piety	not filial piety 1,others 0;very filial piety 1,others 0;average,others 0	N/A	N/A	0	1

Intimate with relatives	no contact 1,others 0;frequently 1,others 0;occasionally 1,others 0	N/A	N/A	0	1
Clan contact	clan contact 1;none 0	0.21	0.41	0	1
Medicare status group					
Participate in the new rural cooperative	participate1,none 0	0.88	0.33	0	1
chronic disease in village clinic	no management ability 1,others 0;strong management ability 1,others 0;average,others 0	N/A	N/A	0	1

\*\* Note: N / A is due to the form of dummy variables, the mean and variance does not have practical significance.

### Empirical Results and Analysis

Table 2 is the regression results of the Order logistic model. It indicate that the belief in religion leads to a significant decline in the life satisfaction of Chinese rural elderly. On the consumer group, the “consumption without medical expenses” is significant at the 5% level in the regression results of the regression equations, and the coefficients are positive, indicating that the rural elderly are able to obtain more life satisfaction by increasing “consumption without medical expenses”. This is mainly because the consumption of medical expenses is often a passive expenditure. So after removing the medical expenses, the consumption is mainly used for food, social communication and so on, and this part of the expenditure can increase the effectiveness. The “average expenditure difference” variable, which is not significant in the four regression equations, suggesting that the rural elderly in the area is not compare to others too much.

**Table 2:** Result of Ordered Logistics Model Regression

Independent variable	(1)	(2)	(3)	(4)
life satisfaction				
Main regression variable group				
Religion belief	-0.18*** (0.05)	-0.17*** (0.05)	-0.14*** (0.05)	-0.13** (0.05)
Consumption Group				
Consumption without medical expenses	1.13e - 05*** (1.85e - 06)	1.28e - 05*** (3.01e - 06)	8.29e - 06*** (3.03e - 06)	7.56e - 06** (3.10e - 06)
average of expenditure difference	N/A	-5.40e - 06 (3.50e - 06)	-3.17e - 06 (3.49e - 06)	-2.17e - 06 (3.54e - 06)
Individual feature group				
Male	-0.08* (0.04)	-0.05 (0.04)	-0.11** (0.04)	-0.12*** (0.04)
Age	5.31e - 03* (2.99e - 03)	9.50e - 03*** (3.07e - 03)	1.38e - 02*** (3.09e - 03)	1.32e - 02*** (3.11e - 02)
Primary school	0.20*** (0.05)	0.13*** (0.05)	0.08 (0.05)	0.10** (0.05)
Junior school	0.34*** (0.07)	0.26*** (0.07)	0.14* (0.07)	0.16** (0.07)
High school	0.39***	0.32***	0.22**	0.26**

	(0.11)	(0.11)	(0.11)	(0.11)
University and Above	0.15 (0.23)	0.12 (0.23)	-0.06 (0.23)	-7.56e - 04 (0.23)
Married	0.26*** (0.05)	0.18*** (0.05)	-0.02 (0.05)	-0.01 (0.05)
Single	-0.90*** (0.20)	0.22 (0.21)	0.04 (0.21)	0.07 (0.21)
Divorced	-0.52** (0.25)	-0.35 (0.26)	-0.39 (0.21)	-0.34 (0.26)
The number of children	2.67e - 03 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-6.79e - 03 (0.02)
Resident population	0.06*** (9.14e - 03)	0.04*** (0.01)	0.03*** (9.38e - 03)	0.03*** (0.01)
Politics status	0.32*** (0.07)	0.28*** (0.07)	0.24*** (0.07)	0.22*** (0.07)
Served as cadre	0.24*** (0.05)	0.21*** (0.05)	0.15*** (0.05)	0.16*** (0.06)
<b>Health status group</b>				
Poor health	N/A	N/A	-0.45*** (0.06)	-0.43*** (0.06)
Healthy	N/A	N/A	0.70*** (0.05)	0.65*** (0.05)
Feel lonely	N/A	N/A	-0.12 (0.07)	-0.13* (0.07)
Feel unlonely	N/A	N/A	0.72*** (0.05)	0.71*** (0.05)
<b>Social life group</b>				
Children are not filial	N/A	-0.59*** (0.15)	-0.48*** (0.15)	-0.52*** (0.15)
Children are filial	N/A	1.70*** (0.07)	1.52*** (0.07)	1.48*** (0.07)
Relatives do not contact	N/A	-0.05 (0.06)	-0.02 (0.06)	-0.03 (0.06)
Relatives contact intimately	N/A	0.35*** (0.05)	0.29*** (0.05)	0.27*** (0.05)
Clan contact	N/A	0.09* (0.05)	0.09* (0.05)	0.13*** (0.05)
<b>Medicare status group</b>				
Participate in the new rural cooperative medical system ( NCMS )	N/A	N/A	N/A	0.14** (0.06)
village clinic doing bad at chronic disease	N/A	N/A	N/A	-0.32*** (0.05)
village clinic doing well at chronic disease	N/A	N/A	N/A	0.69*** (0.06)
Obs	9679	9679	9679	9679
LR $\chi^2$	361.31***	1233.59***	2044.98***	2067.29***
Pseudo R <sup>2</sup>	0.0175	0.0597	0.0990	0.1098

\* Note: The standard deviation in parentheses; the symbols “\*”, “\*\*” and “\*\*\*” are marked at 10%, 5% and 1% respectively.

For the individual feature group, firstly, the change in the gender variable is significant in the three equations in Table 2, and the regression coefficients in all equations are negative, indicating that the rural female's life satisfaction is higher than that of the male. Secondly, the age is significant in all regression equations and its coefficient is positive, which shows that the life satisfaction of rural elderly is increasing. Thirdly, the academic level shows that junior high school and high school educated people get the highest satisfaction, and the satisfaction of the elderly who above the university is statistically insignificant. This phenomenon shows that life satisfaction in rural elderly is increasing by higher educated. Fourthly, the marriage variable is only significant in the model (1), and the other three models are not significant, indicating that the marital status have no significant effect on the life satisfaction of the rural elderly. Fifth, the number of children in the four regression equations are not significant, indicating that the number of children will not affect the life satisfaction of rural elderly. Finally, the variables of the resident population, the political status, and whether they have been a cadre are significant in the four regression equations. The regression coefficient of the resident population is positive, indicating that as the number of resident population increases the satisfaction of the elderly in the rural areas is increased. And as increasing the number of people living together may be more favorable to the elderly; the life satisfaction of the Communist Party members is higher than that of the masses. Because the party's organization life can enrich the spiritual life of the elderly. The coefficient of "served as cadre" is marked as positive, which shows that the prestige will give elderly people a higher life satisfaction.

For the health status group, from the regression the results show that the regression coefficient of the healthy and mentally disabled rural elderly are significantly positive, and the regression coefficient of the elderly is unhealthy and psychologically are significantly negative, indicating that the health condition is better (Including physical and psychological aspects), the higher the satisfaction of life will be.

For the social life group, the regression coefficients of the factors such as "children filial piety", "contact with relatives" and "the clan contact" are significant. The more filial piety of their children are, the higher the satisfaction of the elderly will be. In addition, frequent interaction with relatives and involving in clan activities, will get a higher life satisfaction.

Finally, for the medical condition group, the coefficient of "the new rural cooperative medical system (NCMS)" is significant at 5%, which indicated that the rural elderly who participated in the NRCMS has higher life satisfaction because of the NCMS could give the rural elderly a protective effect of serious illness expenditure, which can reduce their burden on medical expenses and pressure. The coefficient of "management variables of chronic health care" in the village health center is also significant at the significance level of 5%, indicating that if the village health center is good for the rural elderly to get higher satisfaction when it can manage the chronic diseases well.

From the regression results above, it can be seen from the regression results that religious has a negative impact to the happiness, but most scholars get the contrary conclusion from their study. However, we argue that the religious beliefs of our country

and that of the western countries are different, so the relationship between religious beliefs and happiness is likely to be non-direct causal relationship. So we assume that the reason why rural elderly believe in religion is decided by the trait of Chinese rural elderly themselves, and then effect the happiness indirectly. In order to verify this hypothesis, we want to exclude the self-selection process between religious belief and happiness. This paper adopt the Propensity Score Matching (PSM) to carry on the modeling analysis.

Table 3 shows the results of Propensity Score Matching (PSM). First, we test what the effect of the religion belief to the happiness. Then we use Propensity Score Matching (PSM) to confirm that the China's rural elderly who believe in religious are unhappy.

**Table 3: The Results of Propensity Score Matching (PSM)**

ATT	K nearest neighbor matching	Radius matching	Kernel matching	Markov matching
Y: life satisfaction D:religion	-0.06*** ( - 2.77)	-0.05*** ( - 2.45)	-0.05*** ( - 2.69)	-0.05*** ( - 2.62)
Y: religion D: have partner	0.03 ( 1.99)	0.01 ( 0.76)	0.01 ( 0.50)	0.01 ( 0.13)
Y: religion D:healthy status	0.02 ( 1.45)	0.02 ( 1.26)	0.01 ( 0.98)	0.02 ( 1.53)
Y: religion D:lonely	-0.03*** ( - 2.74)	-0.03*** ( - 3.16)	-0.03*** ( - 3.16)	-0.03*** ( - 2.92)
Y: religion D:gender	-0.09*** ( - 9.13)	-0.10*** ( - 10.23)	-0.09*** ( - 10.16)	-0.09*** ( - 9.01)
Y: religion D:education	-0.03 ( - 1.54)	-0.02 ( - 1.08)	-0.02 ( - 1.29)	-0.02 ( - 1.27)
Y: religion D:political status	-0.06*** ( - 3.92)	-0.06*** ( - 4.68)	-0.06*** ( - 4.36)	-0.06*** ( - 4.54)
Y: religion D: Served as cadre	-0.01 ( - 0.46)	-0.00 ( - 0.40)	-0.00 ( - 0.39)	0.00 ( 0.08)
Y: religion D:Children are not filial	-0.03 ( - 0.83)	-0.01 ( - 0.44)	-0.03 ( - 0.84)	-0.01 ( - 0.50)
Y: religion D:Relatives contact intimately	-0.00 ( - 0.40)	0.00 ( 0.21)	0.00 ( 0.21)	0.00 ( 0.37)
Y: religion D:clan contact	0.05*** ( 4.69)	0.06*** ( 5.35)	0.05*** ( 5.15)	0.06*** ( 5.18)
Y: religion D: village clinic doing well at chronic disease	0.00 ( 0.76)	0.00 ( 0.24)	0.00 ( 0.27)	0.00 ( 0.26)
Y: religion D: Participate in NCMS	-0.02 ( - 1.31)	-0.03 ( - 1.79)	-0.03 ( - 2.23)	-0.04 ( - 2.47)

\*the number in the bracket is t-value

Second, by Propensity Score Matching (PSM), we can find physical health has no effect on religious belief and lonely people tend to believe in religion. This findings suggest

that the previous study conclusion which sickness is the cause of religion belief is not accurate and religious beliefs tend to be more closely related to the mental health.

While gender has a significant impact on religious belief, that is, women tender to be more likely believe in religious. The level of education does not affect the life satisfaction of the rural elderly, for the education level is relativity low of them. Communist party members do not believe in religion, which shows the policy status are not affect the religion belief. Whether or not to be as a cadre has no influence on whether believe in religion. Whether children are filial has nothing to do with religion belief. The relationship with relatives is closely related to religion belief. Clan contact has a significant positive impact on religious belief, which maybe the clan activities are organized in the same village or sharing the same family name. The impact of clan members could share the same religious belief. The management of chronic diseases in the village clinics have no effect on religious beliefs. Those who attend the new rural cooperative medical system (NCMS) less intended to believe in religion, which is consistent with the conclusions of scholars that the attending the social security have negative effects to religious belief.

In conclusion, Chinese rural elderly are less likely to believe in religion if they have the following trait: lonely, female, non-Communist Party members, clan contact frequently and not participating in NCMS. We find that believing in religion cannot bring happiness or the increase of life satisfaction. After using Propensity Score Matching (PSM) to find the trait of religious groups, we argue that the characteristics of the people who believe in religion determine their happiness. So from the phenomenon, it seems the belief religion has led to unhappy, but in fact is the traits of the people are more inclined to unhappy by themselves.

## **Conclusions**

Based on the analysis of the data of “thousand village survey” data in Shanghai University of Finance and Economics of 2014, we find that the religious belief of Chinese rural elderly has a negative impact on their life satisfaction or happiness. By using the Propensity Score Matching (PSM) to characterize the rural elderly who believe in religious. We infer the paradox of religious belief and life satisfaction is due to their trait. The conclusion shows that women in rural areas is more intend to believe in religious, in addition, the people who have the following characters, such as: lonely, non-Communist Party members, closely linked of clan, not to participate in NCMS are more easily tend to believe in religion.

On the basis of the conclusions, we can suggest that the Chinese government can guide the religion development in rural area. Firstly, expand the coverage of NCMS to improve the social security of Chinese rural elderly. Secondly, enrich the development of cultural life of the rural people. Thirdly, all level governments should formulate policies to support the living condition of Chinese rural elderly.

In this paper, there are still some insufficient. Since the data used in this paper is the cross-sectional data, the observation is only the state of the research object at time

point. So that it cannot be observed with the change of the time. The research question of this paper is related with many factors, such as religious beliefs, life satisfaction and the individual itself. But we use a modern method to analysis the data, and because it is cross-section data the robustness of this article still need to be tested in the further.

## References

- [1] Zheng Fengtian, Ruan Rongping, Liu Li: "risk, social security and rural religious beliefs", *Economics quarterly*, 2010 (3).
- [2] Jin Ze, Qiu Yonghui: "China Religious Report (2008)", Social Science Literature Publishing House, 2008.
- [3] Wei Dedong: "Religious sociology paradigm shift and its impact", *Journal of Renmin University of China*, 2010(3).
- [4] Ruan Rongping: "China's rural informal social security supply research - based on the analysis of religious social security function", *Management of the world*, 2011(4).
- [5] Jiang Qiuchuan, Zhang Kezhong: "religious influence on the health of the elderly?", World Economic Press, 2013(05).
- [6] Qiu Xinyou, Xiong Fangfang, Shan Wogui: "Microcosmic Analysis of the Religious Belief in China's Rural Areas - Taking the Tie Village Huangzhuang Belief for example", *Journal of Jiangxi Normal University (Philosophy and Social Sciences)*, 2007(02).
- [7] Du Jingzhen: "contemporary rural Christian faith survey", *Chinese religion*, 2004(01).
- [8] Ruan Rongping, Zheng Fengtian, Liu Li: "Crowding-out effect of public cultural supply to religious belief - based on Henan rural survey data", *China Rural Observations*, 2010(6).
- [9] Le Junjie, Ye Han: "Farmers believe in religion is the value of demand or tool? - Based on CHIPs data empirical test", *Management World*, 2012(11).
- [10] Azzi, C. and Ehrenberg, R.: household allocation of time and church attendance, *Journal of Political Economy*, 83(1): 27-57, 1975.
- [11] Iannaccone, L. R.: Introduction to the economics of religion., *Journal of Economic Literature*, 36(3): 1465-1496, 1998.
- [12] Strawbridge, W., Shema, S., Cohen, R. and Kaplan, G.: Religious attendance increases survival by improving and maintaining good health behaviors, mental health, and social relationships., *Annals Of Behavioral Medicine*, 23(1): 68-74, 2001.
- [13] Ellison, C., Boardman, J., Williams, D. and Jackson, J.: Religious Involvement, Stress, and Mental Health: Findings from the 1995 Detroit Area Study, *SOCIAL FORCES*, 80(1): 215-249, 2001.
- [14] Francis, L. and Kaldor, P.: The Relationship Between Psychological Well-Being and Christian Faith and Practice in an Australian Population Sample., *JOURNAL FOR THE SCIENTIFIC STUDY OF RELIGION*, 41(1): 179-184, 2002.
- [15] Keyes, C. and Reitzes, D.: The role of religious identity in the mental health of older working and retired adults., *Aging & Mental Health*, 11(4): 434-443, 2007.
- [16] Green, M. and Elliott, M.: Religion, Health, and Psychological Well-Being., *Journal of Religion & Health*, 49(2): 149-163, 2010.
- [17] Koenig, H., King, D. and Carson, V. B.: *Handbook of Religion and Health*, Oxford University, 2001.
- [18] Wink, P., Dillon, M. and Larsen, B.: Religion as Moderator of the Depression-Health Connection: Findings From a Longitudinal Study, *RESEARCH ON AGING*, (27): 197-220, 2005.
- [19] Schnitker, J.: When is Faith Enough? The Effects of Religious Involvement on Depression., *Journal for the Scientific Study of Religion*, 40(3): 393-411, 2001.
- [20] Powell, L., Shahabi, L. and Thoresen, C.: Religion and spirituality. Linkages to physical health., *The American Psychologist*, 58(1): 36-52, 2003.
- [21] Dezuttera, J., Soenens, B. and Hutsebauta, D.: Religiosity and mental health: A further exploration of the relative importance of religious behaviors vs. religious attitudes, *Personality and Individual Differences*, 40(4): 807-818, 2006.
- [22] Hungerman, D. M.: Are church and state substitutes? Evidence from the 1996 welfare reform, *Journal of Public Economics*., 89(11/12): 2245-2267, 2005.
- [23] Chen, D. L.: Club Goods and Group Identity: Evidence from Islamic Resurgence during the Indonesian Financial Crisis, *Journal of Political Economy*, 118(2): 300-354, 2010.

- [24] Dehejia, R., Deleire, T. and Luttmer, E. F. P.: Insuring Consumption and Happiness Through Religious Organizations, *Journal of Public Economics*, 91(1-2): 259-279, 2007.
- [25] Gruber, J.: Pay or pray?the impact of charitable subsidies on religious attendance, NBER Working Paper No.10374, 2004.
- [26] Gruber, J. and Hungerman, D. M.: Faith-based charity and crowd-out during the great depression, *Journal of Public Economics*, 91(5-6): 1043-1069, 2007.
- [27] Jiang Jinqi, Zheng Fengtian, Liu Jie: "Health risks and choice of faith of rural residents", *Southern Economy*,2011(3).

# Employee Turnover Intention in the Milieu of Human Resource Management Practices

Dharini Rengarajan<sup>1</sup>, Nivethitha Santhanam<sup>2</sup> and Prema Sankaran<sup>3</sup>

Thiagarajar School of Management, India

<sup>1</sup>dharinirengarajan322@gmail.com

<sup>2</sup>nivetha.san@gmail.com

<sup>3</sup>premsank@gmail.com

## Introduction

Human resource management as a discipline has been in existence for decades. Researchers have continued investigating various human resource management practices and whether these practices are influenced by various factors pertaining to specific industries and organizations. In the context of labor-intensive industries, the role of human resource management plays an inevitable role in the business functioning. Human resource management practices play a dynamic role in all phases of hospitality industry such as outset, design, enhancement and provision of services (Lashely, 2002). This observation of human resource management practices accentuates the significance of examining the value and emphasis placed on human resource management in an industry conquered by high employee turnover. However, Connolly and McGing (2007) noted that recognizing, utilizing and developing human resource is one of the significant challenges the hospitality management faces.

In hospitality industry, human resources are at the apex of the business operation and act as a key source of competitive advantage. This study has endeavored to consider the findings of an exploratory study in the Indian hospitality industry context (Santhanam, Kamalanabhan, Dyaram & Ziegler 2015) for the identification of context specific problems. Among all the employee groups in the hospitality industry, frontline employee turnover has emerged as a major challenge. Given the challenges faced by the employers, this research attempted to study one of the prime issues in hospitality industry, employee turnover, by measuring employee turnover intention that acts as an immediate precursor for actual turnover.

Interaction between frontline employees and customers are considered to be a vital source of sustained competitive advantage in the hospitality industry. But, among all the employee groups in the hospitality industry, frontline employee turnover has emerged as a major challenge. Although literature has advocated the importance of role of frontline employees in hospitality industry, there is lack of empirical research on examining the determinants of frontline employees' turnover intention. Moreover, there is scant research performed in the Indian hospitality industry. Considering all these issues and challenges, the objective of this paper is to identify and analyze the role of human resource management practices in employee turnover intention.

## Literature Review

Human resource practices play a crucial role in influencing employee attitudes and behavior. In hospitality industry, salary and fringe benefits, working hours, workload,

work pressure, training and development, leadership, career plans and family factors, internal recruitment and poor training (Yang, Wan & Fu, 2012; Bagri, Babu & Kukreti 2010; Cho, Woods, Jang & Erdern 2006) were identified as determinants of employee turnover intention. Based on these findings, this study intends to hypothesize that the positive perception of human resource management practices will exhibit negative influence on employee turnover intention.

### **Research Methodology**

Scales developed by Khatri (2000) to assess three aspects of employee perception of human resource practices (selection, training and compensation); items from Ganesan and Weitz (1996) to measure career growth opportunity were adapted as measuring constructs. Employee turnover intention was measured with five items: three items from the scale developed by Landau and Hammer (1986) and two items from Lum, Kervin, Clark, Reid & Sirola (1998). The unit of analysis includes individuals (frontline employees). The responses were collected on a five point Likert scale and in addition, four demographic variables including age, gender, educational qualification and work experience in the current organization were also measured to understand the sample profile. The respondents were selected based on their full-time employment in either front office or food and beverage department in four and five star category hotels. The questionnaire was administered to 524 employees, out of which, 410 questionnaires were returned.

### **Analysis and Discussion**

Multiple regression analysis is performed to predict the employee turnover intention based on the human resource management practices). The overall model was found to be significant at  $p \leq .001$  with an adjusted  $R^2$  of 0.15; F value as 9.12\*\*\*. This supports the hypothesis that human resource practices have a significant impact on frontline employees' turnover intention. Result of multiple regression analysis exhibits that better perception about human resource management practices such as selection, career growth opportunities and compensation practices led to reduced turnover intention. In contrast, training has positive relationship with employee turnover intention, which indicated that better training opportunities in the hotels leads to increased employee turnover intention. Nadiri and Tanova (2010) found that the employee skills in hospitality industry are easily transferable from one organization to another organization. Therefore, the industry should focus on providing hotel-specific training with more emphasis on value of organisational culture and commitment to their employees. From the results, it is clear that organisation's human resource management practices have an impact on employee turnover intention (Guchait and Cho, 2010).

With rapid growth and boom in the service economy, there exists an increased employee turnover in the hospitality industry. Human resource management practices should be espoused and implemented to reduce employee turnover intention. This is quite a challenge for the hospitality industry. From the findings of this study, it is evident that in order to reduce the development of turnover intention, managers should focus on the selection practices, career growth opportunities and compensation practices. Better perception of these practices plays a vital role in decreasing an employee's turnover

intention. Thus, human resource management practices should be well employed by the hotels to establish a long-term employment relationship cultivating reduced turnover intention. Further replications and extensions of this study in varied industrial settings with differing sample work-groups are essential to demarcate the applicability of the findings and generalizability of the results.

## References

- Bagri, S. C., Babu, S., & Kukreti, M. (2010). Human resource practices in hotels: A study from the tourist state of Uttarakhand, India. *Journal of Human Resources in Hospitality & Tourism*, 9(3), 286-299.
- Cho, S., Woods, R. H., Jang, S. S., & Erdem, M. (2006). Measuring the impact of human resource management practices on hospitality firms' performances. *International Journal of Hospitality Management*, 25(2), 262-277.
- Connolly, P., & McGing, G. (2007). High performance work practices and competitive advantage in the Irish hospitality sector. *International Journal of Contemporary Hospitality Management*, 19(3), 201-210.
- Ganesan, S., & Weitz, B. A. (1996). The impact of staffing policies on retail buyer job attitudes and behaviors. *Journal of Retailing*, 72(1), 31-56.
- Guchait, P., & Cho, S. (2010). The impact of human resource management practices on intention to leave of employees in the service industry in India: the mediating role of organisational commitment. *The International Journal of Human Resource Management*, 21(8), 1228-1247.
- Khatri, N. (2000). Managing human resource for competitive advantage: a study of companies in Singapore. *International Journal of Human Resource Management*, 11(2), 336-365.
- Landau, J., & Hammer, T. H. (1986). Clerical employees' perceptions of intra organizational career opportunities. *Academy of Management Journal*, 29(2), 385-404.
- Lashley, C. (2002). Emotional harmony, dissonance and deviance at work. *International Journal of Contemporary Hospitality Management*, 14(5), 255-257.
- Lum, L., Kervin, J., Clark, K., Reid, F., & Sirola, W. (1998). Explaining nursing turnover intent: job satisfaction, pay satisfaction, or organizational commitment? *Journal of organizational behavior*, 305-320.
- Nadiri, H., & Tanova, C. (2010). An investigation of the role of justice in turnover intentions, job satisfaction, and organizational citizenship behavior in hospitality industry. *International journal of hospitality management*, 29(1), 33-41.
- Santhanam, N., Kamalanabhan, T.J., Dyaram, L., & Ziegler, H. (2015, May 14-15). *The impact of psychological contract and human resource management practices on frontline employees' turnover intentions in hospitality industry*. Paper presented at the Global Conference on International Human Resource Management, Penn State, USA.
- Yang, J. T., Wan, C. S., & Fu, Y. J. (2012). Qualitative examination of employee turnover and retention strategies in international tourist hotels in Taiwan. *International Journal of Hospitality Management*, 31(3), 837-848.

# Ecotourism Perceptions and Participation by University Students

Rachel Wilson<sup>1</sup>, Ashley De Leon Torres, Daniel Spears, Kc Birendra and Bharath Josiam

University of North Texas, USA  
<sup>1</sup>RachelWilson7@my.unt.edu

## Introduction

The meaning of the term “ecotourism” varies per location as it is subject to cultural relativism (Fennell, 2001). Professionals in the tourism industry continue to debate on what it should be defined as. Due to the absence of universal guidelines and definition for ecotourism, there is an increasing difficulty in ensuring the quality and continuous understanding of ecotourism (Donohoe, 2006). One very important concept that has emerged from the countless attempts to define ecotourism is that it has become accepted as a complex interaction between social, ecological and economic variables (Donohoe, 2006). This approach to ecotourism has taken form in many different ways throughout the literature and has been expressed as ‘criteria’, ‘principles’, ‘characteristics’ and ‘dimensions’. Fennell (2001) and Donohoe (2006) both describe the main variables of ecotourism as the locations where conservation, culture, benefits to locals, and education occur.

Although defining and measuring ecotourism is very important for managing ecotourism development, it is unclear if the average tourist populations understand or perceive ecotourism in the same manner as the industry intends. It is crucial to have congruency in how ecotourism is understood by the industry, and perceived by the general public because the public consists of potential stakeholders in ecotourism. While understanding these stakeholders’ perceptions is of high importance for the ecotourism sector and for the effectiveness of it, little research has been done to understand the perceptions of a millennial travel consumer. Therefore, this study looks to fulfill this gap in the literature. Understanding how ecotourism is perceived by a potential stakeholder who is a member of a generation that is highly active in travel, can have important implications for the ecotourism sector.

This study intends to offer an analysis on the potential millennial market segment in regards to ecotourism by achieving the following objectives: 1) determine which key attributes of ecotourism are the most agreed upon from the perspective of college students; 2) determine the travel motivations (push and pull factors) of University students; 3) understand University students’ perceptions of the key attributes to ecotourism in order to develop a definition of ecotourism from the perspective of University students..

## Literature Review

The overall success of ecotourism development depends on tourists who actively seek out alternative, environmentally appropriate forms of tourism and who are also aware of the negative impacts of tourism and are willing to modify their behavior (Sharpley,

2006). This means that tourists must be motivated to participate in ecotourism and to act in a way that is favorable to the development of ecotourism. For this to be achieved, there must be an understanding of who the ecotourist is through an assessment of their motivations or sought benefits (Sharpley, 2006). People's motivations influence the attitudes they develop and relate to the types of consumer-decisions made. Motivational forces are made up of two different factors, push and pull. The activities that travellers partake in are dependent on personal interests and motivation factors such as these push and pull factors (Fernandez, 2015).

Many of the younger generations of travellers are identifying with the alternative tourism movement that reflects the increasing interest in conservation and sustainability. Typically, this interest is influenced by changing environmental attitudes, the development of environmental education, and the development of environmental mass media (Eagles & Higgins, 1998). Due to these consumer perspectives, there has been an increase in ecotourism amongst college students and young adults, thus contributing to the need to define and understand the concept from a multitude of perspectives.

Analyzing and interpreting the different perceptions of ecotourism will contribute to understanding if potential stakeholders and clients view ecotourism as the industry intends (Cini, 2015). This study aims to further define and understand ecotourism from the perspective of university students. The central purpose of this study is to analyze the perceptions and motivations university students have in relation to ecotourism. The findings of this study will help in understanding the reasons why college students travel as well as why they choose certain destinations. It will also facilitate an understanding of how this population segment defines ecotourism and the types of activities, locations, and experiences they desire.

## **Methods**

The proposed study's population would be that of university students from the University of North Texas (UNT) in the United States. This population's sample ( $n=700$ ) would be selected through convenience sampling and it would be accessed by contacting university professors through e-mail and in person to request their class' participation in the study. Upon agreement, the researchers will attend the classroom and administer the instrument. This sample would consist of a diverse group of undergraduate and graduate students across different academic fields. This sample could be representative of the UNT student population, however the findings could not be generalized to all university students in the USA or in the world.

A survey would be created to measure level of agreement of the various ecotourism attributes, their level of agreement with travel push and pull motivators, and their intent to engage in ecotourism activities. This survey would also collect demographic information from the respondents, and responses to open-ended questions. Extraction of incomplete surveys would take place. The Statistical Package for the Social Sciences (SPSS) software would be used to analyze the data. Various analyses will be conducted including ANOVA, Crosstabs, Frequencies, Factor Analysis, and Reliability.

ANOVA would identify if there is a difference between demographics and respondents' level of agreement to the ecotourism attributes. It would also identify if there is a difference between gender and frequency of travel. Crosstabs would identify differences between students' age and their exposure to the term "ecotourism". Frequencies would be obtained to identify ecotourism attributes most and least agreed with. Reliability would measure the reliability of all the used scales, specifically the created ecotourism attributes scale. If the scales prove to be reliable, factor analysis would be conducted to identify if the used scales are uni- or multi-dimensional.

### **Expected Outcomes and Implications**

It is expected that ecotourism attribute factors will fall between the concept of the Triple Bottom Line and the categories identified within the literature. When classifying college students based on motivational push factors, the study will be able to group them based on their desire for independence, increased popularity, integration with the locals, satisfaction of the thirst for adrenaline, connection with nature, or immersion in solitude. The study would also group the respondents into categories based on the type of pull motivations; these would be similar to that of the ecotourism attributes. After determining which key attributes were most highly agreed upon by college students and comparing them to qualitative data collected, a working definition of Ecotourism would be developed.

This study's findings will benefit marketing departments within the tourism industry, as it will provide insight about a potential market. To successfully market a trip as part of the ecotourism experience, companies must first understand how their target market perceives the term. This study could identify a change in education and environmental consciousness in the millennial age group. Based on the findings, marketing recommendations can be developed for tourism destinations to cater and target to travelers of the millennial generation. These recommendations can redirect public outreach and marketing campaigns towards university students. If a company wants to market a trip as ecotourism, but the company and potential clients both see ecotourism in two different ways, the success rate in marketing the company's trip will be very low.

In regards academic contributions, this study's findings would serve as a starting point for future ecotourism research regarding university millennial participants. The authors recommend that the ecotourism attributes scale continues to be tested to obtain the most reliable and valid scale. Such scale should be inclusive and encompassing of all the attributes considered essential by ecotourists, and ecotourism managers. If significant difference exists between these two stakeholders', separate scales can be developed based on future studies' purpose. This line of study's findings would also facilitate data comparisons between millennial mass tourists, and those millennial ecotourists' travel motivations. Future research can also explore the areas of marketing in studying the decision making process when choosing ecotourism destinations, and if such process varies per market.

### **References**

Bjork, P. (2000). Ecotourism from a conceptual perspective, an extended definition of a unique tourism form. *The International Journal of Tourism Research*, 2(3), 189.

- Cini, F., Leone, L., & Passafaro, P. (2010). Promoting ecotourism among young people: A segmentation strategy. *Environment and Behavior*, 0013916510389313.
- Donohoe, H. M., & Needham, R. D. (2006). Ecotourism: The evolving contemporary definition. *Journal of Ecotourism*, 5(3), 192-210.
- Eagles, P. F., & Higgins, B. R. (1998). Ecotourism market and industry structure. *Ecotourism: A Guide for Planners and Managers, 2nd ed. The Ecotourism Society, North Bennington, VE, USA*, 11-43.
- Fennell, D. A. (2001). A content analysis of ecotourism definitions. *Current issues in tourism*, 4(5), 403-421.
- Fernández Robin, C., Cea Valencia, J., Santander Astorga, P., & Melo Orrego, R. (2015). Turismo De Intereses Especiales: Investigación De Mercado Sobre Las Motivaciones Desde La Perspectiva Del Cliente (Special Interest Tourism: Market Research of Motivation from a Customer). *Revista Internacional Administración & Finanzas*, 8(1), 51-68.
- Sharpley, R. (2006). Ecotourism: A consumption perspective. *Journal of Ecotourism*, 5(1-2), 7-22.

# **An Analysis of Risk Perception Amongst Millennial Aged College Students and Travel**

Kristi Ingram, Daniel Spears<sup>1</sup> and Kc Birendra

University of North Texas, USA

<sup>1</sup>dspears@my.unt.edu

## **Introduction**

With the recent increase in tension amongst the global climate, important questions are raised as to what type of effects are occurring on tourism markets across the world. Although many countries are experiencing political instability, persecution and economic downfall, there is plenty of concern amongst stakeholders regarding the potential effects that civil unrest could have on the booming tourism industry as a whole. History has shown that unrest amongst a population leads to impactful cultural and societal changes, resulting in regions that are vulnerable to social, political, and economical stress (Braha, 2012).

Despite the rise in international tensions, millennials are showing an increase in travel, but in less traditional ways than their predecessors. The UN attributes this generational anomaly to “a commitment by youth in advanced economies to continue traveling despite economic uncertainty.” Millennial aged college students are the fastest growing generation and have already pioneered the evolution of new tourism trends such as volunteer tourism and backpacking. In a 2013 study analyzing the growing population of traveling millennials it is estimated that the Millennial generation alone accounts for approximately one third of total U.S. spending on business flights (Barton, Haywood, Jhunjunwala, & Bhatia, 2013).

As the fastest growing age group, millennials are an important target audience for many regions who want to expand upon their tourism industry. In a pilot study done by Hashimoto (2015) analyzing the marketing strategies of China to American Millennials, it is stated that since many Millennials do not have international travel experience, they have limited knowledge on which to base their perception of an area. This raises questions for tourism agencies and countries as to what millennial-aged students are actually perceiving prior to travelling internationally. How do these preconceived notions of travel destinations impact their decision to travel to particular locations of the world that have been portrayed as having a higher posed risk for tourists?

The media is notorious for phrasing newscasts and articles in a way that attracts the attention of readers and viewers. This competitive industry thrives off of how many people are watching in comparison to other channels and related sites. However, the tourism industry is extremely reliant upon how areas are portrayed by the media messages, on nearly all fronts. Stepchenkova and Eales were able to identify significant factors in consumer destination choices and how the news volume, topics raised, and favorability of coverage all are predictors of traveler choice (2011).

With the growth of social media and the increase in globalization, people are turning to these outlets, legitimate or not, for pre-trip decision and research. Millennials, as a generation born at the brink of the technological revolution, are extremely invested and involved in social media. Reoccurring messages about a particular destination that is presented on websites like Facebook and Twitter have the significant capability of swaying the overall perception of a destination, and ultimately, affecting the traveler's decision of pursuing the location for a potential excursion or study abroad experience.

### **Research Objectives**

Objectives of the study will be to (1) identify how the perception of risk affects a Millennial aged student's decision of a travel destination; (2) explore the differences between various levels of travel experiences (3) determine if various global regions exhibit a higher level of perceived risk (4) identify relationships between risk perception and factors such as preferred media outlet, gender, sexual orientation, religion, etc.

### **Literature Review**

Prior research has been conducted in the area of motivation of college aged students to choose an international university and the risk associated with various types of education delivery methods in those particular countries (Basha, Sweeney, & Soutar, 2015). There are a select few studies that target millennials and their decisions to travel or study internationally, however, there is a distinct lack in literature that encompasses and compares students to one another, both US born and foreign born. Many studies omit international student perspectives although they represent a very important part of international travel and push/ pull motivators for travelers of the Millennial age group, 16- 32.

No research has been conducted comparing the perception of risk for choosing an international destination for travel between students who have never been outside the U.S., students who have traveled internationally, and international students in the host country. This data may be able to provide insight into the travel motivations and perceptions that are experienced by the millennial aged college student, both experienced and inexperienced in international travel.

Although the tourism industry can be impacted by war, political instability, and simply by a government issuing a travel advisory, many people will tend to stray away from areas because of stereotypical perceptions of an area. This comes as no surprise considering tourists are often labeled and considered easy targets in foreign countries as they usually have a very difficult time blending in with the local culture. This, in result, often makes tourists a key target for terrorist organizations. In Luxor, Egypt in 1997, gunmen killed 71 tourists as an act of terrorism directed towards the Western hemisphere. In many countries that host an abundance of first world tourists, there is countless resentment towards the capitalistic views, lifestyle choices, ideologies, and the imminent westernization of global cultures (Lepp & Gibson, 2003). However, a 2003 article by Andrew Lepp and Heather Gibson reveals that more experienced tourists downplayed the threat of terrorism as a perceived risk on their international excursion.

The literature also shows how the impacts of terrorism on tourism can also be seen in western, first world countries as well. Terrorist attacks have shown a direct correlation with a decline in tourism for the country or region that is being affected. According to the World Tourism Organization, incoming flights to the United States decreased by 6.8% after September 11th, 2001 (World Travel & Tourism Counsel, 2016). Although, the industry has since recuperated, this has had a lasting impression on both incoming and outgoing tourists of the United States.

In an article discussing the impact of social media on the consumer decision making process, Hudson and Thal (2013) state that marketers are constantly competing for the attention of travelers long before a trip purchase. Social media outlets are creating new platforms for digital media to advertise and influence the decision of travelers. With this information, it should be noted that according to the Pew Research Institute, approximately 73% of American teens use social media websites. Additionally, 72% of young adults, ages 18-29 used social networking sites (Lenhart, Purcell, Smith, & Zickuhr, 2010). With the increase in technological advances since the study was published in 2010, it can be assumed that the social media environment has had significant changes.

Additional literature review suggests that although more of the Millennial youth are traveling, that 40% of companies surveyed in a NAFSA study claimed they had missed international business opportunities due to a lack of personnel to make the necessary transaction. There is a significant lack in literature stating how universities can target various student populations and why said population is experiencing reluctance (Trends in U.S. Study Abroad, 2015).

Lastly, it is important to note that the majority of articles discussing risk in tourism are extremely outdated and do not address the perceptions of millennial tourists. Equally as important, the impacts of a generation who is increasing their traveling behaviors post 9/11 is an unexplained anomaly, versus older generations who are quickly being outpaced by their younger counterparts.

## **Methodology**

The target population for this study are Millennial aged college students attending a 4-year university in the United States. The Pew Research Center defines a Millennial as one who was born after 1981, but this survey will only monitor those who are over the age of 18 (Fry, 2016). Although a sample will be utilized in order to obtain the data, it is important to point out that the study will be targeting a select age range of students in line with the research objectives, but over the consenting age of 18. The participants must be university students, U.S. or internationally born, and classify as a Millennial born between the years 1981 and 1999. It is extremely important to address that the difficulties with the Millennial population is the age range puts some individuals being born before September 11, 2001 and others being born after the tragedy. This event in history had a significant impact for global travelers, both in the United States and internationally.

From this point on, an ad hoc email system will send out survey requests to the student population who meet the listed criteria. We must assume that not every student is going to participate in the survey. If funding is possible, an incentive may be offered such as drawing for a prize or a meager gift for their participation. This, in turn, has the potential to create a slight bias, but may also increase participation rates from the student population.

By utilizing survey information, the individual participant will be asked about how they perceive risk, where they receive the majority of their news and global information, their amount and type of travel experience, and if various regions or countries would be avoided because of the perceived danger, and demographic information. It is possible that there may even be relationships and significant differences within the Millennial population.

Likert scales would be the most effective way of determining student risk perception in regards to various destinations. Demographic information will also be obtained to see if perception is potentially impacted by socio-economic status, race, religion, sexuality, etc.

Statistical Package for the Social Science (SPSS) will be used to analyze the data for this study. Various statistical procedures (e.g., Linear regression, Chi-Square etc.) will be used to further examine the relationships among variables under study.

### **Expected Outcomes & Study Implications**

Ultimately, this research would be beneficial to see if there is an existing difference in the perception of risk between students who have never travelled out of the country, students who have travelled outside of the country, and international students who reside in the United States. This study can potentially reveal that international students and students who have travelled out of the country would be significantly less fearful or hesitant than students who have never been outside of the United States.

In addition, this study would attempt to gather survey data to measure the fear response or reluctance to travel to countries that are perceived as dangerous, unstable, or with an overall negative stigma. The current body of literature would profit greatly from information relating to the correlation between media outlets, fearfulness and aspects such as gender, religion, sexual orientation, etc.

The direction that can be taken with this study is limitless and there are many implications of the data that will be obtained. A study measuring the risk perception of Millennial aged college student and how they perceive certain travel risks would prove useful in tourism advertising for various universities, companies, countries and regions who are hoping to attract Millennial aged college students. This study fills the literature gap by including perceptions of risk of international students and by also comparing students with various levels of travel experience from zero to being an avid traveler.

This data could also be utilized by schools that have a Study Abroad program and want to see if there are any existing trends or specific perceptions for the current student population. Much time and effort is dedicated by universities in order to identify programs that are sought after by their student populations. Also, to ensure international diversity at the institution, it is crucial that they have ventures with international exchange programs from various regions.

Data obtained will be able to show the areas that are perceived with high risk and if there are particular demographics that they should be targeting at the home institution. Businesses can also benefit similarly to institutions of higher education. Although cultures vary across the world, information that includes international students will provide a more encompassing look at global travel motivations for Millennial aged students. This information could become highly applicable since much of the new generations are becoming more connected and westernized in time. As this generation gets larger and becomes more economically stable, data such as this will only become more valuable in determining long term marketing plans and advertising strategies.

## References

- Basha, N. K., Sweeney, J. C., & Soutar, G. (2015). Effects of country and delivery mode on perceived risk in international higher education. *Journal of Marketing for Higher Education*, 25(2), 171-203. doi:10.1080/08841241.2015.1031313
- Barton, C., Haywood, J., Jhunjhunwala, P., & Bhatia, V. (2013, March 18). Traveling with Millennials. [https://www.bcgperspectives.com/content/articles/transportation\\_travel\\_tourism\\_consumer\\_insight\\_traveling\\_with\\_millennials/](https://www.bcgperspectives.com/content/articles/transportation_travel_tourism_consumer_insight_traveling_with_millennials/)
- Braha, D. (2012, October 31). Global Civil Unrest: Contagion, Self-Organization, and Prediction. *PLoS ONE*, 7(10). doi:10.1371/journal.pone.0048596
- Hudson, S., & Thal, K. (2013). The Impact of Social Media on the Consumer Decision Process: Implications for Tourism Marketing. *Journal of Travel & Tourism Marketing*, 30(1-2), 156-160. doi:10.1080/10548408.2013.751276
- Fry, R. (2016, April 25). Millennials overtake Baby Boomers as America's largest generation. <http://www.pewresearch.org/fact-tank/2016/04/25/millennials-overtake-baby-boomers/>
- Hashimoto, K. (2015, June). A pilot study: Marketing China to American millennials. *The 5th Advances in Hospitality & Tourism Marketing and Management*, 18-21. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20163023206>.
- Lepp, A., & Gibson, H. (2003). Tourist roles, perceived risk and international tourism. *Annals of Tourism Research*, 30(3), 606-624. doi:10.1016/s0160-7383(03)00024-0
- Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010, February 02). Social Media and Young Adults. Retrieved from <http://www.pewinternet.org/2010/02/03/social-media-and-young-adults/>
- Stepchenkova, S., & Eales, J. S. (2011). Destination Image as Quantified Media Messages: The Effect of News on Tourism Demand. *Journal of Travel Research*, 50(2), 198-212. doi:10.1177/0047287510362780
- Trends in U.S. Study Abroad. (2015). Retrieved from [http://www.nafsa.org/Policy\\_and\\_Advocacy/Policy\\_Resources/Policy\\_Trends\\_and\\_Data/Trends\\_in\\_U\\_S\\_Study\\_Abroad/](http://www.nafsa.org/Policy_and_Advocacy/Policy_Resources/Policy_Trends_and_Data/Trends_in_U_S_Study_Abroad/)
- World Travel & Tourism Counsel. (2016) Tourism as a driver of peace. <https://www.wttc.org/-/media/files/reports/special-and-periodic-reports/tourism-as-a-driver-of-peace--full-report-copyrighted.pdf>

# Coastal Restoration Through Community-Based Tourism

Emily Meehan, Daniel Spears<sup>1</sup> and Kc Birendra

University of North Texas, USA

<sup>1</sup>dspears@my.unt.edu

## Introduction

The world's coastal habitats, specifically coral reefs, are under a huge amount of stress, and many agree that improvements in management need to take place, to ensure the protection of the world's coastal resources. A variety of negative trends have had a dismaying effect on the global network of reefs in recent years, such behaviors include destructive fishing techniques, uncontrolled coastal development, and increased visitation to reefs by tourists. Coral reef ecosystems are critical on a global scale because reefs provide a home to more than 1 million diverse species, and they provide protection to many areas by acting as a natural barrier to the fragile coastlines. Furthermore, like rainforests, reefs are believed to offer a plethora of potential treatments for many of the world's most prevalent and aggressive illnesses and disease. Reefs are the breeding grounds for many fish species that are important from a commercial fisheries point of view. Moreover, the Reef Monitoring Network estimated that 120 million people living in coastal areas of Southeast Asia alone depend directly on reefs for many of their daily needs (Dunning, 2015). Lastly, reefs attract many tourists and are often an important component of tourism.

Many of the world's reefs fall under the category of open access. While tourists often have a detrimental effect on reefs, local utilization of natural resources can be just as harmful. In much of the developing world, many people still live subsistence-based lifestyles. While this lifestyle worked for many of our ancestors, today these types of lifestyles typically result in overexploitation of natural resources. Additionally, the open access model does not give locals any motivation to utilize resources in a sustainable manner. Restricted access creates a sense of ownership. For example, residents who keep their right to fish feel as if they own a piece of the reef, and will no longer feel as if they need to fight others for the benefits it gives. Furthermore, when a person believes, something is theirs they have an added incentive to protect it. Therefore, governance of resources can play a critical role in conserving resources, such as coral reefs. Often community-based conservation models adopt inclusive nature of conservation approach to include local communities in conservation and management of natural resources. A Community-based conservation model fulfills the dual goal of conservation and sustaining rural livelihoods by allowing rural communities to utilize their resources to meet the long-term success of conservation. Agrawal and Gibson (1999) suggested that exclusion of community members from the management of resources tends to use resources destructively while involving them in conservation and benefit sharing mechanism can create incentives for them to become good stewards of their resources. Considering the importance and necessity to protect coral reefs while addressing the

needs to incorporate rural livelihoods, the purpose of this study is to examine the community-based tourism (CBT) approach for coral reefs conservation in the context of Costa Rica.

### **Literature Review**

The creation of a respected and capable community group that requires members to work collaboratively together on projects is crucial for the implementation of a successful conservation initiative (White, 2000). The primary goal for coastal policy makers and communities is to design a management system, which creates healthy ecosystem outcomes while simultaneously, ensuring socio-economic wellbeing (Dunning, 2015). The community-based tourism model illustrates the compromises that can be involved in trying to create a sustainable conservation management plan. Combining community participation, environmental education, and economic incentives, paired with legal mandates, in a manner that addresses site-specific issues, coupled with long-term support from not only governments and NGO's but academic institutions and other groups, as well, offers a possible route to success (White, 2000). This type of community-based model has the potential to generate income and contribute to community development but only with considerable investments of both time and money (KISS, 2004). Additionally, while it may rarely eliminate the need entirely, this type of communities based model has the potential to reduce the need for long-term external financing of a conservation program over time (KISS, 2004).

There are varieties of strategies when it comes to protecting the reefs globally. However, recently, due to the difficulties of effectively addressing overall stresses on reefs, such as global warming, the focus has been on reef management at a local level (Roche, 2016). The appeal of a community-based management system is in the prospect of linking conservation and local livelihoods while preserving biodiversity and ultimately reducing rural poverty (KISS, 2004). This type of CBT is initially developed from grassroots beginnings within the community and then progresses outwards on a global level, by incorporating local wisdom, knowledge, culture, and needs (Theerapappisit, 2012). There is a lot of debate surrounding community-based management. However, much of it stems from a lack of agreement on fundamental objectives, and a lack of realistic expectations (KISS, 2004). Bottom-up management is management based within the community and aims to encourage people not to damage the environment, by giving them incentives, as opposed to rules and regulations. Research suggests that bottom-up management leads to a unique "appreciation of indigenous knowledge systems and popular participation towards various future alternatives centered on people and the environment (Theerapappisit, 2012). The primary objective of bottom-up approach of management is to build a strong community and, in doing so, create an environment that fosters learning for residents, rather than promoting tourism as the ultimate end goal (Theerapappisit, 2012). By providing incentives, additional community support may be possible, people must see at least some immediate results from their efforts if they are going to continue with said efforts.

Effective coastal management is more than a simple problem of environmental education or enforcement of laws; management models that utilize the people who use and depend on coastal resources daily are necessary to ensure, not only, widespread participation, but also potentially long-lasting, sustainable results.

## **Methods**

The purpose of this study is to examine CBT in Costa Rica, specifically in the La Fortuna Region. This study will use both primary and secondary data for research. Primary data will be collected through focus group discussions about residence baseline knowledge of the reefs and their current conditions. Followed by in-person interviews which will go more in depth regarding the residences relationship to the reef and coastline in general as well as some of their feelings about tourism and community organization. Preliminary assessment of the project will be conducted in Fall 2017 through review of public policies, and key informant interviews. Review of public policies and key informant interviews will be vital in order to assess the baseline status of the local reefs and environmental resources. Additionally, in order for a community-based project to succeed, a clear understanding of the communities wants needs and desires, as well as their past, is needed.

Providing baseline data to local communities will best illustrate present conditions and can be used as a discussion point during focus group discussions and in-person interviews. Moreover, it is crucial that local residents understand how a management program can help solve issues that are problematic to them; for example, if local communities don't see a link between disturbed or damaged reef habitats, and decreased fish hauls, they will not take action to improve the quality of the reef, however, once the link becomes apparent it's in their best interest to fully participate with conservation efforts (White,2000). In areas where communities have been well-informed and have high participation, the results have been significantly better over the long term (White, 2000).

Preliminary assessment of the project will be followed by focus group discussion and in-person interviews, to be carried out in Spring 2018. Both focus group discussion and in-person interviews will be carried out particularly in relation to SWOT (Strengths, Weaknesses, Opportunities, and Threats) factors regarding community-based tourism in the region. SWOT factors will be used as overarching themes with sub-themes (to be identified based on focus group discussion and in-person interviews) within each factor. A systematic approach will be followed to analyze the data based on framework developed by Braun and Clarke (2006). Analysis of primary data will have a broad focus on commonalities within communities rather than differences between individuals (Jamal, T. B., & Getz, D, 1995).

## Expected Outcomes

CBT model has become popular because it gives stakeholders more power, while simultaneously avoiding many of the pitfalls associated with top-down models, such as lack of support amongst local communities (White, 2000). The CBT model hopes to motivate residents to protect their local resources, rather than explicitly telling them too. The importance of community participation and feelings of ownership are crucial aspects of this type of community-based management. Although CBT models are replicated around the world with similar conceptualization, the outcome from CBT can largely be context-specific due to differences in community structure or its functionality (e.g., Stone & Nyaupane, 2013). Therefore, this study intends to identify SWOT factors of CBT in La Fortuna, Costa Rica, with critical examination of context-specific factors. Many reports on current community-based projects fail to even distinguish between revenues and profits, ignore key issues such as distributional effects and market saturation, and lack any cost-effectiveness analysis (KISS, 2004). A more thorough examination of community-based management projects is needed. This means not only, identifying concrete conservation and socio-economic goals, but also creating a site-specific market analysis that brings to light key issues, such as, wealth distribution within a community, as well as, creating linkage between environmental goals and community incentives (KISS, 2004). The best conservation strategy for any given site must first be developed based on a realistic, educated assessment of the given resources, including the feasibility, social impacts, cost effectiveness, and overall sustainability of the potential project (KISS, 2004).

## References

- Agrawal, A., & Gibson, C. C. (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Development*, 27(4), 629-649.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Dangi, T., & Jamal, T. (2016). An Integrated Approach to "Sustainable Community-Based Tourism". *Sustainability*, 8(5), 475.
- Diedrich, A. (2007). The impacts of tourism on coral reef conservation awareness and support in coastal communities in Belize. *Coral Reefs*, 26(4), 985-996.
- Doiron, S., & Weissenberger, S. (2014). Sustainable dive tourism: Social and environmental impacts — The case of Roatan, Honduras. *Tourism Management Perspectives*, 10, 19-26.
- Dunning, K. H. (2015). Ecosystem services and community based coral reef management institutions in post blast-fishing Indonesia. *Ecosystem Services*, 16, 319-332.
- Hamilton, R., Potuku, T., & Montambault, J. (2011). Community-based conservation results in the recovery of reef fish spawning aggregations in the Coral Triangle. *Biological Conservation*, 144(6), 1850-1858.
- Jamal, T. B., & Getz, D. (1995). Collaboration theory and community tourism planning. *Annals of tourism research*, 22(1), 186-204.
- Kiss, A. (2004). Is community-based ecotourism a good use of biodiversity conservation funds? *Trends in Ecology & Evolution*, 19(5), 232-237.
- Ladkin, A., & Bertramini, A. M. (2002). Collaborative tourism planning: A case study of Cusco, Peru. *Current issues in tourism*, 5(2), 71-93.
- Larsen, R. K., Calgaro, E., & Thomalla, F. (2011). Governing resilience building in Thailand's tourism-dependent coastal communities: Conceptualising stakeholder agency in social-ecological systems. *Global Environmental Change*, 21(2), 481-491.

- Natale, F., Carvalho, N., Harrop, M., Guillen, J., & Frangoudes, K. (2013). Identifying fisheries dependent communities in EU coastal areas. *Marine Policy*, 42, 245-252.
- Pendleton, L., Comte, A., Langdon, C., Ekstrom, J. A., Cooley, S. R., Suatoni, L., . . . Ritter, J. (2016). Coral Reefs and People in a High-CO2 World: Where Can Science Make a Difference to People? *Plos One*, 11(11).
- Pitchon, A. (2015). Large-Scale Aquaculture and Coastal Resource-Dependent Communities: Tradition in Transition on Chiloe Island, Chile. *The Journal of Latin American and Caribbean Anthropology*, 20(2), 343-358.
- Riegl, B., Bruckner, A., Coles, S. L., Renaud, P., & Dodge, R. E. (2009). Coral Reefs. *Annals of the New York Academy of Sciences*, 1162(1), 136-186.
- Roche, R. C., Harvey, C. V., Harvey, J. J., Kavanagh, A. P., McDonald, M., Stein-Rostaing, V. R., & Turner, J. R. (2016). Recreational Diving Impacts on Coral Reefs and the Adoption of Environmentally Responsible Practices within the SCUBA Diving Industry. *Environmental Management*, 58(1), 107-116.
- Simons, I., & Groot, E. D. (2015). Power and empowerment in community-based tourism: Opening Pandora's box? *Tourism Review*, 70(1), 72-84.
- Stone, M. T., & Nyaupane, G. (2013). Rethinking community in community-based natural resource management. *Community Development*, 45(1), 17-31.
- Theerapappisit, P. (2012). The Bottom-Up Approach of Community-Based Ethnic Tourism: A Case Study in Chiang Rai. *Strategies for Tourism Industry - Micro and Macro Perspectives*. DOI: 10.5772/37137
- Turner, R., Fitzsimmons, C., Forster, J., Mahon, R., Peterson, A., & Stead, S. (2014). Measuring good governance for complex ecosystems: Perceptions of coral reef-dependent communities in the Caribbean. *Global Environmental Change*, 29, 105-117.
- White, A. T., & Vogt, H. P. (2000). Philippine Coral Reefs Under Threat: Lessons Learned After 25 Years of Community-Based Reef Conservation. *Marine Pollution Bulletin*, 40(6), 537-550.

# Motivation and Satisfaction of Shore and Land Based Whale Watchers

Lewis Crary, Daniel Spears<sup>1</sup> and Kc Birendra

University of North Texas, USA  
<sup>1</sup>dspears@my.unt.edu

## Introduction

It was not long before Earth's largest animals drew the interest, and soon after, the lance, from civilizations around the world. Their size, accessibility, and diversity of yields made whales extremely appealing for subsistence whalers as well as commercial outfits intent on oil for burning and lubrication (Tønnessen & Johnsen, 1982). From prehistory to the Middle Ages to the Industrial Revolution, whales have played a formative role in human culture and the global economy (Whitridge, 1999; Gardiner, 1997; Vickers, 1983). In recent decades, however, that role is changing.

Not until the late twentieth century were the effects of centuries of unregulated whaling officially recognized. Baleen whales especially faced extinction if practices continued (Burns, 1997; Tønnessen & Johnsen, 1982). Therefore, in 1982, the International Whaling Convention (IWC) declared a moratorium on commercial whaling – a commitment observed today by nearly ninety countries (IWC Membership, 2016). While the ban was enacted principally to allow stocks to revive, it coincided with the popularization of concepts such as conservation and environmentalism (Callicott, 1997). As a result, whaling, like elephant hunting or seal clubbing, is now widely condemned while whale *watching* continues to gain momentum.

In 1991, whale watching attracted 4 million customers distributed across thirty-one countries and, by 2008, 13 million across 119 countries (Lambert et al, 2010). In that same time, whale watching overtook commercial whaling in terms of revenue (Hoyt & Hvenegaard, 2002) with an estimated industry worth of over 1 billion worldwide (Lambert et al., 2008). Whale watching is perceived by many as the quintessential ecotourism experience and proponents consider its success a testament to the potential profitability of responsible wildlife tourism. As more and more communities turn to whale watching as a source of income, understanding whale watch customer attitudes is critical to the success and sustainability of the industry. In this study, shore-based whale watch customer motivation and satisfaction is explored.

## Literature Review

With the meteoric rise of whale watching and its associated boat activity, crowds, and construction, many marine biologists and conservationists question the industry's "eco-friendly" reputation presumed by customers. Studies examining whale responses to boat-based whale watching activities have noted increased swim speed, stereotypy, and reduced respiration (blow spout) intervals among whales – all possible indications of heightened stress (Scheidat et al., 2004; Richter, Dawson, & Slooten, 2006). The sound generated by boat traffic is also potentially harmful. Acoustic studies warn that engine noise can damage cetaceans' hearing and their ability to navigate (Erbe, 2002; Au & Green, 2000).

Shored-based whale watching allows people to view whales without disturbing them. Popular in countries with strict boat-based whale watching restrictions like South Africa, shore-based whale watching is considered a less intrusive and more humane alternative (Findlay, 1997). Despite the minimal impact shore-based whale watching has on whales, no study to date has explored the satisfaction of shore-based whale watch customers. This study addresses this gap and seeks to evaluate tourist motivations and satisfaction from shore-based humpback whale watching experiences relative to boat-based tours on the Hawaiian island of Maui.

## Methodology

The survey instrument being developed is based upon motivation, satisfaction and service quality. Additional questions will be asked of respondents based upon environmental and social efficacy of whale watching and conservation issues. The survey will be administered to two samples of equal size including consumers/tourists having just completed a boat-based whale watching tour and one of those leaving a shore-based whale watching tour. Scale items will be measured along a 1-5 Likert Scale. Paper surveys will be distributed among willing participants in various boat- and shore-based tours on popular whale watching sites on Maui, Hawaii. Tours and respondents will be selected opportunistically until a sample size of 500 is met for both boat- and shore-based groups. The Statistical Package for the Social Sciences (SPSS) software would be used to analyze the data. Various analyses will be conducted including ANOVA, Crosstabs, Frequencies, Factor and Regression analysis.

## Conclusion

Despite its growing popularity and size, the whale watching industry is in its infancy, especially as it relates to understanding visitor profiles, motivation, satisfaction, and service quality. Data from this study on customer experiences from shore- versus boat-based whale watching may facilitate a less-impactful future and add to existing conservation activities within the industry.

## References

- Au, W. W. L., & Green, M. (2000). Acoustic interaction of humpback whales and whale-watching boats. *Marine Environmental Research*, 49(5), 469-481.
- Burns, W. (1997). The International Whaling Commission and Future of Cetaceans: Problems and Prospects. *Colorado Journal of International Environmental Law and Policy* 8(1), 31-88.
- Callicott, J. (1997). Whaling in Sand County: Dialectical Hunt for Land Ethical Answers to Questions about the Morality of Norwegian Minke Whale Catching. *Colorado Journal of International Environmental Law and Policy* 8(1), 1-30.
- Erbe, C. (2002). Underwater noise of whale-watching boats and potential effects on killer whales (*Orcinus orca*), based on an acoustic impact model. *Marine mammal science*, 18(2), 394-418.
- Findlay, K. P. (1997). Attitudes and expenditures of whale watchers in Hermanus, South Africa. *South African Journal of Wildlife Research-24-month delayed open access*, 27(2), 57-62.
- Gardiner, M. (1997). The exploitation of sea-mammals in medieval England: bones and their social context. *Archaeological Journal*, 154(1), 173-195.
- Hoyt, E., & Iñíguez, M. (2008). The state of whale watching in Latin America. *WDCS, Chippenham, UK*.
- Lambert, E., Hunter, C., Pierce, G. J., & MacLeod, C. D. (2010). Sustainable whale-watching tourism and climate change: towards a framework of resilience. *Journal of Sustainable Tourism*, 18(3), 409-427.
- Richter, C., Dawson, S., & Slooten, E. (2006). Impacts of commercial whale watching on male sperm whales at Kaikoura, New Zealand. *Marine Mammal Science*, 22(1), 46-63.

- Scheidat, M., Castro, C., Gonzalez, J., & Williams, R. (2004). Behavioural responses of humpback whales (*Megaptera novaeangliae*) to whalewatching boats near Isla de la Plata, Machalilla National Park, Ecuador. *Journal of Cetacean Research and Management*, 6(1), 63-68.
- Tønnessen, J. N., & Johnsen, A. O. (1982). *The history of modern whaling*. Univ of California Press.
- Vickers, D. (1983). The first whalers of Nantucket. *The William and Mary Quarterly: A Magazine of Early American History and*, 560-583.
- Whitridge, P. (1999). The prehistory of Inuit and Yupik whale use. *Revista de arqueologia americana*, 99-154.

# Sustainable Consumption Behavior of Millennials: Assessment of a Study Abroad Experience

Nathaniel Saul, Daniel Spears<sup>1</sup>, Kc Birendra and Eliecer Vargas

University of North Texas, USA  
<sup>1</sup>dspears@my.unt.edu

## Introduction

Since starting in the MIST program, the majority of the assigned readings have examined sustainability issues in the context of the developing world. From the La Fortuna case study (Matarrita-Cascante et al., 2010) to the use of certification schemes in the volunteer tourism sector (Rattan, 2015) and the effect of tourism on the Galapagos Islands (Mathis and Rose, 2016), the focus of our readings and discussions has been on the means of making tourism in the developing world more sustainable. Though promoting sustainability and environmental protection in the developing world is certainly important, none of the studies have thus far taken into account overconsumption in the developed world. Overconsumption in the developed world poses an enormous threat to attaining sustainability goals, yet the bulk of research is directed toward attaining sustainability in countries with consumption rates much lower than our own. The need to reduce consumption rates and encourage consumers in the developed world to make more sustainable, responsible decisions has never been greater. Means of effectively redressing overconsumption and instilling a greater sense of responsibility in Western consumers are the primary considerations of this literature review. Incorporating sustainability concepts into study abroad programs may work toward achieving these goals.

For many, myself included, studying abroad has a profound effect on “global engagement, education, and career paths” (Paige et al., 2009). One of the potential benefits of studying abroad is the development of “voluntary simplicity,” defined by Murphy et al. (2014, p. 9) as “the effort to lead a more modest, simple lifestyle.” Incorporating sustainability issues into study abroad programs may produce a class of more responsible consumers and reduce overconsumption the West. In particular, encouraging US students to live and study in nontraditional settings (that is, outside of Europe and Australia, where consumption rates are much lower than in this country) may encourage the more widespread practice of voluntary simplicity.

## Literature Review

Many researchers have examined the positive impact of study abroad programs on US students (Paige et al., 2009; Murphy et al., 2014; Tarrant, Rubin, and Stoner, 2014). Paige et. al (2009) considered the effect of studying abroad on global engagement in a research project entitled, *Beyond Immediate Impact: Study Abroad for Global Engagement* (SAGE). Though many studies had been conducted to examine the short-term effects of studying abroad, the SAGE project sought to examine long-term effects. It was the first large-scale study that considered factors other than career paths. In this study, 6,391 US students who had studied abroad from 1960 to 2005 were asked to

assess the effects that studying abroad had on their lives. Five components of global engagement were considered: civic engagement, knowledge production, philanthropy, social entrepreneurship, and voluntary simplicity. It is the final component, voluntary simplicity, that may be the key to reducing overconsumption in the West.

Though admirable for its size and scope, the SAGE study's findings on voluntary simplicity were vague. It was simply reported that "a large percentage of the respondents (86.1%) practice voluntary simplicity to a large or some degree" (Paige et al., 2009, p. 10). In what capacity the respondents practiced voluntary simplicity, and how often they did so, remain unknown. Furthermore, this study did not include a control group of alumni who had not studied abroad, making it impossible to conclusively attribute the practice of voluntary simplicity to studying abroad.

The work of Murphy et al. (2014) also considered the effect of studying abroad on future consumer behavior, albeit briefly. These researchers utilized an online questionnaire based on the Global Engagement Survey (GES) developed for the SAGE project. Two of the twenty-eight items on the survey sought to measure voluntary simplicity. 88 percent of respondents who had studied abroad reported practicing voluntary simplicity, compared to 77 percent who had not studied abroad. These respondents affirmed that they had made purchasing decisions based on the social or political values of the company. Though this study addressed a major shortcoming of the SAGE project by adding a non-study abroad control group, the extent to and frequency with which respondents practice voluntary simplicity were not specifically addressed.

To date, only a few studies have examined study abroad programs that have explicitly incorporated sustainable development themes (Cusick, 2008; Tarrant, Rubin, and Stoner, 2015). Cusick's study (2009) examined a 15-day intensive course in New Zealand. While the focus of his research was on enhancing the quality of the study abroad experience, he concludes that, "Education for sustainable development in the study abroad context may motivate students to manifest learning outcomes on campuses in their communities and thus have a ripple effect on those students unable to participate on such programs" (p. 811). Though future consumer behavior of these students is never considered in this study, the implication is that students who study abroad may serve as catalysts for positive change in their home societies.

Tarrant, Rubin, and Stoner's research (2015) examined the effects of short-term study abroad programs on the respondents' "global perspectives." This study utilized the Global Perspective Inventory (GPI) to measure the effect of studying abroad on students' global perspectives (Braskamp, Braskamp, and Engberg, 2013). Four categories of respondents were considered: students who had studied abroad versus those who had not, and curricula that specifically addressed sustainability versus those which did not. It was hypothesized that students enrolled in study abroad programs that specifically addressed sustainability would show the greatest increase in global awareness, as measured by the GPI. While study abroad students demonstrated greater global awareness, the inclusion of sustainability concerns in the curriculum had no significant impact on GPI scores. The results of this study demonstrate the positive

impact that studying abroad had on students' global awareness, which in turn may lead to more responsible consumer behavior in the future.

A final consideration is whether the location of the study abroad program has any effect on learning outcomes, with a specific emphasis on increased voluntary simplicity. Wells (2006) found that in recent years, US students have expressed greater interest in studying abroad in "nontraditional settings," defined in this study as destinations in Africa, Asia, Latin America, and the Middle East. As a result of the increased interest on the part of the students, many American universities have begun offering additional programs in these regions, setting in motion a mutually-reinforcing cycle. Between 2013 and 2015, China, Costa Rica, Japan, South Africa, Mexico, India, Brazil, Ecuador, Argentina, and South Korea were all among the top twenty destinations for US students in study abroad programs (IIE, 2016). Consumption rates in many of these nations are much lower than those in the United States. To date, no studies have specifically considered the outcomes of studying abroad in a nontraditional setting. This research project would address this gap by examining the possibility of using study abroad programs in nontraditional settings like Costa Rica to encourage the more widespread practice of voluntary simplicity.

## **Methodology**

Based on the results of the literature review, the following questions have been developed as the basis for my research.

1. Will studying abroad in a nontraditional setting have an effect on voluntary simplicity among U.S./Western students?
2. How will the experience of studying abroad in a nontraditional setting affect the behavior of U.S./Western students as tourists and consumers later in life?
3. How can sustainability goals be incorporated into study abroad programs? Does greater awareness of sustainability issues result in more responsible, sustainable consumer decisions?
4. What are the limits to voluntary simplicity? How often and to what extent would US consumers be willing to practice voluntary simplicity?

During my time in Costa Rica, my research will primarily seek to address the first of the aforementioned research questions regarding the promotion of voluntary simplicity among U.S. students. To collect data, a mixed-methods approach consisting of both in-person surveys and supplemental focus-group discussions will be employed. On the quantitative side, a survey instrument will be developed to gauge U.S./ Western student attitudes toward sustainability and the extent to which they practice voluntary simplicity. For the purposes of this research, Murphy et al.'s (2014, p.9) definition of voluntary simplicity, "the effort to lead a more modest, simple lifestyle," will be used. The survey instrument will consist of two sets of items. The first set will measure the degree of importance that students place on various facets of sustainability (e.g. using public transportation, reducing energy/water usage at home, switching to a plant-based/more sustainable diet) using a 5-point Likert scale. The second set of items will seek to gather data on the frequency with which students actually practice voluntary simplicity in their own lives. This section will seek out information about both lifestyle-altering choices that

students have made as well as their purchasing decisions. By comparing the results of the two sections, sustainable behaviors that students perceive to be important but have thus far not engaged in themselves may be identified. Ideally, this survey will be administered twice, both at the beginning of the first semester and at the end of the study abroad experience. In this way, changes in attitudes regarding the importance of sustainability as well as the frequency with which students practiced voluntary simplicity may be tracked. The underlying assumption is that the longer students live in societies with lower overall rates of resource consumption, the more likely they are to practice voluntary simplicity in the future.

Focus-group discussions will be used to supplement the quantitative data collected via the survey instrument. The inclusion of focus-group discussions in this research study would allow respondents to voice specific instances in which their perceptions of the importance of sustainability changed or give examples of purchasing decisions made with voluntary simplicity in mind.

### **Study Contributions**

Through this literature review, it was found that there exists a large body of literature extolling the many virtues of studying abroad. Increased civic engagement, knowledge production, philanthropy, social entrepreneurship, and voluntary simplicity have all been identified as beneficial outcomes of studying abroad. However, no studies have specifically considered the extent to which studying abroad encourages voluntary simplicity. Furthermore, only a few studies have examined the outcomes of study abroad programs that explicitly address sustainability, nor have many considered the effects of studying abroad in nontraditional settings. Encouraging more students to study abroad in nontraditional settings and incorporating sustainability concerns into study abroad programs could serve to reduce overconsumption in the United States.

Though my research may be limited by the relatively small sample size available at CATIE, it contributes to the existing body of knowledge in a meaningful way. The survey may be administered to study abroad participants involved in other programs in the future to determine the extent to which the program influences the practice of voluntary simplicity. For example, it may be beneficial to distribute the survey to future MIST cohorts as they begin their first semester at UNT, at the start of the year at CATIE, and finally at graduation. Doing so may provide conclusive evidence that voluntary simplicity is another positive outcome of studying abroad.

### **References**

- Braskamp, L. A., Braskamp, D. C., & Engberg, M. (2013). *The Global Perspective Inventory (GPI): Its purpose, construction, potential users, and psychometric properties*. Chicago, IL: Global Perspectives Institute, Inc. Retrieved from <http://gpi.central.edu/supportDocs/manual.pdf>
- Cusick, J. (2009). Study abroad in support of education for sustainability: a New Zealand case study. *Environment, development and sustainability*, 11(4), 801-813.
- Institute of International Education. (2016). "Top 25 Destinations of U.S. Study Abroad Students, 2013/14 -2014/15." *Open Doors Report on International Educational Exchange*. Retrieved November 27, 2016, from <http://www.iie.org/opendoors>

- Matarrita-Cascante, D., Brennan, M. A., & Luloff, A. E. (2010). Community agency and sustainable tourism development: The case of La Fortuna, Costa Rica. *Journal of Sustainable Tourism, 18*(6), 735-756.
- Mathis, A., & Rose, J. (2016). Balancing tourism, conservation, and development: A political ecology of ecotourism on the Galapagos Islands. *Journal of Ecotourism, 15*(1), 64-77.
- Murphy, D., Sahakyan, N., Yong-Yi, D., & Magnan, S. S. (2014). The Impact of Study Abroad on the Global Engagement of University Graduates. *Frontiers: The Interdisciplinary Journal Of Study Abroad, 24*, 1-24.
- Paige, R. M., Fry, G. W., Stallman, E. M., Josić, J., & Jon, J. (2009). Study abroad for global engagement: The long-term impact of mobility experiences. *Intercultural Education, 20*(1).
- Rattan, J. K. (2015). Is certification the answer to creating a more sustainable volunteer tourism sector?. *Worldwide Hospitality and Tourism Themes, 7*(2), 107-126.
- Tarrant, M. A., Rubin, D. L., & Stoner, L. (2014). The added value of study abroad fostering a global citizenry. *Journal of Studies in International Education, 18*(2), 141-161.
- Tarrant, M. A., Rubin, D. L., & Stoner, L. (2015). The Effects of Studying Abroad and Studying Sustainability on Students' Global Perspectives. *Frontiers: The Interdisciplinary Journal of Study Abroad, 26*, 68-82.
- Wells, R. (2006). Nontraditional Study Abroad Destinations: Analysis of a Trend. *Frontiers: The Interdisciplinary Journal of Study Abroad, 13*, 113-133.

# Uncovering Dimensionality of Guest Experience at Airbnb Accommodations

Olena Ciftci<sup>1</sup>, Cihan Cobanoglu<sup>2</sup>, Faizan Ali<sup>3</sup> and Katerina Berezina<sup>4</sup>

College of Hospitality and Tourism Leadership  
University of South Florida Sarasota-Manatee, USA

<sup>1</sup>elestp@gmail.com

<sup>2</sup>cihan@cihan.org

<sup>3</sup>faizanali7@hotmail.co.uk

<sup>4</sup>katerina@katerinaberezina.com

## Introduction

Increasing popularity and rapid growth of a peer-to-peer (P2P) accommodation have attracted tremendous attention of public, lodging industry practitioners, and researchers (Guttentag, 2015; Freitag & Haywood, 2015; Fortune, 2015; PwC, 2015; Tussyadiah & Pesonen, 2015; Tussyadiah & Zach, 2016). Airbnb, as the market leader in P2P accommodation industry, has transformed into a strong competitor to hotels in a very short period of time (Freitag and Haywood, 2015). However, as a newcomer to the lodging industry, it is focusing on converting their guests into satisfied and loyal guests (Lyons, 2014). According to Smith and Wheeler (2002), service providers can ensure guests' loyalty by developing satisfactory and positive experiences for them. Consequently, loyal guests will advocate, repurchase and spread positive word of mouth about the service provider (Curtis et al., 2011; Lyons, 2014). Despite its importance, little effort has been paid towards studying Airbnb guests' experience and its further consequences i.e., satisfaction and behavioral intentions. Furthermore, recent scholars have emphasized on the importance of developing specific scale to measure guest experiences in different sectors of lodging and tourism industry (Tan et al., 2013; Walls et al., 2011). Hence, this study aims to determine underlying dimensions of guest experience with Airbnb, and to investigate effect of guests' experience on their satisfaction and behavioral intentions.

The findings of this study can be helpful for Airbnb managers to understand dimensions of guest experience, their satisfaction and loyalty with Airbnb. Moreover, hoteliers may benefit from the results of the study, attract guests who are not their regular target population by adding new components to their operations and strategies. Future research may use the model developed in this study as a basis for better understanding of consumer experiences with Airbnb.

## Literature Review

Following the study conducted by Pine and Gilmore (1998), numerous scholars developed and tested scales to measure customer experience in different hospitality and tourism settings (Ali, Ryu, & Hussain, 2015; Chen and Chen 2010; Gentile, Spiller, & Noci, 2007; Hosany & Witham, 2010; Mehmetoglu & Engen, 2011; Oh, Fiore, & Jeong, 2007; Ren, Qiu, Wang, & Lin, 2016; Xu and Chan, 2010). However, the findings of aforementioned research cannot be generalized to Airbnb guest experience, satisfaction, and after consumption behavioral intentions due to considerations that

Airbnb may fulfill different consumer needs when compared to hotels, tourism destination, or cruises (Tussyadiah, 2016).

To the best knowledge of the authors, the extant academic literature has not produced any empirical research in the context of Airbnb guests' experience as of November, 2016. Even though some of prior studies described factors of Airbnb guests' experience implicitly, they did not identify the main dimensions of the guest experience with Airbnb (Lee, Hyun, Ryu, Lee, Rhee, & Suh 2015; Tussyadiah, 2016; Tussyadiah & Zach, 2016; Tussyadiah & Zach, 2015). Therefore, the following research question was stated for this study:

What are the main dimensions of guest experience with Airbnb?

Prior research in business, hospitality, and tourism has shown that guests' positive behavioral intentions, such as intentions to revisit and recommend to others, is influenced by their satisfaction (Chen & Chen, 2010; Curtis et al., 2011; Hosany & Witham, 2010; Quadri-Felitti & Fiore, 2012), which, in turn, is affected by their experience (Chen & Chen, 2010; Kim, 2010; Oh et al., 2007; Ren et al., 2016; Tung and Ritchie 2011). Hence, following hypothesis were proposed:

H1: Guests' experiences have a significant influence on their satisfaction.

H2: Guests' experiences have a significant influence on their behavioral intentions.

H3: Guests' satisfaction have a significant influence on their behavioral intentions.

## **Methods**

A qualitative approach was used to address the research question and identify attributes of guest experience with Airbnb. First, data mining technics were used to analyze guest reviews on Airbnb website about Airbnb accommodations in Tampa, Orlando, and Miami areas. After text mining, distinct attributes of guest experience with Airbnb were identified. Further, academic literature in hospitality, tourism, and sharing economy, in particular P2P services was reviewed, to find additional attributes of guest experience. Qualitative approach was then followed by the quantitative approach where an exploratory factor analysis (EFA) was conducted to determine the factorial structure of guest experience with Airbnb. This structure was used to develop the questionnaire to collect data via Amazon Mechanical Turk. A self-selection sample of Airbnb guests 18 years old and older who booked Airbnb accommodation within the past 12 months and reside in the US was used. Sample size was chosen based on total number of items, ten responses per one measurement item on the scales (Hair, Black, Babin, Anderson, & Tatham, 2010). A confirmatory factor analysis was performed to evaluate the measurement model of experience, satisfaction, and behavior intentions' constructs. Finally, the underlying hypotheses were tested by employing structural equations modeling (SEM).

## **References**

References are available upon request

# Why Chinese Travelers Choose Airbnb? Building a Model of Customer Decision-making

Zhongyi Ma<sup>1</sup> and Katerina Berezina<sup>2</sup>

University of South Florida Sarasota-Manatee

<sup>1</sup>wilsonma@mail.usf.edu

<sup>2</sup>katerina@katerinaberezina.com

## Abstract

Airbnb was founded in the U.S. and has been rapidly developing since 2008 (Airbnb, n.d.). With its peer-to-peer model and a unique opportunity for interaction between guests and hosts all around the world, Airbnb offers its customers the living experience in local accommodations with local people. Airbnb has grown to become a famous accommodation brand in the world, which value is over 10 billion dollars with 1 million houses covering 34,000 cities in more than 190 countries. A wide penetration and acceptance of Airbnb made it an important competitor to the traditional lodging (Varma, Jukic, Pestek, Shultz, & Nestorov, 2016).

In the process of global brand domestication of Airbnb, China may be one of the attractive markets that increasingly draws the attention of Airbnb because of China's huge economic potential and its large population. However, Airbnb still was not able to fully understand China's market, especially the Chinese traveler decision-making model with regard to acceptance of peer-to-peer accommodations, which results in Airbnb not being able to extend its market rapidly since they entered in 2015. Even though academic research started looking into the area of Airbnb appeal and acceptance by consumers (Guttentag, 2015; Varma et al., 2016), there is a lack of empirical research that would explain customer adoption of Airbnb in the Chinese market.

Based on the problem presented above, this project aims to explore Chinese traveler's decision-making model of choosing Airbnb. According to the theory of planned behavior (Ajzen, 1991) this study proposes that customer intentions of staying in Airbnb may be influenced by customer attitudes towards Airbnb, subjective norms (the opinions of close circles towards Airbnb), and perceived behavioral control of the consumer. As antecedents of these three variables, this study will consider authenticity, trust, online review reliability, culture, and price. The proposed theoretical model will be tested using structural equation modeling based on the responses of 350 Chinese travelers. Overall, the significance of this study is in its attempt to contribute to Airbnb domestication in China's market, and to improve the understanding of Chinese travelers' decision-making. Also, the research model proposed in this study may be applied to other counties with different cultural climates, and help Airbnb to accumulate more experience of brand domestication in the future.

**Keywords:** Airbnb, Chinese travelers, decision model, theory of planned behavior.

## References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Airbnb (n.d.). About us. Retrieved on March 10, 2017 from <https://www.airbnb.com/about/about-us>
- Guttentag, D. (2015). Airbnb: disruptive innovation and the rise of an informal tourism accommodation sector. *Current issues in Tourism*, 18(12), 1192-1217.
- Varma, A., Jukic, N., Pestek, A., Shultz, C. J., & Nestorov, S. (2016). Airbnb: Exciting innovation or passing fad? *Tourism Management Perspectives*, 20, 228–237.

# Determinants of Locations, Participants and Trial Duration for Medical Device Clinical Trials

G Naga Rekha<sup>1</sup> and M H Bala Subrahmanya<sup>2</sup>

Department of Management Studies  
Indian Institute of Science, Bangalore, India  
<sup>1</sup>rekha@mgmt.iisc.ernet.in

## Abstract

Of late, India has emerged as one of the attractive and preferred countries to carry out clinical studies due to numerous advantages, primarily because of its diverse human gene pool and cost-competitiveness. However, the factors influencing the medical device clinical trials have not been explored adequately in the Indian context. It is to throw light on this critical issue with respect to the selection of participants in the clinical trial process, selection of locations and determination of trial duration that the present study has been carried out. Furthermore, characteristics of clinical trials by sponsor category, device type and disease category have been studied. Together, these objectives will provide in gaining insight about the determinants of selection of number of participants, locations and trial duration required for conducting trials.

**Keywords:** participant recruitment, locations, duration, medical device clinical trials, sponsor, disease category, India

## Introduction

India has become one of the attractive and preferred countries to execute clinical trials because of its various advantages such as cost savings, huge population base, largest pool of patients with many diseases; high quality of research professionals and investigators and state-of-the-art infrastructure (Maiti and Raghavendra, 2007; Varawalla and Jain, 2011; Chawan et al., 2015). While the clinical trial activity in the USA and other developed countries exhibited a decreasing trend, global share of clinical trials happening in India grew from 0.9% in 2008 to 5% in 2013 (Mondal and Abrol, 2015). Despite the fact that Indian medical devices industry is tremendously growing at a faster pace and India has emerged as one of the preferred clinical trial destinations by sponsors, yet it is not free of challenges. The first and foremost challenge is to achieve a sufficient number of trial participants to test the device performance which facilitates in translating clinical research in to medical practice (Sung et al., 2003). Clinical trials are conducted in a variety of locations and the selection of these trial sites depend on the sponsors strategies and constraints (Lang and Siribaddana, 2012). Another crucial challenge in the clinical trial activity is the duration of the trial and is one of the vital factors that should be considered by the sponsors while selecting a clinical trial site (McDermott, 2010). Conducting trials with more number of participants and in multiple locations yield better results, but it calls for a huge amount of resources and infrastructure which may not be feasible in all the cases (Allareddy et al., 2014). This study attempts to empirically understand the factors that influence the selection of number of locations, recruitment of number of participants and

time taken to carry out medical device clinical trials which is important for economic, social and technological reasons.

### **Literature Review:**

To begin with, we discuss some of the challenges such as enrolment of number of participants, selection of number of locations and the trial duration faced during execution of clinical trials. Further, factors such as sponsor related, device related, disease and/or speciality area related factors that influence participant recruitment, selection of locations and time taken to perform clinical trials is described in this section.

### **Participant Recruitment During Clinical Trial Stage**

Public participation for clinical trials is one of the central challenges facing the clinical research enterprise which assists in translating clinical studies in to medical practice (Sung et al., 2003). One of the “key determinants” for the successful completion of a clinical trial is the recruitment and retention of adequate number of participants/sample size (Sullivan, 2004). If this is not achieved properly, it will have negative implications such as prolonged trial duration, cost and sometimes termination of clinical trial. Literature points out that recruiting participants for clinical trials has always been the greatest problem which has a huge impact on the cost and time taken for the development of a medical device (Hunninghake et al., 1987; Pugatch and Chu, 2011). It has been concluded that low participant enrolment rates may affect the generalizability and validity of the clinical trial findings (Rengerink et al., 2010; Gul and Ali, 2010; Martin et al., 2013).

### **Selecting the Locations/Sites for Clinical Trials**

A clinical trial site is an “epicentre” for medical research because of the core process of clinical research takes place there (Goel, 2015). The trial site involves many challenges such as the availability of several well-trained investigators and sub-investigators, research nurses, study coordinators, data managers as well as other medical specialists such as pathologists, radiologists, etc (Thatte and Bavdekar, 2008; Saini et al., 2013). Carrying out clinical trials in multiple locations or otherwise named as multi-centre trials were typically regarded as the “gold standard” for evaluating medical treatments. However, this might not be feasible in all the cases. It has also been ascertained that some of the clinical trial locations have been terminated due to low participant enrolment (Bernardez-Pereira et al., 2014). Implementing clinical trial globally or otherwise known as international clinical trials (conducting trials in multiple countries) pose many advantages to sponsors economically in terms of cost and also in getting access to potentially eligible patients which leads to generalizability of the results, early study completion and efficient trial output. Hence, one of the primary challenges for clinical trials conducting in multiple countries is to meet the participant recruitment goals in a specified time frame. As stated by Karlberg and Speers (2010), clinical trial industry needs to identify approximately 50,000 new study sites annually for carrying out clinical trials. One of the major challenges faced by multi-centre trials is the efficiency to recruit participants at individual trial locations. Further, the review of literature related to key outcomes of absorptive capacity i.e., degree of intra-cluster and extra-cluster linkages is brought out in the subsequent sections.

### **Clinical Trial Duration**

One of the crucial aspects sponsors should consider while selecting a study site is the duration of the study protocol (McDermott, 2010). Defining the duration of the clinical trial study is very difficult and is one of the challenges facing the clinical trial industry (Thomas, 2006). Clinical trial duration incorporates various aspects such as design and finalization of the protocol, regulatory and ethics committee approvals and is dependent on the number of participants. The duration of the study varies considerably for each type of interventions being investigated (Dainty and Karlsson, 2003).

The above research studies clearly revealed that participant enrolment, selection of number of locations and trial duration are some of the challenges which need to be addressed for successful clinical trial execution. However, there are some factors that are related to these three challenges which are discussed subsequently.

### **Factors Influencing Clinical Trial Execution**

There are various factors such as sponsor related, device related, disease and/or speciality area related and type of trial related factors that influence participant recruitment, selection of locations and time taken to conduct clinical trials.

#### **Sponsor Related Factors**

Literature has categorized sponsor as industry (companies) and non-industry (universities/medical colleges, hospitals and government organizations). According to a study by Dainty and Karlsson (2003), the primary concern for the sponsor is to achieve eligible participant enrolment to carry out clinical studies. This research also highlighted that involving in industry-sponsored trials offers numerous benefits in getting access to new cutting edge technologies or devices or medications that are not yet in the market.

Using the dataset from clinicaltrials.gov website as of September 2010, based on 96,346 trials and dataset from International Clinical Trials Registry as of March 2014, analysis revealed that majority of trials conducted by industry sponsors recruits more number of participants for carrying out clinical trials compared to other sponsor categories (Califf et al., 2012; Merriel et al., 2015). This finding has also been in accordance with the study by Todd et al., (2013) related to pulmonary, critical care and sleep medicine clinical trials registered in USA clinical trial registry. Based on the results from this study it has been found that the trials involving higher number of participants were more likely to be funded by industry sponsors as compared to the number of participants involved in trials funded by other sponsor categories (Todd et al., 2013). Another study carried out by Dear et al. (2011) analyzed the cancer clinical trials registered in clinicaltrials.gov database and the logistic regression analysis revealed that industry sponsors recruit patients with more advanced disease (in this case cancer) as compared to non-industry sponsors.

#### **Device Related Factors**

Medical devices can be invasive or non-invasive according to the guidelines given by Global Harmonization Task Force (GHTF) on medical device classification. Using the data on cardiovascular clinical trials, Butler et al. (2015) divided the trials in to four

categories such as medication, invasive devices (pacemakers, implantable cardioverter defibrillators, and ventricular assist devices), diagnostic testing/imaging and non-invasive devices (continuous positive airway device and other lifestyle interventions) based on the intervention being examined in each of the trial. Among these trials, majority of the trials were related to medication followed by invasive trials.

### **Disease or Speciality Area Related Factors**

Researchers have used clinical trial data and segregated the interventional trials based on various speciality areas like oncology, cardiovascular, mental health (Califf et al., 2012) and disease states like coronary artery disease, arrhythmias, heart failure (Butler et al., 2015). Based on the clinical studies from [clinicaltrials.gov](http://clinicaltrials.gov) database as of September 2010, the results revealed that cardiovascular trials accounted for the largest proportion of trials assessing medical devices (20.2%) compared to oncology and mental health. In cardiovascular trials, the participant enrolment for clinical trials is nearly twice as large (average 100) compared to other disease related trials (Califf et al., 2012).

### **Gaps in Literature**

Most of the literature emphasize on the influence of sponsor related and disease related factors on the characteristics of trials such as participant enrolment and location of trial sites. However, the factors related to the duration of the trial have been evaluated only to a limited extent. Furthermore, studies focusing on the influence of the type of device on locations, participants and trial duration has not been addressed so far to the best of our knowledge. Additionally, there are a lack of empirical studies using clinical trial data to identify factors relevant for the selection of number of locations, participants and the time taken to execute clinical trials in India specifically for medical devices. Furthermore, all these studies investigated the characteristics of clinical trials from USA trial registry i.e., [www.clinicaltrials.gov](http://www.clinicaltrials.gov). However, to the best of our knowledge, there has not been any systematic empirical analysis that examined the medical device based clinical trials registered in Indian trial registry [www.ctri.nic.in](http://www.ctri.nic.in). It is against this background that we formulate our research objectives.

## **Objectives, Scope, Sample, Conceptual model and Methodology**

### **Objectives**

1. To determine the effect of device related, sponsor related and trial administrative related variables on the recruitment of number of participants, required for executing medical device clinical trials
2. To determine the effect of device related, sponsor related and trial administrative related variables on the selection of number of locations required for conducting medical device clinical trials
3. To determine the effect of device related, sponsor related and trial administrative related variables on the time taken to carry out medical device clinical trials

## Scope

This study is confined only to clinical trial registrations of medical devices registered with Clinical Trials registry of India (CTRI). The medical device trial registrations may comprise both new medical device registration trials and trails comparing a device to an already existing medical device product. The study does not focus on the clinical trial registrations for pharmaceutical products registered with CTRI.

Clinical trials, being considered the means of assuring safety and efficacy of the medical devices on human subjects, the scope of this study does not include the mode or method of execution of clinical trials. However, details of clinical trials which can shed lights on perceived involvement of managerial decisions like allocation of resources, in terms of human resource and time consumption are considered under the scope of this study. Having said that, details of clinical trials like number of participants enrolled for a clinical trial, number of locations where clinical trials have been executed, total duration of clinical trials, are considered a surrogate of effective performance outcomes of clinical trials, and are included within the scope of this study.

## Sample and Data Collection

Data considered for this study, being secondary in nature, were obtained from Clinical Trials Registry of India (CTRI) database. CTRI is a free and online public record system for registration of clinical trials in India ([www.ctri.nic.in](http://www.ctri.nic.in)). The sample selected for medical device clinical trials in India was identified through an intense keyword search. Total number of records found using keyword search was 279. Out of these 279 records, some of the records were excluded after screening assessment because a few of them were not related to medical devices and others have multiple entries (duplication of same record) and hence omitted from the study. About 108 records were identified as medical device clinical trial registrations from the year 2008 to 2014 and the rest of them was drugs.

## Variables

**Table.1:** Definition of Variables

Variable Name		Variable Definition	Reference
Sponsor related	Organization type of PS	The primary sponsors can be from Industry or Non-industry. Industry sponsors are companies, whereas non-industry sponsors include medical college, research institute, hospital or a government organization	Dear et al., 2011; Todd et al., 2013; Bernardez-Pereira et al., 2014; Merriel et al., 2015
	Country of origin of PS	The primary sponsors can be from either India or a foreign country	Merriel et al., 2015
Device related	Invasiveness of device	Invasive device: A device, which, in whole or in part, penetrates inside the body, either through a body orifice or through the surface of the body	Global Harmonization Task Force (GHTF, 2012)
		Non-invasive device: A device which does not penetrate into the body	

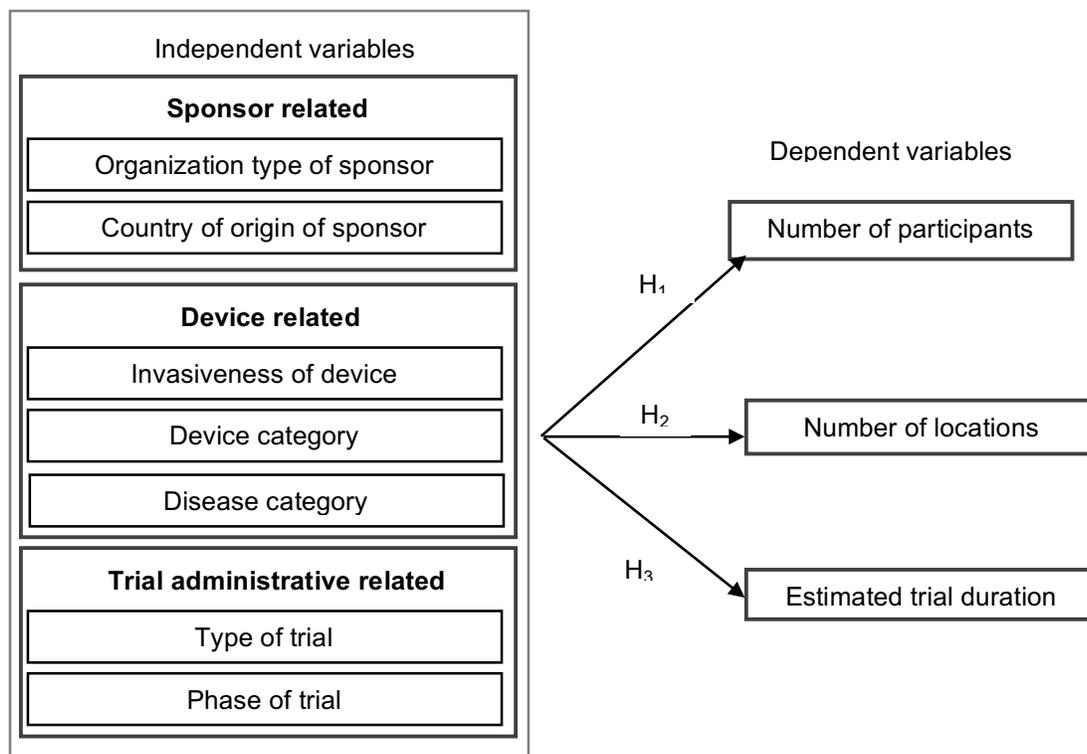
Disease / Speciality area related	Device category	The medical device can be either a stent or pacemaker or defibrillator	Newly introduced variable
	Disease focus	The focus of trials with different disease categories like cardiovascular or thermostability altering diseases or diabetes	Califf et al., 2012; Butler et al., 2015; Merriel et al., 2015
Trial administrative related	Speciality area of focus	The focus of trials with specialty subject areas like cardiology, neonatology, and respiratory medicine and so on	Califf et al., 2012; Merriel et al., 2015
	Number of locations	The location where the clinical trial is carried out in order to test the new device or treatment on participants	Karlberg and Speers, 2010; Califf et al., 2012; Todd et al., 2013; Bernardez-Pereira et al., 2014; Inrig et al., 2014; Cher et al., 2015
	Number of participants	The total number of participants (patients/subjects) recruited for a specific clinical trial to examine a new treatment	Califf et al., 2012; Todd et al., 2013; Bernardez- Pereira et al., 2014; Cher et al., 2015; Merriel et al., 2015
	Estimated duration of trial	The expected time duration of trial, starting from enrolment of first patient to final submission of report	Dainty and Karlsson, 2003; Inrig et al., 2014; Buttler et al., 2015
	Type of trial	It indicates whether the trial is an interventional trial, observational trial	Califf et al., 2012; Inrig et al., 2014; Butler et al., 2015
	Phase of trial	It indicates the trial in a particular phase (Phase 1, 2, 3, 4)	Bernardez-Pereira et al., 2014; Inrig et al., 2014; Butler et al., 2015

### Conceptual Model

In this section, we propose a conceptual model to understand the determinants of selection of number of participants, locations and the time taken to execute medical device clinical trials.

Studies discussed in the literature demonstrate that recruiting adequate number of participants, and selecting more number of locations have always been the greatest challenges which has an enormous impact on the cost and time taken for the product reach the market (Hunninghake et al., 1987; Frank et al., 2004; Pugatch and Chu, 2011). It has been found that participant enrolment, selection of locations and trial duration are some of the challenges faced during the clinical trial execution process. Hence, these three variables are considered the dependent variables for this study.

The conceptual model for the selection of number of participants, locations and trial duration is depicted in Figure 1. The key hypotheses for this conceptual model have been presented subsequently.



**Figure1:** Conceptual Model for Participants, Locations and Trial Duration

### Proposed Hypothesis

**H<sub>1</sub>:** Sponsor related, device related and trial administrative related variables significantly differ with respect to the recruitment of number of participants for clinical trials.

**H<sub>2</sub>:** Sponsor related, device related and trial administrative related variables significantly differ with respect to the selection of number of locations required for conducting clinical trials.

**H<sub>3</sub>:** Sponsor related, device related and trial administrative related variables significantly differ with respect to the time taken for executing medical device clinical trials.

### Method of Analysis

A conceptual model has been developed to identify the effect of sponsor related, device related, disease or speciality area related and trial administrative related variables on the selection of number of participants, locations and trial duration for conducting medical device clinical trials. To empirically test the proposed conceptual model, a Stepwise Backward Elimination Multiple Regression analysis is done on the three dependent variables to identify the significant predictor variables. Since the present study is exploratory in nature, it is apt to use SBEM regression analysis to effectively identify the significant predictors (Whittingham et al., 2006). The models were built using IBM SPSS 20.0.0.0. In all the three model results, the Adjusted R<sup>2</sup>, t-values for each coefficient, F-Statistic from ANOVA and the Variance Inflation Factor (VIF) are reported.

## Results and Discussion:

In this section, a SBEM regression analysis is performed to identify whether there exists any statistically significant influence of sponsor related, device related, disease or speciality area related and trial administrative related variables on the outcome variables i.e., number of locations, participants and trial duration required for conducting medical device clinical trials.

### SBEM Regression models: Participants, Locations and Trial duration

The data on the number of participants, locations and trial duration is skewed. Therefore, the logarithmic transformed value is considered for further analysis. The categorical independent variables namely organization types of sponsor, country of origin of sponsor, invasiveness of device, interventional trial, phase of trial, device category and disease category are coded as shown in Table 2.

The regression model for the log transformed (number of locations, number of participants and trial duration) as the dependent variable is described below:  

$$\text{Log (Number of participants)} = \beta_0 + \beta_1(\text{Organization type of PS}) + \beta_2(\text{Country of origin of PS}) + \beta_3(\text{Invasiveness of device}) + \beta_4(\text{Stent}) + \beta_5(\text{Airway device}) + \beta_6(\text{Cardiovascular disease}) + \beta_7(\text{Interventional}) + \beta_8(\text{Phase 4}) + \varepsilon \dots \dots \text{ (Model 1)}$$

$$\text{Log (Number of locations)} = \beta_0 + \beta_1(\text{Organization type of PS}) + \beta_2(\text{Country of origin of PS}) + \beta_3(\text{Invasiveness of device}) + \beta_4(\text{Stent}) + \beta_5(\text{Airway device}) + \beta_6(\text{Cardiovascular disease}) + \beta_7(\text{Interventional}) + \beta_8(\text{Phase 4}) + \varepsilon \dots \dots \text{ (Model 2)}$$

$$\text{Log (Estimated trial duration)} = \beta_0 + \beta_1(\text{Organization type of PS}) + \beta_2(\text{Country of origin of PS}) + \beta_3(\text{Invasiveness of device}) + \beta_4(\text{Stent}) + \beta_5(\text{Airway device}) + \beta_6(\text{Cardiovascular disease}) + \beta_7(\text{Interventional}) + \beta_8(\text{Phase 4}) + \varepsilon \dots \dots \text{ (Model 3)}$$

**Table 2:** Coding of Categorical Predictor Variables Used in Model 1, 2 And 3

Categorical variable	Variable level	Frequency of observations (N)	Parameter coding
Organization type of Sponsor	Company	72	1
	Medical college/Hospital	36	0
Country of origin of Sponsor	India	72	1
	Foreign	36	0
Invasiveness of device	Invasive	60	1
	Non-invasive	48	0
Interventional trial	Yes	79	1
	No	29	0
Phase of trial	Phase 4	33	1
	Others (Phase 1, 2 and 3)	75	0
Device category	Stent	20	1
	Airway device	24	0
Disease category	Cardiovascular	49	1
	Others (Ex: Respiratory, diabetes)	59	0

The results of the SBEM regression analysis for the three dependent variables are tabulated in Table 3. Predictor variables such as organization type of sponsor

(company / non-company), invasive device type and cardiovascular disease related trials showed a significant positive influence with respect to the three dependent variables (number of participants, number of locations and trial duration).

From Table 3 it is observed that companies have a significant positive influence at 5% and 1% significance level in all the three models. This indicates that sponsors from companies choose more number of locations (multiple sites), recruit higher number of participants and take a longer duration to execute medical device clinical trials in comparison to research institutes or medical colleges or hospitals. This finding is in agreement with literature as well. It is reported that the number of locations (Karlberg and Speers, 2010; Cher et al., 2015) and participants (Califf et al., 2012; Merriel et al., 2015; Cher et al., 2015) selected for clinical trials by industry sponsors is always higher in number as compared to non-industry sponsors. This could be because sponsors from companies are financially stable and may have more expertise in executing clinical trials as compared to other sponsor categories.

Device type such as invasive also have a statistically significant positive influence with respect to the three dependent variables. This specifies that invasive medical devices involve more number of participants, tested in multiple locations and take a longer duration for clinical testing compared to non-invasive device type. This could be because the risk and complexity involved in invasive devices is higher compared to non-invasive device type.

Device category such as stent showed a significant positive influence at 5% significance level in terms of the number of locations. This indicates that stent requires relatively more number of locations to perform clinical trials as compared to other device categories. On the other hand, airway devices showed a significant negative influence (1%) with respect to the trial duration. This suggests that airway devices take relatively less duration for clinical trials as compared to cardiac related devices such as stent, pacemaker etc.

Interventional trial and phase of trial have a significant positive influence with respect to the number of participants and trial duration. However, there is no significant difference has been observed with respect to the selection of number of locations. This indicates that interventional trials involve more number of participants for clinical studies as compared to observational trials. Also, later phase trials (phase 3 / phase 4) take a longer duration for clinical testing as compared to early phase studies (phase 1 / phase 2).

It is further interesting to see that cardiovascular disease trials also have a significant positive influence at 1% significance level in all the three models. This reveals that trials that are related to cardiovascular disease involve more number of participants and are tested in multiple locations and usually take longer duration as compared to respiratory or other disease related trials. Our findings are well-supported by the recent literature in this domain as well. It has been established that the number of locations and participants selected for cardiovascular disease trials are much higher in number as

compared to other disease categories (Califf et al., 2012; Inrig et al., 2014; Butler et al., 2015). Moreover, since cardiovascular trials took a longer duration as it was perceived to be one of the important barriers for clinical trials (Martin et al., 2013; Bernardez-Pereira et al., 2014; Inrig et al., 2014).

## Conclusion

To summarize, this study explored the determinants of selection of number of participants, locations and trial duration for carrying out medical device clinical trials that are registered in Indian trial registry i.e., CTRI. The number of participants enrolled for a clinical trial, number of locations where clinical trials have been executed, total duration of clinical trials, are considered a surrogate of effective performance outcomes of clinical trials. Based on the empirical findings of the proposed conceptual model, it is established that category of sponsorship (company / non-company: research institute, medical college, hospital), device type (invasive / non-invasive), disease category (cardiovascular / respiratory /others) have a statistically significant influence in terms of the three outcome variables.

**Table 3: SBEM Regression Model Results- Participants, Locations and Trial duration**

Predictor Variables	Model 1: Log (Number of participants)			Model 2: Log (Number of locations)			Model 3: Log (Estimated trial duration)		
	Beta	P - value	VIF	Beta	P - value	VIF	Beta	P - value	VIF
Constant		.000			.000			.000	
Organization type of sponsor	.312	.043*	1.919	.177	.058#	1.328	-.185	.101#	1.640
Country of origin of sponsor	-.155	.259	1.334	.076#	.324	1.290	-.070	.469	1.327
Invasiveness of device	.346	.023*	1.785	.362	.027*	1.736	.378	.001**	1.212
Stent	-.122	.454	1.278	.191	.039*	1.103	-.074	.518	1.278
Airway device	.058	.732	1.600	-.003	.975	1.600	-.323	.008**	1.163
Cardiovascular disease	.419	.009**	1.985	.429	.000**	1.364	.163	.105#	1.946
Interventional Phase 4	.244	.071#	1.123	.016	.832	1.119	-.108	.252	1.110
	.175	.107#	1.090	.032	.654	1.084	.153	.090#	1.056
Model Statistics									
Number of Observations		108			108			108	
Multiple R <sup>2</sup>		.325			.441			.400	
Adjusted R <sup>2</sup>		.270			.396			.352	
Standard Error of Estimate		.579			.326			.408	
F statistics		5.958 with p value = .000			9.758 with p value = .000			8.258 with p value = .000	

\*\*p<0.01; \*p<0.05; #p<0.1

Sponsors from companies choose relatively more number of locations (multiple sites), recruit a higher number of participants and take a longer duration to execute clinical trials in comparison to other sponsor categories (Karlberg and Speers, 2010; Cher et

al., 2015; Califf et al., 2012; Merriel et al., 2015; Cher et al., 2015) This could be because sponsors from companies are financially stable and may have more expertise in executing clinical trials as compared to other sponsor categories. Higher risk medical devices such as invasive and in particular, cardiovascular disease trials require more number of locations, participants and take a longer duration for clinical trials as compared to non-invasive devices (airway / respiratory). Thus, we can conclude that sponsorship and type of intervention being investigated play a vital role in the selection of locations, recruitment of participants and the time taken to execute clinical trials for medical devices.

## References

- Maiti, R., & Raghavendra, M. (2007). Clinical trials in India. *Pharmacological Research*, 56(1), 1-10
- Varawalla, N., & Jain, R. (2011). Clinical trials in India In Chin, R., & Bairu, M. (Eds.), *Global Clinical Trials: Effective Implementation and Management* (pp. 119-157). San Diego, CA: Elsevier Inc
- Chawan, V. S., Gawand, K. V., & Phatak, A. M. (2015). Impact of new regulations on clinical trials in India. *International Journal of Clinical Trials*, 2(3), 56-58
- Mondal, S., & Abrol, D. (2015). Clinical trials industry in India: A Systematic Review. Retrieved from: <http://isid.org.in/pdf/WP179.pdf>
- Sung, N. S., Crowley Jr, W. F., Genel, M., Salber, P., Sandy, L., Sherwood, L. M., ... & Larson, E. L. (2003). Central challenges facing the national clinical research enterprise. *JAMA*, 289(10), 1278-1287
- Lang, T., & Siribaddana, S. (2012). Clinical trials have gone global: Is this a good thing? *PLoS Med*, 9(6), e1001228
- Bernardez-Pereira, S., Lopes, R. D., Carrion, M. J. M., Santucci, E. V., Soares, R. M., de Oliveira Abreu, M., ... & Cavalcanti, A. B. (2014). Prevalence, characteristics and predictors of early termination of cardiovascular clinical trials due to low recruitment: Insights from the clinicaltrials.gov registry. *American Heart Journal*, 168(2), 213-219.
- McDermott, P. W. (2010). *Industry Perspective on Clinical Investigative Sites: Maximizing Sponsor Return on Investment* (Master's Thesis)
- Allareddy, V., Rampa, S., Masoud, M. I., Lee, M. K., Nalliah, R., & Allareddy, V. (2014). Overview of registered studies in orthodontics: Evaluation of the clinicaltrials.gov registry. *American Journal of Orthodontics and Dentofacial Orthopedics*, 146(5), 587-593
- Sullivan, J. (2004). Subject recruitment and retention: Barriers to success. *Applied Clinical Trials*, 13(4), 50-54
- Hunninghake, D. B., Darby, C. A., & Probstfield, J. L. (1987). Recruitment experience in clinical trials: Literature summary and annotated bibliography. *Controlled Clinical Trials*, 8(4), 6-30
- Pugatch, M. P., & Chu, R. (2011). The strength of pharmaceutical IPRs vis-à-vis foreign direct investment in clinical research: Preliminary findings. *Journal of Commercial Biotechnology*, 17(4), 308-318
- Rengerink, K. O., Opmeer, B. C., Logtenberg, S. L., Hooft, L., Bloemenkamp, K. W., Haak, M. C., ... & van Pampus, M. G. (2010). Improving participation of patients in clinical trials-rationale and design of IMPACT. *BMC Medical Research Methodology*, 10(1), 1-6
- Gul, R. B., & Ali, P. A. (2010). Clinical trials: The challenge of recruitment and retention of participants. *Journal of Clinical Nursing*, 19(1-2), 227-233
- Martin, S. S., Ou, F. S., Newby, L. K., Sutton, V., Adams, P., Felker, G. M., & Wang, T. Y. (2013). Patient- and trial-specific barriers to participation in cardiovascular randomized clinical trials. *Journal of the American College of Cardiology*, 61(7), 762-769
- Goel, D. (2015). Empowering clinical trial sites with data. *Indian Journal of Medical Specialities*, 6(4), 161-164
- Thatte, U. M., & Bavdekar, S. B. (2008). Clinical research in India: Great expectations? *Journal of Postgraduate Medicine*, 54(4), 318
- Saini, K. S., Agarwal, G., Jagannathan, R., Metzger-Filho, O., Saini, M. L., Mistry, K., ... & Gupta, S. (2013). Challenges in launching multinational oncology clinical trials in India. *South Asian Journal of Cancer*, 2(1), 44-49

- Bernardez-Pereira, S., Lopes, R. D., Carrion, M. J. M., Santucci, E. V., Soares, R. M., de Oliveira Abreu, M., ... & Cavalcanti, A. B. (2014). Prevalence, characteristics and predictors of early termination of cardiovascular clinical trials due to low recruitment: Insights from the clinicaltrials.gov registry. *American Heart Journal*, 168(2), 213-219
- Karlberg, J. P. E., & Speers, M. A. (Eds.). (2010). *Reviewing clinical trials: A guide for the ethics committee*. Clinical Trials Centre
- Thomas, M. K., & Gupta, Y. K. (2006). Drug-eluting stents: A pharmacoclinical perspective. *National Medical Journal of India*, 19(4), 195-199
- Dainty, K., & Karlsson, J. (2003). Factors to consider in determining the feasibility of randomized clinical trials. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 19(8), 882-884
- Califf, R. M., Zarin, D. A., Kramer, J. M., Sherman, R. E., Aberle, L. H., & Tasneem, A. (2012). Characteristics of clinical trials registered in clinicaltrials.gov, 2007-2010. *JAMA*, 307(17), 1838-1847
- Merriel, A., Harb, H. M., Williams, H., Lilford, R., & Coomarasamy, A. (2015). Global women's health: current clinical trials in low-and middle-income countries. *BJOG: An International Journal of Obstetrics & Gynaecology*, 122(2), 190-198
- Todd, J. L., White, K. R., Chiswell, K., Tasneem, A., & Palmer, S. M. (2013). Using clinicaltrials.gov to understand the state of clinical research in pulmonary, critical care, and sleep medicine. *Annals of the American Thoracic Society*, 10(5), 411-417
- Dear, R. F., Barratt, A. L., McGeechan, K., Askie, L., Simes, J., & Tattersall, M. H. (2011). Landscape of cancer clinical trials in Australia: Using trial registries to guide future research. *Medical Journal of Australia*, 194(8), 387-391
- Global Harmonization Task Force (GHTF, 2012). Definition of terms. <http://www.imdrf.org/docs/ghtf/final/sg1/technical-docs/ghtf-sg1-n071-2012-definition-of-terms-120516.docx>
- Butler, J., Tahhan, A. S., Georgiopoulou, V. V., Kelkar, A., Lee, M., Khan, B., ... & Gheorghiade, M. (2015). Trends in characteristics of cardiovascular clinical trials 2001-2012. *American Heart Journal*, 170(2), 263-272
- Frank, G. (2004). Current challenges in clinical trial patient recruitment and enrollment. *SoCRA Source*, 2(February), 30-38
- Whittingham, M. J., Stephens, P. A., Bradbury, R. B., & Freckleton, R. P. (2006). Why do we still use stepwise modelling in ecology and behaviour? *Journal of Animal Ecology*, 75(5), 1182-1189
- Cher, D. J., & Capobianco, R. A. (2015). Spine device clinical trials: Design and sponsorship. *The Spine Journal*, 15(5), 1133-1140
- Inrig, J. K., Califf, R. M., Tasneem, A., Vegunta, R. K., Molina, C., Stanifer, J. W., & Patel, U. D. (2014). The landscape of clinical trials in nephrology: A systematic review of Clinicaltrials.gov. *American Journal of Kidney Diseases*, 63(5), 771-780

# Relationship Between Facebook Advertisements Consumer Attitude: A Case Study of Generation Y

Ali Tehci<sup>1</sup>, Salih Yildiz<sup>2</sup>, And Emel Yildiz<sup>3</sup>

Gumushane University

<sup>1</sup>tehciali@hotmail.com

<sup>2</sup>salihyildiz@gumushane.edu.tr

<sup>3</sup>emelyildiz@gumushane.edu.tr

## Abstract

The aim of this study is to determine the relationship between Facebook advertisements and consumer attitude. In the study the data was obtained using online and face to face survey for 385 people who are persons 15-35 years old and known as Y generation and the research data was tested with using Cronbach alpha coefficient method, factor analysis, one way Anova, correlation analysis. No significant difference was found between Facebook frequency of visit and consumer attitude, but there was a positive relationship between advertising dimensions and consumer attitude. Respectively, the dimensions that were found to be the most affair with consumer attitudes were entertainment, credibility and informativeness variables while it was found that there was a negative relation with irritation variables.

**Keywords:** social media, Facebook, online advertising, consumer attitude.

## Introduction

With the development of technology, digital media has become an important channel in terms of marketing communication. Digital environment changed consumer and business links and offers new opportunities for accessing to information, reduction in transaction costs and easier connection between buyers and sellers. Digital environment also provide wide range of economic benefits in terms of innovation, creativity, time, unlimited access to information sources and reduction of environmental costs (Muller et al., 2011: 10). Social networks that provide people communicate and share information with other people by creating online profiles, take part in the lives of millions of people (Bronstein 2013: 173). Especially social media, which is a fundamental part of the life of young people is used to connect with friends, to share information about products and services (Gaber and Wright, 2014: 52). Therefore, marketers now advertising to existing and potential consumers by using different types of social networks (Awad, 2015: 74). Time spent on Facebook is increasing day by day and this situation lead to businesses to include online advertisings to firms' marketing budgets (Lee et al., 2014: 2). It is stated that social media is a mandatory way for global marketing communication to reach young people and it covers most of the advertising budgets (Duffett, 2014: 499).

Advertisement, one of the most effective ways of communicating, is defined as a tool that help consumers make their choice at the point which product is beneficial to them in terms of meeting their needs (Kannan, 2013: 2). Advertisement that is defined as the promotion and general presentation of goods, services, or ideas through mass media

such as newspapers, magazines aims to inform the customers, to create perception and awareness for the product or brand (Ashmawy and Sahn, 2014: 42-43; Kotler and Keller, 2012: 478). For this reason, it is stated that advertisements have great effect on customers purchase decisions (Giri, 2015: 1). With the globalization and development of technology, internet advertising have different forms than traditional media (Jothi et al., 2011: 234).

Being personal, interactive and measurable is the most important features that differentiate internet advertising from traditional advertising and making internet ads on social networks has made it important to research consumer attitudes towards advertisements (Kazançoğlu, et al., 2012: 162). Therefore, advertising in social media has gain more importance than traditional advertising. The growing popularity of social media requires advertisers to be more engaged with social networks in communication with the consumer (Otugo et al., 2015: 436). This leads marketers to adopt social media more in their activities and to use social media to communicate with existing and potential customers (Gaber et al., 2014: 53). It is stated that social media advertising have some advantages such as dissemination of brands, ideas and services to target audience and to give information about the presence on the market (Jothi et al., 2011: 235). Thereby, it is important how to manage different channels in marketing communication and how to value the company or brand (Chaffey, 2010: 187).

Today, almost every consumer is spending time on the internet and as a result, businesses are expanding their marketing campaigns to reach consumers through online platforms. There are many popular social networks today and businesses are very interested in advertising on these popular social networking sites. Facebook, which is one of the popular social networking sites and is in first place in terms of number of users, has 1.72 billion users and 74,2 million pages in the world. Also, Facebook that increases the total number of users by 12% between 2014-2015 can impact many markets (Statisticbrain, 2016).

Diversity of facebook users in terms of demographic factors provides great convenience to advertisers in terms of reaching target audience and making market segmentation (Tortlak and Ay, 2013: 86). Therefore, facebook, which connects people to one another and promotes social interactions, is becoming a promising platform for introducing a product or service (Kodjamanis and Angelopoulos, 2013: 57). Facebook that is getting bigger and bigger among the various social media applications is becoming important for advertisers and marketers to promote products and services and affect consumers purchase decisions (Otugo et al., 2015: 435) and becoming an attractive platform to increase brand awareness and to engage with potential customers (Arkonsuo and Leppiman, 2014: 48). Thereby, facebook may be thought to be a more effective marketing communications environment as a commercial information is demanded or created rather than an environment in which commercial messages are pushed to the user, such as in the traditional media (Köseoğlu, 2013: 98).

Although the ads on facebook pages offer limited product information, internet users directed to the advertising web sites or facebook pages by clicking on the ads and can

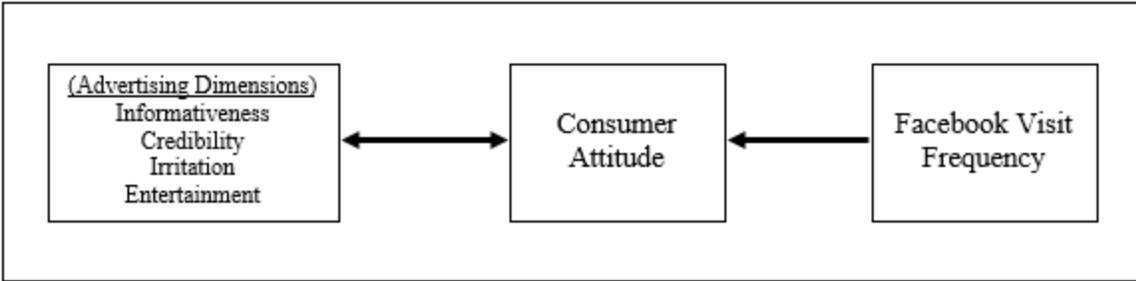
access product or purchase information. In this sense, the informativeness dimension of advertising means the submission of information to meet the needs of consumers and advertisements that are informative are positively associated with consumers' attitudes (Alsamydai and Khasawn, 2013: 44). Entertainment from advertising dimensions is perceived as exciting and enjoyable. Disturbing, deceptive or unwanted Facebook ad messages affect negatively attitudes of consumers towards Facebook advertising. The credibility of the advertisement is related to the reliability of the advertisement at consumers and this factor has significant influence on consumer attitudes towards advertising (Alsamydai and Khasawn, 2013: 45-46).

Alsamydai and Khasawn (2013) in their study on Jordan consumers found that while informativeness, entertainment and credibility have positive effect on consumer attitude, message irritation has negative effect on consumer attitude towards Facebook advertising. Yousif (2012) examine Facebook users' tendency to advertising messages in Jordan and demonstrate that the ads are very interesting in social networks, advertising informations are perceived as credible and lead to consumers to purchasing process (Yousif, 2012: 122). Following technological developments, many researchers study to measure consumers' attitudes toward online advertising. But research on how advertising affects consumer buying behaviors through social networks is insufficient and therefore the views on the results of Facebook ads are controversial (Hardwick et al., 2014: 4). Because literature related to social media advertising is very limited, it is stated that many researchers focus on online or interactive advertising and need to research to explore more social media advertising (Bond et al., 2010: 3).

Chu and Kim (2011) in their study that aims to understand consumers' attitudes towards Facebook advertising, found that users have positive and negative attitudes towards social media advertising but university students and younger users are more likely to have positive attitudes towards social media advertising (Gaber et al., 2014, 56). It is stated that online advertising on consumers' online buying behaviour may differ in terms of countries' cultures, histories, economic and technological developments (Wang and Sun, 2010: 104). Despite the positive or negative aspects of Facebook advertising, online advertising is still confronted as one of the situations that shape the consumer buying process (Hardwick et al., 2014: 8). In this sense it is thought that this study will shed light on marketers in terms of understanding the relationship between Facebook advertisements and consumers' attitudes.

### **Research Purpose, Model and Hypothesis**

Social media which is increasingly used every day and has an important place in human life, is influential in consumers' online shopping process. Therefore, the purpose of this study is to determine the relationship between Facebook advertising sizes and consumer attitudes and the direction of this relationship. The model created for the purpose of the research is shown in Figure 1.



**Figure 1.** Research Model

Research hypothesis are as follows.

**H1:** There is a significant relationship between advertising dimensions and consumer attitude

**H1a:** There is a significant relationship between informativeness and consumer attitude

**H1b:** There is a significant relationship between credibility and consumer attitude

**H1c:** There is a significant relationship between irritation and consumer attitude

**H1d:** There is a significant relationship between entertainment and consumer attitude

**H2:** Facebook Visit Frequency leads to a meaningful difference in consumer attitudes.

**Scope Of The Research**

The main mass of the research is composed of consumers between 14-36 years old known as Y Generation. Data were obtained from online and face to face questionnaire between 09/05/2016 – 07/07/2016. The sample size of the research consist of 385 questionnaires returned as a result of questionnaire survey. The first part of the questionnaire is a 5 Likert type; 1: I definitely not agree, 2: I do not agree, 3: I agree or disagree, 4: I agree, 5: I definitely agree. These questions are the statements that measure the relationship between advertising dimensions and consumer attitude. The second part of the questionnaire consist of questions related to demographic factors. Alsamydaı and Khasawneh (2013), Gaber and Wright (2014) studies were used for scale formation. Demographic characteristics of participants are as Table 1.

**Table 1:** Frequency and Percentage of Participants' Demographic Characteristics

<b>Education</b>	<b>N</b>	<b>%</b>	<b>Age</b>	<b>N</b>	<b>%</b>
Primary Education	45	11,7	14-19	25	6,5
High School	76	19,7	20-25	146	37,9
University	223	57,9	26-30	80	20,8
PostGraduate	41	10,6	31-36	134	34,8
<b>Visit Frequency</b>	<b>N</b>	<b>%</b>	<b>Gender</b>	<b>N</b>	<b>%</b>
1-4 hour	162	42,1	Female	171	44,4
5-10 hour	92	23,9	Male	214	55,6
10-20 hour	52	13,5			
20-40 hour	36	9,4	<b>Total</b>	385	100
40 hour and above	43	11,2			

As seen in table 1, there is not much difference between the distribution of the number of female (171) and male (214) consumers. In terms of education level, the vast majority

of participants are university graduates with a rate of 57.9%, followed by high school with 19,7%, primary education with 11,7% and post graduate with 10,6%. 37,9% of the consumers who participated in the survey are 20-25, 34,8% are between 31-36 and 20,8% are between 26-30 years old. Majority of consumers (42,1%) visit Facebook for 1-4 hours per week, followed by consumers who visit 5-10 with 23,9% and 10-20 hours with 13,5%.

## Findings

The reliability of the scale used in the research was tested by Cronbach Alpha Coefficient method and its validity by Factor Analysis.

### Reliability and Validity of Research

Data were analyzed with SPSS program and a reliability analysis was conducted to measure the reliability of the survey questions. Reliability is the consistency between independent measures (Baş, 2010: 236). As a result of the reliability analysis, the Cronbach Alpha Coefficient was 0.865. The closer the Cronbach's Alpha Coefficient is to 1, the greater the reliability of the scale (Kalaycı, 2010: 405). It is stated that Cronbach's Alpha Coefficient is 81%-100% expressed as sign that the research is very reliable (Nakip 2013: 205). When the overall alpha values of the scales are examined; Informativeness is 0,868, Credible is 0,831, Irritation is 0,670, Entertainment is 0,807 and Consumer Attitude is 0,865. Accordint to this results generally it is possible to say that the research is very reliable except a factor.

To determine whether the data set is suitable for factor analysis KMO and Barlett Test was used. With the Bartlett test, it was determined that there was sufficient level of correlation between variables to perform factor analysis ( $p=0,00<0,05$ ). KMO is 0,914 and it can be said that the variables are suitable for factor analysis. As a result of the KMO test, it is interpreted that the sample size is "very good" if the value is between 0.90-1. Validity is the degree of measure what is it purported to measure or can be measure without confuse with other things (Baş 2010: 237). One of the methods used for validity analysis is Factor Analysis. As a reuslt of Factor analysis it can be said that the structural validity of this scale is at a good level when the explained variance of the scale is 0.50 and above (Kalaycı 2010: 330).

**Table 2:** Results of Factor Analysis

Components	Variance (%)	KMO	Bartlett Test	P
Informativeness	71,823	0,800	761,337	,000
Credibility	75,078	0,699	471,982	,000
Irritation	60,538	0,620	194,808	,000
Entertainment	72,159	0,710	376,123	,000
Consumer Attitude	78,815	0,736	550,183	,000

Since values of KMO Sampling Sufficiency and significance levels of the data less are smaller than 0,01 and Barlett test is significant at 99% confidence level it is said that correlations between variables are high and data sets are suitable for factor analysis.

## Testing the Research Hypothesis

In research the Anova test was used to determine whether there is a significant difference between the frequency of Facebook visits and consumer attitudes, correlation analysis was used to examine the relationship and direction of relations between the dimensions of advertising and consumer attitude.

## Anova Test Results on Facebook Visit Frequency

**Table 3:** Anova Test Results - Facebook Visit Frequency and Consumer Attitude

Scale	Visit Frequency	N	Mean	SD	Source	SS	df	MS	F	Sig.
<b>Consumer Attitude</b>	1-4	162	2,2654	1,03902	Inter group	,737	4	,184	,175	,951
	5-10	92	2,2862	,89577						
	10-20	52	2,3205	1,10842	In-group	399,487	380	1,051		
	40 and above	36	2,3704	1,10634						
	Total	43	2,1938	1,05968	Total	400,224	384			

Variance Homogeneity Test => **p: 0,140**

As seen in Table 3 p value is 0.140 in the variance homogeneity test, so it can be said that the results of the one-way ANOVA test are healthy. But Sig. value, indicating whether the difference between consumers' facebook visit frequency and consumer attitude is meaningful, is 0,951, so there was no significant difference between consumers' facebook visit frequency and consumer attitude. Therefore, H2 is not supported.

## Correlation Analysis Results

**Table 4:** Correlation Analysis Results

	Consumer Attitude	Informativeness	Credibility	Irritating	Entertainment
<b>Consumer Attitude</b>	1	0,636*	0,661*	-0,185*	0,733*
<b>Informativeness</b>		1	0,690*	-0,203*	0,528*
<b>Credibility</b>			1	-0,184*	0,613*
<b>Irritating</b>				1	-0,134*
<b>Entertainment</b>					1

\* Pearson's correlation coefficients as marked are significant at  $\alpha = 0.01$  level.

As a result of correlation analysis it is found that there is a significant and positive relationship between Facebook advertisements and consumer attitude. Independent variables that were found to be most effective on consumer attitude were respectively entertainment, credibility and informativeness variables. But irritation dimension has weak negative relationship with consumer attitude. So, H1 (H1a, H1b, H1c, H1d) is supported.

## Conclusion

Nowadays traditional marketing communication is inadequate and so with the development of technology businesses began to use social media effectively to communicate with consumers. Rapidly developing technology has brought differences to the forms of communication and consumption, also with the increasing use of the internet, businesses are trying to exist in social media environments to retain and satisfy their customers and in this way they try to reach consumers. The increase in the number of consumers using the internet has made it possible to increase the number of advertisements made through digital channels. Spending time on facebook, one of the most used social media tools by the people, is a means by which marketers can demonstrate presence in this field and, in the academic sense, to do their work.

In the reserach One-Way ANOVA was used to determine whether there was a significant difference between the frequency of facebook visits and consumer attitudes and Correlation analysis was used to test relationship between advertising dimensions and consumer attitudes. According to the results of the study; As a result of the one-way ANOVA test, there was no significant difference between the frequency of Facebook visits and consumer attitudes. As a result of the correlation analysis, it was found that Facebook advertisements had a positive correlation with consumer attitude at 1% level. The most effective independent variables on consumer attitudes are respectively; entertainment, credibility and informativeness. But there is negative weak relationship between irritation and consumer attitude.

In general, when looking at the results of the study, Facebook visiting frequency does not make difference on consumer attitude. This means that there is no difference attitudes of consumers who use Facebook frequently or rarely. On the other hand, there is a high correlation between advertisements that are informative, credible and entertaining with consumer attitudes. In this context, it can be said that advertisings should be take care of.

## References

- Alsamydai Mahmood Jasim, Mohammad Hamdi Al Khasawneh. (2013). "Antecedents and Consequences of E- Jordanian Consumer Behaviour Regarding Facebook Advertising", *Global Business and Management Research: An International Journal*, 3(4):41-60.
- Ashok V. Giri. (2015). "Advertising and Consumer Behaviour", *International Journal of Multifaceted and Multilingual Studies*, 4(1): 1-9.
- Ashmawy Mariam El, Farid El Sahn. (2014). "Measuring the University Students' Attitude Toward Facebook Advertising" *The Macrotheme Review*, 3(9): 40-55.
- Awad, Alhaddad Abdullah. (2015). "The Effect of Advertising Awareness on Brand Equity in Social Media", *International Journal of e-Education, e-Business, e-Management and e-Learning*, 5(2): 73-84.
- Baş, Türker; (2010), "Anket", *Genişletilmiş 6. Baskı, Seçkin Yayınevi*, ss. 271.
- Bond Camilla, Carla Ferraro, Sandra Luxton, Sean Sands. (2010). "Social Media Advertising: An Investigation of Consumer Perceptions, Attitudes, and Preferences for Engagement" [http://www.anzmac.org/conference\\_archive/2010/pdf/anzmac10Final00326.pdf](http://www.anzmac.org/conference_archive/2010/pdf/anzmac10Final00326.pdf), 11 Aralık 2016'da erişildi.
- Bronstein, Jenny. (2013). "Like me! Analyzing the 2012 Presidential Candidates' Facebook Pages", *Online Information Review*, 37(2): 173-192.
- Chaffey, Dave. (2010). "Applying Organisational Capability Models to Assess the Maturity of Digital-Marketing Governance", *Journal of Marketing Management*, 26(3-4): 187-196.

- Duffet, Rodney Graeme. (2014). "Facebook advertising's influence on intention-to-purchase and purchase amongst Millennials", *Internet Research*, 25(4): 498-526.
- Gaber, Hazem Rasheed, Len Tiu Wright, (2014). "Fast-food advertising in social media. A case study on Facebook in Egypt", *Journal of Business and Retail Management Research* 9(1): 52-63.
- Jialin Hardwick, Lauriane Delarue, Barry Ardley, Nick Taylor. "Mobile Phones Purchases and Consumer Decision Making Process: The Role of Facebook Online Advertising" <http://eprints.lincoln.ac.uk/14445/>, 08 Aralık 2016'da erişildi.
- Kalaycı, Şeref (2010), "Faktör Analizi". SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri. Ed. Ş. Kalaycı. Ankara: Asil Yayın Dağıtım LTD.ŞTİ. 321-331.
- Kazançoğlu İpek, Elif Üstündağlı, Miray Baybars. (2012). "Tüketicilerin Sosyal Ağ Sitelerindeki Reklamlara Yönelik Tutumlarının Satınalma Davranışları Üzerine Etkisi: Facebook Örneği", *Uluslararası İktisadi ve İdari Araştırmalar Dergisi*, 8(4): 159-182.
- Kodjamanis Antonis, Spyros Angelopoulos. (2013). "Consumer Perception and Attitude Towards Advertising on Social Networking Sites: The Case of Facebook", II. International Conference on Communication, Media, Technology and Design, 52-58.
- Kotler Philip, Keller Kevin Lane. (2012). "Marketing Management", Prentice Hall, 14th ed.
- Köseoğlu, Özgür. (2013). "Bir Pazarlama İletişimi Ortamı Olarak Facebook: Reklam ve Elektronik Ağızdan Ağıza Mesajların Karşılaştırılmasına Yönelik Bir Analiz", *Global Media Journal: Turkish Edition*, 3(6): 74-101.
- Lee Dokyun, Kartik Hosanagar, Harikesh S. Nair. (2014). "The Effect of Social Media Marketing Content on Consumer Engagement: Evidence from Facebook", [http://misrc.umn.edu/wise/2014\\_Papers/5.pdf](http://misrc.umn.edu/wise/2014_Papers/5.pdf), 05 Kasım 2016'da erişildi.
- Livi Riivits-Arkonsuo, Anu Leppiman. (2014). "Online Word-of-Mouth on Brands and Experience Marketing", *Journal of Management of Change*, 32/33: 43-55.
- Nakip, M., (2013), "Pazarlama Araştırmalarına Giriş", Seçkin Yayıncılık, ss. 205.
- Otugo, Nkiru Esther, Uzuegbunam, Chikezie Emmanuel, Obikeze, Chinedu Okey. (2015). "Social Media Advertising/Marketing: A Study of Awareness, Attitude and Responsiveness by Nigerian Youths", *International Conference on Communication, Media, Technology and Design*, 435-451.
- P. Sri Jothi, M. Neelamalar, R. Shakthi Prasad. (2011). "Analysis of Social Networking Sites: A Study on Effective Communication Strategy in Developing Brand Communication", *Journal of Media and Communication Studies*, 3(7): 234-242.
- Patrice Muller, Mette Damgaard, Annabel Litchfield, Mark Lewis, Julia Hörnle, (2011)."Consumer Behaviour in a Digital Environment" [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2011/464441/IPOL- IMCO \\_ET\(2011\)464441\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2011/464441/IPOL- IMCO _ET(2011)464441_EN.pdf), 05 Kasım 2016'da erişildi.
- R. Kannan, Sarika Tyagi. (2013). "Use of Language in Advertisements", *English for Specific Purposes World*, 37(13): 1-10.
- Torlak Ömer, Ufuk Ay. (2013). "Facebook'ta Bulunma Amacı ve Facebook Reklamlarına Duyulan İlgi Arasındaki İlişki", *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 4(14): 83-94.
- Ying Wang, Shaojing Sun. (2010). "Examining the Role of Beliefs and Attitudes in Online Advertising a Comparison Between the USA and Romania" *International Marketing Review*, 1(27): 87-107.
- Yousif, Rudaina Othman. (2012). "The Extent of Facebook User's Interest in the Advertising Messages", *International Journal of Marketing Studies*, 3(4): 122-133. <http://www.statisticbrain.com/facebook-statistics/>, 06 Kasım 2016'da erişildi.

# Rural Tourism and its Impact on Thriving and Non-Thriving Communities in The State of Arkansas

Dylan Martinez<sup>1</sup>, Kelly A. Way<sup>2</sup> and Zola K. Moon<sup>3</sup>

College of Agricultural, Food and Life Sciences  
University of Arkansas, USA

<sup>1</sup>dcm005@uark.edu

<sup>2</sup>kway@uark.edu

<sup>3</sup>zmoon@uark.edu

## Introduction

Tourism is among the recommended development tactics for rural areas around the globe. Tourism activities are not risk-free for the local environment and social fabric. Rural communities consider tourism and concomitant entrepreneurship as strategies to reverse economic declines. As a relatively inexpensive strategy, tourism has become an increasingly prevalent community option. Tourism is vital to the state of Arkansas' economy. In 2015, 28 million visitors spent \$7.2 billion in travel expenditures (an increase of 9% over 2014) which equated to \$374 million in state taxes and \$137 million in local taxes (Arkansas Department of Parks & Tourism 2015-2016 Annual Report). This study examines the role rural tourism plays in thriving and non-thriving rural communities in the state of Arkansas.

## Literature Review

The demand for rural tourism development has accelerated in recent years with the help of qualities that tourists are seeking, such as personal contact, authenticity, heritage and individualism (Gartner, 2004, Long and Lane, 2000). Media has focused on the 'authenticity' of rural areas and a rural life that people are feeling threatened by mass retailers (Wal-Mart) and global food service chains (McDonald's) and loss of the traditional ways has led to the search for the untouched rural communities (Gartner, 2004). Rural tourism development has potential due to the perception that it is a 'clean' and economical way to generate revenue from tourists in small communities (Lewis, 1998). The idea is to conserve and promote local lifestyles, environment, economies and traditions by empowering the local communities with opportunities (Pallavi, 2011). Rural tourism development continues to grow with the ongoing interest in rural communities.

## Methods

As part of a larger project, (Families in Arkansas-Strong, Thriving, and Resilient-FASTR) adult residents from four rural counties, two thriving (Marion and Pike) and two non-thriving (Stone and Woodruff), were randomly selected to participate. Thriving and non-thriving was based on the researchers' expert analyses of secondary data examining a suite of sociodemographic indicators including: population and economic growth, tax base, civic infrastructure and migration rates, population age structures, labor force and industry composition, educational attainment and health rankings in the state.

Based on an extensive literature review, **two separate measures** were developed from 15 characteristics and 19 aspects of rural tourism considering present and future potential value for the community. Study participants rated 15 rural tourism characteristics to assess perceived importance of each characteristic and rated 19 aspects of rural tourism involving both present and future potential value of each aspect. An analysis of the relationships between thriving v. not thriving communities and both the perceived importance and the perceived value of rural tourism was conducted, controlling selected demographic characteristics. Research questions were centered on patterns of response among participants and latent class analysis (LCA) was used to identify underlying groups based on responses-person-centered analysis.

## Findings

A subset of seven indicators, those with sufficient responses in cells for estimation, reflective of aspects of rural life were analyzed. Those were: cost of living in the area, preserving local culture and traditions, peacefulness and quiet of the area, abundance of wildlife, attractive area, and personal safety and security. Goodness of fit indicators among competing models indicated three latent classes that were appropriate (see Table 1).

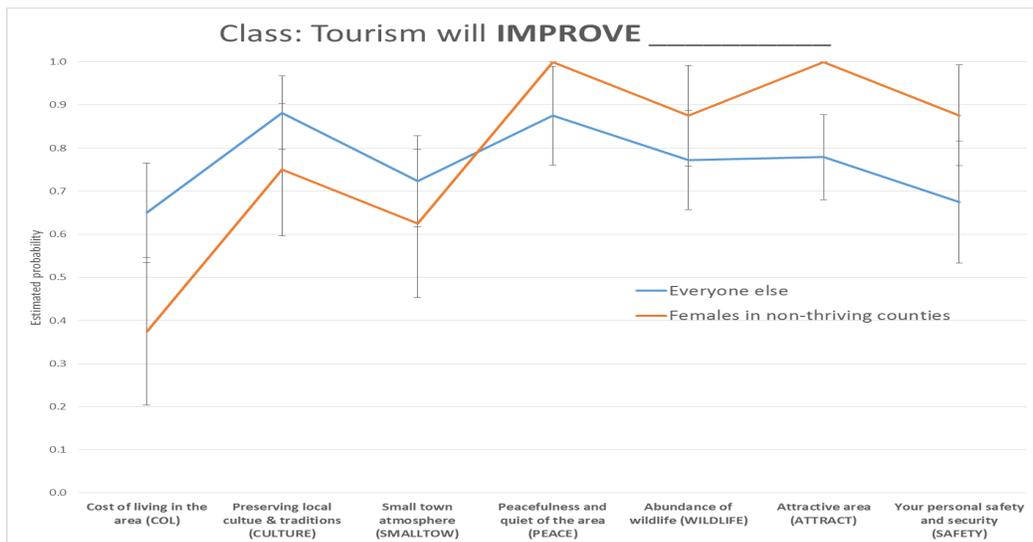
**Table 1:** Thriving vs Non-thriving communities and their belief on how tourism will impact their community

How will Tourism Impact	Cost of living in the area		Preserving local culture & traditions		Small town atmosphere		Peacefulness and quiet of the area		Abundance of wildlife		Attractive area		Your personal safety and security	
	T%	NT%	T%	NT%	T%	NT%	T%	NT%	T%	NT%	T%	NT%	T%	NT%
Worsen	17.2	23.9	11.9	8.7	20.0	17.2	40.4	29.0	33.0	18.3	16.0	8.9	29.3	16.5
No change	63.6	53.3	59.4	43.5	56.0	55.9	47.5	54.8	56.0	62.4	61.0	54.4	62.6	68.1
Improve	19.2	22.8	28.7	47.8	24.0	26.9	12.1	16.1	11.0	19.4	23.0	36.7	8.1	15.4

Note: T% = Thriving Percentage; NT% = Non-thriving Percentage

In general, most of the respondents thought more tourism would not have a positive or negative impact. This leads the researchers to believe that the respondents potentially had both negative and positive feelings about rural tourism, but were not presented with a scale that demonstrated choices that they more fulfilled their feelings. Future research should seek to expand upon the Likert scales used and dive deeper into the undecided category's actual feelings. Despite the neutral responses, the respondents from non-thriving counties were more likely to perceive improvement in the community.

**Table 2: Tourism Will Improve**



Most of the rural residents perceived more tourism as having little impact (positive or negative) on aspects of community life (see Table 2). However, for women in non-thriving (i.e., struggling) counties, the view was slightly more pessimistic. This could be due to cost of living, preserving local culture and traditions and small town atmosphere.

The implications of this study includes: local residents' perceptions about rural tourism being a "fix" for their struggling community. A definite concern as the communities/participants were not homogeneous and were not as optimistic as professionals may anticipate them to be. These probing differences in perception may point to adaptive strategies that will be more acceptable or more equitable for each county. The limitations for this study were a relatively small sample size and low response rate.

## References

- Arkansas Department of Parks & Tourism 2015-2016 Annual Report.  
[http://www.arkansas.com/userfiles/annual\\_report\\_2016/2016%20APT%20Annual%20Report\\_1-75.pdf](http://www.arkansas.com/userfiles/annual_report_2016/2016%20APT%20Annual%20Report_1-75.pdf)
- Gartner, W. C. (2004). Rural Tourism Development in the USA. *The International Journal of Tourism Research*, 6(3), 151-164.
- Lewis, J. B. (1998). The Development of Rural Tourism. *Parks & Recreation*, 33(9), 99-107.
- Long, P. and Lane, B. (2000). *Rural tourism development*. In *Trends in recreation, Leisure, and Tourism*, Gartner, W., Lime, D. (eds). CABI: Wallingford; 299-308.
- Pallavi, S. (2011, August 3). Villages begin to reap benefits from rural tourism. *McClatchy-Tribune Business News* [Washington].

## Acknowledgements:

The research team would like to thank the University of Arkansas' Division of Agriculture for the funding of this research project, ARK02480.

# Determinants of Capital Structure of Banks and Financial Institutions of Bangladesh: A Panel Data Approach

Sumaiya Zaman

School of Business  
University of Liberal Arts Bangladesh  
sumaiya.zaman@ulab.edu.bd

## Abstract

The paper aims to determine factors that influence capital structure of a firm. The study focuses on the private commercial banks and financial institutions of Bangladesh as the chosen sector is crucial to the economic health of the nation. In Bangladesh, there are 30 private commercial banks and 23 financial institutions listed in the Dhaka Stock Exchange. Of them, 24 banks and 13 financial institutions are selected for the study owing to data availability for the five-year period of January 2011 to December 2015. Variables indicating firm profitability, size, growth, asset structure, cost of capital, dividend, and tax are chosen as capital structure determinants. Statistical tools as multivariate regression and correlation have been used on the 185 firm-year observations. Multi-collinearity among the final indicators has also been tested. It is seen that select variables can be fine determinants of bank capital structure in the financial market of Bangladesh.

**Keywords:** accounting ratios, capital structure, financial institutions, private commercial banks, Dhaka Stock Exchange

## Introduction

The necessity of establishing a stock exchange in Bangladesh, the then East Pakistan, was first decided by the government when, early in 1952, it was learnt that the Calcutta Stock Exchange had prohibited the transactions in Pakistani shares and securities. The East Pakistan Stock Exchange Association Ltd. was incorporated on 28 April 1954. As public limited company, the name was revised to East Pakistan Stock Exchange Ltd on 23 June 1962. Although incorporated in 1954, the formal trading was started in 1956 at Narayanganj after obtaining the certificates of commencement of business. But in 1958, it was shifted to Dhaka and started functioning at the Narayanganj Chamber Building. On 1 October 1957, the stock exchange purchased a land from the government and shifted the stock exchange to its own location in 1959. The name of East Pakistan Stock Exchange Limited was changed to "Dhaka Stock Exchange Limited" on 14 May 1964. At the time of incorporation, the authorized capital of the exchange was Pakistan rupees 300,000 divided into 150 shares. Currently, in independent Bangladesh, there are two stock exchanges: the Dhaka Stock Exchange Limited and the Chittagong Stock Exchange Limited. The companies listed in the Chittagong Stock Exchange are also listed in the Dhaka Stock Exchange. In 2016, the authorized capital of the Dhaka Stock Exchange is worth Bangladesh taka 25,000 million with 1,803,776,500 shares.

There are two types of financial institutions in general: banks and non-bank financial institutions. The Dhaka Stock Exchange Limited has categorized the financial institutions listed with it into four categories:

- Banks
- Financial institutions (Mainly Leasing)
- Insurance
- Mutual funds

The paper focuses on banks and financial institutions listed with the Dhaka Stock Exchange.

**Banks:**

The journey of the banking industry of Bangladesh started in 1971 with 6 nationalized commercial banks, 2 state-owned specialized banks, and 3 foreign banks. Private banks made their entrance into the market in the 1980's. Currently, banks in Bangladesh are primarily of two types with Bangladesh Bank, the central bank of Bangladesh, being the chief regulatory body of the banking sector:

- Scheduled banks
- Non-scheduled banks

Non-scheduled banks are established for special and definite objective and operate under the acts that are enacted for meeting up those objectives. These banks cannot perform all functions of scheduled banks. On the other hand, scheduled banks are the ones that get license to operate under Bank Company Act, 1991 (Amended in 2003). There are 56 scheduled banks in Bangladesh who operate under full control and supervision of Bangladesh Bank which is empowered to do so through Bangladesh Bank Order, 1972 and Bank Company Act, 1991. Scheduled Banks are classified into:

- State-owned commercial banks
- Specialized banks
- Private commercial banks
- Foreign commercial banks

There are five state-owned commercial banks which are fully or majorly owned by the Government of Bangladesh and three specialized banks established for specific objectives like agricultural or industrial development. These banks are also fully or majorly owned by the Government of Bangladesh. There are nine foreign commercial banks operating in Bangladesh as the branches of banks which are incorporated abroad. There are 39 private commercial banks which are majorly owned by the private entities (Banks & FIs: Bangladesh Bank, 2013). Of the 39 private commercial banks, 30 are listed in the Dhaka Stock Exchange.

**Financial institutions:**

The financial institution sector works as a catalyst to the economic growth of the country. This sector has been contributing towards increasing both the quality and

quantity of financial services and thus, enhancing financial intermediation to meet the growing needs of investments in the country. These institutions run in parallel to the traditional deposit taking commercial banks. Financial institutions supplement banks in providing financial services to individuals and firms. They can provide competition for banks in the provision of these services. While banks may offer a set of financial services as a package deal, financial institutions unbundle these services, tailoring their services to particular groups. Additionally, individual financial institution may specialize in a particular sector, gaining an informational advantage. By this unbundling, targeting, and specializing, financial institutions promote competition within the financial services industry. Having a multi-faceted financial system, which includes non-bank financial institutions, can protect economies from financial shocks and recover from those shocks. Financial institutions provide multiple alternatives to transform an economy's savings into capital investment, which act as backup facilities should the primary form of intermediation fail. Financial institutions include, but are not limited to:

- Development finance institutions
- Leasing companies
- Investment companies
- Modaraba companies
- House finance companies
- Venture capital companies
- Discount and guarantee houses
- Corporate development companies

The financial institution sector in Bangladesh consists primarily of the development financial institutions, leasing enterprises, investment companies, merchant bankers etc. There are 23 financial institutions listed in the Dhaka Stock Exchange (2016). The financing modes of the financial institutions are long term in nature. Traditionally, banks are involved in term lending activities, which are mostly unfamiliar products for them. The operations of financial institutions in Bangladesh are regulated by the central bank of Bangladesh, the Bangladesh Bank. The grant of authority to engage in borrowing from the general public is normally based on such factors as minimum capital requirement, quality of management, compliance with the concerned laws, rules, and regulations, and stability of financial standing. Financial institutions may grant loans to their members and the general public up to a certain amount and may also engage in trust functions with prior permission of the central bank. They are not allowed to engage in foreign exchange transactions (Bangladesh Leasing & Finance Companies Association, n.d.).

The banking industry of Bangladesh has undergone unprecedented changes over the last decade. The number of private commercial banks is increasing rapidly. The central bank of Bangladesh has given approval to nine new banks in 2012 (bdnews24.com, 2013). These changes have resulted in fierce competition and greater productive efficiency in the banking market. The financial institution sector of Bangladesh, however, claims that inefficiency of banks in long-term loan management has already

led an enormous volume of outstanding loan in the country. At this backdrop, in order to ensure flow of term loans and to meet the credit gap, financial institutions have immense importance in the economy. In addition, financial institution sector is important to increase the mobilization of term savings and for the sake of providing support services to the capital market (Bangladesh Leasing & Finance Companies Association, n.d.).

Capital composition matters to most firms in free markets, but there are differences. Companies in non-financial industries need capital mainly to support funding such as to buy property and to build or acquire production facilities and equipment to pursue new areas of business. While this is also true for banks, their main focus is somewhat different. By its very nature, banking is an attempt to manage multiple and seemingly opposing needs. Banks provide liquidity on demand to depositors through the current account and extend credit as well as liquidity to their borrowers through lines of credit (Kashyap, Rajan, & Stein, 1999). The cost of funding by financial institutions is significantly higher than the banks as banks are the prime sources of funds for them. According to industry insiders, leasing companies depend on bank finance for their business: small companies depend 100 percent on banks while the larger ones depend 60 percent to 70 percent (Rahman, 2010). This seemingly similar and at the same time different nature of business between banks and financial institutions have given the author incentive to study the factors that influence the capital structure of banks and financial institutions of Bangladesh. The objectives of the study are:

- i. Studying the capital structure of private commercial banks and financial institutions listed in the Dhaka Stock Exchange during the period of January 2011 to December 2015.
- ii. Determining the factors that influence the capital structure of the chosen institutions during the period of study.

The paper begins with a brief introduction to the Dhaka Stock Exchange and the private commercial banks and financial institutions listed in it. The paper, then, presents a review of relevant literature on capital structure and its determinants. This is followed by the methodology adopted by the study. The next section presents the empirical model and findings resulting from the analysis. The paper ends with a conclusion on the study done.

### **Literature Review**

Multiple studies have been conducted to understand the capital structure of corporations. These studies attempt to explain the mix of securities and financing sources used by corporations to finance real investment. Most of the research on capital structure has focused on the proportions of debt versus equity. However, there is no universal theory of the debt-equity choice, and no reason to expect one. There are several useful conditional theories, however. For example, the trade-off theory says that firms seek debt levels that balance the tax advantages of additional debt against the

costs of possible financial distress. The theory, hence, predicts moderate borrowing by tax-paying firms. The pecking order theory says that firms have a particular preference order for capital used to finance their businesses. Owing to the presence of information asymmetries between the firm and potential financiers, the relative costs of finance vary between the financing choices. Where the funds provider is the firm's retained earnings, meaning more information than new equity holders, the new equity holders will expect a higher rate of return on capital invested resulting in the new equity finance being more costly to the firm than using existing internal funds. A similar argument can be provided between the retained earnings and new debt-holders. In addition, the greater the exposure to the risk associated with the information asymmetries for the various financing choices besides retained earnings, the higher the return of capital demanded by each source. Thus, the firm will prefer retained earnings financing to debt, short-term debt over long-term debt and debt over equity. The free cash flow theory says that dangerously high debt levels will increase value, despite the threat of financial distress, when a firm's operating cash flow significantly exceeds its profitable investment opportunities. This theory is designed for mature firms that are prone to overinvest. In short, the tradeoff theory emphasizes taxes, the pecking order theory emphasizes differences in information, and the free cash flow theory emphasizes agency costs (Myers, 2001).

Empirical research on Slovenian firms from 1999 to 2006 has shown that some capital structure differences can be explained by modern capital structure theory in mature market economies, however, the forces behind capital structure decisions in emerging European economies remain a puzzle. The empirical study found a statistically significant negative correlation between leverage and tangibility of assets, earnings volatility, profitability, the extent to which a firm is characterized by employee-governed behavior, and equity capital per employee, and a statistically significant positive correlation between leverage and firm size and growth rate (Črnigoj & Mramor, 2009).

A study on the largest companies of 10 developing countries, namely, India, Pakistan, Thailand, Malaysia, Turkey, Zimbabwe, Mexico, Brazil, Jordan, and Korea from 1980 to 1990 reveal that debt ratios in developing countries seem to be affected in the same way and by the same types of variables that are significant in developed countries. However, there are systematic differences in the way these ratios are affected by country factors, such as GDP growth rates, inflation rates, and the development of capital markets. Although some of the independent variables have the expected sign, their overall impact is low and the signs sometimes vary across countries. There is support for the importance of variables such as profitability, the tangibility of assets, size, etc., across all the countries in this data set. This belies the notion that finance is not portable from developed to developing countries (Booth, Aivazian, Demircug-Kunt, & Maksimovic, 2001).

A paper on Indian firms suggests a possibility of optimal capital structure strongly influenced by factors like size, asset structure, profitability and short-term financial distress cost. The data set of the research comprises a balanced panel of 697 manufacturing and non-financial firms over the period of 1990-1998 (Guha-Khasnobis & Bhaduri, 2002).

Another paper investigates how firms operating in capital market-oriented economies (the U.K. and the U.S.) and bank-oriented economies (France, Germany, and Japan) determine their capital structure. Using panel data and a two-step system-GMM procedure, the paper finds that the leverage ratio is positively affected by the tangibility of assets and the size of the firm, but declines with an increase in firm profitability, growth opportunities, and share price performance in both types of economies. The leverage ratio is also affected by the market conditions in which the firm operates. The degree and effectiveness of these determinants are dependent on the country's legal and financial traditions. The results also confirm that firms have target leverage ratios with French firms being the fastest in adjusting their capital structure toward their target level and Japanese firms the slowest. Overall, the capital structure of a firm is heavily influenced by the economic environment and its institutions, corporate governance practices, tax systems, the borrower-lender relation, exposure to capital markets, and the level of investor protection in the country in which the firm operates. The study uses data from 1987 to 2000 (Antoniou, Guney, & Paudyal, 2008).

A study analyzes the determinants of capital structure for Latin American countries: Argentina, Chile, Mexico, and Peru, for the time period 1998-2007 using a sample of 133 Latin American firms. Simultaneously, the study analyses a sample of 486 U.S. firms for the same period in order to compare. It is found that Chile's results are very similar to those for the United States. In fact, when using market leverage, every single coefficient is statistically significant at 1 percent. Mexico reports similar results except for the coefficient of size, which is not statistically significant. For Argentina and Peru, only two coefficients are statistically significant. A common result among the countries is that the higher the growth opportunities, the lower the leverage, except for Peru (Espinosa M, Maquieira V, Vieito, & González A, 2012).

Paper exploring the relation between ownership structures and capital structures in Russia - an economy with a state-run banking sector, weak corporate governance, and highly concentrated ownership, gives interesting result. It shows that firms with the state as controlling shareholder have significantly higher leverage than firms controlled by domestic private controlling shareholders other than oligarchs. Both firms controlled by the state or oligarchs finance their growth with more debt than other firms. Profitability is negatively related to leverage across all types of controlling owners, indicating a preference for internal funding over debt. The results indicate that firms with owners that have political influence or ties to large financial groups enjoy better access to debt. The

final sample consists of a panel of 95 firms with 368 firm- year observations starting from 2000 (Pöyry & Maury, 2010).

Forty-three Egyptian firms in thirteen different industries are studied for investigating possible determinants of capital structure over the 1997-2000 period. Results suggest that non-debt tax shelters are an important determinant of long-term leverage. However, all other traditional variables fail to achieve significance in explaining long-term leverage. For short-term leverage, results again reveal the importance of only one theoretical factor; namely, the unlevered tax rate (Benkato, Darrat, & Abual-Foul, 2005).

Using data from a broad sample of U.S. public companies during the period 1982-2005., a research finds that leverage is positively related to asset liquidity. Further analysis reveals that the relation between asset liquidity and secured debt is positive, whereas the relation between asset liquidity and unsecured debt is curvilinear. The results are consistent with the view that the costs of financial distress and inefficient liquidation are economically important and that they affect capital structure decision (Sibilkov, 2009).

This paper aims to see if the established theories hold true for the capital market of Bangladesh. The paper, thus, attempts to see if commonly discussed determinants have the predicting capacity of capital structure of the private commercial banks and financial institutions of Bangladesh.

## **Methodology**

### **Sample**

The paper attempts to find out the significant determinants of capital structure of banks and financial institutions listed in the Dhaka Stock Exchange. There are 30 private commercial banks and 23 financial institutions listed in the Dhaka Stock Exchange in Bangladesh. Of these, 24 private commercial banks and 13 financial institutions have been selected for study during the period of January 2011 through December 2015 owing to availability of data. The chosen banks are: Al-Arafah Islami Bank Limited, Arab Bangladesh Bank Limited, Bank Asia Limited, Dhaka Bank Limited, Dutch Bangla Bank Limited, Eastern Bank Limited, Export Import Bank of Bangladesh Limited, First Security Islami Bank Limited, ICB Islamic Bank Limited, International Finance Investment and Commerce Bank Limited, Islami Bank Bangladesh Limited, Mercantile Bank Limited, Mutual Trust Bank Limited, National Bank Limited, National Credit and Commerce Bank Limited, Premier Bank Limited, Prime Bank Limited, Rupali Bank Limited, Shahjalal Islami Bank Limited, Social Islami Bank Limited, South-east Bank Limited, Standard Bank Limited, Trust Bank Limited, and United Commercial Bank Limited. The selected financial institutions are: Bay Leasing and Investment Limited, Bangladesh Finance and Investment Co Limited, FAS Finance and Investment Limited, First Finance Limited, GSP Finance Company Limited, IDLC Finance Limited, International Leasing and Financial Services Limited, MIDAS Financing Limited, National Housing

Finance and Investment Limited, Phoenix Finance and Investments Limited, Peoples Leasing and Financing Services Limited, Union Capital Limited, and Uttara Finance and Investments Limited.

### Data collection

The study uses secondary data that have originally been collected by the sample institutions and reported in their published documents. Data collected and published by the Dhaka Stock Exchange have also been used. Literature pertaining to the research has been collected from published journals and articles.

### Data Source

Websites and audited annual reports of the select institutions have been sources of relevant data for the research. Significant data have also been extracted from the Dhaka Stock Exchange data archive. Recent literature pertinent to the study has also been comprehensively studied.

### Empirical Model

The paper studies the determinants of capital structure of the Dhaka Stock Exchange listed private commercial banks and financial institutions in Bangladesh during the five year period of January 2011 through December 2015. The dependent variable, company capital structure, has been measured by indicators depicted in Table 1.

**Table 1:** Accounting Ratios and Their Formulae Used to Indicate Company Capital Structure

<b>Ratios for company “i” at year “t”</b>	<b>Formulae</b>
Debt <sub>it</sub>	Total liabilities <sub>it</sub> /Total assets <sub>it</sub>
Long-term debt <sub>it</sub>	Total long-term liabilities <sub>it</sub> /Total assets <sub>it</sub>
Short-term debt <sub>it</sub>	Total short-term liabilities <sub>it</sub> /Total assets <sub>it</sub>
Debt-equity <sub>it</sub>	Total liabilities <sub>it</sub> /Total owners' equity <sub>it</sub>

Seven types of accounting ratios (given in Table 2) are selected as explanatory variables of company capital structure. The chosen ratios are indicators of company profitability, size, growth, asset structure, cost of capital, dividend, and tax. The paper finds out the selected ratios of each sample company for each year for the study period i.e. January 2011 – December 2015.

**Table 2:** Accounting Ratios and Their Formulae Used to Indicate Company Profitability, Size, Growth, Asset Structure, Cost of Capital, Dividend, and Tax

Ratios for company “i” at year “t”	Formulae
<b>Profitability</b>	
Profit margin <sub>it</sub>	Net income <sub>it</sub> /Operating income <sub>it</sub>
Profit to assets <sub>it</sub>	Net Income <sub>it</sub> / Total assets <sub>it</sub>
<b>Size</b>	
Log of assets <sub>it</sub>	Log of total assets <sub>it</sub>
Change in assets <sub>it</sub>	(Total assets <sub>it+1</sub> - Total assets <sub>it</sub> )/ Total assets <sub>it</sub>
<b>Growth</b>	
Change in operating income <sub>it</sub>	(Operating income <sub>it+1</sub> - Operating income <sub>it</sub> )/ Operating income <sub>it</sub>
<b>Asset structure</b>	
Fixed assets to total assets <sub>it</sub>	Fixed assets <sub>it</sub> / Total assets <sub>it</sub>
<b>Cost of capital</b>	
Cost of fund <sub>it</sub>	Cost of fund <sub>it</sub> as reported by the company (mainly cost of debt)
<b>Dividend</b>	
Dividend rate <sub>it</sub>	Cash dividend <sub>it</sub> + Stock dividend <sub>it</sub>
<b>Tax</b>	
Pre-tax profit <sub>it</sub>	Pre-tax profit <sub>it</sub> / Total assets <sub>it</sub>
Tax rate <sub>it</sub>	Tax rate <sub>it</sub> as declared by the Government of Bangladesh

The individual measures of capital structure of banks and financial institutions are regressed on sets of different combinations of accounting ratios chosen as predict or over the five year period of study using multivariate regression. The purpose is to devise a statistically significant model that would explain the capital structure of banks and financial institutions. The equation of the regression is:

$$Y_{it} = \alpha_{it} + \sum_{i=1}^n \sum_{t=1}^n \beta_{it} X_{it} + \varepsilon_{it} \quad (1)$$

Where,  $Y_{it}$  is the measure of capital structure of bank or financial institution “i” for the year “t”.  $\alpha_{it}$  is the slope.  $\beta_{it}$  represents parameter of the econometric model for accounting ratio “ $X_{it}$ ”, while  $\varepsilon_{it}$  is the error term.

Statistical tools as Wald (z-statistic) and chi-square have been applied to examine the significance of the explanatory variables and goodness of fit of the model. Karl Pearson’s coefficient of correlation (r) has been applied to test the multi-collinearity among the predictors to ensure the study is free of such matter.

## Findings

Summary statistics of dependent and independent variables show that most of the sample banks and financial institutions have debt ratio of 91% with a mean of 90%. The figures indicate heavy reliance on debt than equity by the institutions with the banks slightly more leveraged (mean debt ratio of 94%) than the financial institutions (mean debt ratio of 83%). Profit margins of the two categories of institutions are close while the

financial institutions seem to invest slightly bigger proportion in fixed assets than banks. Both financial institutions and banks fall in the same tax brackets set by the National Board of Revenue in Bangladesh. The average dividends given by the two types of institutions have similar rates, while the cost of fund is higher in banks (See Tables A1, A2, and A3).

Multivariate regression has been run on sets of different combinations of predictors to devise a statistically significant model that would explain financial leverage of banks and financial institutions. Probability of chi-square statistic, in other words, the p-value, is calculated for each model using different combinations of independent variables for each of the four ratios that would explain company capital structure. The model with p-value (0.0000) less than  $\alpha$  (0.05) is chosen to be statistically significant. Output of the model is summarized in Table 3

**Table 3:** Output Of Multivariate Regression Model For Years 2011 - 2015

R-sq: within	= 0.3037	Number of obs	= 120
between	= 0.0325	Wald chi2(4)	= 33.49
overall	= 0.1073	Prob> chi2	=0.0000

Long-term debt	Coefficient	Standard error	z	P> z	[95% Confidence Interval]
Change in operating income	-0.0019	0.0006	-2.95	0.003	-0.0031 -0.0006
Pre-tax profit	1.1605	0.6516	1.78	0.075	-0.1167 2.4377
Fixed assets to total assets	-0.4864	0.1814	-2.68	0.007	-0.842 -0.1308
Log of assets	0.1734	0.0414	4.19	0.000	0.0923 0.2544
Constant	-1.6369	-0.4618	-3.54	0.000	-2.5421 -0.7318

Wald statistics (z-values) are computed by dividing coefficients of predicting variables by their respective standard errors. Probabilities of z-values, which are the p-values, signify if coefficients of predictors are significantly different from “zero” and hence, if null hypothesis can be rejected. P-values of majority predictors in the model are less than  $\alpha$  (0.05) and thus, are statistically significant. Exceptions pre-tax profit. The model can be summarized as:

$$\text{Long-term debt} = -1.64 \quad -0.002 \quad \text{Change in} \quad +1.16 \quad \text{Pre-tax} \quad -0.49 \quad \text{Fixed assets} + 0.17 \quad \text{Log of} \quad (2)$$

$$(-0.46) \quad (0.001) \quad \text{operating} \quad (0.65) \quad \text{profit} \quad (0.18) \quad \text{to total} \quad (0.04) \quad \text{assets}$$

$$(-0.46) \quad (0.001) \quad \text{income} \quad (0.65) \quad (0.18) \quad \text{assets}$$

$$n = 120, R^2 = 0.1073$$

Regression model shows that rise in fixed assets to total assets by one unit brings about half a unit decrease in bank long-term debt ratio ceteris paribus. Pre-tax profit seems to have the largest positive impact on bank long-term debt. The impact of change in operating income and log of assets on bank capital structure seems nominal. Fixed assets to total assets and change in operating income are the two predictors that have negative impact on bank long-term debt ratio. Entering ratios of a certain bank into

the devised model might tend to give signal as to whether the bank's long-term debt ratio will rise or fall.

It can, therefore, be said that tax has the largest positive impact on bank capital structure. Bank size and growth have nominal impact on its long-term debt ratio. Bank asset structure and growth appear to have negative impact on its capital structure, meaning a bank raising its fixed assets proportion would lead to decline in its long-term debt proportion ceteris paribus. The same can be said about bank growth. The model can be, thus, presented as:

$$\text{Bank capital structure} = -1.64 \text{ Growth} - 0.002 \text{ Tax} + 1.16 \text{ Asset structure} - 0.49 \text{ Size} + 0.17 \text{ (3)}$$

$(-0.46) \quad (0.001) \quad (0.65) \quad (0.18) \quad (0.04)$

$$n = 120, R^2 = 0.1073$$

Multi-collinearity has been tested among and between the statistically significant independent variables. Table 4 shows that all the variables share low correlations between and among themselves, and therefore, ridding the study of any such issues.

**Table 4:** Correlation Among the Predictors of the Derived Multivariate Regression Model for Years 2011-2015

	Change in operating income	Pretax profit	Fixed assets to total assets	Log of assets
Change in operating income	1			
Pretax profit	-0.0347	1		
Fixed assets to total assets	0.0222	-0.0542	1	
Log of assets	0.0541	0.41766	-0.0288	1

From the results, it is seen that the bigger a bank, the higher would be its reliance on long-term debt. Bank growth seems to have minimum impact on its financial leverage decisions. The more a bank invests on fixed assets, the lower it relies on long-term debt.

### Conclusions

The purpose of the paper is to develop a model that would explain the capital structure of private commercial banks and financial institutions listed in the Dhaka Stock Exchange during the period of January 2011 to December 2015. It has been seen that both types of institutions rely heavily on financial leverage with banks relying more on short-term borrowing while financial institutions relying more on long-term borrowing.

The paper has come up with a statistically significant model that shows that bank long-term debt financing depends on bank size, growth, tax, and asset structure. This is in compliance with established theory. The bigger the bank, the more would be its reliance on long-term financial leverage. The faster the bank growth rate, the lower would it

depend on long-term debt financing. A bank with higher investment on fixed assets seems to rely less on long-term debt. The model might prove useful to academicians, researchers, and future banks in understanding the factors that explain the capital structure of banks operating in the capital market of Bangladesh.

The paper, however, could not find a statistically significant model that explains the capital structure of both banks and financial institutions or financial institutions alone. No set of predictors could explain short-term debt financing or debt-equity balance of banks either.

The paper opens up scope for further research that will address:

- Why do private commercial banks in Bangladesh rely more on short-term debt financing and whether the institutions have debt-composition target.
- Capital structure of Insurance companies operating in Bangladesh.
- Role and impact of risk factors on company capital structure in Bangladesh.

## References

- (n.d.). Retrieved April 14, 2017, from Bangladesh Leasing & Finance Companies Association:  
<http://www.blfca.org>
- Črnigoj, M., & Mramor, D. (2009). Determinants of capital structure in emerging European economies:evidence from Slovenian firms. *Emerging Markets Finance & Trade*, 45(1), 72-89.
- Antoniou, A., Guney, Y., & Paudyal, K. (2008). The determinants of capital structure: capital market-oriented versus bank-oriented institutions. *The Journal of Financial and Quantitative Analysis*, 43(1), 59-92.
- Banks & FIs: Bangladesh Bank*. (2013). Retrieved March 25, 2015, from Bangladesh Bank Website:  
<http://www.bangladesh-bank.org/fnansys/bankfi.php>
- Baptista, R., & Swann, P. (1998). Do firms in clusters innovate more? *Research Policy*, ELSEVIER, 27(5): 525-540.
- bdnews24.com. (2013, February 5). 5 new banks licensed. Retrieved from bdnews24.
- Becheikh, N., Landry, R., & Amara, N. (2006). Lessons from innovation empirical studies in the manufacturing sector:A systematic review of the literature from 1993–2003. *Technovation*, 26:644-664.
- Bell, M., & Albu, M. (1999). Knowledge Systems and Technological Dynamism in Industrial Clusters in Developing Countries. *World Development*, 27(9): 1715-1734.
- Benkato, O., Darrat, A., & Abual-Foul, B. (2005). Capital structure of firms in an emerging market: an empirical inquiry. *Savings and Development*, 29(1), 97-111.
- Bergman, E. M. (2008). Cluster life-cycles:an emerging synthesis. In C. Karlsson, *Handbook of Research on Cluster Theory* (pp. 114-132). Northampton, MA: Edward Elgar.
- Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksimovic, V. (2001). Capital structures in developing countries. *The Journal of Finance*, 56(1), 87-130.
- Brenner, T., & Gildner, A. (2006). The Long-term implications of Local Industrial Clusters. *European Planning Studies*, 1315-1328.
- Carlsson, B. (2010). Creation and Dissemination of Knowledge in High-tech Industry Clusters. *Working Paper, Case Western Reserve University*. Cleveland, Ohio.
- Chiu. (n.d.).
- Cohen, W., & Levinthal, D. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation . *Administrative Science Quarterly*, 35(1): 128-152.
- Commission, N. K. (2007). *Innovation in India*. New Delhi: Government of India.

- Cooper, C. (1980). Policy Interventions for Technological Innovation in Developing Countries. Washington DC: World Bank Staff Working Paper, No. 441.
- Cruz, S. C., & Teixeira, A. A. (2007). A new look into the evolution of cluster literature: A bibliometric exercise. *FEP working paper*, 257.
- CSO. (2008). *NIC*. New Delhi: Ministry of Statistics and Programme Implementation. Govt. of India.
- DeVol, R., & Wong, P. (1999). *America's High-Tech Economy: Growth, Development and Risks for Metropolitan Areas*. Milken Institute.
- Do, G., Jaesoo, & Lee, B. (2015). Evaluating the Development of Government-led High-tech Clusters: A Comparative Study Between Daedeok Innopolis and Hsinchu Science. *ASIP 2015 Korea Conference*. Jeju: Asian Society of Innovation and Policy.
- Espinosa M, C., Maquieira V, C., Vieito, J., & González A, M. (2012). Capital structure in developing countries: the Latin American case. *Investigación Económica*, 71(282), 35-54.
- Fabrizio, K. R. (2009). Absorptive capacity and the search for innovation. *Research Policy*, 38(2): 255-267.
- Fosfuri, A., & Tribo, J. A. (2008). Exploring the antecedents of potential absorptive capacity and its impact on innovation performance. *The International Journal of Management, ELSEVIER*, 36: 173-187.
- Fosfuri, A., & Tribo, J. A. (2008). Exploring the antecedents of potential absorptive capacity and its impact on innovation performance. *The International Journal of Management, ELSEVIER*, 173-187.
- Gildner, T. B. (2006). The Long-term Implications of Local Industrial Clusters. *European Planning Studies*, 14(9): 1315-1328.
- Giuliani, E. (2005). Cluster Absorptive Capacity: Why do some clusters forge ahead and others lag behind. *European Urban and Regional Studies*, 269-288.
- Giuliani, E. (2011). Role of Technological Gatekeepers in the Growth of Industrial Clusters: Evidence from Chile. *Regional Studies*, 45:10, 1329-1348.
- Giuliani, E., & Bell, M. (2005). The micro-determinants of meso-level learning and innovation: evidence from a Chilean wine cluster. *Research Policy*, 47-68.
- Giuliani, E., & Bell, M. (2005). The micro-determinants of meso-level learning and innovation: evidence from a Chilean wine cluster. *Research Policy*, 34(1): 47-68.
- Guha-Khasnobis, B., & Bhaduri, S. (2002). Determinants of capital structure in India (1990-1998): a dynamic panel data approach. *Journal of Economic Integration*, 17(4), 761-776.
- Hall, B., Helmers, C., Rogers, M., & Sena, V. (2014). The Choice between Formal and Informal Intellectual Property: A Review. *Journal of Economic Literature*, 52(2): 1-50.
- Harshim, S., Murthy, M., & Roy, S. (2010). *SME CLUSTERS IN INDIA: Identifying Areas of Intervention for Inclusive Growth*. New Delhi: Institute for Studies in Industrial Development.
- Hathaway, I. (2013). *Tech Starts: High-Technology Business Formation and Job Creation in the United States*. Kauffman Foundation.
- He, J., & Fallah, M. H. (2011). The typology of technology cluster and its evolution- Evidence from hi-tech industries. *Technology Forecasting & Social Change*, 945-952.
- Huang, K.-F., & Cheng, T.-C. (2015). Determinants of firms' patenting or not patenting behaviors. *Journal of Engineering and Technology Management*, 36: 52-77.
- Hudson, J., & Minea, A. (2013). Innovation, Intellectual Property Rights, and Economic Development: A Unified Empirical Investigation. *World Development*, 46: 66-78.
- IPO UK. (2013). *Innovation, Patenting and Licensing in the UK: Evidence from the SIPU survey*. Newport: Intellectual Property Office.
- Kakati, M. (2003). Success criteria in high-tech new ventures. *Technovation, ELSEVIER*, 447-457.
- Kashyap, A. K., Rajan, R., & Stein, J. C. (1999). Banks as liquidity providers: an explanation for the co-existence of lending and deposit-taking. *NBER Working Paper Series(6962)*.
- Ketels, C. H. (2003). The Development of the cluster concept- present experiences and further developments. *NRW conference on clusters*. Duisburg, Germany.
- Kostopoulos, K., Papalexandris, A., Papachroni, M., & Loannou, G. (2011). Absorptive capacity, innovation, and financial performance. *Journal of Business Research*, 64(12): 1335-1343.

- Krugman, P. (1991). Increasing Returns and Economic Geography. *Journal of Political Economy*, 99(3): 483-499.
- L, K. (1995). *Absorptive capacity and industrial growth: A conceptual framework and Korea's experience*. St. Martin's Press.
- Lau, A. K., & Lo, W. (2015). Regional innovation system, absorptive capacity and innovation performance; An empirical study. *Technological Forecasting & Social Change*, 92: 99-114.
- Lau, A. K., & Lo, W. (2015). Regional innovation system, absorptive capacity and innovation performance; An empirical study. *Technological Forecasting & Social Change*, 99-114.
- Liu, C. Y., Painter, G., & Wang, Q. (2014). *LESSONS FOR U.S. METRO AREAS: Characteristics and Clustering of High-Tech Immigrant Entrepreneurs*. Kauffman Foundation.
- Macdonald, S. (2004). When means become ends: considering the impact of patent strategy on innovation. *Information Economics and Policy*, 135-158.
- Markusen, A. (1996). Sticky places in slippery space: a typology of industrial districts. *Economic Geography*, 72(3): 293-313.
- Marshall, A. (1925). *Principle of Economics (eighth edition)*. UK: Macmillan and company.
- Miguelez, E., & Moreno, R. (2015). Knowledge flows and the absorptive capacity of regions. *Research Policy*, ELSEVIER, 44(4): 833-848.
- Miguelez, E., & Moreno, R. (2015). Knowledge flows and the absorptive capacity of regions. *Research Policy*, ELSEVIER, 833-848.
- Monecke, A., & Leisch, F. (2012). Structural Equation Modeling Using Partial Least Squares. *Journal of Statistical Software*, 48:3.
- Morosini, P. (2004). Industrial Clusters, Knowledge Integration and Performance. *World Development*, ELSEVIER, 305-326.
- Mowery, D. C., & Oxley, J. E. (1995). Inward technology transfer and competitiveness: The role of innovation systems. *Cambridge Journal of Economics*, 19: 67-93.
- Muskell, P. (2001). Towards Knowledge-based Theory of the Geographical Cluster. *Industrial and Corporate Change*, 921-941.
- Myers, S. C. (2001). Capital Structure. *The Journal of Economic Perspectives*, 15(2), 81-102.
- Mytelka, L. K. (2000). Local Systems of Innovation in a Globalized World Economy. *Industry and Innovation*, 7(1): 33-54.
- Nadvi, K. (1995). Industrial Clusters and networks: case studies of SME growth and innovation. *UNIDO, Small Medium Enterprises Programme*.
- Nooteboom, B. (1999). Innovation and inter-firm linkages: new implications for policy. *Research Policy*, 28: 793-805.
- OECD. (2004). NETWORKS, PARTNERSHIPS, CLUSTERS AND INTELLECTUAL PROPERTY RIGHTS: OPPORTUNITIES AND CHALLENGES FOR INNOVATIVE SMEs IN A GLOBAL ECONOMY. (p. 78). Istanbul, Turkey: OECD.
- Okada, A., & Siddharthan, N. (2007). Industrial Clusters in India: Evidence from Automobile Clusters in Chennai and the National Capital Region. *Institute for Studies in Industrial Development, JETRO*. Chiba, Japan.
- Pöyry, S., & Maury, B. (2010). Influential ownership and capital structure. *Managerial and Decision Economics*, 31(5), 311-324.
- Parathasarthy, B. (2004). India's Silicon Valley or Silicon Valley's India? Socially embedding the computer software industry in Bangalore. *International Journal of Urban and Regional Research*, 664-685.
- Patibandla, M., & Petersen, B. (2002). Role of Transnational Corporations in the Evolution of a High-Tech Industry: The Case of India's Software Industry. *World Development*, 30(9): 1561-1577.
- Patibandla, M., & Petersen, B. (2002). Role of Transnational Corporations in the Evolution of a High-Tech Industry: The Case of India's Software Industry. *World Development*, 1561-1577.
- Peltoniemi, M. (2008). Intra-industry variety as an outcome of intellectual capital. *Journal of Intellectual Capital*, 395-408.
- Porter, M. E. (1990). The Competitive of Nations. *Harvard Business Review*.

- Purgał-Popiela, J. (2012). *Dimensions of Foreign Subsidiary's Absorptive Capacity in the Context of Knowledge Transfer through Expatriation*. National Science Center.
- Pyke, F., Becattini, G., & Sengerberger, W. (1990). *Industrial Districts and Inter-firm Co-operation in Italy*. Geneva: International Institute for Labor Studies.
- Rahman, S. (2010, April 8). Leasing firms, banks in turf war. *The Daily Star*.
- Rao, P., & Klein, J. A. (2013). Inter-Firm Technology Transfers and Collaboration. In P. Rao, & J. A. Klein, *Strategies for High-Tech Firms* (pp. 107-120). New York: M.E. Sharpe.
- Rao, P., & Klein, J. A. (2013). Sustaining Competitive Advantage in a High-Tech Environment. In P. Rao, & J. A. Klein, *Strategies for High-Tech Firms* (pp. 3-28). New York: M.E. Sharpe.
- RBI. (2014). *Industrial Performance*. Reserve Bank of India.
- Rosenfeld, S. (2005). Industry Cluster: Business Choice, Policy Outcome, or Branding Strategy. *New Business Ideas and Trends*, 3(2): 4-13.
- Rylková, Ž., & Chobotová, M. (2014). Protection of intellectual property as a means of evaluating innovation performance. *Procedia Economics and Finance. ELSEVIER*, 14: 544 – 552.
- Saxenian, A. L. (1994). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, MA: Harvard University Press.
- Schmitz, H. (1999). From ascribed to earned trust in exporting clusters. *Journal of International Economics, ELSEVIER*, 139-150.
- Schumpeter, J. A. (1934). *The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest, and the Business Cycle*. Transaction Publishers.
- Sibilkov, V. (2009). Asset liquidity and capital structure. *The Journal of Financial and Quantitative Analysis*, 44(5), 1173-1196.
- Smedlund, A. P. (2004). Assessing intellectual capital creation in regional clusters. *Journal of Intellectual Capital*, 351-365.
- Sonderegger, P., & Taube, F. (2010). Cluster life cycle and diaspora effects: Evidence from the Indian IT cluster in Bangalore. *Journal of International Management, ELSEVIER*, 16(4): 283-397.
- Song, C., & Oh, W. (2015). Determinants of patent application and policy implications in Korea. *ASIP 2015 Korea Conference*. Jeju: ASIP.
- Steinle, C., & Schiele, H. (2002). When do industries cluster? A proposal on how to assess an industry's propensity to concentrate at a single region or nation. *Research Policy, ELSEVIER*, 849-858.
- Subrahmanya, M. H. (2011). Technological Innovation and Growth of SME's in Bangalore: Does Innovation Facilitate Growth of Firm size? *The Asian Journal of Technology Management*, 41-55.
- Subrahmanya, M. H. (2011). Technological Innovation and Growth of SMEs in Bangalore: Does Innovation Facilitate Growth of Firm Size? *The Asian Journal of Technology Management*, 41-55.
- Subrahmanya, M. H. (2013). External Support, Innovation And Economic Performance: What Firm Level Factors Matter For High-tech SMEs? How? *International Journal of Innovation*, 17:1-26.
- Subrahmanya, M. H. (2014, November). Technological Innovation in Manufacturing SMEs:A Decisive Means of Competitiveness. *Yojana*, pp. 4-9.
- Sweet, C. M., & Maggio, D. S. (2015). Do Stronger Intellectual Property Rights Increase Innovation? *World Development, ELSEVIER*, 66: 665-677.
- Tappi, D. (2001). *The Neo-Marshallian Industrial District: A Study on Italian Contributions to Theory and Evidence*. Jena: Max-Planck-Institute for Research into Economic Systems.
- Tholons. (2010). *www.tholons.com*. Retrieved from *The Bangalore Story: Becoming the Outsourcing Capital of the World*.
- Tidström, M. S. (2010). Competitive flows of intellectual capital in value creating networks. *Journal of Intellectual Capital*, 23-38.
- UNDP. (2001). *Human Development Report*. New York: Oxford University Press.
- Wang, W., & Yang, J. (2012). Empirical Study of High-tech Industry Cluster in Shaanxi Province. *National Conference on Information Technology and Computer Science*.
- Wong, K. K.-K. (2013). Partial Least Square-Structural Equation Modelling (PLS-SEM) Using SmartPLS. *Marketing Bulletin*, 24.

- Xie, X., Zeng, Z., & Tam, C. (2011). Towards continuous innovation for regional high-tech industrial clusters. *Innovation: Management, policy & practice*, 361-375.
- Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, And Extension. *Academy of Management Review*, 27(2): 185-203.
- Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, And Extension. *Academy of Management Review*, 2: 185-203.
- Zemplinerová, A., & Hromádková, E. (2012). Determinants of Firm's Innovation. *Prague Economic Papers*, 4: 487-502.
- Zhou, Y. (2011). High-tech Industry. *International Encyclopedia of Human Geography, ELSEVIER* , 120-127.

## Appendix

### Descriptive Statistics of Dependent and Independent Variables

**Table A1:** Descriptive Statistics of Dependent and Independent Variables of the Select Dhaka Stock Exchange Listed Banks and Financial Institutions for Years 2011-2015

	Mean	Median	Standard Deviation	Min	Max	Count
Debt	90%	91%	15%	13%	177%	185
Long-term debt	40%	30%	43%	0%	285%	185
Short-term debt	54%	57%	22%	1%	205%	185
Debt-equity	1.83 E10%	955%	1.15 E11%	-337%	9.67 E11%	185
Profit margin	15%	23%	103%	-1237%	312%	185
Profit to assets	1%	1%	2%	-10%	9%	185
Log of assets	1075%	1106%	65%	877%	1186%	185
Change in assets	218%	17%	2705%	-100%	36806%	185
Change in operating income	128%	10%	1463%	-137%	19871%	185
Fixed assets to total assets	5%	2%	16%	0%	110%	185
Cost of fund	41%	11%	183%	3%	1233%	185
Dividend	16%	15%	10%	0%	65%	185
Pretax profit	2%	2%	3%	-17%	10%	185
Tax rate	41%	43%	5%	10%	43%	185

**Source:** Annual Reports of banks and financial institutions of Bangladesh for years 2011-2015.

**Table A2:** Descriptive Statistics of Dependent and Independent Variables of the Select Dhaka Stock Exchange Listed Banks for Years 2011-2015

	Mean	Median	Standard Deviation	Min	Max	Count
Debt	94%	92%	16%	13%	177%	120
Long-term debt	30%	27%	16%	0%	91%	120
Short-term debt	59%	61%	18%	8%	84%	120
Debt-equity	1099%	1048%	459%	-337%	2550%	120
Profit margin	15%	21%	45%	-317%	121%	120
Profit to assets	1%	1%	1%	-10%	4%	120
Log of assets	1115%	1119%	35%	877%	1186%	120
Change in assets	323%	17%	3358%	-100%	36806%	120
Change in operating income	184%	9%	1815%	-100%	19871%	120
Fixed assets to total assets	3%	2%	6%	0%	70%	120
Cost of fund	56%	10%	226%	6%	1233%	120
Dividend	16%	15%	10%	0%	65%	120
Pretax profit	1%	2%	3%	-17%	6%	120
Tax rate	42%	43%	1%	40%	43%	120

**Source:** Annual Reports of banks and financial institutions of Bangladesh for years 2011-2015.

**Table A3:** Descriptive Statistics of Dependent and Independent Variables of the Select Dhaka Stock Exchange Listed Financial Institutions for Years 2011-2015

	Mean	Median	Standard Deviation	Min	Max	Count
Debt	83%	85%	9%	60%	101%	65
Long-term debt	58%	38%	65%	6%	285%	65
Short-term debt	46%	40%	26%	1%	205%	65
Debt-equity	5.33 E10%	510%	1.9 E11%	61%	9.67 E11%	65
Profit margin	14%	30%	163%	-1237%	312%	65
Profit to assets	2%	1%	2%	-6%	9%	65
Log of assets	1000%	1000%	36%	942%	1086%	65
Change in assets	25%	17%	51%	-78%	380%	65
Change in operating income	25%	11%	106%	-137%	698%	65
Fixed assets to total assets	10%	2%	25%	0%	110%	65
Cost of fund	14%	13%	4%	3%	35%	65
Dividend	14%	12%	11%	0%	55%	65
Pretax profit	3%	3%	3%	-10%	10%	65
Tax rate	40%	43%	8%	10%	43%	65

**Source:** Annual Reports of banks and financial institutions of Bangladesh for years 2011-2015.

# Job Satisfaction, Job Stress and Healthy Eating Behavior of Hotel Employees

Bendegul Okumus<sup>1</sup>, Suja Chaulagain<sup>2</sup> and Ibrahim Giritlioglu<sup>3</sup>

Rosen College of Hospitality Management  
University of Central Florida, USA  
<sup>1</sup>bendegul.okumus@ucf.edu  
<sup>2</sup>suja.chaulagain@ucf.edu

Tourism and Hotel Management  
Gaziantep University, Turkey  
<sup>2</sup>giritlioglu@gantep.edu.tr

## Introduction

Healthy nutrition plays a vital role in keeping a healthy lifestyle to reduce the risk of chronic illnesses (Carbone and Zoellner, 2012). Wrong diet methods and sedentary lifestyles with little physical activities create a huge risk in certain deaths after smoking. Eating behavior including external and internal eating are closely associated with stress factors. Many factors including physiologic mechanisms regulate appetite. For example, some hormones as an internal factor, such as neuropeptide-Y while stimulating food intake, leptin reducing food intake. On the other hand, previous studies reported a connection between emotional distress and dietary choice in humans (Oliver and Wardle, 1999). To the authors best knowledge, no study has examined how job stress and job satisfaction influence hotel employees' eating behavior. The current research aims to investigate the impacts of job stress and job satisfaction on hotel employee's eating behavior including internal and external eating.

## Literature Review

It is important to note that there are many reasons why people eat certain foods regardless of whether such foods are healthy or unhealthy. People like different foods and prepare them in different ways and make decisions based on many different factors such as familiarity, affordability, ethical and moral reasons, healthy reasons and more. On the other hand, according to American Psychological Association Press, approximately 50% of population deal with stress which is greater ratio than 5 years ago and 43% of population directly use food to manage it in USA.

Studies on stress and eating behavior show that stress might disturb food intake regulation. Stress as an external factor threatens to overwhelm, the body's compensatory abilities to maintain homeostasis and alter eating patterns or excess of requirements. (Torres and Nowson, 2007). One of the first research on job stress and occupational burnout shows that eating behavior is affected by chronic work stress (Nevanpera et al., 2012). The medical evidences indicate that prolong stress effects stress hormones level (e.g. high cortisol) and creates metabolic syndrome. This emotional health unbalance may change eating behavior and leads eating as a results of negative mood states, such as sadness, loneliness and concern. Stress also change food preferences towards sweet and salty, alcoholic, and initiate abnormal eating

behavior such as overeating and under eating (Nevanpera et al., 2012). It has been reported that self-reported stress and perceived stress is associated with unhealthy dietary practices engaging in emotional eating. Individuals experienced “emotional eating” mostly seeks “comfort foods” such as highly palatable foods to eliminate or reduce negative emotions (Sims et al., 2008). Based on the aforementioned discussion, the following hypotheses were tested:

H1: There is a relationship between job stress and emotional eating

H2: There is a relationship between job stress and external eating

H3: There is a relationship between job satisfaction and emotional eating

H4: There is a relationship between job satisfaction and external eating

## **Methods**

A self-administered, closed-ended questionnaire was used to collect the data of the study. The research constructs were measured using existing scales that had been previously validated. All responses were based on a 5-point Likert-type scale ranging from 1-strongly disagree to 5-strongly agree. The data of the study collected from Turkish Hotel Employees in 15 four and five star hotels in Antalya, Turkey. The human resources managers of selected hotels were approached to determine whether they would permit the survey to be conducted. All of the hotels agreed to help. A total of 500 questionnaires were distributed by using a convenience sampling method. Of these, 410 questionnaires were returned for an 82% response rate and 372 were considered valid and usable for the study. The data of the study were analyzed with AMOS 21.0 using the two-step approach suggested by Anderson and Gerbing (1988). In the first step, the measurement model was assessed in order to confirm the scales. In the second step, structural equation modeling (SEM) analysis was performed to test the study hypotheses.

## **Findings**

In the first step of data analysis, a confirmatory factor analysis (CFA) was conducted to test the validity of the multi-item scales. Overall, the chi-square statistic was significant, with the ratio of the chi-square value to degree of freedom being less than the cut-off point of 3 ( $\chi^2= 418.162$ ,  $df=196$ ). In addition, other goodness-of-fit statistics, including NFI (0.91), CFI (0.95), GFI (0.90), and RMSEA (0.05), indicated a reasonable theoretical model fit (Hair et al., 2006). The average variance extracted (AVE) scores were utilized to assess convergent validity. The AVE values ranged from 0.51 to 0.74, which exceeded the 0.50 cut-off recommended by Fornell and Larcker (1981). To evaluate discriminant validity, the square root of AVE of each latent construct was compared with its inter-construct correlation (Fornell and Larcker, 1981). All AVE values exceeded squared inter-construct correlations, indicating an appropriate level of discriminant validity.

In the second step of the analysis, the goodness-of-fit measures were used to assess the overall structural model fit. The overall fit indices for the proposed/base model was acceptable, with Chi-square/df equal to 1.9, RMSEA of 0.03, NFI of 0.95, CFI of 0.93, and GFI of 0.91. The study results demonstrated that all of the hypotheses were supported indicating that Job satisfaction had a negative, and job stress had a positive

impact on emotional eating, and job satisfaction and job stress had a positive impact on external eating.

## Conclusions

Previous studies in this area have generally shared study results from different occupational fields and demographics such as college students, health care professionals, women, men, teenagers or young adults. This proposed research study is one of the first study sharing empirical evidence on how job stress and job satisfaction influence hotel employees' eating behavior.

Due to the continuous increase in health care costs, companies focus on developing effective health awareness strategies in USA to growth employees' health perception while decreasing employers' medical costs. It is suggested that if workplace offers special risk-reduction and health promotion programs to the employees to increase awareness of health and nutrition, employee's working efforts, attendance and medical costs will be close to the desired level. The workplace, as a bounded community, is a very important place for daily interactions and formal and standardized communication (Gregg et al., 1990). It is hoped that the findings of this study provide empirical evidence on employee's current situations and perceptions in health, nutrition, and job stress and job satisfaction. It also will suggest some workplace health and nutrition awareness programs that can improve health, specified health risks and intervention strategies (exercise, diet, and nutrition education).

## References

- Carbone, E. T., & Zoellner, J. M. (2012). Nutrition and health literacy: a systematic review to inform nutrition research and practice. *Journal of the Academy of Nutrition and Dietetics*, 112(2), 254-265.
- Gregg, W., Foote, A., Erfurt, J., Heirich, M. (1990). Worksite follow-up and engagement strategies for initiating health risk behavior changes. *Health Education Quarterly*, 17 (4), 455-478
- Nevanpera, N. J., Hopsu, L., Kuosma, E., Ukkola, O., Uitti, J., & Laitinen, J. (2012). Occupational burnout, eating behavior and weight among working women. *American Journal of Clinical Nutrition*, 95, 934-943.
- Oliver, G., & Wardle, J. (1999). Perceived effects of stress on food choice. *Physiology and Behavior*, 66(3):511-515.
- Sims, R., Gordon, S., Garcia, W., Clark, E., Monye, D., Callender, C., and Campbell, A. (2008). Perceived stress and eating behaviors in a community-based sample of African American. *Eating Behaviors*, 9, 137-142.
- Torres, S. J., & Nowson, C. A. (2007). Relationship between stress, eating behavior and obesity. *Nutrition*, 23, 887-894.

# Entrepreneurship, Innovation, and Dynamic Growth vs. Instability in the Market

Faraz Farhidi

Georgia State University, USA  
ffarhidi1@student.gsu.edu

## Introduction

The challenge of the current study is to introduce entrepreneurship into Microeconomics theory for greater extendability and realism yet capture its unique aspects in a manageable analytical model. The model starts with a perfectly competitive market and then adds a subset of agents with unique skills, capabilities, startup savings, and risk preferences, called entrepreneurs. These profit-seeking agents, raising funds from the financial markets, modify a fraction of the existing products with additional (close substitute) attributes. Thus, a situation of monopolistic competition is created. A unique contribution developed is that entrepreneurship creates an endogenous cycle (Schumpeter, 1939) which brings growth but also instability and inequality at the same time caused by the risky decisions an entrepreneur has made before. The expected profit motive drives entrepreneurs to create new products, which expands supply. In perfect competition, markets' price competition erodes entrepreneurs' monopoly rents to zero with a new equilibrium. However, in the current model, entrepreneurs simultaneously change the structure of the market toward monopolistic competition, creating a dynamic cycle where the prospect of entrepreneurial rents drives more product innovation, supply to the market, and structural change (Mathews, 2006); while, at the same time, higher profit rates, therefore riskier situations (Knight, 1921) induce entry and price-cutting and force out old capacity and products.

## Method

Using the tips from Spulber (2014), I modified my model as follows: Individuals who decide to stay in the labor force maximize their utility,  $U_L$ , by allocating their budget constraint to the consumption of the existing good  $c_i$ , and a new good developed by the entrepreneurs  $c_j$ .

$$U_{Lt} = \ln((1 + c_{it})^{\mu_i} * (1 + c_{jt})^{\mu_j}) - \eta_L n_L + \gamma \ln(1 + n_t) \quad (1)$$

$$n_L + n_t \leq 1 \quad (2)$$

$$p_{it}c_{it} + p_{jt}c_{jt} + a_{Lt+1} \leq w_{L_i} * n_L + E(\pi_{It}) + (1 - \sigma_I e)(1 + r_t)a_{Lt} \quad (3)$$

$e=1$  for entrepreneurs and zero for others.  $p_i$  is the price for the good  $q_i$ ; while,  $q_j$  represents the new good, with the price  $p_j$ .  $w_{L_i,j}$  is the wage rate which the labor force earns by participating in the production of good  $i$  or  $j$ . And  $a_L$  is the summation of all the assets that an individual (worker) has.

A risk-taker entrepreneur has two sources of income: parts of his assets ( $\sigma_I$ ) that can be lent to the market with the interest rate  $r$ ; and the expected profit from selling his new good in the market. He needs to invest the rest of his assets,  $1 - \sigma_I$ , into his business

as a startup cost or some part of fixed costs. Here, the other component to the entrepreneurs' budget constraint has been added which may allow the model to save a portion of the profit to invest in entrepreneurial abilities and skills, therefore increasing the efficiency of the production process both intensively and extensively.

In this model, there is a financial market which borrows money with the rate  $r$  from individuals (i.e., banking system), and finances the firms with the rate of  $r_F$ , and entrepreneurs, with the rate of  $r_I$ , while  $r_I > r_F > r$ .

$$E(\pi_{Ft}) = (1 - \varepsilon) * A_t * r_{Ft} + \varepsilon * A_t * E(r_{It}) - A_t * r_t \quad \text{s.t. } A_t = \sum_{i=1}^n a_{it} \quad (4)$$

Firms are hiring the fraction of total assets  $\{(1 - \varepsilon)\}$  with the rate  $r_F$  from the financial market to produce good  $q_i$  in the perfectly competitive market.

$$\pi_{Ft} = p_{it}q_{it} - (1 - \varepsilon)r_{Ft}A_t - w_L n_{Lit} \quad (5)$$

$$q_{it} = TFP * (1 - \rho_T)[(1 - \varepsilon)A_t]^{\beta_i} n_{Lit}^{1-\beta_i} \quad (6)$$

TFP is the total factor productivity shock with the mean one.  $\rho_T$  is the unexpected negative shock (at the micro level, consider it to be an exogenous shock, but at the macro level, it would be a function of the aggregate risky decision that the entrepreneurs have taken to produce a new good). One can think about it as a summation of all the noises created by the risk, whereas, unlike the white noises, this summation doesn't add up to zero, but one at the end of each period, and causes an impulse shock every couple of years (T). Therefore:

$$\rho_T = \sum_{i=1}^T \varepsilon_i(\varepsilon) \quad (7)$$

Entrepreneurs will produce  $q_j$  with the below conditions:

$$E(\pi_{It}) = p_{jt}E(q_{j,t}) - \varepsilon r_{It}A_t - w_L n_{Ljt} - \sigma_I a_{It}, \sigma_I a_{It} \geq EB_0 \quad (8)$$

Here  $(1 - \sigma_I)a_{It}$  is an entry cost as a startup of a new business which is needed to be paid by the entrepreneurs and cannot be borrowed from the financial market, and must be greater or equal than entry barrier  $EB$ .

$$q_{jt} = TFP * \{(1 - \rho_T)M_{It}^{\theta}(\varepsilon A_t)^{\beta_j}(n_{Ljt})^{1-\beta_j}\} \quad (9)$$

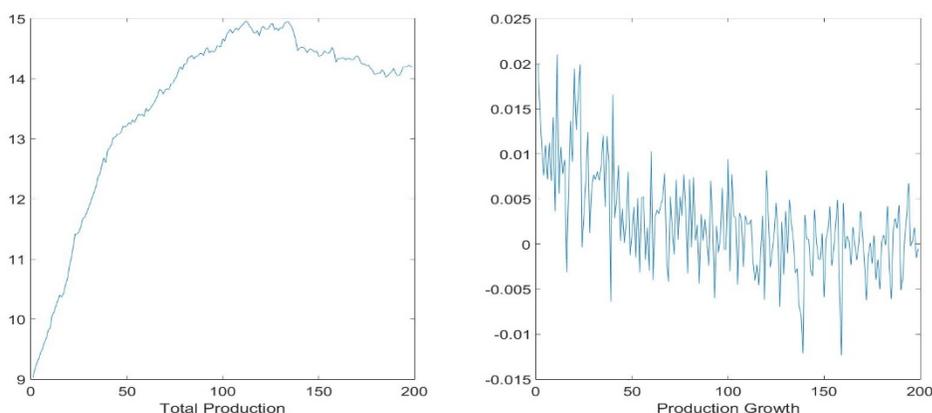
$$n_{Li} + n_{Lj} = n_L \quad (10)$$

in which  $M_I \geq 1$  is the managerial skill or entrepreneurial innovation.

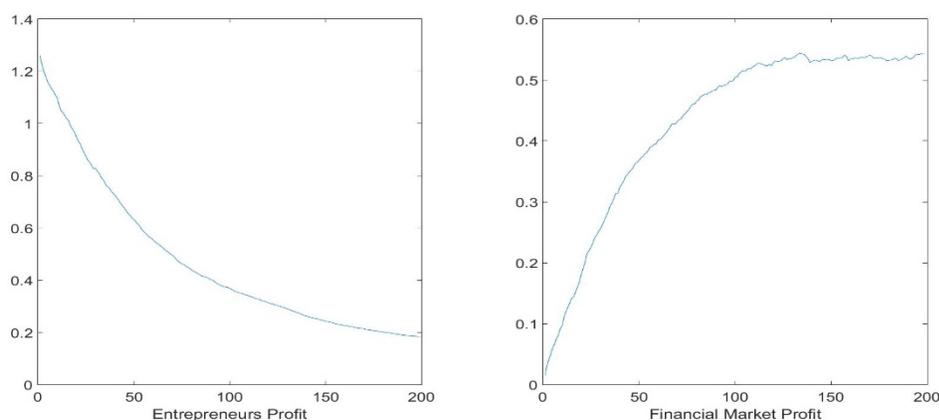
## Findings

Solving the model for the different calibrated parameters, one can observe that as the financial markets (exogenously) allocate more assets to the entrepreneurs, the total production of the market increases to some point, however, it starts to decrease beyond that critical stage which one call it bliss point. Thus, there is a tradeoff here between the allocating more assets to the entrepreneurial activities to produce more (and diverse) commodities, and facing a negative growth beyond the threshold, over a long time, with a higher risk of having a recession. On the other hand, the financial market earns more and more, which would occasionally drop along the growth path; while as the number of

the entrepreneurs increases (or more assets allocate to the entrepreneurial activities), the profit margin for the business maker diminishes due to higher competition.



**Figure 1:** Total output, and output growth, in a two-good Economy over time



**Figure 2:** Total Profit for the entrepreneurs, and the financial market, over time

Considering that entrepreneurs' businesses are mostly based on human capital relative to established firms with large capital shares, as this gap grows, more goods are produced, and the utility of the individuals boosts up over time, as more people are attracted to more risky works, and running their businesses, instead of work for others.

**References:**

Knight, F. H. (1921). Risk, uncertainty and profit. *New York: Hart, Schaffner and Marx.*  
 Mathews, J. A. (2006). *Strategizing, disequilibrium, and profit.* Stanford University Press.  
 Schumpeter, J. A. (1939). *Business cycles* (Vol. 1, pp. 161-74). New York: McGraw-Hill  
 Spulber, D. F. (2014). *The innovative entrepreneur.* Cambridge University Press.

# Differential Effects of Internal and External Remoteness on Trade Flows: The Case of Pakistan

Salamat Ali

University of Nottingham, UK  
salamatpcs@gmail.com

## Abstract

This study differentiates the trade-impeding effects of internal remoteness from trade-processing infrastructure from those of external remoteness from export markets. It uses a novel dataset that identifies the locations of manufacturing facilities and modes of shipment over time. It finds that the marginal effect of domestic distance to sea ports is almost double that of international distance to export markets. Both distances have heterogeneous effects along trade margins. Domestic distance impedes exports primarily through extensive margins (EM) of firms and product, whereas international distance restricts these mainly through quantity margins, in addition to constricting the EM. Although the trade-impeding effects of both components of distance have reduced over time, the drop has been relatively greater for the international leg. These findings imply reducing inland transportation costs can boost exports through the channels of 1) entry of more firms into exporting and 2) widening of the export product set.

**Keywords:** trade costs, remoteness, structural gravity, trade margins, Pakistan

## Introduction

A typical trade consignment involves both domestic and international transportation, with possible transshipments at gateway sea ports, airports or land crossings. Quantitative models of international trade use mainly remoteness between trading partners in gravity estimations and find robust evidence on its trade-impeding effect (for a survey see Head and Mayer, 2014). A separate strand of literature examines the role of behind-the-border trade costs and shows the domestic component of trade cost is higher in developing countries in particular<sup>2</sup>(Coşar and Demir, 2016; Donaldson, 2015; Van Leemput, 2016). This paper distinguishes the trade-impeding effects of internal remoteness from trade-processing facilities from those of international remoteness of export markets and generates quantitative evidence on the differential effects of both segments on firm-level trade flows. It finds that the marginal effect of internal remoteness from sea ports is almost twice that of international remoteness from export markets. The internal remoteness shrinks mainly the extensive margins (EM) of firms and products, whereas external remoteness, besides restricting trade flows along the EM, have a relatively large effect through quantity margins.

To compare the effects of domestic and international remoteness, I use a novel dataset that tracks the locations of firms' manufacturing facilities and modes of shipments in Pakistan. I measure the remoteness of firms' production facilities within the country to

---

<sup>2</sup> For instance, Atkin and Donaldson (2015) find that intra-national costs in Ethiopia and Nigeria are four to five times larger than those for the US.

gateway sea ports and use the inland distances as an additional regressor in gravity estimations together with the international component of distance (to markets of trading partners). Following estimation of the overall trade-impeding effects of both distances, I deconstruct the estimated coefficients along the relative responses of EM of firms and products as well as margins of prices and quantities. Finally, I explore the heterogeneity in the responses of trade margins across sectors and over time. A main challenge in this kind of analysis is to overcome the issue of potential endogeneity of internal remoteness owing to firms' choice of manufacturing locations. Exporting firms may decide to build a plant at a particular location to serve the domestic market (in addition to exporting) or use local inputs or benefit from externalities of industrial clusters. Although these issues have no definitive solution, I attempt to circumvent them by using the rich datasets on domestic sales and purchases of these firms, along with information on intra-country trade flows and the historical pattern of entry of firms into exporting.

The main contribution of the paper lies in its comparison of the trade-restricting effects of internal and external distances, which Coşar and Demir (2016) do not examine, as they focus exclusively on inland component. Coşar and Demir (2016) examine the effect of improvements in internal transportation infrastructure on regional access to international markets in Turkey. In another closely related paper, Crozet and Koenig (2010) include domestic transportation distances for French exports to adjacent countries in estimations to compute the structural parameters of Chaney's (2008) model. In contrast with these studies, this paper examines the differential effects of domestic and international elements of distance. Compared with France and Turkey, Pakistan is a relatively lower-middle-income country with poor infrastructure and long inland haulages. Theoretically, all firms are within the same country, but practically speaking their manufacturing base may be thousands of miles away<sup>3</sup> from export-processing stations (see Table 3). As the behaviour of exporters varies with the stage of development (Fernandes et al., 2016), this empirical setting is typical of a developing economy.

The second contribution of this paper is to extend the micro-literature on the response of trade margins to trade costs. Existing studies in this stream (e.g. Bernard et al., 2007; Eaton et al., 2004; Mayer and Ottaviano, 2008) explore the responses of trade margins to the international component of trade costs. This paper applies a similar methodology to decompose trade flows into multiple margins and confirms the above studies' findings regarding the reactions of trade margins to the international component of trade costs. In addition, it in tandem informs on the effects of the domestic element of trade costs on trade margins, which above studies do not examine. In another stream of literature, Hillberry and Hummels (2008) focus on the effects of domestic spatial frictions on intra-national shipments in the US, and Limão and Venables (2001) examine the effect of geography on transportation costs and trade volume across countries. By contrast, I explore the implications of internal and external remoteness for international

---

<sup>3</sup> Inland transportation distances from manufacturing locations to main sea ports in Pakistan vary from 50 km to more than 2,500 km (Table 2).

consignments originating from a developing economy and reveal the precise channels of their influence.

The examination of responses of trade margins improves our understanding of the mechanisms of influence of domestic and international trade costs. Existing literature shows that these costs inhibit entry of firms into export markets (ADBI, 2009; Albarran et al., 2013), affect the pattern of regional specialisation (Coşar and Fajhelbaum, 2016) and impede firms from moving up the value chain ladder (OECD/WTO, 2015). In extension of these studies, I show that the internal and external components of trade costs have a heterogeneous effect on trade margins. The internal element operates primarily through the EM of firms and products and thus impedes the entry of firms and diversification of exports, whereas the external element mainly restricts quantities of shipment. Finally, the study complements work on the impact of trade costs on trade composition (Milner and McGowan, 2013). Milner and McGowan find that trade costs influence the export mix of trading partners. In extension to this, this paper generates micro-level empirical evidence to the effect that remoteness within the country shrinks the EM of both firms and products, which are two basic elements of trade composition.

This study uses an administrative dataset from Pakistan that is being used for the first time for such empirical research work. This dataset is unique in many respects. First, in addition to tracking firms' production locations and modes of shipments, it identifies products at an eight-digit level of the Harmonised System (HS) of classification and thus allows estimation of a relatively precise role of EM. Second, its coverage of the recent period and its long timespan (2000–2014) makes it possible to examine the reactions of trade margins over time. Third, it encompasses the population of exporters in the agriculture sector as well, whereas many existing datasets are limited in coverage to manufacturing firms. Since agriculture is an important component of exports from many developing countries in Asia, Africa and South America (Hanson, 2012), analysis based on the data of firms in all sectors helps in generalising the results to other economies.

This paper thus contributes to the literature as the first paper (to the best of my knowledge) that explicitly investigates the differential effect of trade flows to domestic and international elements of remoteness by using unique datasets from a developing country. This study therefore adds a new dimension to the micro-literature on firms and has development policy implications as it informs on the precise channels of influence of these costs, in addition to estimating their magnitude.

The structure of the paper is as follows. Section 2 introduces the data and presents preliminary evidence. Section 3 discusses the empirical strategy and Section 4 presents the estimation results and robustness checks. Section 5 deconstructs the responses of trade flows along trade margins and Section 6 concludes by highlighting the policy implications of this work.

## Data Description and Preliminary Analysis

### Background

This research uses primary data sources of Pakistan<sup>4</sup>. Pakistan is the sixth-most populous country in the world, with a population exceeding 200 million. It is the 26th largest economy globally and is characterised as being among the emerging and growth-leading countries of the developing world. In terms of size, Pakistan is the 36th largest country, with an area covering 881,913 km<sup>2</sup> (340,509 square miles). It is bordered by India to the east, Afghanistan to the west, Iran to the southwest and China to the far northeast. Its 650-mile coastline along the Arabian Sea in the south has two sea ports, Karachi and Qasim, which handle 90% of Pakistan's exports (Figure 1:

Export-Processing Infrastructure in Pakistan

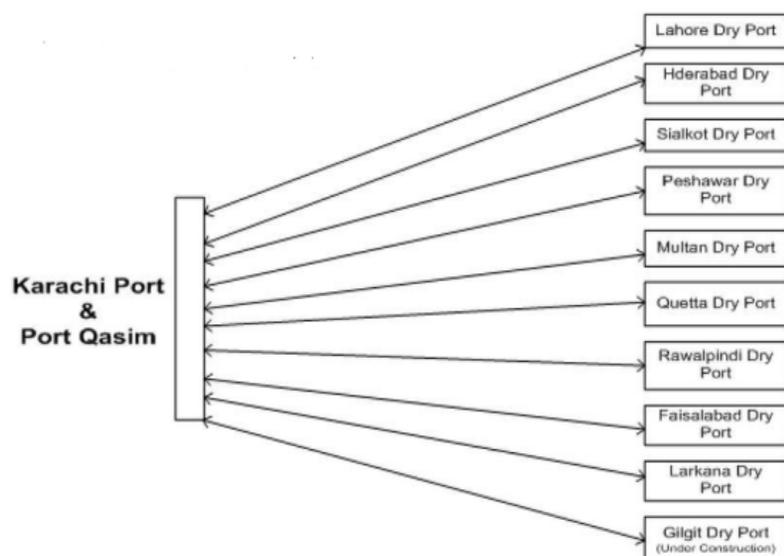
Table 2). Around 50% of exports originate from the coastal belt and the remainder from the hinterland. Exporting firms based in hinterland regions either directly transport goods to sea ports or use inland export-processing stations that are linked to sea ports (Figure 1). Road transport is the primary mode of inland freight transportation from the hinterland to sea ports in Karachi. Sea ports are quite distant from the manufacturing locations of many firms. Road distances from industrial areas in the hinterland to the sea ports vary from 50 km to more than 2,000 km, which makes domestic transportation an important element of trade costs.

### Trade Data

Micro-level information on various margins of firms and products is retrieved from the national database of Pakistan Customs. This dataset contains information on export values, HS8 product codes, prices and quantities for the universe of exporting firms for 190 export markets. Details on the firms' spatial locations come from the records of the Pakistan Inland Revenue Services (IRS). Both datasets (Customs and IRS) identify firms by the same unique identification code, their National Tax Number (NTN), which facilitates their merger. The merged dataset informs on the location of firms' production facilities, identities of trade-processing stations and modes of shipments (sea, air and land). This additional information allows us to examine the effect of remoteness arising as a result of the dispersion of production and exporting activities within the country.

---

<sup>4</sup> These datasets are subjected to confidentiality agreement. Most of the information is, however, available from the Export Dynamics Database of the World Bank.



**Figure 1:** Export-Processing Infrastructure in Pakistan

**Table 2:** Snapshot of Pakistan’s Exporting Sectors in 2014

Category		Exports		Firms		Products		Markets	
		Value	%	#	%	#	%	#	%
Spatial distribution of manufacturing for exports	Hinterland	1,235	50	7,362	44	3,496	83	182	96
	Coastal region	1,228	50	9,283	56	3,194	76	186	98
Modes of shipment	Sea	2,204	89	12,335	74	3,690	88	179	95
	Air	246	10	9,701	58	2,650	63	183	97
	Land	13	1	429	3	108	3	11	6
	All	2,463		16,645		4,200		189	

Notes: The data presents the distribution of exports, firms and products along spatial dimensions, as well as along modes of shipment for the most recent year (2014). Export values are in PKR billions. Products are identified at an eight-digit level of Harmonised System (HS). Coastal region indicates areas near the sea ports of Karachi and hinterland represents all up-country regions of Pakistan.

Sea ports handle around 90%<sup>5</sup> of Pakistan’s exports (Figure 1: Export-Processing Infrastructure in Pakistan

Table 2). As exports through sea ports are a major component of the overall exports of the country, this paper restricts the analysis to shipments through sea only. The data contains 16.1 million transactions for the period 2000–2014. For ease of estimation, I construct trade flows and trade margins for five administrative regions of Pakistan at sector-market-year level, following Comtrade’s broader classification of products in 16 groups. This transformation yields 66,044 observations. Gravity model variables are retrieved from the CEPII<sup>6</sup> and GDP is downloaded from the open data sources of the World Bank.

<sup>5</sup> And remainder 9% transacts through air and 1% through land routes.

<sup>6</sup> <http://www.cepii.fr/>

## Inland Distances to Sea Ports

I compute the distances from the manufacturing locations of firms to sea ports. These measurements are precise up to town level, the smallest unit of administration<sup>7</sup>. I identify the exact locations of firms' manufacturing facility from the dataset of the IRS. The IRS has territorial jurisdiction and firms are required to register with regional tax offices for VAT purposes. The raw data indicates that exporting firms are located in 1,935 towns; however, after standardisation of town names by removing typographical mistakes, the figure drops to 1,323. I manually retrieve the latitudes and longitudes from Google Maps for 1,323 towns and calculate their straight-line distances to sea ports using Stata command 'geodist'. This command provides the length of the shortest curve between two points along the surface of a mathematical model of the earth. Following the same approach, I compute intra-town distances within the country to run a domestic gravity model, used as a robustness check for baseline estimates. In another variant of this approach, I also compute the shortest road distance from the centre of major towns to sea ports from Google Maps.

## Preliminary Evidence and Empirical Motivation

This sub-section present preliminary evidence on how the export performance of firms based in the hinterland is different from that of those located near the sea ports.

**Table 3: Spatial Distribution of Pakistan's Exports in 2014**

Distance to sea ports	Exports			Firms			Products			Markets		Region
	Value	%	#	%	#	%	#	%	#	%		
1	2	3	4	5	6	7	8	9	10			
50	1,235.49	50.1	7,273	42.8	3,497	82.6	182	96.3		Karachi		
162	23.9	0.9	63	0.4	122	2.9	83	43.9		Hyderabad		
490	3.83	0.2	34	0.2	13	0.3	15	7.9		Sukkur		
715	39.42	1.4	153	0.9	296	7	72	38.1		Quetta		
876	0.34	0	8	0	14	0.3	16	8.5		Bahawalpur		
958	64.21	2.5	174	1	406	9.6	84	44.4		Multan		
1,203	272.9	11	691	4.1	782	18.5	141	74.6		Faisalabad		
1,280	465	19.2	3,405	20	2,362	55.8	163	86.2		Lahore		
1,360	33.95	1.3	341	2	629	14.9	99	52.4		Gujranwala		
1,390	145.97	5.9	3,940	23.2	1,096	25.9	178	94.2		Sialkot		
1,411	6.91	0.3	45	0.3	129	3	45	23.8		Sargodha		
1,516	17.56	0.7	277	1.6	552	13	82	43.4		Rawalpindi		
1,521	21.7	1.4	124	0.7	371	8.8	86	45.5		Islamabad		
1,605	2.73	0.1	26	0.2	47	1.1	23	12.2		Abbottabad		
1,616	128.96	5.1	442	2.6	845	20	103	54.5		Peshawar		
2,500	0.13	0	6	0	60	1.4	16	8.5		Sust		
All	2,463				4,200		189					

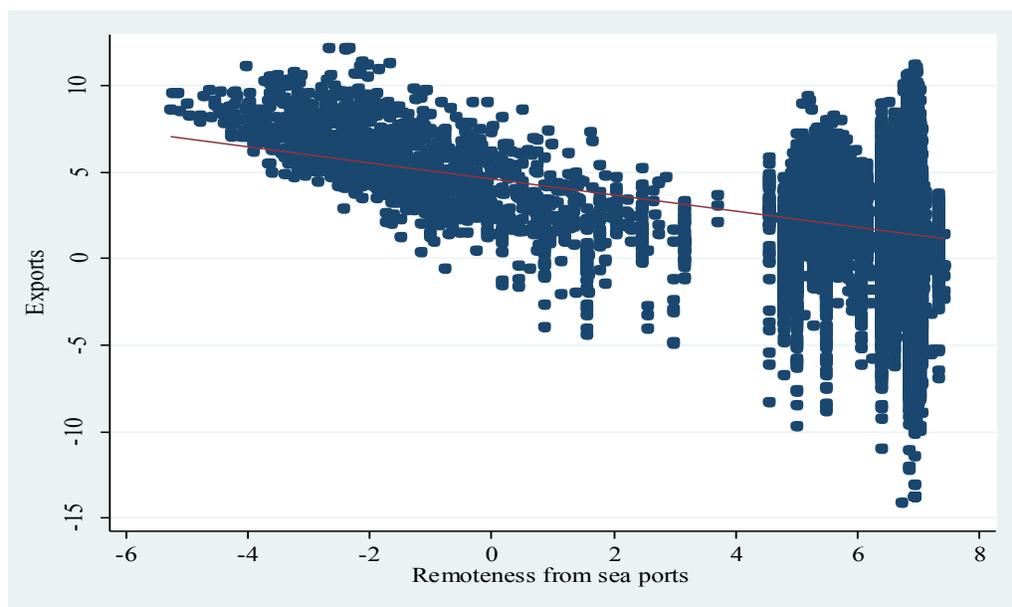
Notes: The data shows spatial distribution of exports across geographical regions of Pakistan and decomposes exports to firms, products and markets. Distance is measured in km from the sea ports of Karachi. Export values are in PKR billions. Products are identified at eight-digit level of Harmonised System (HS).

Source: Constructed using administrative dataset of Pakistan Customs.

Table 3 shows spatial distribution of exports across geographical regions of Pakistan (sorted by order of distance from sea ports) and decomposes this to number of firms, products and markets. Although major exporting activity tends to agglomerate in Karachi, there is excessive spatial variation within the country. Firms located in Karachi

<sup>7</sup> Pakistan consists of four provinces, one federal capital territory and one autonomous region (Kashmir). These administrative units are divided into 34 divisions, 149 districts, 588 sub-districts or *tehsils* (roughly equivalent to counties) and several thousand towns.

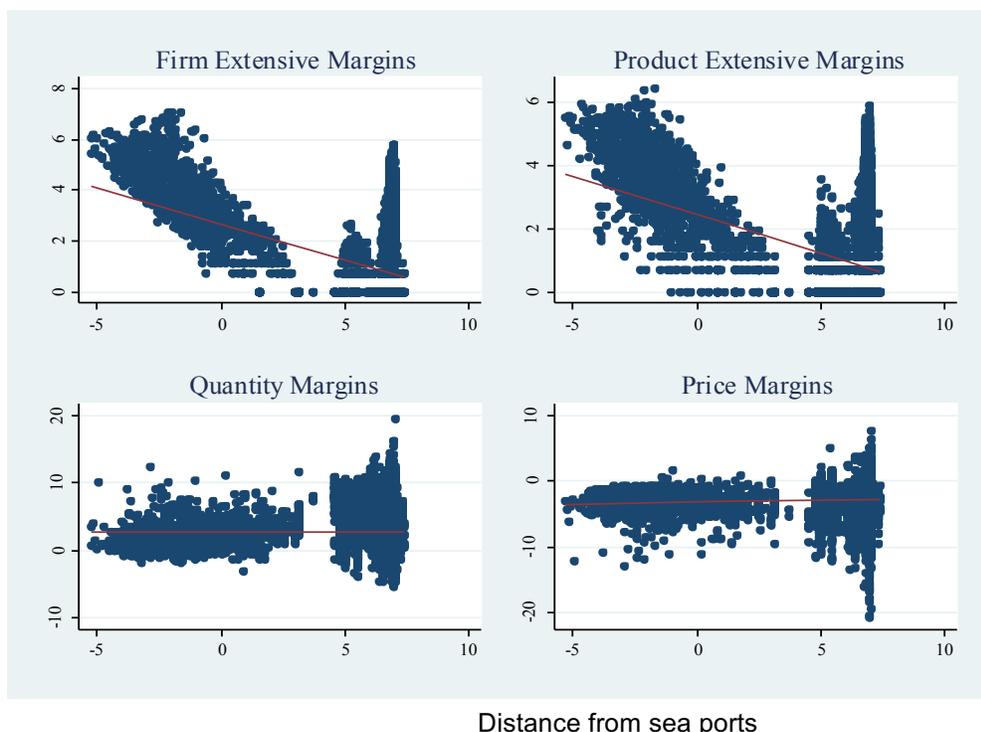
(near the sea ports) export a large set of products to a large number of markets (columns 7 and 9). Following Karachi, the three main export manufacturing regions are Lahore, Sialkot and Rawalpindi, all of which are more than 1,000 km from the sea ports. The number of exporting firms in these remote regions is small and the set of exported products is quite narrow. Moreover, these firms appear to ship to fewer destinations. This heterogeneity in trade margins across regions highlights, inter alia, the role of the internal remotes from trade-processing facilities.



**Error! Reference source not found.:** Presents the Distribution of Exports According to Distance From Sea Ports: On a Logarithmic Scale

Figure 2 shows the same for four trade margins. These charts suggest that exports drop in remoteness from sea ports, and the main action appears to come from the EM of firms and products. This pattern is quite intuitive as firms located in the hinterland face more transport costs compared with those located in coastal areas. For example, shipping a standard 20-foot container from the port of Karachi to the US involves a freight of \$700, but the internal transportation of the same container from the industrial area of Rawalpindi (1,500 km from sea ports) to Karachi incurs almost the same charges<sup>8</sup>. The clustering of data points at the upper end reflects exports originating from two large cities, Lahore and Faisalabad, and other adjoining regions. These regions, although relatively far from sea ports, are major centres of production of textiles.

<sup>8</sup> Figures on domestic freight collected from transporters' associations and those on international freight are retrieved from the Customs' dataset.



**Figure 2:** Responses of Trade Margins to Remoteness from Sea Ports: On a logarithmic scale

Notes: The figure presents the variation in four elementary margins against internal remoteness from sea ports. The deconstruction approach follows Mayer and Ottaviano (2008). The clustering of data points at the upper end reflects exports originating from two large cities, Lahore and Faisalabad, and other adjoining regions. These regions, although relatively far from sea ports, are major centres of production of textiles.

Simple dummy variable regressions on the transaction-level data of 2014 indicate that, on average, firms located far from shipping facilities export a smaller volume, ship a narrow set of products and serve a smaller number of markets (Table 4). Remoteness from sea ports, therefore, seems to negatively affect both IM (column 1) and EM (columns 2 and 3). The next sections investigate this trade-impeding effect of remoteness in an empirical framework

**Table 4:** Differential Export Response from Coastal and Hinterland Regions

Dependent variables	Export/firm/market (1)	Product/firm/market (2)	Market/firm (3)
Hinterland region (1, 0)	-0.152*** (0.006)	-0.163*** (0.004)	-0.048*** (0.003)
Market-year FE	Y	Y	Y
Industry FE	Y	Y	Y
R-squared	0.081	0.065	0.326
Observations	742,029	742,023	239,359

Notes: The table shows the regressions of a few firm performance measures on a dummy variable that takes the value of '1' if a transaction pertains to the hinterland regions of Pakistan and zero if it pertains to the coastal regions. The dependent variable is described at the head of each column. All estimations are in log. Standard errors clustered at market level are in parentheses \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. Y indicates the inclusion of fixed effects.

## Empirical Strategy

The descriptive analysis in the previous section shows that manufacturing activities in Pakistan are quite dispersed in the hinterland, and many industrial areas are thousands of miles from the gateway sea ports. Moreover, various margins of firms and products appear to drop in internal distance to trade-processing stations. To investigate empirically the differential effects of internal and external remoteness on trade flows, I estimate the following equation (1):

$$\ln(X)_{ijkt} = \beta_0 + \beta_1 \ln(\text{dist.})_{ip} + \beta_2 \ln(\text{dist.})_j + \beta Z'_{ijt} + \gamma_{kt} + \alpha_i + \varepsilon_{ijkt} \dots \dots \dots (1)$$

The subscript ‘i’ denotes regional location of industry within Pakistan, ‘p’ sea port, ‘j’ export market, ‘k’ sector and ‘t’ time (year). The dependent variable,  $X_{ijkt}$ , is the value of exports originating from each administrative region at sector-market-year level. All products are bundled into 16 sectors following UNCTAD’s standard groups and the country is divided into five regions following the administrative set-up discussed in Section 0.

The main explanatory variable,  $\text{dist.}_{ip}$ , is the distance from the locations of industry in Pakistan to sea ports. The construction of this variable is discussed above in Section 0. The second explanatory variable,  $\text{dist.}_j$ , measures the international distance to the market of trading partner. It is retrieved from the CEPII dataset and measures straight-line distances between the capitals of countries, which is quite standard in the gravity literature. The coefficients  $\beta_1$  and  $\beta_2$  are expected to be negative.

$\gamma_{kt}$  are time-varying fixed effects for products. They account for heterogeneity across various sectors.  $\alpha_i$  is the set of region fixed effects, which control for differences in physical and human infrastructure and the nature of economic activities across various administrative regions, like GDP, population or income. These industry- and region-specific variables account for time-invariant and time-varying unobservable.

$Z'$  is a set of controls. The specification incorporates the usual gravity controls, such as GDP of trading partners, and a dummy variable identifying whether the trading partners have a common border, share a common official language and are a member of a preferential trade agreement. The common language and adjacency dummies are used to capture information costs. Search costs are probably lower for countries whose business climate, language and institutional structures are similar. These gravity variables are taken from CEPII and follow the definitions therein.

The same estimation equation (1) is used to examine the responses of various margins. Following Mayer and Ottaviano (2008) and Hillberry and Hummels (2008), the overall trade flow is deconstructed to firm EM (number of exporting firms), product EM (number of products per firm) and quantity and price margins (quantity exported per product per firm, and export price per product per firm), respectively. This four-fold division helps us pin down the precise channels of influence of remoteness on exports along various dimensions. I concentrate on examining the responses of four elementary margins of trade: EMs of firms and products and the margins of prices and quantities. The reason is that the combined reactions of these four margins adds to the total trade-impeding

effect of distance on exports at the aggregate level<sup>9</sup>, which help in understanding the relative contribution of each component. I therefore abstract from the discussion of reactions of intensive margins (IM) of firms and products, which are a sort of ‘mixed’ margins (Gil-Pareja et al. 2015) and represent price and quantity margins at a higher level of aggregation.

In an alternative specification (equation 2), I add both internal and external components of distance as in Crozet and Koenig (2010) and incorporate market-year fixed effects to absorb the international element of distance.

$$\ln(X)_{ijkt} = \beta_0 + \beta_1 \ln(\text{dist})_{ij} + \beta Z'_{ijt} + \gamma_{kt} + \lambda_{jt} + \varepsilon_{ijkt} \dots \dots \dots (2)$$

In this modified form, the variable of interest,  $\text{dist}_{.ij}$ , becomes the total distance from the location of industry ‘i’ in Pakistan to the market of trading partner ‘j’.  $\lambda_{jt}$  are market-year fixed effects. The dummies not only account for the general remoteness of Pakistan from export markets but also allow for better control for destination market’s multilateral resistance. Since they soak up the effect of the international component of distance, the remaining effect can be attributed to domestic distance only<sup>10</sup>. This alternative estimation approach thus ensures robustness of the effect of inland distance on trade flows.

The estimation method is Ordinary Least Squares (OLS)<sup>11</sup>; however, to account for heteroskedasticity in trade data and the presence of zero trade flows, I use the Poisson Pseudo Maximum Likelihood (PPML) estimator, as suggested in Silva and Tenreyro (2006), in robustness checks. Using equation (1), I initially examine the overall response of exports to inland and international components of distance and then deconstruct the effect into the responses of trade margins. I estimate the model with high dimensional fixed effects by using the Stata command, ‘reghdfe’, suggested in Guimaraes and Portugal (2010). Standard errors are clustered at the region-destination level. Following the baseline estimations, and robustness checks, I examine the heterogeneity of the effect across sectors and over time.

## Estimation Results, Discussion and Robustness Checks

### Estimation Results

**Table 5** presents baseline estimation results. Column (1) contains the estimates for inland distance to sea ports. The coefficient of interest is negative and statistically significant at a 1% significance level, showing that internal remoteness negatively affects exports, as transportation costs are higher for exports originating from distant regions. Column (2) estimates the same equation with international distance to the

<sup>9</sup>  $X_{ijkt} = N^f_{ijkt} \times N^p_{ijkt} \times p^{-fp}_{ijkt} \times q^{-fp}_{ijkt}$ , where  $N^f_{ijkt}$  and  $N^p_{ijkt}$  are the number of firms and products per market by sector and  $p^{-fp}_{ijkt}$  and  $q^{-fp}_{ijkt}$  are average quantity and average price per product by firm.

<sup>10</sup> Addition of the internal and international elements of distances allows the bilateral distance to trading partners to vary depending on the location of industry within Pakistan. The specification therefore isolates the effect of domestic distance by soaking up the effect of international component from the combined effect of domestic and international elements.

<sup>11</sup> Since the OLS is a linear estimator, the coefficients have additive property. For example, trade flow = Firm EM + Firm IM, and Firm IM = Product EM + Product IM and Product IM = Quantity margin + Price margin.

markets of trading partners. This coefficient captures the effect of external distance for all firms. The effect of external remoteness is negative as expected.

The magnitude of the effect in column (1) is larger compared with the results in column (2), indicating that the marginal effect of internal remoteness from exporting stations is greater compared with that of international remoteness from export markets. Column (3) adds both distances in the estimation, which yields similar results to those reported in columns (1) and (2)

**Table 5:** Trade-Impeding Effect of Remoteness – Main Results Dependent variable is log of exports by sector, region and market

	Straight line distances (columns 1 to 4)				Road distance	Specification n-II	Single period	PPML estimate	Domestic trade flows
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Distance to port	-0.688*** (0.028)		-0.680*** (0.028)	-0.943*** (0.034)	-0.929*** (0.135)	-1.256*** (0.194)	-1.143*** (0.057)	-0.743*** (0.037)	-1.302*** (0.084)
Distance to market		-0.498*** (0.022)	-0.464*** (0.024)	-0.476*** (0.024)	-0.529*** (0.025)		-0.421*** (0.058)	-0.321*** (0.058)	
Additional controls									
Sector-year	Y	Y	Y	Y	Y	Y			
Region	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sector							Y	Y	Y
Region-sector				Y	Y				
Market-year						Y			
R2	0.306	0.253	0.309	0.343	0.236	0.325	0.192	0.292	0.476
N	34,121	66,044	34,121	34,117	34,121	66,044	7,635	179,635	33,114

**Notes:** Robust standard errors clustered at market level are in parentheses, \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. The coefficients on fixed effects and other gravity variables are not reported since they are not of direct interest. Columns (1) to (5) and (7) and (8) contain the results of specification (1) and column (6) contains those for specification (2). Column (8) estimates the specification (1) with the PPML estimator. As this estimator accounts for zero trade flows also, the number of observation in column (8) is larger. The number of observations also vary in columns (1) and (2) as trade flows pertaining to coastal region near the port are dropped in column (1). The estimates in column (4) are used as baseline.

Column (4) adds sector-region fixed effects to account for the heterogeneity of various industries in different regions of Pakistan. As various regions specialise in certain sectors, incorporating these dummies controls for this variation. Addition of these fixed effects increases the magnitude of coefficient on inland distance but does not much affect the same for international distance (column 4). The magnitude of coefficient on internal distance variable estimated in column (4) is almost double than that on international distance. Since these estimations are in logs, the coefficients correspond to elasticity. The coefficient in column (4), for example, suggests that, on average, an increase of 10% in the inland distance is associated with a drop in exports by 9.43%. The corresponding effect of international distance is 4.76% only. The estimates in column (4) are used as baseline.

These estimates imply that the trade-impeding effect of domestic transportation costs is larger than that of their international component. These results are in line with the findings of earlier studies, which reckon that domestic trade costs are quite high: for example, Anderson and Van Wincoop (2004) argue that domestic costs in the US are more than twice as high as the cost of international transportation. Limão and Venables (2001) show that the per unit cost of overland transport in the US is higher than that of the sea leg. Rousslang and To (1993) find that domestic freight costs for US imports are of the same order as their international component.

Columns (5) to (9) present initial robustness checks. Column (5) estimates the same equation with an alternative measure of domestic distance. Instead of using straight-line distances computed using coordinates, it uses shortest road distances from manufacturing locations to sea ports. The coefficient of interest on internal distance (measured along roads) is similar in sign, statistical significance and magnitude. Column (6) uses an alternative specification. It adds two components of distance, instead of using them as separate regressors and includes market-year fixed effect in the estimations that absorb other factors that vary across markets and over time. These dummies soak up the effect of international component of distance but the coefficient on inland distance is retrieved, which remains unaffected in terms of sign and statistical significance, although it is slightly larger in magnitude. Column (7) collapses the data to a single period to overcome any potential problem of serial correlation in error terms. This transformation generates estimates that are comparable to the baseline specification in column (4). Column (8) replicates the estimations with the PPML estimator to check the effect of non-linearity owing to the presence of zero trade flows. These estimates are similar in sign and significance, although the magnitude of coefficients is relatively smaller.

Column (9) presents the results of gravity estimations for the trade flows oriented away from sea ports rather than towards them. It uses the data for domestic sales of Karachi-based firms to those based in up-country locations. Karachi is the largest manufacturing station and is a source of inputs for many firms located in the hinterland. The data of domestic trade shows that in 2013 around 14,216 firms based in 367 hinterland towns sourced inputs from Karachi. Column (9) examine the effect of internal transportation on these domestic trade flows. As the estimates indicate, the effect is negative and the

magnitude of coefficient in column (9) is slightly larger compared with the baseline estimates for export data in column (4). One potential reason for this large trade-impeding effect on domestic trade could be the sample composition as it contains exporting as well non-exporting firms. As non-exporting firms are generally small, they might not benefit from the economy of sale in domestic transportation. Second, many non-exporting firms are based in small remote towns. As road infrastructure in remote towns is particularly poor, it might reflect larger resistance to trade flows.

### Further Robustness Checks

One of the major issues in this kind of analysis is to circumvent the endogeneity of firms' location choice, which could be endogenous for several reasons, such as engagement in sales in the home market, access to domestic inputs and positive externalities of agglomeration. To account for these issues, I take multiple measures, as discussed below.

First, I split the trade-impeding effect of domestic distance between two groups of firms, exporting-only and exporters-cum-domestic sellers. Table 6 shows that 65% firm do not sell in the domestic market and export all their output. The remaining 35% firms engage in exports as well as in domestic sales. The potential endogeneity induced by access to home market may be problematic for the latter cohort but the location choice of the former group is not dictated by home market as it does not engage in domestic sales. Therefore, internal remoteness from sea ports for exporting-only firm can be considered largely exogenous, at least from the dimension of home-market effect, as they do not care about sales at home.

**Table 6:** Trade Orientation of Exporting Firms

Firm type	Firms (%)	Exports (%)
Exports only	65	15
Exports+ domestic sales	35	85

Source: Author's working using Customs' dataset.

As the results in column (1) show, the effect of remoteness is negative and statistically significant for both cohorts, and the magnitude is slightly higher for exporting-only firms (**Table 7**). The trade-impeding effect for exporting-only firms could be higher as they are of relatively small size<sup>12</sup> and might not benefit from the economy of scale in domestic transportation. The estimated effect of internal remoteness for this exporting-only group can be treated as purged of the endogeneity issue to a great extent.

<sup>12</sup> They comprise over 65% of exporting firms but deal with 15% of exports only (Table 5).

**Table 7: Robustness Checks for Endogeneity of Location Choice**

Dependent variable is log of exports by sector and region

	(1) Split the coefficient	(2) Control for domestic sales	(3) Control for domestic inputs	(4) IV estimates
Distance to port				
# Exports + domestic sales	-1.024*** (0.035)	-0.922*** (0.037)	-0.994*** (0.036)	-1.442*** (0.053)
#Exports only	-1.276*** (0.035)			
Distance to market	-0.430*** (0.022)	-0.401*** (0.029)	-0.462*** (0.027)	-0.482*** (0.032)
Domestic sales		0.072*** (0.007)		
Domestic purchases			0.106*** (0.007)	
R2	0.332	0.366	0.357	
N	41,108	23,074	26,845	30,554

Notes: Robust standard errors clustered at market level are in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . These estimations follow specification 4 above. The coefficients on fixed effects and other gravity variables are not reported since they are not of direct interest.

Access to home market may affect the location choice of firms that sell domestically in addition to exporting. I therefore control for home-market effect for exporter-cum-domestic sellers through domestic sales<sup>13</sup> in column (2). The third factor determining location choice could be access to domestic inputs. Column (3) controls for this by incorporating domestic purchases as an additional regressor.

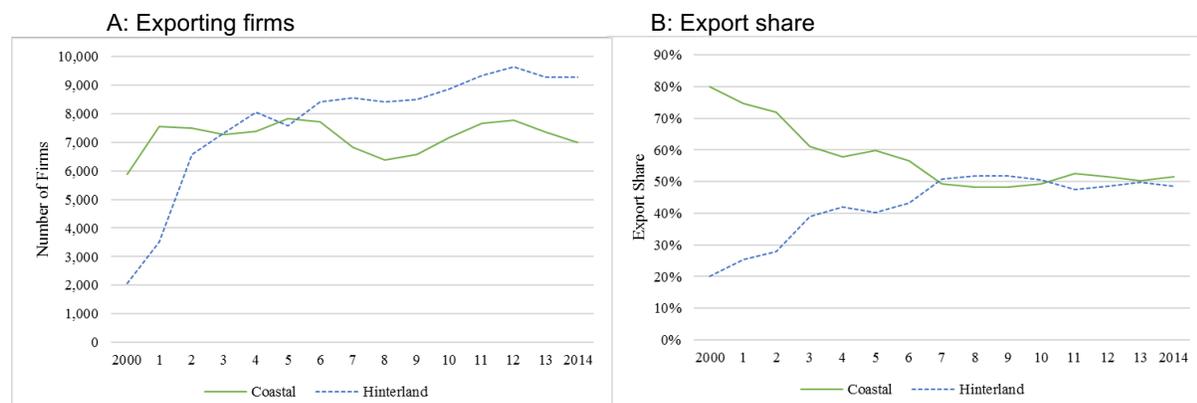
As column (2) and (3) indicate, the sign, statistical significance and magnitude of the coefficient on the regressors of interest remain almost unaffected in these estimations. Moreover, both domestic sales and purchases positively affect trade flows. The positive effect of domestic sales may reflect the benefit of economy of scale in production to serve local and international markets.

Column (4) uses the number of already established firms in each region at a sector level as an instrument for the potentially endogenous variable, distance to port. Pakistan has various industrial clusters in different regions. For instance, Faisalabad is a hub of textile, Sialkot is a centre of sports goods and Wazirabad is a manufacturing base for surgical equipment. This spatial distribution alludes to the role of the agglomeration effect. To account for this, I count the number of firms in each sector in each region over time and use this as an instrumental variable for distance to sea ports. This variable bears a negative correlation of '-0.45' with the internal distance. This estimation approach does not affect the coefficient on external distance but increases the magnitude of internal distance considerably.

Finally, the pattern of entry of these firms into exporting suggests that hinterland firms potentially take remoteness from sea ports as exogenous (Figure 3). Till 1999, Pakistan was a sort of closed economy. The trade openness started in the regime of General

<sup>13</sup> This approach inherently assumes that domestic sales are a proxy for local population size.

Pervaiz Musharraf, who came to power by overthrowing an elected government and pursued a trade policy reform agenda to seek legitimacy on the grounds of economic performance. Firms established prior to 1999 in the hinterland were oriented mainly towards the domestic market but started exporting over time (panel A of Figure 3).



**Figure 3: Evolution of Pakistan's Exports from the Hinterland and Coastal Regions over Time**

Notes: Coastal region indicates the areas near the sea ports of Karachi and the hinterland represent all up-country parts of Pakistan. Panel B shows that, prior to 2000, Pakistan's exports were dominated by firms based near the sea ports. However, the export share of hinterland firms increased gradually as a result of trade policy reforms in this period.

Source: Constructed using administrative datasets for the financial year 2014.

As the charts indicate, in the earlier period, around 80% of exports originated from the coastal regions. Later on, after reform of the military establishment, the proportion of exports originating from the hinterland increased gradually (panel B of Figure 3). Therefore, for the set of firms serving just the domestic market in the earlier period and that started exporting in the later year, distance to port is exogenous, as exporting was not their primary concern at the time of establishment

### Mechanisms of Influence: Responses of Trade Margins

The estimates in Section 0 indicate the average effect of domestic and international aspects of remoteness but for policy prescriptions the relative responses of trade margins are considered to be more informative. This section therefore deconstructs the coefficient on the distance variables into four constituent components: the EM of firms and products, as well as price and quantity margins in the spirit of Bernard et al. (2007) (**Table 8**). Panel A contains the results for inland distance and panel B for international distance. Figure 4 plots these coefficients for ease of interpretation. Since the OLS is a liner estimator, the coefficients in columns (2) and (5) add up to that in column (1).

**Table 8: Decomposition of Export Response along Trade Margins**

Dependent variables	X <sub>ijkt</sub> (1)	Firm EM (2)	Prod. EM (3)	Qty. M (4)	Price. M (5)
Panel A:					
Distance to port	-0.943 <sup>***</sup> (0.034)	<b>-0.607<sup>***</sup></b> (0.017)	-0.505 <sup>***</sup> (0.016)	<b>0.155<sup>***</sup></b> (0.031)	0.013 (0.028)
Panel B:					
Distance to market	-0.476 <sup>***</sup> (0.024)	<b>-0.146<sup>***</sup></b> (0.009)	-0.120 <sup>***</sup> (0.009)	-0.226 <sup>***</sup> (0.019)	0.016 (0.016)
R <sup>2</sup>	0.343	0.393	0.401	0.362	0.314
Observations	34,117	34,117	34,117	34,105	34,105

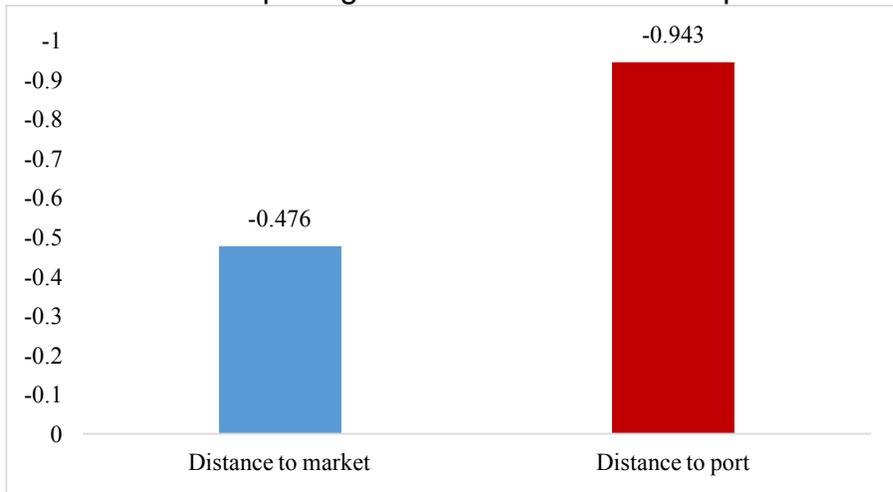
Note: Robust standard errors are in parentheses, \*p<0.10, \*\*p<0.05, \*\*\*p<0.01. The coefficients on fixed effects and other gravity variables are not reported since they are not of direct interest. EM denotes extensive margins and IM indicates intensive margins. Column (1) contains the overall effect of distance and columns (2) through (5) decompose the coefficient in column (1) into various trade margins. All estimations are in logs.

A comparison of the estimates in panels A and B shows that the EM of both firms and products drop in distances but the relative effect is much larger for internal distance (column 2 panel A). As the chart shows, 64% of the effect of domestic distance is transmitted through EM of firms and 54% through EM of products, but the corresponding figures for international distance are 31% and 25%, respectively (panel B of Figure 5). Columns (4) and (5) contain the responses of quantity and price margins. The results show that the response of quantities to domestic distance is positive (panel A) but the same to international distance is negative (panel B), indicating that quantity margins defy domestic remoteness but drop in its international element. The relative effects on quantity margins are -47% for international remoteness and +16% for internal remoteness.

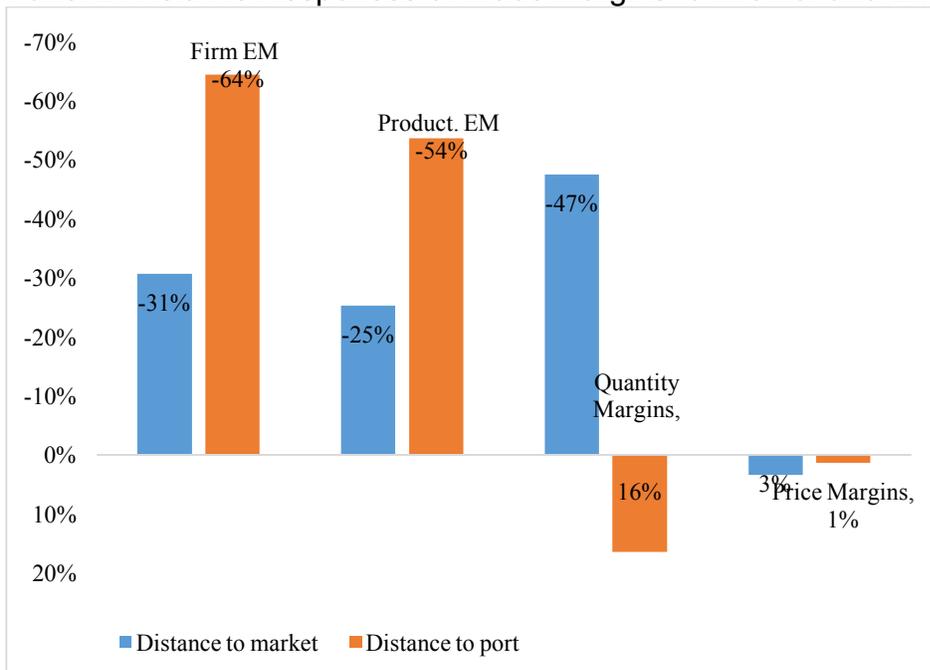
Panel A of Figure 5 shows that the net effect of domestic distance is almost double that of international distance (panel A). The deconstruction in panel B suggests that the response of firms to internal remoteness is different from that to international remoteness. The former operates mainly through the EM of firms and products, whereas the latter operates primarily through quantity margins besides restricting trade along EM.

In the case of distance (a proxy for trade costs), the usual assumption in gravity modelling has been that it reflects transportation costs, which vary with the quantity exported. The positive response of quantities, however, suggests that there may be a fixed cost element to the domestic distance as well. For instance, loading, unloading, handling and documentation charges do not vary with distance. These estimations suggest that the fixed cost component of domestic distance operates through average sales and the variable cost component through EM by restricting the entry of firms. It seems that domestic distance may be capturing the other elements; for example, information networks may decline with distance from port and absence of information may increase cost of entry (Krauthaim, 2009). This analysis also shows that internal distance to sea ports has some sort of selection effect on firms and products. It restricts the entry of firms into exporting but the entrants export a higher volume on average.

Panel A: Trade-impeding Effects of Distance on Exports



Panel B: Relative Responses of Trade Margins to Internal and External Remoteness

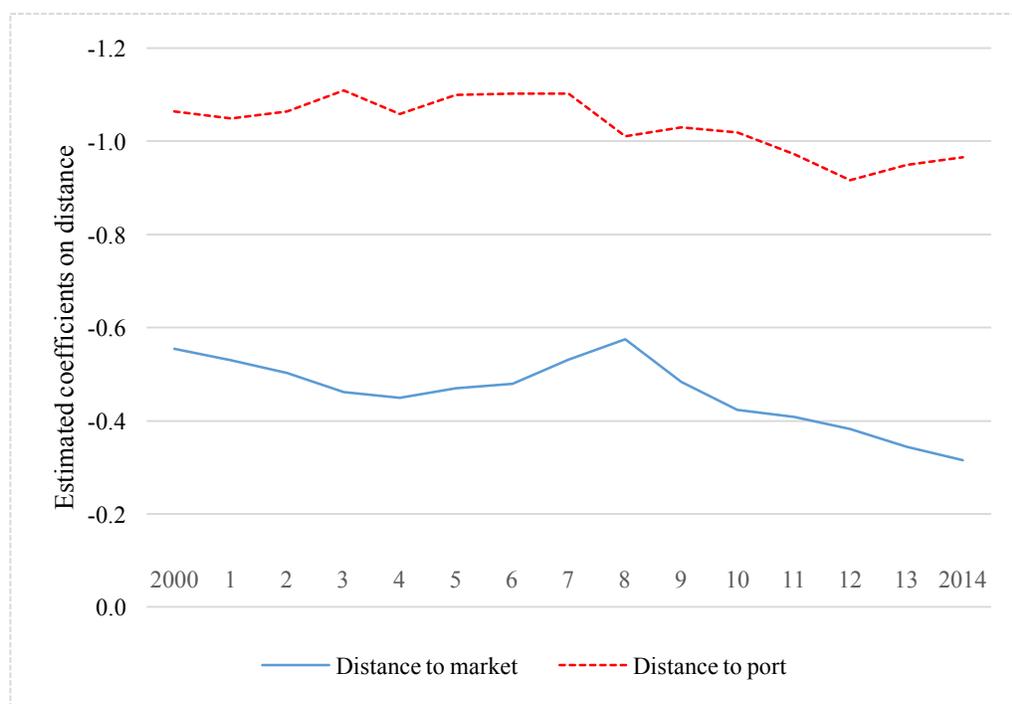


Notes: These figures plot the estimated coefficients in Table 7. Panel A indicates the net effect of distances on trade flows and panel B provides the relative contribution of each trade margin. EM denotes extensive margins. Panel A shows that the net effect of domestic distance is almost double that of international distance. The deconstruction in panel B suggests that the trade-inhibiting effect of domestic distance operates mainly through the EM of firms and products, whereas international distance operates primarily through quantity margins besides restricting trade along EM.

**Figure 4: Heterogeneity of the Effect of Remoteness on Trade Flows and Trade Margins (Values on y-axis are in reverse order)**

## Heterogeneity over Time and across Sectors

Figure 5 deconstructs the effects of internal and external remoteness on trade flows over time. The detailed estimates are contained in Table A2. As the chart shows, the magnitudes of the effect of international component of distance are smaller than those for domestic component for all years. Moreover, the trade-impeding effect of both components of distance has reduced over time, and the drop is relatively higher for the international leg. From 2000 to 2014, the trade-resisting effect of international distance dropped by 34%, whereas that of domestic distance dropped by 9% only, on average. The former may be a result of improvements in shipping and communication technologies, leading to a reduction in international freight and other associated costs, and the latter may be a result of upgradation of domestic infrastructure. Similarly, the heterogeneous reactions of quantity margins observed at aggregate level are not specific to any particular year; they respond positively to internal remoteness but negatively to external remoteness (column 4, Table A2).

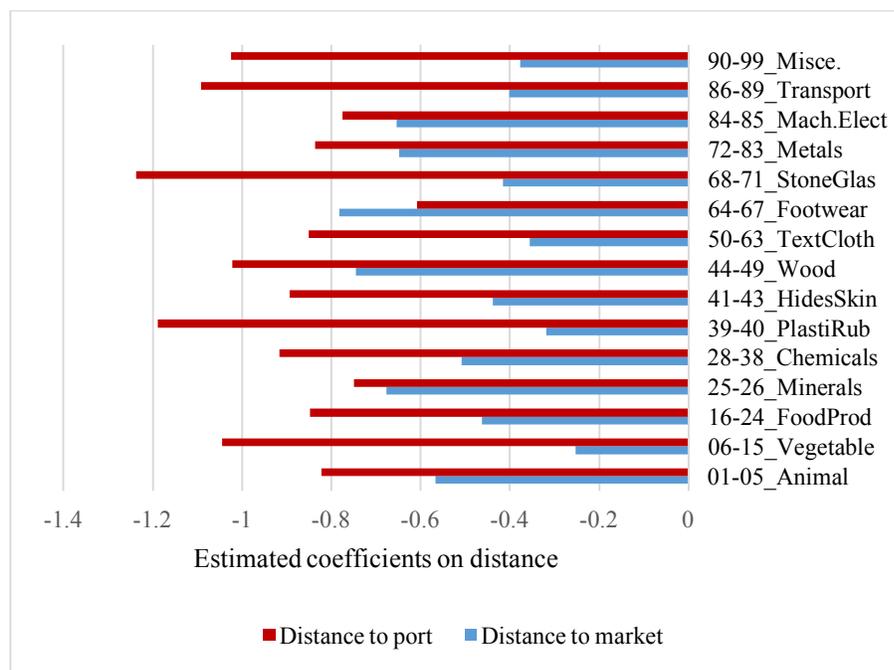


**Figure 5: Heterogeneity of the Effects of Remoteness on Trade Flows over Time (Values on the y-axis are in reverse order)**

Notes: The figure plots the regression coefficients on internal and external distances estimated using equation (1). As the chart indicates, the effect of remoteness from port is larger than the effect of remoteness from export markets for all years in the study period. The detailed estimates are contained in Table A2.

Since the estimations include the universe of exporting firms in both sectors, agriculture and manufacturing, it can be argued that a particular sector may be driving these results. By deconstructing the baseline results across sectors, Figure 6 shows that the trade-restricting effect of internal remoteness is larger in all sectors. Similarly, the heterogeneity of the effect along the EM of firms and products (columns 2 and 3) and quantity margins (column 4) is evident across panels A and B (Table A3). This

deconstruction confirms baseline estimates and also yields further information on the asymmetric nature of trade costs across sectors.



**Figure 6: Heterogeneity of the Effects of Remoteness on Trade Flows across Sectors**

Notes: The figure plots the regression coefficients on internal and external distances deconstructed at a sector level using equation (1). It indicates that the effect of remoteness from ports is larger than the effect of remoteness from export markets for all sectors. The estimates vary widely, reflecting heterogeneity in the trade costs' sensitivity across sectors. The detailed estimates are contained in Table A3.

### Conclusion and Policy Implications

Relatively high costs of transporting goods from factories and farms to gateway sea ports and airports are considered to restrict the growth of exports from developing economies. Although domestic trade costs are very high, the existing micro-literature focuses mainly on their international component. This study examines the differential effects of both cost elements, domestic and international, by using novel datasets from a developing country, which identify the locations of manufacturing and modes of shipment. It finds that, on average, the marginal trade-restricting effect of internal remoteness is twice that of international remoteness from the markets of trading partners. Moreover, the relative effects of domestic costs on trade margins are different to those of international costs: the latter negatively affect trade along all margins, with a relatively large effect through quantity margins, but the former operate mainly through the extensive margins (EM) of firms and products, suggesting a larger role for domestic distance in restricting the entry of firms and constricting the diversification of products. Moreover, quantity margins defy internal remoteness, although they drop with its international element. The trade-impeding effects of remoteness, both international and domestic, have reduced over time but the drop is relatively higher for the international leg. These results are robust to an alternative specification, data sources and the measurement approach of internal distances as well as to the deconstruction of the distance effects across sectors and over time.

During the past two decades, the fall in tariffs, improvements in maritime transport and the communication revolution have considerably reduced the international element of trade costs and drawn attention towards behind-the-border trade costs. In the developing world, these costs – *inter alia* – are usually induced by the remoteness of trade-processing infrastructure from firms’ production facilities and are further compounded by poor transport networks (ODI, 2015). This paper shows that the relatively higher element of domestic costs is an important impediment to accessing international markets. The internal remoteness represents an implicit tax: it inhibits firms’ participation in exporting and constricts their export product sets. This finding suggests that, from a trade facilitation perspective, a focus on reducing within-country trade costs is relatively more important to generate an appropriate trade response. Since the overall trade-restricting effect of domestic trade costs is much higher along the EM, this suggests that policies aimed at strengthening these margins assume more importance in promoting exports. Export promotion strategy and policy has to focus on facilitating the market entry of firms and products, rather than on quantity subsidies.

## References

- ADB. (2009). Infrastructure for a Seamless Asia. Discussion Paper. Tokyo: ADB.
- Albarran, P., Carrasco, R. and Holl, A. (2013). Domestic Transport Infrastructure and Firms’ Export Market Participation. *Small Business Economics* 40(4): 879–98.
- Anderson, J. E. and Van Wincoop, E. (2004). Trade Costs. *Journal of Economic Literature* 42(3): 691–751.
- Atkin, D. and Donaldson, D. (2015). Who’s Getting Globalized? The Size and Nature of Intra-national Trade Costs. Cambridge, MA: NBER.
- Bernard, A. B., Jensen, J. B., Redding, S. J. and Schott, P. K. (2007). Firms in International Trade. *Journal of Economic Perspectives* 21(3): 105–30.
- Bricongne, J.-C., Fontagné, L., Gaulier, G., Taglioni, D. and Vicard, V., (2012). Firms and the Global Crisis: French Exports in the Turmoil. *Journal of International Economics* 87(1): 134–46.
- Combes, P.-P. and Lafourcade, M. (2005). Transport Costs, Measures, Determinants, and Regional Policy Implications for France. *Journal of Economic Geography* 5(3): 319–49.
- Coşar, A. K. and Demir, B. (2016). Domestic Road Infrastructure and International Trade: Evidence from Turkey. *Journal of Development Economics* 118: 232–44.
- Coşar, A.K. and Fajgelbaum, P. (2016). Internal Geography, International Trade, and Regional Specialization. *American Economic Journal: Microeconomics* 8(1): 24–56.
- Crozet, M. and Koenig, P. (2010). Structural Gravity Equations with Intensive and Extensive Margins. *Canadian Journal of Economics/Revue canadienne d’économique* 43(1): 41–62.
- Donaldson, D. (2015). Railroads of the Raj: Estimating the Impact of Transportation Infrastructure. *American Economic Review* (forthcoming).
- Eaton, J., Kortum, S. and Kramarz, F. (2004). Dissecting Trade: Firms, Industries, and Export Destinations. *American Economic Review* 94(2): 150–54.
- Fernandes, A. M., Freund, C. and Pierola, M. D. (2016). Exporter Behaviour, Country Size and Stage of Development: Evidence from the Exporter Dynamics Database. *Journal of Development Economics* 119: 121–37.
- Guimaraes, P. and Portugal, P. (2010). A Simple Feasible Procedure to Fit Models with High-dimensional Fixed Effects. *Stata Journal* 10(4): 628-649.
- Hanson, G. H. (2012). The Rise of Middle Kingdoms: Emerging Economies in Global Trade. *Journal of Economic Perspectives* 26(2): 41–64.
- Head, K. and Mayer, T. (2014). Gravity Equations: Workhorse, Toolkit, and Cook Book, in K.R. Elhanan Helpman and G. Gopinath (eds). *Handbook of International Economics*, Vol. 4. Amsterdam: Elsevier, pp. 131–95.
- Hillberry, R. and Hummels, D. (2008). Trade Responses to Geographic Frictions: A Decomposition using Micro-data. *European Economic Review* 52(3): 527–50.

- Krautheim, S. (2009). Gravity and Information: Heterogeneous Firms, Exporter Networks and the 'Distance Puzzle'. European University Institute Report EUI ECO; 2007/51. Available at <http://hdl.handle.net/1814/7602>
- Limão, N. and Venables, A. J. (2001). Infrastructure, Geographical Disadvantage, Transport Costs, and Trade. *World Bank Economic Review* 15(3): 451–79.
- Mayer, T. and Ottaviano, G. I. (2008). The Happy Few: The Internationalisation of European Firms. *Intereconomics* 43(3): 135–48.
- Milner, C. and McGowan, D. (2013). Trade Costs and Trade Composition. *Economic Inquiry* 51(3): 1886–1902.
- ODI (2015). Regional Infrastructure for Trade Facilitation: Impact on Growth and Poverty Reduction. Policy Summary and Briefing Paper. London: ODI.
- OECD/WTO (2015). Aid for Trade at a Glance 2015: Reducing Trade Costs for Inclusive, Sustainable Growth. Paris: OECD.
- Rousslang, D. J. and To, T. (1993). Domestic Trade and Transportation Costs as Barriers to International Trade. *Canadian Journal of Economics/Revue canadienne d'économique* 208-221.
- Silva, J. S. and Tenreyro, S. (2006). The Log of Gravity. *The Review of Economics and statistics* 88(4): 641–58.
- Van Leemput, E. (2016). A Passage to India: Quantifying Internal and External Barriers to Trade (2016-12). FRB International Finance Discussion Paper 1185. Available at SSRN: <https://ssrn.com/abstract=2882438> or <http://dx.doi.org/10.17016/IFDP.2016.1185>
- Venables, A. (2005). Spatial Disparities in Developing Countries: Cities, Regions, and International Trade. *Journal of Economic Geography* 5(1): 3–21.

## Annexe-A

**Table A1: Summary Statistics**

Variable	Observations	Mean	Standard Deviation
Internal distance (km)	66,044	903	310
International distance (km)	66,044	6,794	3,439
Intra-town distances (km)	33,114	920	301
Exports ( $X_{ijkt}$ ) in PKR billions	66,044	0.335	2.67
Firm extensive margins	66,044	0.83	1.11
Firm intensive margins	66,044	0.50	2.09
Product intensive margins	66,044	7.34	70.14
Product extensive margins	66,044	0.81	1.05
Quantity margins	66,044	2.59	2.10
Price margins	66,044	0.26	8.29

**Table A2: Deconstruction of Trade-Impeding Effects of Remoteness over Time**

Dep. variables	$X_{ijkt}$ (1)	Firm EM (2)	Prod. EM (3)	Qty. M (4)	Price. M (5)
<b>A: Distance to port x</b>					
2000	-1.064*** (0.038)	-0.671*** (0.020)	-0.512*** (0.018)	0.173*** (0.035)	-0.054* (0.030)
2001	-1.049*** (0.038)	-0.663*** (0.019)	-0.499*** (0.017)	0.163*** (0.035)	-0.051* (0.030)
2002	-1.064*** (0.038)	-0.674*** (0.020)	-0.554*** (0.020)	0.162*** (0.039)	0.001 (0.033)
2003	-1.109*** (0.041)	-0.682*** (0.021)	-0.594*** (0.019)	0.080 (0.047)	0.087 (0.044)
2004	-1.059*** (0.040)	-0.649*** (0.020)	-0.563*** (0.020)	0.134*** (0.040)	0.016 (0.038)
2005	-1.100*** (0.040)	-0.667*** (0.020)	-0.589*** (0.019)	0.173*** (0.035)	-0.018 (0.031)

2006	-1.102 <sup>***</sup> (0.038)	-0.660 <sup>***</sup> (0.018)	-0.581 <sup>***</sup> (0.017)	0.161 <sup>***</sup> (0.035)	-0.021 (0.031)
2007	-1.102 <sup>***</sup> (0.041)	-0.660 <sup>***</sup> (0.020)	-0.579 <sup>**</sup> (0.019)	0.109 <sup>**</sup> (0.042)	0.030 (0.036)
2008	-1.011 <sup>***</sup> (0.045)	-0.639 <sup>***</sup> (0.022)	-0.555 <sup>**</sup> (0.020)	0.104 <sup>*</sup> (0.044)	0.078 <sup>*</sup> (0.038)
2009	-1.030 <sup>***</sup> (0.049)	-0.623 <sup>***</sup> (0.023)	-0.536 <sup>**</sup> (0.023)	0.123 <sup>**</sup> (0.043)	0.006 (0.035)
2010	-1.019 <sup>***</sup> (0.051)	-0.626 <sup>***</sup> (0.024)	-0.523 <sup>**</sup> (0.020)	0.123 <sup>**</sup> (0.042)	0.007 (0.036)
2011	-0.973 <sup>***</sup> (0.048)	-0.617 <sup>***</sup> (0.022)	-0.518 <sup>**</sup> (0.020)	0.158 <sup>**</sup> (0.041)	0.002 (0.035)
2012	-0.917 <sup>***</sup> (0.041)	-0.578 <sup>***</sup> (0.019)	-0.495 <sup>**</sup> (0.018)	0.101 <sup>***</sup> (0.038)	0.055 (0.034)
2013	-0.950 <sup>***</sup> (0.041)	-0.584 <sup>***</sup> (0.019)	-0.496 <sup>**</sup> (0.019)	0.077 <sup>**</sup> (0.039)	0.053 (0.034)
2014	-0.966 <sup>***</sup> (0.042)	-0.591 <sup>***</sup> (0.019)	-0.495 <sup>**</sup> (0.018)	0.108 <sup>**</sup> (0.036)	0.012 (0.031)
<b>B: Distance to market x</b>					
2000	-0.554 <sup>***</sup> (0.028)	-0.179 <sup>***</sup> (0.013)	-0.211 <sup>***</sup> (0.011)	-0.266 <sup>***</sup> (0.023)	0.103 <sup>***</sup> (0.018)
2001	-0.530 <sup>***</sup> (0.027)	-0.171 <sup>***</sup> (0.012)	-0.211 <sup>***</sup> (0.010)	-0.263 <sup>***</sup> (0.022)	0.116 <sup>***</sup> (0.017)
2002	-0.503 <sup>***</sup> (0.028)	-0.152 <sup>***</sup> (0.013)	-0.158 <sup>**</sup> (0.013)	-0.217 <sup>***</sup> (0.025)	0.024 (0.020)
2003	-0.461 <sup>***</sup> (0.031)	-0.133 <sup>***</sup> (0.014)	-0.111 <sup>***</sup> (0.013)	-0.123 <sup>***</sup> (0.030)	-0.094 <sup>***</sup> (0.027)
2004	-0.449 <sup>***</sup> (0.030)	-0.135 <sup>***</sup> (0.014)	-0.110 <sup>**</sup> (0.014)	-0.187 <sup>**</sup> (0.026)	-0.014 (0.024)
2005	-0.470 <sup>***</sup> (0.028)	-0.144 <sup>***</sup> (0.012)	-0.100 <sup>**</sup> (0.011)	-0.230 <sup>**</sup> (0.021)	0.004 (0.018)
2006	-0.479 <sup>***</sup> (0.027)	-0.151 <sup>***</sup> (0.011)	-0.108 <sup>**</sup> (0.011)	-0.227 <sup>**</sup> (0.021)	0.008 (0.018)
2007	-0.531 <sup>***</sup> (0.028)	-0.161 <sup>***</sup> (0.012)	-0.115 <sup>***</sup> (0.011)	-0.254 <sup>***</sup> (0.025)	-0.001 (0.021)
2008	-0.575 <sup>***</sup> (0.030)	-0.173 <sup>***</sup> (0.013)	-0.130 <sup>**</sup> (0.012)	-0.268 <sup>***</sup> (0.027)	-0.004 (0.023)
2009	-0.483 <sup>***</sup> (0.037)	-0.130 <sup>***</sup> (0.017)	-0.098 <sup>**</sup> (0.016)	-0.297 <sup>***</sup> (0.030)	0.043 <sup>*</sup> (0.024)
2010	-0.423 <sup>***</sup> (0.039)	-0.111 <sup>***</sup> (0.017)	-0.092 <sup>**</sup> (0.014)	-0.276 <sup>**</sup> (0.031)	0.055 <sup>*</sup> (0.026)
2011	-0.408 <sup>***</sup> (0.035)	-0.109 <sup>***</sup> (0.015)	-0.089 <sup>**</sup> (0.014)	-0.277 <sup>**</sup> (0.029)	0.068 <sup>**</sup> (0.023)
2012	-0.383 <sup>***</sup> (0.032)	-0.124 <sup>***</sup> (0.013)	-0.090 <sup>**</sup> (0.012)	-0.190 <sup>**</sup> (0.027)	0.022 (0.024)
2013	-0.344 <sup>***</sup> (0.032)	-0.118 <sup>***</sup> (0.013)	-0.090 <sup>**</sup> (0.013)	-0.169 <sup>***</sup> (0.027)	0.033 (0.023)
2014	-0.315 <sup>***</sup> (0.032)	-0.109 <sup>***</sup> (0.013)	-0.087 <sup>**</sup> (0.012)	-0.197 <sup>***</sup> (0.025)	0.079 <sup>**</sup> (0.021)
R <sup>2</sup>	0.316	0.375	0.376	0.336	0.295
Observations	34,118	34,118	34,118	34,106	34,106

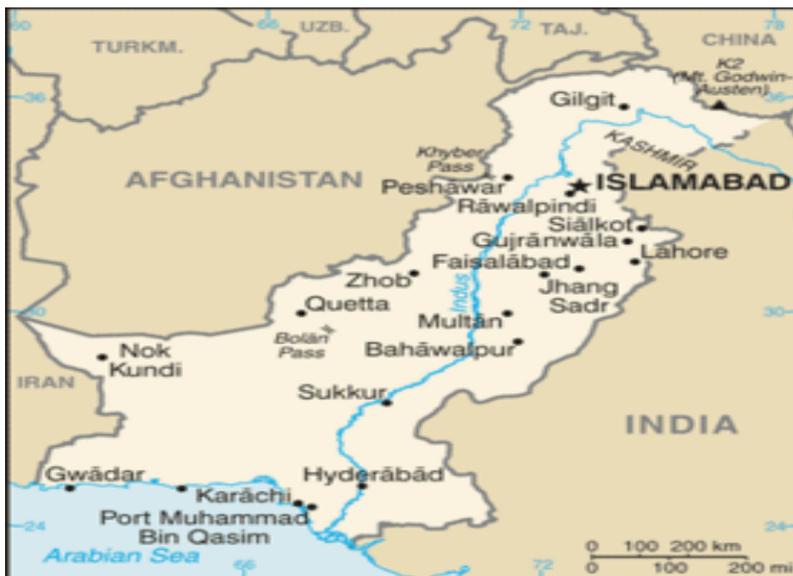
**Notes:** All estimations are in logs. The dependent variables are reported at the head of each column. EM denotes extensive margins. Column (1) contains the overall effect of distances and columns (2) through (5) decompose this into responses of various trade margins. The coefficients in columns (2) to (5) add to those in column (1). The coefficients on fixed effects and other gravity variables are not reported since they are not of direct interest. Robust standard errors clustered at market level are in parentheses, \*p<0.10, \*\*p<0.05, \*\*\*p<0.01.

**Table A3: Deconstruction of Trade-Impeding Effects of Remoteness across Sectors**

Dep. variables	X <sub>ijklt</sub> (1)	Firm EM (2)	Prod. EM (3)	Qty. M (4)	Price. M (5)
<b>A: Distance to port x</b>					
01-05_Animal	-1.045 <sup>***</sup> (0.047)	-0.543 <sup>***</sup> (0.020)	-0.484 <sup>***</sup> (0.022)	0.114 <sup>***</sup> (0.042)	-0.135 <sup>***</sup> (0.033)
06-15_Vegetable	-0.848 <sup>***</sup> (0.051)	-0.561 <sup>***</sup> (0.019)	-0.507 <sup>***</sup> (0.019)	0.197 <sup>***</sup> (0.048)	0.023 (0.035)
16-24_FoodProd	-0.749 <sup>***</sup> (0.062)	-0.502 <sup>***</sup> (0.021)	-0.397 <sup>***</sup> (0.017)	0.163 <sup>***</sup> (0.061)	-0.014 (0.039)
25-26_Minerals	-0.916 <sup>***</sup> (0.071)	-0.516 <sup>***</sup> (0.025)	-0.449 <sup>***</sup> (0.025)	0.194 <sup>***</sup> (0.057)	-0.138 <sup>***</sup> (0.052)
28-38_Chemicals	-1.189 <sup>***</sup> (0.070)	-0.566 <sup>***</sup> (0.023)	-0.466 <sup>***</sup> (0.023)	0.008 (0.056)	-0.166 <sup>***</sup> (0.044)
39-40_PlastiRub	-0.894 <sup>***</sup> (0.054)	-0.503 <sup>***</sup> (0.021)	-0.403 <sup>***</sup> (0.020)	0.223 <sup>***</sup> (0.049)	-0.210 <sup>***</sup> (0.044)
41-43_HidesSkin	-1.022 <sup>***</sup> (0.078)	-0.582 <sup>***</sup> (0.029)	-0.476 <sup>***</sup> (0.028)	0.027 (0.056)	0.006 (0.051)
44-49_Wood	-0.851 <sup>***</sup> (0.031)	-0.519 <sup>***</sup> (0.014)	-0.435 <sup>***</sup> (0.013)	0.098 <sup>***</sup> (0.028)	0.004 (0.025)
50-63_TextCloth	-0.608 <sup>***</sup> (0.161)	-0.509 <sup>***</sup> (0.036)	-0.439 <sup>***</sup> (0.036)	0.342 <sup>***</sup> (0.134)	-0.002 (0.093)
64-67_Footwear	-1.237 <sup>***</sup> (0.057)	-0.670 <sup>***</sup> (0.025)	-0.537 <sup>***</sup> (0.023)	0.149 <sup>***</sup> (0.060)	-0.181 <sup>***</sup> (0.054)
68-71_StoneGlas	-0.836 <sup>***</sup> (0.059)	-0.503 <sup>***</sup> (0.022)	-0.406 <sup>***</sup> (0.022)	-0.005 (0.063)	0.068 (0.059)
72-83_Metals	-0.775 <sup>***</sup> (0.066)	-0.458 <sup>***</sup> (0.026)	-0.397 <sup>***</sup> (0.032)	0.030 (0.068)	0.048 (0.068)
84-85_Mach.Elect	-1.092 <sup>***</sup> (0.091)	-0.507 <sup>***</sup> (0.034)	-0.415 <sup>***</sup> (0.036)	0.011 (0.086)	-0.182 <sup>***</sup> (0.073)
86-89_Transport	-1.025 <sup>***</sup> (0.037)	-0.570 <sup>***</sup> (0.019)	-0.349 <sup>***</sup> (0.017)	-0.062 (0.035)	-0.045 (0.029)
<b>B: Distance to market x</b>					
01-05_Animal	-0.567 <sup>***</sup> (0.101)	-0.038 (0.035)	-0.033 (0.027)	-0.181 <sup>*</sup> (0.096)	-0.316 <sup>***</sup> (0.120)
06-15_Vegetable	-0.253 <sup>***</sup> (0.032)	-0.120 (0.013)	-0.091 (0.013)	-0.041 (0.027)	0.000 (0.019)
16-24_FoodProd	-0.462 <sup>***</sup> (0.035)	-0.147 (0.012)	-0.085 (0.012)	-0.104 (0.033)	-0.127 (0.022)
25-26_Minerals	-0.676 <sup>***</sup> (0.046)	-0.196 (0.015)	-0.202 (0.012)	-0.050 (0.045)	-0.227 (0.028)
28-38_Chemicals	-0.508 <sup>***</sup> (0.054)	-0.176 (0.016)	-0.133 (0.017)	-0.277 (0.040)	0.075 (0.039)
39-40_PlastiRub	-0.319 (0.048)	-0.159 (0.014)	-0.132 (0.014)	-0.090 (0.036)	0.062 (0.028)
41-43_HidesSkin	-0.438 <sup>***</sup> (0.040)	-0.155 (0.014)	-0.132 (0.014)	-0.474 (0.034)	0.323 (0.032)
44-49_Wood	-0.745 <sup>***</sup> (0.055)	-0.147 (0.020)	-0.126 (0.019)	-0.275 (0.039)	-0.197 (0.035)
50-63_TextCloth	-0.356 <sup>***</sup> (0.025)	-0.089 (0.010)	-0.038 (0.010)	-0.291 (0.020)	0.062 (0.016)
64-67_Footwear	-0.782 <sup>***</sup> (0.123)	-0.188 (0.026)	-0.150 (0.026)	-0.509 (0.102)	0.065 (0.071)
68-71_StoneGlas	-0.416 <sup>***</sup> (0.036)	-0.085 (0.014)	-0.088 (0.013)	-0.188 (0.040)	-0.055 (0.035)
72-83_Metals	-0.648 <sup>***</sup> (0.036)	-0.194 (0.014)	-0.157 (0.013)	-0.197 (0.040)	-0.090 (0.035)

	(0.043)	(0.014)	(0.015)	(0.043)	(0.042)
84-85_Mach.Elect	-0.654***	-0.234***	-0.165***	-0.237***	-0.016
	(0.052)	(0.018)	(0.023)	(0.051)	(0.054)
86-89_Transport	-0.401***	-0.211***	-0.172***	-0.173***	0.155**
	(0.062)	(0.021)	(0.023)	(0.060)	(0.048)
R <sup>2</sup>	0.285	0.354	0.354	0.297	0.276
Observations	34,118	34,118	34,118	34,106	34,106

**Notes:** All estimations are in logs. The dependent variables are reported at the head of each column. EM denotes extensive margins. Column (1) contains the overall effect of distances and columns (2) through (5) decompose this into responses of various trade margins. The coefficients in columns (2) to (5) add to those in column (1). The coefficients on fixed effects and other gravity variables are not reported since they are not of direct interest. Robust standard errors clustered at market level are in parentheses, \*p<0.10, \*\*p<0.05, \*\*\*p<0.01.



**Figure A1:** Geographical Map of Pakistan

Source: [www.googlemaps.com](http://www.googlemaps.com)

# Development of a Trust Model for P2P Accommodations for Chinese Users

Cui Wenjing<sup>1</sup> and Chen Po-Ju

City University of Macau

<sup>1</sup> teresawenjing@outlook.com

## Abstract

Peer-to-peer (P2P) markets, collectively known as the sharing economy, have emerged as alternative suppliers of goods and services traditionally provided by long-established industries including lodging (Zervas, Proserpio, & Byers, 2016). With the rapid growth and influence of the sharing economy, P2P accommodations have become significant competitors for traditional destination lodging providers in recent years. This new source of competition may result in new and unique tourism experiences and additional foreign accommodation options (Fang, Ye, & Law, 2016; Guttentag, 2015; Heo, 2016; Zervas, Proserpio, & Byers, 2016).

Researchers point out that marketing success relies on trust (Morgan & Hunt, 1994). Trust is the evaluation of products and services offered by providers and is a significant factor in the consumer decision-making process. In the field of consumer behavior, several trust models have been established for online shopping and e-commerce services, but no validated trust model for P2P accommodations currently exists. Due to the relative newness of P2P accommodations, the lack of standards and trust, this developing service sector faces many challenges in destinations worldwide including China (Wang & Wang, 2013).

In the first six months of 2016, over 2 billion and 236 million Chinese citizens go domestic travel, and over 59 million Chinese citizens traveled internationally, leading to expectations for similar numbers, if not increases in the future (China National Tourism Administration, 2016). Airbnb, a form of P2P first introduced in 2009 was launched as an alternative supplier of short term accommodations for traveler. It has since become a prevalent P2P accommodations platform in the global market – including China. In addition, several companies in China have developed similar platforms for domestic Chinese travelers. Among those, Tujia is one of the leaders in this market-space.

This qualitative research is designed to explore the construct of perceived trust in a P2P market. Based on semi-structured interviews with 61 Tujia and Airbnb clients in China, this study identified the multi-dimensional trust model. This study applies consumer behavior principles and methodologies to develop a trust model for P2P accommodation providers, filling this void. Furthermore, practical implications to both lodging industry are also discussed.

**Keywords:** P2P accommodations, sharing economy, trust model, Chinese users

## References

- China National Tourism Administration. (2016, August 1). Re: National Tourism Administration released the first half of 2016 Tourism Statistics Report [Online government data]. Retrieved from [http://www.cnta.gov.cn/zwgk/lysj/201608/t20160801\\_779445.shtml](http://www.cnta.gov.cn/zwgk/lysj/201608/t20160801_779445.shtml)
- Fang, B., Ye, Q., & Law, R. (2016). Effect of sharing economy on tourism industry employment. *Annals of Tourism Research, 57*, 264-267.
- Guttentag, D. (2015). Airbnb: disruptive innovation and the rise of an informal tourism accommodation sector. *Current Issues in Tourism, 18*(12), 1-26.
- Heo, C. Y. (2016). Sharing economy and prospects in tourism research. *Annals of Tourism Research, 58*, 166-170.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing, 58*(3), 20-38
- Wang, J., & Wang, C. (2013). Online short-term rental: China does not have Airbnb. *The Founder* (3), 18-20.
- Zervas, G., Proserpio, D., & Byers, J. (2016). The rise of the sharing economy: estimating the impact of Airbnb on the hotel industry. *SSRN Electronic Journal*. doi: 10.2139/ssrn.2366898

# Engel's Law and Household Consumption Patterns in Sri Lanka

Thilani Kankanamge

North Dakota State University

thilani243@gmail.com

## Introduction

Ernst Engel studied household consumption patterns using income and expenditure data. His focus was mainly on food consumption patterns of households. In the Engel's Law, he found that "the proportion of income spent on food declines as income rises" (Houthakker, 1957, p. 532). This did not imply that the absolute value spent on food was decreasing. Implications of Engel's Law were still valid in different disciplines such demand theory, welfare measurement, international trade, and inflation. This paper intended to examine household consumption patterns of Sri Lanka using income elasticities.

## Literature Review

Since 1857, literature repeatedly provided evidence on testing Engel's Law. Houthakker (1957) conducted a cross-country study in commemorating a century of Engel's Law. He used survey data from about 30 countries and calculated expenditure elasticities for food, housing, clothing, and miscellaneous items. He found that all survey results confirmed Engel's law and elasticities were almost similar among different countries. He further argued that elasticities provided a greater flexibility when dealing with international currencies (Houthakker, 1957). Çağlayan & Astar (2012) conducted a similar study in Turkey. They also found consistent results and argued that both food and clothing were necessary goods and imposing taxes on these items will affect low-income households negatively compared to high income earning households (Çağlayan & Astar, 2012).

## Methods

First, descriptive statistics were used to understand the distribution of the data. Secondly, an ordinary least square regression model was used to estimate the elasticities of each expenditure item. The double-logarithmic regression form was used in this study to best fit data. Therefore, estimator coefficients directly represented the elasticities. According to Houthakker (1957), a number of household members were also included as a dependent variable in this model. It can be explained as follows:

$$\ln Y_i = \alpha_i + \beta_i \ln X_1 + \gamma_i \ln X_2 + \epsilon_i \quad (1)$$

where  $Y_i$  represented the expenditure spend for the  $i$  th item,  $X_1$  was the total household income per month,  $X_2$  was the total number of household members,  $\epsilon_i$  was the error term, and  $\alpha_i$ ,  $\beta_i$ , and  $\gamma_i$  represented the coefficient estimates. A separate regression model was used for each expenditure category.

This study used secondary data from the Household Income and Expenditure Survey in 2012/2013. The Department of Census and Statistics of Sri Lanka collected survey data from 20,540 households. This was a randomly selected sample and it represented the entire country.

### **Findings**

Table 1 showed the regression results for each expenditure category. Independent variables income and household size were statistically significant at 0.01 level. However,  $R^2$  appeared low except for the model (i).

Similar to other empirical studies, this study also provided evidence for Engel's Law (Houthakker, 1957; Pope, 2012; Çağlayan & Astar, 2012). The income elasticity on food was 0.21. In other words, keeping other factors constant unit percentage increase in total household income will increase the expenditure on food by 0.21 percent. Since the income elasticity on food is less than one it can be said that food is a necessary good. This low income elasticity of food expenditure also implied that living standards among Sri Lankans are good.

Further, income elasticities on health, clothing, liquor, drugs and tobacco, education, transportation, communication, recreation, and housing were less than one. Thereby, these items can be categorized as necessary goods or services. Income elasticities of housing, transport, communication, education, and recreation were higher compared to food, health, clothing, and liquor, drugs and tobacco.

A low income elasticity (0.2992) of liquor, drugs, and tobacco implied important concerns for expenditure patterns among poor households. In these families, high spending on liquor, tobacco, and drugs could jeopardize expenditure on food, health, and education creating issues related to malnutrition, lower productivity.

**Table 1:** Summary of OLS regression results

Expenditure item Yi (ln)	X1 income (ln)	X2 household size (ln)	R2	N
(i) Food	0.2111*** [0.0035]	0.4666*** [0.0062]	0.4679	20,540
(ii) Liquor, drugs & tobacco	0.2992*** [0.0179]	0.0441*** [0.0316]	0.0428	8,211
(iii) Housing	0.6961*** [0.0089]	-0.1910*** [0.0158]	0.2774	20,540
(iv) Health	0.4138*** [0.0155]	-0.1157*** [0.0281]	0.0678	11,955
(v) Transportation	0.7811*** [0.0119]	0.2525*** [0.0204]	0.2791	18,274
(vi) Communication	0.6249*** [0.0095]	-0.0523*** [0.0160]	0.2513	17,970
(vii) Education	0.6599*** [.0171]	-0.2532*** [.0409]	0.1438	11,078
(viii) Recreation	0.5644*** [0.0174]	-0.1464*** [0.0310]	0.1108	9,922
(ix) Clothing (including footwear)	0.4320*** [0.0094]	0.4225*** [0.0174]	0.1917	17,810

**Source:** Author's calculations using the HIES survey data 2012/13.

**Note:** Heteroskedasticity adjusted standard errors were included inside square brackets, and \*\*\* denoted the significance of independent variables at 0.01 level.

## Conclusions

This study provided evidence on Engel's Law using household level data in Sri Lanka. Income elasticities of each expenditure item were fallen between 0 and 1. Therefore, it can be concluded that they are necessary goods or services.

## References

- Çağlayan, E., & Astar, M. (2012). An Econometric Analysis of Engel's Curve: Household Food and Clothing Consumption in Turkey. *Economic Sciences*, 59 (1), 313-319.
- Houthakker, H.S. (1957). An International Comparison of Household Expenditure Patterns, Commemorating the Centenary of Engel's Law. *Econometrica*, 25 (4), 532-551.
- Pope, R. (2012). Engel's Law. *BYU Studies Quarterly*, 51 (3), 119-140.

# Rat Race: Birth of Turkish Cuisine in Corporate America

John Palabiyik

Texas Tech University  
john.palabiyik@ttu.edu

## Abstract

Food derived from a location, culture and an ethnic group with the local ingredients and sources is referred to as an ethnic food (Kwon, 2015). To be able to classify food as a part of a group's or a country's ethnic cuisine, the food should be accepted by consumers from other cultures (Kwon, 2015). According to the National Restaurant Association, 80 percent of consumers in the US eat at least one ethnic cuisine per month, and global flavors are a long-term trend on restaurant menus. Italian, Mexican, and Chinese ethnic restaurants are dominant, and they have a high popularity in the U.S. food market (Papadopoulos, 1997). Turkish cuisine is categorized as one of the richest and oldest cuisines of the world together with French and Chinese cuisines (Guvenc, 1996). Most American customers are familiar to French and Chinese cuisines. However, Turkish cuisine is not well-known, and it is not represented in the American food industry as much as it should. There are a few successful Turkish restaurants in the metropolis, but most Turkish restaurants are either barely surviving, or closed eventually. This study aims to examine Turkish restaurants in the United States and develop a corporate Turkish restaurant model that can be successfully applied in American food market.

**Keywords:** Turkish, cuisine, corporate America

## References

- Guvenc, B. (1996): Food, culture and food culture. In: *Eskimeyen Tatlar, Türk Mutfak Kültürü*. Vehbi Koç Vakfı Yayın No: 7, İstanbul, pp. 13-17.
- Kwon, D. Y. What is ethnic food? *Journal of Ethnic Foods*, 2(1), 1. doi:10.1016/j.jef.2015.02.001
- Papadopoulos, H. (1997), "Trendy tastes", *Restaurants USA*, Vol. 17 No.2, pp 41-4
- Top 10 Most Popular Ethnic Cuisines in US « All About America. (n.d.). Retrieved March 27, 2017, from <http://blogs.voanews.com/all-about-america/2015/05/18/top-10-most-popular-ethnic-cuisines-in-us/>