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## ABEM 2019 Conference Proceedings

Innovation, Linkages and Internatlization of Firms

August 7-9, 2019

Universidad Estatal a Distancia (UNED), San Jose, Costa Rica

5<sup>th</sup> Academy of Business and Emerging Markets (ABEM 2019) Conference

Editors

Dr. Luis Camacho, SUNY Empire State College, USA Dr. Satyendra Singh, University of Winnipeg, Canada (c) Academy of Business and Emerging Markets (ABEM)

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### EDITORIAL MESSAGE

Welcome to San Jose, the capital of Costa Rica!

It is an honor to welcome you to the 2019 Academy of Business and Emerging Markets (ABEM) Conference to be held at the Universidad Estatal a Distancia (UNED) in San Jose, a lively and dynamic metropolis that looks to the future and works for sustainable development, with an exuberant nature that surrounds it, in a valley surrounded by colorful mountains and volcanoes, making the venue ideal to hold the 5th ABEM 2019 conference.

This Central American city, very different from others in the region, is a melting pot in which diverse cultures and thoughts merge. Cosmopolitan and traditional, modern and old, in San Jose ABEM participants will enjoy the Tico's friendship and amiability.

It is our pleasure to edit the proceedings of the Conference on the theme—Innovation, Linkage and Internalization of Firms, which will gather an ample group of scholars from different countries, enriching the discussions and strategies that support the growth of emerging markets and developing countries. ABEM 2019 will continue to impulse the debate around its three main tracks: Business, Government, and Community.

This year, we received 55 submissions from 24 countries, making it true to its mission. In fact, we have representations from almost all the continents. Each submission was peer-reviewed in a double-blind review process by at least two professors who were experts in the area of the submissions. Finally, 25 submissions from 17 countries were selected for presentations.

The proceedings contains 18 abstracts and seven papers that were presented at the Conference. We are grateful to UNED for hosting the conference and thank our sponsors, reviewers, authors, keynote speakers, organizers, student assistants, contributors and conference participants. Without their assistance, we would not have been able to edit this proceedings. As always, we will deposit a copy of the proceedings for archiving to Library and Archive, Ottawa, Government of Canada.

We look forward to working with you and sharing our experiences and knowledge at this year's conference and hope to see you again at our annual conferences in the years to come!

Sincerely,

Dr. Luis Camacho Editor, 5<sup>th</sup> ABEM 2019 Conference proceedings Assistant Professor, Business Management SUNY Empire State College, New York USA

Dr. Satyendra Singh Editor, 5<sup>th</sup> ABEM 2019 Conference proceedings Professor, Marketing & International Business University of Winnipeg CANADA

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## ABSTRACTS

## WHERE DO YOU LIVE AND WHERE DO YOU WORK? THE ROLE OF HIGHER EDUCATION INSTITUTIONS IN THE LABOR STRUCTURES OF EMERGING ECONOMIES

### Rosibel Víquez-Abarca, Universidad Estatal a Distancia (UNED), Costa Rica

Emerging economies have been a part of a considerable transformation to global markets. More recently, one of the main challenges for these emerging economies is the question of how to manage fewer resources in order to prevail over the crisis of unemployment. Recent research suggests that local socio-productive structures struggle to survive. Where do you live and where do you work are simple questions which can help identify strategies that small businesses can use to mobilize and successfully overcome potential challenges. In this context, Higher Education Institutions (HEI) become an important counterpart, as they contribute to improving the local labor markets via new-skill training programs. In addition, lifelong learning is now more prevalent, as it contributes to the role that education has in these emerging economies. All this enables them to play their parts in the wider economy. This study highlights the importance of higher education in developing an equitable society.

## WHAT'S THE SOCIALITY THAT MOVES PEOPLE? Koichi Nakagawa, Osaka University, Japan

One of the characteristics of businesses in emerging markets is the high sociality. Sociality is defined as the extent to which a person or a group has the tendency to develop social links and live in communities. Using this theory, a company that incorporates sociality into its strategy can: create high awareness; motivate employees; acquire external support such as investments; align stakeholders' interests with company goals; and, thus become a more desirable company for customers. Indeed, such sociality can also become a new source of competitive advantage for companies in both advanced economies and emerging markets, although a stronger sociality can be expected in emerging markets due to the collective nature of the society. However, it may be difficult for companies to obtain support from people to subscribe to the notion of this kind of strategy even though people recognize that they should engage in some kind of social activities. We all have natural instinct to work with others beyond our self-interests, and when we do that we have a high psychological satisfaction as well. The objective of the study is to understand *what kind of social activities* draws people together which can contribute to advancing goals and missions of companies.

## INNOVATIVE LINKAGES FOR THE INTERNATIONALIZATION OF SMES Ye-Sho Chen, Louisiana State University, USA

There is an increased research interest in the internationalization of SMEs. The purpose of the study is to enrich the literature by proposing a *Flying High, Landing Soft* methodology, and thus helping SMEs go abroad. The methodology is based on the Soft Landings program originally developed by the International Business Innovation Association. Soft landings is a process that helps a company from one country to land softly – without crashing, into the market of another country through a local incubator. The methodology provides innovative lingakes for students at various levels (undergraduate, graduate, and executive education) and business communities to engage in global entrepreneurship in sustainable value chains. The methodology is grounded in the theories of strategic entrepreneurship, docility-based distributed cognition, and internationalization. The study analyzes the sustainable bamboo development projects done by the International Bamboo and Rattan Organisation. The implications of the results for managers and policy makers interested in United Nations' Sustainable Development Goals are discussed.

## ORGANISATIONAL AMBIDEXTERITY AND INNOVATION IN THE VIRTUAL ENVIRONMENT: A CASE OF OPEN SOURCE SOFTWARE (OSS) COMMUNITIES Meera Sarma, University of Liverpool, UK

The tension between *exploitation* and *exploration* in organizational learning and innovation is a familiar one. The notion of an ambidextrous organisation denotes the paradox of managing innovation in an increasingly complex and fast changing environment. Also, ambidextrous organizations are ones that can sustain their competitive advantage by operating in multiple modes simultaneously managing for short-term efficiency by emphasizing stability and exploitation, and for long-term innovation by undertaking risky explorative activities. While the concept of organisational ambidexterity is an attractive one, the process of knowledge creation and innovation underpinning it, is not well understood. In this paper, we examine a unique example of innovative communities in the virtual environment: the hacker communities in open source software (OSS) which display many characteristic features of organisational ambidexterity. We argue that the OSS community has certain distinct characteristics regarding membership, purpose and structure that make it innovative. The study focuses on knowledge creating and sharing, and examines the spatial distributedness, relational proximity (simultaneity and speed of reconfiguration) and processual characteristics that contribute to the development of virtual ambidexterity. The empirical evidence is based on individual interviews and observations of the OSS communities associated with GNOME (GNU Network Object Model Environment), KDE (K Desktop environment) and OSS members working in other related projects.

## PRODUCTION FLEXIBILITY, RISK SHIFTING AND CAPITAL STRUCTURE Sudipto Sarkar, McMaster University, Canada

We analyze the effect of production flexibility on optimal leverage ratio. A firm can operate at two production levels, high and low, and operating flexibility is measured by the cost of switching from one level to the other. Greater operating flexibility has two opposing effects – value-enhancing and risk-shifting, resulting in higher and lower optimal leverage ratio respectively. The overall effect is ambiguous, and depends on which effect dominates. We demonstrate that optimal leverage ratio can be either increasing or decreasing in operating flexibility, depending on input parameters such as degree of output adjustment, profit margin, growth rate, tax rate and bankruptcy cost. When these parameters are large (small), optimal leverage ratio is an increasing (a decreasing) function of operating flexibility. An empirical prediction of the model is that, for large firms, optimal leverage ratio will be a decreasing function of operating flexibility, consistent with previous findings.

## POPULISM PAYS?: BRIDGING INSTITUTIONAL VOIDS AT THE BASE OF THE PYRAMID THROUGH DIRECTED INTERVENTION Bhupesh Manoharan, Indian Institute of Management (IIM) Calcutta, India

Krishanu Rakshit, Indian Institute of Management (IIM) Calcutta, India

Populism is an approach which emphasises growth and income distribution while ignoring negative consequences such as inflation, deficit financing, external constraints and the suppression of market policies on account of aggressive non-market interventions. Populism has been described variously as a pathology, a syndrome, a *jhumla* or an eyewash and has generally been accepted to have negative consequences for society. In this paper, through the case study of *Amma Mobiles*, a populist policy by the Tamil Nadu Government, we make a case for directed populism, which we define as populistic policies specifically directed at bridging the institutional voids, which curtail the entrepreneurial mindset and the opportunities of the economically and socially marginalized classes.

# SURVIVING IN AFRICA'S EMERGING MARKETS: INFORMAL MICRO ENTREPRENEURSHIP AND SOCIAL CAPITAL DYNAMICS TO THE RESCUE

Adeniyi Olarewaju, Tecnologico de Monterrey, Mexico Ayodele Shittu, University of Lagos, Nigeria Sunday Adebisi, University of Lagos, Nigeria

In spite of preponderance of microenterprises in Africa's emerging markets, there is a dearth of knowledge about what motivates a microentrepreneur to start operations in the informal sector. This study therefore examined informal microentrepreneurship in Africa's emerging markets and considered the degree to which owners perceive enterprise as a necessity or opportunity. The extent to which social capital dynamics influence starting and sustaining a microenterprise in the informal sector was also assessed while self-affirmation theory served as theoretical underpinning of the study. Consequently, based on a number of factors, Nigeria was selected as population of study. A conversational interview method through face-to-face semi-structured interviews was employed to retrieve information from owners of microenterprises. Findings revealed that informal microentrepreneurship in Africa's emerging markets are necessity-driven and anchored on survival of owners. Additionally, it was established that social capital dynamics play a germane role in starting and sustaining microenterprises in the informal economy. Policy implications for governments in Africa's emerging markets need to consciously seek active personal ties and social embeddedness that could help them in starting or sustaining an enterprise.

## VALUE CREATION IN BUSINESS MODELS FOR MOBILE SERVICES AT BOTTOM OF THE PYRAMID IN SUB-SAHARAN AFRICA

Joshua Omoju, Northumbria University, UK Roseline Wanjiru, Northumbria University, UK Jason Whalley, Northumbria University, UK

Firms face a range of challenges when doing business at the Bottom-of-the-Pyramid (BoP) in emerging markets, including the need to adapt their business models to emerging markets' institutional, cultural and economic features. This study investigates business models for BoP segments in the mobile telecommunications industry in Africa. Drawing from original data from the case studies, we examine how firms serving BoP can set up their value creation mechanisms in order to deliver wide value propositions that meet the needs of low-income users and underserved communities. The study provides deeper analysis on the variations that exist across BoP business models, and find that BoP business models deployed by historically BoP-focused organizations create inclusive value by being embedded in wider innovation ecosystems. On the other hand, BoP business models that resemble traditional low-end market entry initiative can provide inclusive value without extending the value creation activities for offering complementary services. Our paper advance understanding on emerging research perspectives on the BoP and elaborate on the multidimensionality of value proposition design for BoP segments of emerging markets. In doing so, we support the notion that BoP-focused innovations require looking beyond the consumers of innovation, but also at other possible beneficiaries, in order to create solutions that are inclusive and have a wider impact on stakeholders serving the BoP.

## THE ROLE OF ETHNOCENTRISM IN CUSTOMER BEHAVIOR THROUGH ONLINE PURCHASES

Stefanny Calderón, Sergio Arboleda University, Colombia Melissa Cabezas, Sergio Arboleda University, Colombia Fernando Parrado, Sergio Arboleda University, Colombia Luis Camacho, SUNY Empire State College, USA In the fast-changing world, with the introduction of new technologies, enterprises need to be aware of changing consumer behavior and the new way of purchasing products. Different variables, such as ethnocentrism and e-commerce, can impact this behavior. In order to determine the impact caused by these variables, it is necessary to analyze relevant information to expand our knowledge in this area related to international marketing/business. Therefore, the objective of this study is to establish a relationship between ethnocentrism, consumer behavior, and e-commerce. The research has used a systematic review methodology to achieve its aim. Findings indicate that, during 2005-2019, there were more publications on e-commerce than ethnocentrism or consumer behavior.

## FIRM-SPECIFIC PRACTICES OF DEVELOPMENT AND APPLICATION OF DYNAMIC CAPABILITIES IN UK HIGH-TECH SMES

Chaminda Senaratne, Northumbria University, UK

This study explores the nature of dynamic capabilities (DCs), and identifies firm specific practices in developing and applying DCs in the high-tech SMEs in the UK. This is needed to generate insights on how DCs are embedded in firm specific practices in SMEs. This exploratory study is based on qualitative in-depth interview data collected from the UK high-tech SMEs in five industries. Since the data were collected from a single informant from each firm, more in-depth, longitudinal, qualitative research using multiple sources of data may be required to develop deeper insights into the firm-specific nature of DCs. The study identifies firm specific practices of developing and applying DCs within firms. The findings have important practical implications for the managers of high-tech SMEs in particular, and firms in general, who need to focus on how firms can sustain in the changing business environment by using effective mechanisms to develop and apply DCs. The study also contributes to the understanding of DCs in high-tech SMEs by exploring the mechanisms through which SMEs develop and apply DCs challenging the view that DCs associated mostly with large firms.

## THE ROLE OF CONSUMER ETHNOCENTRISM AND CULTURAL SENSITIVITY ON ATTITUDES TOWARDS DOMESTIC FASHION BRANDS: A CARIBBEAN PERSPECTIVE

Meena Rambocas, University of the West Indies, Trinidad and Tobago

Consumer attitude towards local and foreign products is a crucial area for many researchers and marketers. However, consumer attitude from a developing country perspective has not been sufficiently examined. This study proposes that socio-psychological traits of Consumer Ethnocentrism (CE) and Cultural Sensitivity (CS) will have an impact on Caribbean consumers' attitudes towards domestic fashion brands. Furthermore, the study suggests that consumer demographical characteristics of age, gender and income moderate the influence. Data were collected in Trinidad and Tobago and analyzed using exploratory factor analysis and multiple regression analysis. The findings confirm the positive impact of CE on consumers' preferential attitudes while CS had a significant but negative effect. Also, the results show that consumers' age and gender moderate these relationships. These findings provide a deeper understanding of the relative perceptions and inherent biases towards products produced in the Caribbean region. It further explains how local brands, in particular, fashion brands, can utilize their products country-of-origin and other attributes as a tool to compete in the global market. The paper discusses the theoretical and practical implications of these findings as well as the limitations, and future research opportunities.

## DEFORMATION OF THE TAX SYSTEM: A CASE STUDY OF SMES IN SLOVAKIA Darina Saxunova, Comenius University in Bratislava, Slovakia

This study realtes to the deformation of the tax system in the contemporary global environment from behavioural perspective, which requires a process of creation and implementation of new tax legislations. The process of identifying, defining and understanding leads to a high quality legal tax norms, user-friendly tax environment, and indeed, instruments of effective tax control. Tax legislators do their best to create tax system which is fair and just. Yet, imperfections of the tax system do occur. These deformations are abused by taxpayers in a legal or illegal way. The objective of this study is to identify and analyze tax system and tax policy of the Slovak Republic. The empirical data was conducted via online questionnaire, analyzed, and recommendations were formulated relting to VAT frauds. The crucial information was collected by studying tax concepts and then the information was applied to analyse the case studies dealing with tax anomalies found in the entreprises relting to tax evasions or avoidances. Methods of analysis, comparison, synthesis and deduction, the systematization of theoretical concepts in the knowledge management resulted in the new clear definition of the studied phenomena.

## IS THE SOUTH AFRICAN REVENUE SERVICE COMPROMISING AUDIT QUALITY OVER QUANTITY?

Kgabo F. Masehela, University of Johannesburg, South Africa

Quality is one of the factors that builds an organisation's reputation and reduces uncertainties amongst stakeholders. The South African Revenue Service (SARS) is under pressure to deliver targets set by the Minister of Finance in the yearly mid-term budget. Due to targets being set increasingly high for the collector of revenue, pressure has mounted on SARS, prompting frequent audits on taxpayers. SARS continues to lose public trust due to the poor quality audits that are being conducted. This raises the question whether quality matters with regard to audits. Quality audits would help bolster the collection process. Conversely, poor quality audits increase costs particularly due to cases being referred to objection, appeal committees or to courts. Quality in the context of revenue collection is defined as a strict and consistent commitment to certain standards that achieve uniformity. Quantity in the context of revenue collection is taken from countries that have proved to have effective revenue collection methods. Skilled SARS employees would conduct quality audits that would satisfy targets and taxpayer expectations, thus improving taxpayer morale and confidence in SARS.

### MIND: INTERCULTURAL MODEL OF NEGOTIATION FOR DECISION-MAKING

Fernando Parrado, Universidad Sergio Arboleda, Colombia María A. Ducuara, Universidad Sergio Arboleda, Colombia Ana P. Robinson, Universidad Sergio Arboleda, Colombia Kimberly P. Roncancio, Universidad Sergio Arboleda, Colombia

Today's world is a communication network where business and international trade take place. Day by day, technological advances facilitate communication between people, but the cultural barrier is a decisive factor in the success of negotiation if it is not handled with care. Therefore, MIND is a model that has unified different models of prominent interculturality authors, which allows that dimensions or critical aspects of a culture intervene in a negotiation process (i.e. Manoella Wilbaut: Negotation model), from its preparation to completion. This model has been implemented in an analysis of the Chinese and Colombian cultures, where there are essential similarities in communications, power perception, and group relations. On the other hand, there are differences handling uncertainty, time, and type of negotiations. Thus, the recognition of these aspects becomes a significant tool to explain, understand, and predict behavior from both countries and the results of a negotiation process.

## CHARACTERIZATION OF THE MUISCA INDIGENOUS CULTURE ACCORDING TO THE CULTURE MODEL OF GEERT HOFSTEDE

Juan E. G. Oviedo, Universidad Sergio Arboleda, Colombia Sebastián R. R. Triana, Universidad Sergio Arboleda, Colombia

### Fernando Parrado, Universidad Sergio Arboleda, Colombia

The present investigation seeks to learn about the Muisca Indigenous Tribe in the Bosa district of Bogotá, Colombia, through the remembrance and expansion of their beliefs, the understanding of their methods of social organization, taking of ancestral medicines, their folklore, their dressing, and their values. Thus, research of secondary sources has been carried out and interviews with people who have been involved with the Muisca tribe accumulating an experiential knowledge. This study aims to find the community's characteristic values and its relationship with the cultural dimension's theory proposed by Hofstede. Therefore, power distance, collectivism vs. individualism, masculinity vs. femininity, indulgence vs. restriction, uncertainty avoidance, and it's long- or short-term orientation have been analyzed.

## SCIENTIFIC MAPPING OF ACADEMIC PRODUCTION ON TECHNOSTRESS

Cristian Salazar, Universidad Austral de Chile, Chile Pilar Ficapal-Cusi, Universitat Oberta de Catalunya, Spain Joan Boada-Grau, Universitat Oberta de Catalunya, Spain Konstantin Verichev, Universidad Austral de Chile, Chile Luis Camacho, Empire State College, U.S.A.

Information and Communication Technology has two sides. On the one hand, it facilitates work, and on the other, it can generate psychosocial effects and negative emotions in workers as they interact with them. Technostress is a phenomenon that has been studied in different contexts; however, bibliometric studies on scientific production have not been carried out. The objective of this work is to identify and analyze the panel data on technostress between 1984 and 2017 indexed in Scopus. Using the tool of Science Maps SciMAT, this work's aim is to analyze the relevant research, emerging, nontrendy and peripheral topics.

## UNDERSTANDING HOW DEMOCRATIC GOVERNANCE INFLUENCES RESOURCE ALLOCATION AND UTILISATION IN ECONOMIES IN TRANSITION: THE CASE OF CAMEROON

Terence M. Seka, University of Buea, Cameroon

This paper examines democratic governance within the private and public sectors in economies in transition (Cameroon) by exploring how they influence development in terms of resource allocation to priorities that are locally conceptualized. The benefit of this is an improvement in indigenous and the quality of life for the local population. Using an ethnographic approach, this paper suggests that institutional corruption and state bureaucracy have limited the impact of democratic governance in influencing development. This has seen funds for developments being embezzled, and thus local projects are not being done to satisfaction, among others. The paper contributes to literature by proposing measures to eliminate corruption in order to improve democratic governance, resource allocation and utilization.

## A DIGITAL TRANSFORMATION STRATEGY FRAMEWORK: MODELS, PATTERNS, ACTIONS, APPROACHES AND MEASURES TO GUARANTEE AN EFFECTIVE DIGITAL TRANSFORMATION STRATEGY FOR COMPANIES

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Digital transformation constitutes a challenge for the worldwide industry but it also offers an opportunity to improve competitiveness. It is a process that can be broken down into different phases

but that, in short, is the process of change that is necessary to allow a company to compete in the market with *native digital* companies that place the customer at the center of the organization and always seek to simplify their work in order to digitalize. The purpose of the study is to fill the gap in the strategic digital transformation operational framework. The main objectives of the study are to: explore empirically the implications of ICT evolution and their impacts at a social, political and economic level; examine the relationships between digital transformation and Industry 4.0; contribute to a better understanding of the challenge for the worldwide industry; and, provide businesses with an opportunity to improve their competitive position. Due to the nature of this research, a methodological approach based on the combination of synthetic and analytical methods; i.e. a Digital Transformation Strategy Model for companies within the Industry 4.0 framework was chosen. The first major practical contribution of the study is that it provides a strategic framework and a set of tools and actions for the Digital Transformation of all types of companies. A second important implication of our study comes from the results, which gives a specific set of skills, information sources, decision styles, and attitudes for developing a successful Digital Transformation strategy.

## PAPERS

### SOCIALITY, AFFORDABILITY AND THE REVERSE KNOWLEDGE FLOW FROM EMERGING MARKETS

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In rapidly growing emerging markets that exhibit a significant amount of heterogeneity, innovation activities by multinational corporations undergo a substantial transformation. This phenomenon can be summarized by the appearance of frugal innovation (innovation for emerging markets) and reverse innovation (innovation from emerging markets to the rest of the world). Although each of them is discussed individually, there are few studies that have investigated the relationship between the two concepts. Scarce studies have investigated what kind of innovation specific to emerging markets is transferred to the multinationals' headquarters. Using the communication theory that whether the intrinsic value of the information is the main determinant of its transfer, we consider which aspect of frugal innovation is valuable for multinational's headquarters. We hypothesize that the sociality of the innovation is the chief value of innovation from emerging markets, and that the affordability supplementally increases the value. That is, sociality determines the fundamental level of transfer and affordability moderates positively the relationship between sociality and the level of transfer to headquarters. We examine the relationship by using the data from innovation projects for emerging markets of Japanese multinationals.

### Introduction

The purpose of the study is to examine the relationship between two trends characterizing multinational corporation's activities in emerging countries: Frugal innovation and reverse innovation. Backed by recent rapid growth of emerging market, research attention has been focused on innovation activities in emerging countries. Nnumerous studies reveal that new types of innovation have occurred there for obtaining local markets. Those types are termed as frugal innovation (Bhatti, 2012; Sharma & Iyer, 2012; Zeschky, Winterhalter, & Gassmann, 2014), bricolage (Ernst et al., 2015), grassroots innovation (Brem & Wolfram, 2014), *jugaad* (Cappelli et al., 2010), etc. Here, we coin those innovations for emerging markets as frugal innovation. Scholars have also found that there is another characteristic of innovative activities in the emerging market: Innovation in emerging markets has sometimes been transferred to the rest of the world to revolve or improve multinational corporation's strategy. Such innovation from the emerging market is termed as reverse innovation (Govindarajan & Trimble, 2013; Zedtwitz et al., 2015). Ideas from heterogeneous emerging countries would sometimes become a great hint for strategic change. While there are many studies for both types of innovation, and sometimes scholars use these two concepts interchangeably and use them without distinction, they are different phenomena. One describes developing a new product/service for emerging markets while the other is the transfer of it to other areas. Past studies haven not yet considered the relationship between them. Thus, in this paper we try to make a bridge between those two concepts.

The value of our study lies in its clarification of what aspect of innovation for emerging markets can also be applicable to other regions. We identify two central features of innovation for emerging markets: Affordability and sociality. Both are important for the success in emerging markets, but we do not know which could be also important in other regions. Using the new product project data of Japanese multinationals, this paper examines that sociality is the primary item that determines the degree of transfer, while the affordability is the secondary one that further enhances the impact of sociality.

### Literature Review about Innovation in Emerging Markets

After recent rapid growth of emerging countries, much attention has been paid to emerging market research. Emerging markets are fundamentally different from developed markets in many respects. One of the central differences between these two markets lies in the income level (Prahalad, 2005; Zeschky et al., 2014). Emerging markets are characterized by low-income, limited affordability, and strong cost-consciousness. The other typical characteristics of them is resource constraints, which means shortage and limited availability of resources (Baker &

Nelson, 2005). As is often the case, emerging markets lack basic facilities such as infrastructure and talented human resources. In these situations, it is difficult for MNCs to develop products which have deployed in their home developed market (Prahalad, 2005). Emerging markets are also known as institutional voids which means the absence of specialized intermediaries, regulatory systems, and contract-enforcing mechanisms in emerging markets (Khanna et al., 2005).

As these characteristics are remarkable, not only for practitioners but also for scholars who have started to pay attention to the product innovation that intends to adapt to emerging markets. It is no longer easy for MNCs to succeed in emerging market by simply importing their existent products or making copy of them in the emerging countries. They need to deal with it by changing the nature of their product. In fact, many MNCs have been struggling to change and localize their product development activities into the emerging market (Williamson, 2010; Zeschky et al., 2014). And now both scholars and practitioners have recognized that this requires significantly different kind of product innovation to capture emerging markets' needs (Prahalad, 2005; Sharma & Iyer; 2012; Zeschky et al., 2014).

### **Innovation FOR Emerging Markets, Innovation FROM Emerging Markets**

Reflecting those research progress, many innovation researchers seek to conceptualize these new types of innovation for obtaining emerging markets. While there are many conceptualization of innovation in emerging markets, (Cappelli et al., 2010; Ernst et al., 2015; Petrick & Juntiwasarakij, 2011; Prahalad & Mashelkar, 2010; Sharma & Iyer, 2012; Zeschky et al., 2011), we summarize that such innovation can be characterized by affordability, sociality, and utilization of available technology. The first character of the product innovation for emerging markets is the affordability for low-income customers (Brem & Wolfram, 2014; Ernstet al., 2015). Thus, those innovations for emerging markets are often referred to as frugal innovation. The large portion of emerging markets is characterized as low income, which means customers feel difficulty in purchasing needed products. Because their biggest issue is price, sometimes *good enough* innovation which means sufficiently low-cost and reliable would be effective (Ernst et al., 2015). To target these segments, innovation needs to include a cost reduction aspect while also offering value to them (Anderson & Markides, 2007; Dubiel & Ernst, 2013).

The second character is social problem-solving. There are many institutional voids in emerging markets, and thus social problems often occur (Bhatti, 2012; Prahalad, 2005). This is the reason why sometimes products which only reduce the cost of existing products tend to fail. These local specific needs are strongly related to the constraints emerging market have been confronting. As stated, emerging countries often suffer from not only affordable constraints of customer, but also resource constraints and institutional constraints. Social innovation which provides solutions to these situations is one measure to satisfy market needs. Thus, frugal innovation has aspect of social innovation (Khanna & Palepu, 2010).

The third is the utilization of existing technology. In the usual case of innovation in developed countries, technological novelty is regarded as one of the important factors to realize a valuable, unique user experience (Eppinger & Ulrich, 2015; Kahn, 2012). However, in emerging markets, the use of available existing technology by *bricolage* is rather effective in solving local problems (Cappelli et al., 2010; Ernst et al., 2015; Petrick & Juntiwasarakij, 2011; Sharma & Iyer, 2012). It takes less resources, less efforts, and less time than introducing sophisticated technology and it often make it easier to adapt to local situation of emerging markets. Although these characteristics refer to the nature of innovation for capturing the emerging markets, there are still other research streams which shed light on different aspect of innovation activity in emerging countries. That is called as *reverse innovation* which refers to the reverse transfer of product and knowledge from emerging countries to developed markets (Govindarajan & Ramamurti, 2011). Ideas generated in emerging markets are often novel for developed-country multinationals, and they are sometimes applicable to other regions too. Thus, many MNCs now started to try to utilize innovation spawn from emerging countries to overall global operations.

Although past studies have investigated more in-depth about those two features of innovation in emerging markets, there exists an important research gap. Few studies have considered the relationships between frugal innovation and reverse knowledge flow (Bhatti, 2012; Brem & Wolfram, 2014; Kolk, Rivera-Santos & Rufín, 2014). As past studies indicated, because innovation FOR emerging markets has several specificities like affordability and sociality that are new for developed country multinationals, it can become the innovation FROM emerging markets that make changes in their global operation (Godindarajan & Trimble, 2013). Thus, we think it is quite valuable to investigate which character of innovation for emerging markets facilitates the transfer and utilization of it within the multinationals. If we can specify the nature of innovation in emerging markets to both emerging markets and developed markets in the end. In this sense, to investigate the relationships between the nature

of innovation for emerging markets and the transfer of that innovation to other areas are worth tackling for both academia and business practices.

### **Theory and Hypotheses**

#### **Conceptual Framework: Communication Theory**

To consider the impact of affordability and sociality on the degree of knowledge transfer, we use communication theory as the theoretical framework. Communication theory regards knowledge transfer as information flow from senders to receivers (Gibson & Williams, 1990; Gupta & Govindarajan, 2000; Krone et al., 1987, Szulanski, 1996). According to this theory, communication process is composed from mainly two different elements: the content and the sender-receiver relation. The content of information is the chief element of communication and the value of the content for the receiver firstly determines the degree of knowledge flow from the sender to him/her. When the receiver recognizes that the information is quite important for him/her, he/she makes more effort to obtain it correctly from the sender. The sender-receiver relationship is the secondary determinant of the knowledge flow. Its conditions facilitate or inhibit the transfer. When the sender and the receiver have a friendly relationship, a well-developed communication channel, or a shared value and norms, they can exchange their knowledge transfer is useful for our analysis. We can put the nature of innovation in emerging markets as the content of information, and the local subsidiary and its headquarters as a sender and a receiver, respectively. Then, by considering the value of the innovation for the headquarters, we can examine the impact of the nature of innovation on the degree of transfer after controlling the relationship between the local subsidiaries and the headquarters.

Drawing on the communication theory, let us develop a model that the nature of innovation in emerging markets determines the level of transfer from emerging market. As explained, we define the characters of innovation in emerging markets by three items: sociality, affordability, and the utilization of available technology as depicted in Figure 1.



Figure 1. Hypothesized Model of the Frugality and Reverse Transfer of Innovation

Let us consider the effects of chief characteristics of innovation in emerging markets - affordability and sociality. As explained, both features enhance the possibility of successful innovation in emerging countries. Affordability helps the product to reach a large number of customers (Anderson & Markides, 2007; Dubiel & Ernst, 2013, Lee et al., 2011) and sociality captures the essential needs of people. It contributes to solving local social problems that people face (Bhatti, 2012; Brem & Wolfram, 2014; Prahalad, 2005). Both are effective from the viewpoint of marketing for emerging markets, but given a

good thought, there is a decisive difference between the two. The sociality is social problem-solving value for the customers, and the affordability is the means to make that value reachable to more customers.

We assume that the sociality is the chief value of the innovation in emerging markets. Fundamentally, innovation is the problem-solving for the customer (Eppinger & Ulrich, 2015). In that sense, the product that improves the situation of the customer who faces the serious social constraints or problem should be inherently the central activities of the company located in emerging markets. If the company tries to apply that innovation to the other market than the original one, the key issue must become the value for the customer of that area. Whether the product can be accepted or not is determined by the level of problem-solving for the customer. In fact, some researchers strongly claimed that these social aspect of innovation, providing radical solutions to pressing needs of society, is critically important for frugal innovation (Bhatti, 2012; Brem & Wolfram, 2014; Prahalad & Mashelkar, 2010).

Social innovation would be also important for enhancing reverse activity from emerging countries to developed countries as well. As London and Hart (2004) pointed out, it is not a rare occasion that social and environmental issues are common to both emergent and developed countries. The commonality of the social problem is not the only reason for the importance of emerging market in sociality of innovation. Emerging market, especially bottom of the pyramid (BOP) segment is a source of breakthrough (Prahalad, 2012). As this segment is seriously confronting pressing social needs, it provides abundant opportunities for experimentation. If the new innovation meets the requirements of the base of the pyramid in emerging countries, it is possible for MNCs to provide solutions

to some of the developed countries' most pressing social and environmental problems. According to these argument, if the product innovation entails social nature, the value of it would increase for MNCs to introduce it to the developed market. Thus, we can hypothesize as follows;

## H1. The level of sociality of a new product has a positive association with the degree of reverse knowledge flow toward the headquarters.

Affordability is not only the central value of the innovation but also the supplemental element that makes customers accessible to the product. Because the emerging markets are characterized by low-income, the affordability of the product often becomes important factor of success (Anderson & Markides, 2007; Dubiel & Ernst, 2013; Lee et al., 2011). But in terms of the possibility of reverse transfer to headquarters, we can assume that the affordability itself does not heighten it. This is because the affordable innovation is not always valuable for the developed market. One reason for this is related to sources of affordability. The nature of low-cost is sometimes rooted in the locally-embedded sources such as low-cost of resources and workforce in emerging market. In these situations, the reproduction of these low-cost is difficult in developed countries. Thus, affordability of innovation itself would not be valuable for headquarter of MNCs.

## H2. The level of affordability of a new product is not associated with the degree of reverse knowledge flow towards the headquarters.

Even though affordability singly cannot be regarded as valuable to transfer to headquarters in the developed country, we can assume that affordability enhances the value of social product and thus it contributes as a positive moderator between sociality and the level of transfer to headquarters. If the product that tackles the social problem becomes more inexpensive, more customers can enjoy that benefit (Bhatti, 2012). When an affordable product is turned into a cheap product in developed market, the affordable and social product does offer the smart solution for social problem. Thus, we can hypothesize as follows:

## H3. The interaction of the level of affordability and the sociality have positive association with the degree of reverse knowledge flow toward the headquarters.

Finally, let us consider the technological aspect. There is a quite wide range of technology level in product innovation in emerging markets, from bricolage to a very sophisticated one. A bricolage often brings a good result because it can realize problem-solving with inexpensive way (Cappelli et al., 2010; Ernst et al., 2015). On the other hand, novel technology sometimes can also achieve low-cost solutions in poor areas. As Zeschky et al. (2014) shows, innovations that introduce new technology, new product architecture, or novel use of existent technology sometimes enable entirely new applications at much lower price points than existing solutions. To summarize, both obsolete and novel technology can be valuable for emerging markets, as long as it improves the customer's quality of life. In other words, the essential value of the new product developed in emerging markets does not lie in the way of problem-solving (technology), but the outcome of it (sociality). Thus we can hypothesize as follows;

H4: The level of technological novelty of a new product is not associated with the degree of reverse knowledge flow toward the headquarters.

### Methodology

### **Sample and Procedures**

Our data were collected through a questionnaire survey mailed during January-September 2017. We chose Japanese overseas subsidiaries located in emerging markets as listed in both International Monetary Fund (2016) and Standard & Poor's country classification (Standard & Poor, 2017). Our unit of analysis is the new product development project held in that subsidiaries and targeted its local market. Following Ernst et al. (2015), we adopted a two-stage sampling procedure to measure the performance and project management approach correctly to avoid the risk of common method variances. To develop a distribution list, we did a random sampling from the *Toyo Keizai Overseas Japanese company database 2016* (Toyo Keizai, 2016), which is often used for surveys of Japanese companies (Delios & Henisz 2000; Nakagawa et al., 2017; Nakamura et al., 1996). We focused on the manufacturing sector because some of our questions about the development project can be applied only to manufacturing such as

production costs or product engineering (Eppinger & Ulrich, 2015). Finally, we obtained 52 usable filled questionnaires. In Table 1 we provide our sample's descriptive statistics.

Company p	ofile					Project profi	le	
Country		Industry		Established year		Project duration (months)		
Thailand	10	Chemical	13	1960s	1	1 - 6	17	
China	7	Electronics	13	1970s	7	7 -12	15	
Indonesia	6	Machinery	10	1980s	5	13 - 18	4	
Vietnam	6	Automotive	8	1990s	25	19 - 24	10	
Brazil	5	Metal	4	2000s	14	25 - 36	5	
Taiwan	5	Daily consumer	4			37 - 48	1	
Malaysia	4	goods		Employees				
India	2			30 - 99	9	Project partic	cipants	
Mexico	2			100 - 299	14	1 - 4	17	
Phillipine	2			300 - 499	9	5 - 9	12	
Czech	1			500 - 999	13	10 - 19	15	
Hungary	1			1000 - 1999	5	20 - 49	5	
Pakistan	1			2000 - 4000	2	50 - 200	3	

#### Measures

We measured all of variables in line with the past studies. Table 2 summarizes the measurement method. In addition, for calculating the effect of those variable regarding communication theory, we controlled for the effect of subsidiary age, size, and industrial area since the subsidiary's local experiences and its competitive environment are fundamental determinants of its behavioral pattern. We measured subsidiary size as the number of employees in thousands and age as the number of years since the subsidiary was

established. As for industrial category, we used Japanese industrial classification code to classify the subsidiary's business domain (The numbers of observations are: Chemical = 13, electronics = 13, machinery = 10, automotive = 8, metal = 4, daily consumer goods = 4).

Variable	Items and scale	refeered papers	Cronbach's alpha
(Dependent variable)			
Reverse knowledge flow	3 items about the knowledge transfer from the focal subsidiary to its headquarters (1. Not at all - 7. A very great deal)	Gupta and Govinradajan (2000) Björkman, et al. (2004)	0.78
(Independent variable)			
Sociality	2 items about social proble-solving nature of the new product (1. Totally disagree-7. Totally agree)	Brem & Wolfman, (2014) Bhatti (2012)	0.75
Affordability	2 items about cost-saving nature of the new product (1. Totally disagree-7. Totally agree)	Hossain (2016)	0.68
Technological novelty	2 items about the technological lebel of the new product (1. Totally disagree-7. Totally agree)		0.71
(Control variable)			
Parent involvement	5 items about the parent company's involvement in developing the new product (1. No involvement -5. Parent did it alone)	Nohria & Ghoshal (1994) Roth & Morrison (1992)	0.91
Socialization	5 items about the organizational socialization of the subsidiary by its headquarters (1. Totally disagree-7. Totally agree)	Tsai & Ghoshal (1998) Li (2005)	0.91
Subsidiary importance	5 items about the importance of that subsidiary within the overall MNC (1. Not important at all - 5. Very important)	Bartlett & Ghoshal (1989) Rugman & Verbeke (1992)	0.82

We checked the averages, standard deviations, and correlations for all variables to confirm whether they have reasonable number or not. Each variable has moderate level of averages and sufficient variations. The correlations also show there is no serious collinearity among the independent variables. No one correlation surpasses 0.5.

We employed hierarchical OLS regression analysis to estimate the influences of the independent and control variables on reverse knowledge flow. The results are shown in Table 3. At first, let us look at single effect of independent variables. As for *affordability*, we cannot say that it has any significant impact on *reverse knowledge flow* (p > 0.1 both in Model 2 and 5). On the other hand, *sociality* has significantly positive impact on it (Beta =

0.23, p < 0.05 in Model 3, and Beta = 0.24, p < 0.05 in Model 5). Regarding the degree of *technological novelty*, we cannot find any significant impact on reverse knowledge flow (p > 0.1 both in Model 4 and 5). Thus, we can conclude that Hypotheses 1, 2, and 4 are supported. In terms of interaction effects, we found that *affordability* \* *sociality* had significantly positive influence on *reverse knowledge flow* (Beta = 0.15, p < 0.05 in Model 6). Hence we can say that H3 is supported. That is, frugality of innovation promotes the transfer of social products to the parent company.

For the control variables, *parent involvement* and *subsidiary importance* had positive influence on reverse knowledge flow, as communication theory predicted (Gupta & Godindarajan, 2000; Krone et al, 1987). However, the *socialization* by the parent company has no significant influence and it is contrary to the prediction of communication theory. We investigate these results theoretically in the next section. The other three variables, *sub. age, sub. size* and *industry dummy*, were introduced for purely controlling the general conditions of the subsidiary. All of them did not show any significant relationships with reverse flow of knowledge.

To check the robustness, we performed two robustness tests. First, to check whether each independent variable itself had a curvilinear effect or not, we introduced the square term of *affordability, sociality,* and *technological novelty*. We found that all of the squares of the independent variables were not significant. Second, we reexamined the model using randomly selected 90 percent subsamples, and we found that the empirical results were the same as when the full sample was used. While we found the increase in p value and T statistics of some independent terms that had statistically significant association in using full sample, all of them are below 0.1 even when using subsample.

### Results

Dependent Variable: Reverse knowledge flow												
	Mo	del 1	Model 2		Mo	del 3	Mo	odel4	Mo	del 5	Mo	del 6
	Beta	SE	Beta	SE.	Beta	SE	Beta	SE	Beta	SE	Beta	SE
Intercept	-1.37	1.21	-1.32	1.30	-1.31	1.17	-1.15	1.24	-1.45	1.30	-1.55	1.27
Sociality					0.23*	0.10			0.24*	0.11	0.28*	0.11
Affordability			-0.10	0.14					-0.14	0.14	-0.18	0.13
Technological novelty							0.12	0.15	0.01	0.16	0.04	0.15
Sociality * Affordability											0.15*	0.07
Parent involvement	0.28†	0.15	0.33†	0.16	0.32*	0.15	0.27†	0.15	0.39*	0.16	0.37*	0.16
Socialization	0.06	0.16	0.06	0.16	-0.00	0.15	0.01	0.17	-0.02	0.17	0.02	0.16
Subsidiary importance	0.46†	0.25	0.50†	0.25	0.41†	0.24	0.44†	0.25	0.46†	0.25	0.49*	0.24
Sub. Age	-0.01	0.01	0.01	0.019	-0.01	0.01	-0.01	0.01	-0.02	0.01	-0.01	0.01
Sub. Size	0.03	0.26	0.00	0.26	0.04	0.25	0.05	0.26	0.00	0.26	0.05	0.25
(thousands)												
Industry dummy	no		no		no		no		no		no	
Model statistics												
Adjusted R <sup>2</sup>	0.10		0.09		0.17		0.09		0.15		0.22	
$\Delta$ Adjusted R <sup>2</sup>			-0.01		0.07		0.00		0.05		0.06	
from Model 1												
P. of F-statistic	0.10		0.14		0.03		0.13		0.06		0.02	

Table 3. Results of the Hierarchical OLS Regression Analysis for Reverse Knowledge Flow

n = 52. All two-tailed tests. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. SE = Standard Error

### Discussion

Looking at the results, we can say that all of our hypotheses were supported: Affordability itself had no influence on the level of reverse flow of the innovation, but it fostered reverse transfer when the innovation possessed sociality nature. Therefore, here we can put emphasis on the importance of sociality. It is important for developed country-based MNCs because in terms of ethics as well as business expansion. We can see the similar social problems like health, pollution or natural resource shortage in several areas in the world. So the frugal solution for it becomes worth transferring from one emerging country to the other countries. Similarly, the frugal application of the sophisticated technology was also worth transferring because it is a good way to diffuse that technology.

Those findings may contribute to the academy of innovation management in emerging markets. Past studies have investigated and emphasized on both reverse innovation and frugal innovation, but scarce number of studies mainly considered the relationship between them (Bhatti, 2012; Brem & Wolfram, 2014; Zedtwitz et al., 2015). Thus we analyzed the relationship theoretically and empirically. Drawing on the results, we can conclude that sociality plays a key role of mediating frugality and reverse flow of the innovation. Although it was found that the sociality of the product innovation improved its market performance, differentiated competency, our study discovered a new effect of sociality on knowledge flow towards the parent company in the developed country.

Our findings also suggest some practical implications for MNCs that have challenges in emerging markets. As we discussed, sociality may play the key role in diffusing innovation from one emerging area to the other world. When the innovation possesses social problem-solving nature, it would be valuable for those who suffer from that social problem, wherever they live. That is why MNCs tend to transfer it from one emerging country to the other areas. Affordability, the other character of frugal innovation, does not have such a power to improve quality of life of those who face social difficulties in itself, while the affordable products that incorporate sociality perform best. The value of innovation rose when it was utilized by more people (Rogers, 2003). In this sense, sociality can be considered as one of the most important characteristics of frugal innovation.

### **Limitation and Future Research**

However, our findings have several limitations and we should refrain from overgeneralizing the conclusion. First, we have to mention our limited sample size. While we sent more than one thousand questionnaires and collected more than two hundred responses, we finally found that only one fourth of all responses carried out the project. As a result, our sample became quite small. We thought that it was because not many MNCs challenged new product development in emerging countries until now. Anyway, we must consider the problem about the sample size. Furthermore, our sample only consisted of Japanese MNCs. Even in that sense we must not overgeneralize our results. Meanwhile, our results can be considered valid from communication theory's viewpoint. To take account of those things altogether, we can conclude that this study examined theoretically predicted relationships with limited Japanese sample. Further studies have to be done to reconfirm our results in the future. Not only quantitative but also qualitative study would be valuable to understand what really happens in realizing reverse flow of the product innovation in emerging markets.

### References

- Anderson, J., & Markides, C. (2007). Strategic innovation at the base of the pyramid. MIT Sloan Management Review, 49(1), 83-88.
- Baker, T., & Nelson, R.E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. Administrative Science Quarterly, 50(3), 329-366.
- Bhatti, Y. (2012). What is Frugal, what is Innovation? Towards a theory of frugal innovation. Oxford Centre for Entrepreneurship and Innovation. (Unpublished, available at SSRN: https://ssrn.com/abstract=2005910)
- Brem, A., & Wolfram, P. (2014). Research and development from the bottom up-introduction of terminologies for new product development in emerging markets. Journal of Innovation and Entrepreneurship, 3(1), 9-30.
- Cappelli, P., Singh, H., Singh, J., & Useem, M. (2010). The India way: Lessons for the US. The Academy of Management Perspectives, 24(2), 6-24.
- Delios, A., & Henisz, W.J. (2000). Japanese firms' investment strategies in emerging economies. Academy of Management Journal, 43(3), 305-323.
- Dubiel, A., & Ernst, H. (2013). Industrial R&D centers in emerging markets: Motivations, barriers, and success factors. The offshoring challenge: Springer, pp. 191-209.
- Eppinger, S., & Ulrich, K. (2015). Product design and development. NY: McGraw-Hill.
- Ernst, H., Kahle, H.N., Dubiel, A., Prabhu, J., & Subramaniam, M. (2015). The antecedents and consequences of affordable value innovations for emerging markets. Journal of Product Innovation Management, 32(1), 65-79.
- Gibson, D., & Williams, F. (1990). Technology transfer. Newbury Park: Sage.
- Govindarajan, V., & Ramamurti, R. (2011). Reverse innovation, emerging markets, and global strategy. Global Strategy Journal, 1(3-4), 191-205.
- Govindarajan, V., & Trimble, C. (2013). Reverse innovation: Create far from home, win everywhere. Boston: Harvard Business School Press.
- Gupta, A.K., & Govindarajan, V. (2000). Knowledge flows within multinational corporations. Strategic Management Journal, 21(4), 473-496.
- Harzing, A.W. (1997). Response rates in international mail surveys: Results of a 22-country study. International Business Review, 6(6), 641-665.
- International Monetary Fund. (2016). Glossary of Selected Financial Terms. Terms and Definitions. Retrieved on 2017/10/17. (Link: http://www.imf.org/external/np/exr/glossary/showTerm.asp#E)
- Kahn, K.B. (2012). The PDMA handbook of new product development. Hoboken, New Jersey: Wiley.
- Khanna, T., & Palepu, K.G. (2010). Winning in emerging markets: A road map for strategy and execution. Harvard Business Press.
- Khanna, T., Palepu, K.G., & Sinha, J. (2005). Strategies that fit emerging markets. Harvard Business Review, 83(6), 4-19.
- Kolk, A., Rivera-Santos, M., & Rufín, C. (2014). Reviewing a decade of research on the "base/bottom of the pyramid" (BOP) concept. Business & Society, 53(3), 338-377.
- Krone, K.J., Jablin, F.M., & Putnam, L.L. (1987). Communication theory and organizational communication: Multiple perspectives. In Jablin, F. M., L. L. Putnam, K. H. Roberts and L. W. Porter (Eds.). Handbook of Organizational Communication. Newbury Park, CA: Sage.

- Lee, Y., Lin, B.W., Wong, Y.Y., & Calantone, R.J. (2011). Understanding and managing international product launch: A comparison between developed and emerging markets. Journal of Product Innovation Management 28(1), 104-120.
- London, T., & Hart, S.L. (2004). Reinventing strategies for emerging markets: beyond the transnational model. Journal of International Business Studies, 35(5), 350-370.
- Nakagawa, K., Tada, K., & Fukuchi, H. (2017). Organizational cultural crossvergence and innovation: Evidence from Japanese multinationals in emerging markets. Cross-cultural Management Journal, 11(1), 47-57.
- Nakamura, M., Shaver, M.J., & Yeung, B. (1996). An empirical investigation of joint venture dynamics: evidence from US-Japan joint ventures. International Journal of Industrial Organization, 14(4), 521-541.
- Petrick, I.J., & Juntiwasarakij, S. (2011). The rise of the rest: Hotbeds of innovation in emerging markets. Research-Technology Management, 54(4), 24-29.
- Prahalad, C.K. (2005). The fortune at the bottom of the pyramid: Eradicating poverty through profits. Vikalpa, 30(2), 149.
- Prahalad, C.K. (2012). Bottom of the pyramid as a source of breakthrough innovations. Journal of Product Innovation Management, 29(1), 6-12.
- Prahalad, C.K., & Mashelkar, R.A. (2010). Innovation's Holy Grail. Harvard Business Review, 88(7/8), 132-141.

Rogers, E. (2003). Diffusion of Innovations. New York: Simon and Schuster

- Sharma, A., & Iyer, G.R. (2012). Resource-constrained product development: Implications for green marketing and green supply chains. Industrial Marketing Management, 41(4), 599-608.
- Standard & Poor (2017). S&P Dow Jones Indices' Annual Country. Classification Consultation. Retrieved on 2017/10/17. (Link: https://jp.spindices.com/documents/index-news-and-announcements/20161215-spdji-country-classification-consultation-results.pdf?force\_download=true)
- Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. Strategic Management Journal, 17(S2), 27-43.
- Toyo Keizai (2016). Kaigai Shinshutsu Kigyo Soran. Tokyo: Toyo Keizai.
- Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. Academy of Management Journal, 41(4), 464-476.
- Williamson, P.J. (2010). Cost innovation: preparing for a 'value-for-money' revolution. Long Range Planning, 43(2), 343-353.
- Zedtwitz, M., Corsi, S., Søberg, P.V., & Frega, R. (2015). A typology of reverse innovation. Journal of Product Innovation Management, 32(1), 12-28.
- Zeschky, M., Widenmayer, B., & Gassmann, O. (2011). Frugal innovation in emerging markets. Research-Technology Management, 54(4), 38-45.
- Zeschky, M.B., Winterhalter, S., & Gassmann, O. (2014). From cost to frugal and reverse innovation: Mapping the field and implications for global competitiveness. Research-Technology Management, 57(4), 20-27.

## MANAGEMENT MOVES TO REDUCE COSTS WITH SELF-CHECKOUT: WHAT AFFECTS CUSTOMER USAGE? Angelina I. T. Kiser, University of the Incarnate Word, USA Vess L. Johnson, University of Arkansas at Little Rock, USA Richard Woolridge, University of Arkansas at Little Rock, USA

Increasing pressure on retailers to compete with a growing number of online competitors and a changing consumer demographic have driven some to consider how technology might be used to increase operational efficiency, reduce costs, and at the same time increase customer loyalty and improve the shopping experience. This study uses the IS continuance model as its theoretical foundation to explore the impact of efficiency and technology anxiety on consumer willingness to continue using self-checkout systems. In addition, the study also considers how well these systems perform with respect to consumer expectations. In a pilot study, results indicate that efficiency positively affects consumer satisfaction and their willingness to continue using the technology. However, preliminary results also indicate that anxiety associated with self-checkout systems has a negative impact on satisfaction and continuance intention. Moreover, evidence is found to suggest that while these systems meet customer expectations with respect to efficiency, they also appear to cause the consumer greater anxiety than initially anticipated.

### Introduction

Managers of brick-and-mortar retail stores face increasing pressure to provide efficient operations as consumers increasingly shop across channels. There is an expectation that in-store prices will match the prices found online and this price consistency motivates brick-and-mortar retailers to develop ultra-efficient operating models (McKinsey & Company, 2014). There is little room for error in price consistency since 90 percent of Americans keep their mobile devices near them twenty-four hours per day. Moreover, research has shown that those mobile devices influence 75 percent of purchases for 44 percent of Americans (RIS Research, 2015). Achieving greater profitability through technological innovations has become a strong focus in retail stores (Pantano & Vissone, 2014). One technological innovation that has seen increased attention in the retail sector is self-checkout systems. The Food Marketing Institute reports: (1) over 62 percent of grocery retailers have installed self-checkout systems in at least one store, (2) 25 percent of total checkout lanes are self-checkout systems, and (3) 25 percent of total transactions go through selfcheckout systems (Amato-McCoy, 2008). These systems improve the retailers' profitability by cost reductions associated with off-loading work to the consumer. In some cases, the savings from self-service can be substantial; in the airline industry, using a staffed desk to check-in a passenger costs \$3 while the cost of using self-service for the same task is 14 cents. In other cases, retailers may use self-checkout systems to reduce checkout staff from three to one for every four self-checkout stations and then reallocate those now available staff hours to the sales-floor in order to increase sales (Castro, Atkinson, & Ezell, 2010).

The implementation of self-checkout systems in organizations has not been without issues and some organizations are reducing or eliminating SCS implementations. Albertson's LLC is eliminating self-checkout systems from 217 stores in two states in order to increase customer interaction (Anand, 2011). Some Canadian Tire stores in Toronto have removed self-checkout systems to improve customer experience (Harris, 2019). Other retailers who have reduced or removed self-checkout systems include: CVS (Darrow, 2015), PCC Grocery Stores (Belle, 2019), and Safeway (McLaughlin, 2016). Many of these retailers, in the above cited examples, report customer experience or perception as a reason for the decision to reduce or remove self-checkout systems. This study begins to explore customer expectations, efficiency, anxiety, and satisfaction on customers' intentions to continue, or not continue, use of self-checkout systems. The amount of investment, importance of profitability, and the potential impact on customer satisfaction and perception described in the above cited examples highlight the importance of understanding customers' continuance intention regarding self-checkout systems.

As retailers continue to search for technologically innovative ways to increase efficiency, it is crucial that companies understand that those technologies that directly impact consumers must be studied and analyzed so that the investment is worthwhile. In the case of self-checkout systems, where customers become active participants in the delivery process, managers must find ways to engage the customers to use self-checkout and then continue to use self-checkout. They must address issues such as technology anxiety, efficiency, and satisfaction with self-checkout if the company is going to invest the money and resources to implement this self-service technology.

### Literature Review

### **Creating Value**

The concept of value is ambiguous because it is based on perception. However, it is crucial for an organization to create value for customers as it will influence both attitudes and behavior. There are many potential problems that can arise when an organization has difficulty assessing what customers' value in both products and services, and management must be able to create enough value through both products and services to maintain a healthy organization. For the purpose of this study, customer value is a perception by the consumer and takes into consideration both benefits and sacrifices (Christopher, 2005). Furthermore, the definition includes what customers deem is the total worth of benefits received for the price paid (Simpson, Siguar, & Baker, 2001). Customer value must be positively perceived by the customers and be able to help them be successful, whether it is with the purchase they made or with the service they used or received. Unlike online retailers, brick and mortar stores must be concerned not just with the product being sold but also with the customer interaction experience. Moreover, the concept of value is dynamic and changes over time (Ribeiro, Monteiro, & Luttembarck, 2018). Whereas the emphasis in the past was on tangible output, the new view is service oriented in which key components include exchange processes and relationships (Vargo & Lusch, 2004). The following table (Table 1) illustrates both the benefits and sacrifices related to both customer and supplier value that include both tangible and intangible concepts (Chicksand & Rehme, 2018).

Customer	Value	Supplier Value				
Benefits	Sacrifices	Benefits	Sacrifices			
Direct:	Direct:	Direct:	Direct:			
Revenue	Price	Product/service	Revenue			
Operational	erational Financing costs		Operational			
Reduced risk Search costs		Dedicated inventory	Reduced risk			
Learning costs						
	Switching costs					
Indirect:	Indirect:	Indirect:	Indirect:			
Reputation effects	Relationship	Relationship	Reputation			
Social/relationship	Psychological	Psychological	Social/			
Environmental	Loss of power	Loss of power	Environmental			

Table 1: Benefits and Sacrifices to Customers and Suppliers

When it comes to value, customers weigh benefits compared to sacrifices and decide if the decision to act is of value. In the case of a selfcheckout, if customers do not perceive enough value or if the sacrifices are too great, they will decide not to use them. Therefore, even if management sees a value to Teadou's shopping avariance

the self-checkout registers, their efforts may not translate to value for the customers. Today's shopping experience can be viewed as co-created with both innovation and value (experience) playing a role (Vargo & Lusch, 2004). It is essential that buyer and supplier value is clearly established in order to create a balance between the two in order to create total value in which the desired outcomes are achieved for both parties (Chicksand & Reheme, 2018).

### **Service-Dominant Logic**

In the past, the dominant business model was goods-dominant with supplier and customer working independently of each other (Vargo & Lusch, 2004). However, a current business model, service- dominant (S-D) logic focuses on the collaborative efforts of suppliers and consumers with emphasis on service processes (Zacharia, Nix, & Lusch, 2011). A key principle of S-D logic is that value is co-created and derived by customers (Akaka & Vargo, 2014). From this S-D perspective, product innovations are themselves service innovations (Lusch & Nambisan, 2015). Information technology (IT) innovation studies have recently focused on the impact of IT service innovations on organizational performance, but a more comprehensive model is needed to examine the viewpoint of service (Lusch & Nambison, 2015). Re-conceptualizing the definition of innovation to be considered the "rebundling of diverse resources that create novel resources that are beneficial (i.e. value experiencing) to some actors in a given context" allows for a better understanding of the role of IT in service innovation (Lusch & Nambison, 2015). The focus shifts to the consumer who is an active participant who plays a critical role in the innovation process (Smedlund, 2012). When customers become co-creators in the development of value, the provider gains value as well (Ida, 2017), but companies are not the creators of value, they simply contribute to and facilitate the creation of value (Ribeiro, Monteiro, & Luttembarck, 2018). Therefore, it is critical that organizations identify and understand the tasks that customers must accomplish so that they can understand the value-creation process (Ribeiro, Monteiro, & Luttembarck, 2018). S-D logic encompasses two broad resource classifications: (1) operand resources that require action taken upon them to be considered valuable, and (2) operant resources that are able to act on other resources to create value (Vargo & Lusch, 2004). Using the operant resources view, S-D logic points toward technology as a process of doing something in addition to an outcome of human action (Arthur, 2009). Understanding the role of technology is necessary in understanding value co-creation through innovation (Akaka & Vargo, 2014).

### Self-Service Technology

Self-service technologies (SST) allow consumers to complete transactions without the assistance of an employee (Meuter, Ostrom, Roundtree & Bitner, 2000). Self-checkout registers are an example and have been implemented by companies in an attempt to increase efficiency and lower costs. However, it is important for managers to know why customers do or do not utilize this specific SST. As with other SSTs, self-checkout places further responsibility on the consumer to purchase items even though they intent may be to benefit the consumer (Curran & Meuter, 2005). If consumers experience dissatisfaction with or anxiety from using self-checkout, or if they simply do not view it as more efficient, they may choose not continue using it. Not only must the technology benefit consumer, but the company must find a strategy that positively influences the customers' intent to use that technology (Curran & Meuter, 2005). In other words, if a company is going to invest the money in a SST, then it needs to be a positive return on investment. A major challenge for companies is moving from the employee to technology in the delivery of services (Curran & Meuter, 2005). Service quality must be considered because if there is a lack of quality, the more likely that the technology will not be utilized by customers, causing both monetary and non-monetary losses to the organization. Therefore, as SSTs continue to emerge, it is vital the management be aware of the service quality on customer satisfaction, loyalty, and behavioral intentions (Iqbal, Hassan, & Habibah, 2018). Retailers around the world have installed self-checkout lanes as a way to improve efficiency and customer service. Consequently, it is imperative that retail manager be able to distinguish the factors that contribute to customers' acceptance or rejections of self-checkout (Demoulin & Djelassi, 2016). In their study of factors related to using self-checkout in France, Demoulin and Djelassi (2016) found that technology anxiety negatively influenced perceived ease of use of self-checkout, and perceived usefulness positively influenced perceived ease of use of self-checkout. Service quality can be measured by consumers' perceptions about the performance of the service delivery, which can then be used to make improvements to the SST (Seth, Deshmukh, & Vrat, 2005). There have been some interesting side effects of using SSTs. As customers become more involved in the service delivery, they become more knowledgeable about a company's process operations, which enables them to better analyze the process (Sampson & Froehle, 2006).

### Bhattacherjee's Information Systems (IS) Continuance Model.

As firms continue to invest in IS, it is important to note that a goal of the system implementation is for continued use. According to Parthasarathy and Bhattacherjee (1998), the cost to acquire new customers is as much as five times more than the cost to retain existing customers. Bhattacherjee's IS Continuance Model is adapted from the Expectation-Confirmation Theory (ECT), which is grounded in the concept that a consumers will repurchase a product or service based on their satisfaction of prior use (Oliver, 1993). Bhattacherjee (2001) adapted the model to examine intention to continue using IS that takes into account the differences between acceptance and continuance behaviors. In order to enhance the ECT model to be applicable to IS, several theoretical extensions were required: (1) the focus is only on post-acceptance variables, (2) the inclusion of post-consumption expectation, and (3) the representation of expectation by perceived usefulness (Bhattacherjee, 2001). Bhattacherjee's (2001) study found evidence to support the positive impact of perceived usefulness on both IS continuance intention and satisfaction. In addition, the study also found that confirmation positively affects perceived usefulness and satisfaction and satisfaction is the strongest predictor of IS continuance, and satisfaction is primarily predicted by confirmation of IS use and by users' perceived usefulness. Hence, consistent with the IS continuance model and prior research the following are proposed:

H1. Satisfaction positively impacts Continuance Intention.

H2. Confirmation positively impacts Satisfaction.

Continued usage of an IS is often motivated by some intrinsic or extrinsic reward or consequence resulting from that usage. When use of an IS results in an extrinsic reward, then continuance intention is positively affected. However, if use of an IS results in a negative consequence, then continuance intention is negatively affected (Ryan & Deci, 2000). In Bhattacherjee's (2001) IS continuance model, the notion of confirmation captures how the IS meets or fails to meet pre-adoption expectations. If the expectation is met or exceeded for a positive reward, such as usefulness, then confirmation will have a positive impact on the perception of that reward (i.e. my gain was more than expected). In the IS continuance model, the positive motivation for continuing to use the IS is represented by the individual's perception of usefulness. In the current study, the positive motivation of usefulness is replaced by efficiency. Efficiency captures the benefit that the consumer hopes to gain by using self-checkout. Similar to that shown in the IS continuance model, if using self-checkout meets or exceeds one expectations with respect to efficiency, it would be reasonable to assume that this confirmation would also positively impact the perceived efficiency (i.e. it was more efficient than expected). Also, the current study extends the IS continuance model by

including technology anxiety as a negative motivation. Technology anxiety captures the sacrifice or negative consequence that the consumer experiences by using self-checkout. Here a similar argument can be made with respect to confirmation. If using the IS results in the individual feeling more anxious than expected, then the negative consequence of technology anxiety will be reinforced through confirmation (i.e. it caused more anxiety than expected). Thus, based on motivation theory (Ryan & Deci, 2000), the IS continuance model (Bhattacherjee, 2001), and prior research the following are proposed:

H3. Confirmation positively impacts Efficiency.

H4. Confirmation negatively impacts Technology Anxiety.

### Efficiency

Efficiency is an important measure when scrutinizing an organization's performance. One reason for installing selfcheckout lanes in retail stores is to create efficiency. However, is this actually happening? When shoppers get tired of waiting in line or do not want to have interactions with store employees, they may choose to do their own checkout. However, customers who believe they will save time are sometimes faced with problems such as bag struggle, *scanner blindness*, the *unexpected item in the bagging area* message, items without barcodes, scanning items multiple times, waiting for an ID check, or even just a system failure (Winterman, 2009). Dong and Sivakumar (2015) examined the concept of efficiency (speed of service delivery) from a customer's perspective within the context of customer participation. They concluded that while an output may enrich satisfaction, it may also increase the negative effect of customer participation on efficiency. Furthermore, they suggest that generic SSTs may need to be more customized in order to increase both satisfaction and efficiency in customer participation (Dong & Sivakumar, 2015). The interaction of satisfaction and efficiency should be explored further in order to gain a greater understanding of their interrelated effects on continued IS use. Hence, consistent with prior research the following is proposed:

H5. Efficiency positively impacts Satisfaction.H6. Efficiency positively impacts Continuance Intention.

### Anxiety

People experience anxiety for a variety of reasons, but this study examined anxiety caused by using self-checkout. When looking into self-checkout initial usage and intent to continue usage, it is important to consider why someone might experience technology anxiety and how to mitigate that anxiety. In their study on the use of public SSTs and anxiety, Gelbrich and Sattler (2014) researched the effects of anxiety when using self-checkout as these are in public view with other people often waiting to use them, which can create a situation of crowding and time pressure. Self-checkout, unlike some private SST's such as ATMs, are in open spaces and used only once a shopper is ready to checkout. The results of their study indicated that the more customers feel anxious about using a new technology for the first time, the less likely they are to use that technology in a public setting. Therefore, the lack of intent to use the public SST is based on emotion and not cognitive reflection (Gelbrich & Sattler, 2014). Self-efficacy greatly diminishes technology anxiety when people consider using a public SST. Even more important is the result that contextual dimensions such as crowding and time pressure appear to cause people not to use the public SST due to a perceived inability to do so even if the technology is perceived to be easy to use (Gelbrich & Sattler, 2014). Therefore, consistent with the IS continuance model and prior research the following hypotheses are proposed:

H7. Technology Anxiety negatively impacts Satisfaction.

H8. Technology Anxiety negatively impacts Continuance Intention.

### Methodology

Figure 1 below represents the proposed model for the study. The researchers explored the effects of efficiency and technology anxiety on confirmation, efficiency, confirmation, and technology anxiety, on satisfaction, and then efficiency, satisfaction, and technology anxiety on continuance. These formed the basis for the hypotheses. A pilot study was conducted utilizing crowdsourcing in order to validate the survey instrument. Crowdsourcing has been found to provide access to a more diverse respondent pool than those typically associated with other sampling techniques (Behrend, Sharek, Meade, & Wiebe, 2011; Kittur, Chi, & Suh, 2008). The survey was made available on Amazon's Mechanical Turk platform as a human intelligence task (HIT). Respondents residing in the United States were invited to participate in the study. A sample of 104 responses from 35 states in the United States were collected. An a priori power analysis assuming a medium effect size, error probability ( $\alpha$ ) of 0.05, and power of 0.80 (1- $\beta$ ) indicates that a minimum sample size of 84 is needed (Cohen, 1988). Therefore, the sample size of 104 is sufficient for this pilot study. The survey instrument was development by adapting scales from previously validated

studies. All non-demographic items on the questionnaire were rated using a five-point Likert scale ranging from 1 =Strongly Disagree to 5 = Strongly Agree. Some questions were modified in order to better correspond to the context of the current study.

Percent

Frequency



### **Figure 1: Proposed Model** Source: Authors

Table 2 Demographics of the Sample

### **Demographics**

Demographic variable	Category
Gender	Male
	Female
1 00	>21

Gender	Male	40	38.5
	Female	64	61.5
Age	>21	2	2.0
	21-30	38	37.3
	31-40	24	23.5
	41-50	20	19.6
	51-60	12	11.8
	>60	6	5.9
Ethnicity	American Indian/Alaskan Native	0	0
	Asian	16	15.4
	Black/African American	3	2.9
	Hispanic	4	3.8
	Native Hawaiian/Pacific Islander	1	1.0
	White	76	73.1
	Other	4	3.8

Table 3. Factor Loading, Reliability, and Correlation Matrix

Scale	Std.	Cronbac	AVE	Composite	CONF	CONT	FFF	SAT	TANX
Item	Loading	h Alpha	AVE	Reliability	cont	CONT	LIT	SAI	IANA
CONF1	0.94								
CONF2	0.95								
CONF3	0.93	0.97	0.88	0.97	0.94				
CONF4	0.96								
CONF5	0.92								
CONT1	0.96								
CONT2	0.96	0.07	0.02	0.00	0.00	0.06			
CONT3	0.95	0.97	0.92	0.56	0.80	0.90			
CONT4	0.95								
EFF1	0.93								
EFF2	0.93								
EFF3	0.85	0.94	0.81	0.96	0.76	0.78	0.90		
EFF4	0.89								
EFF5	0.91								
SAT1	0.89								
SAT2	0.78								
SAT3	0.84	0.96	0.86	0.97	0.90	0.84	0.79	0.93	
SAT4	0.85								
SAT5	0.89								
TANX1	0.88								
TANX2	0.91								
TANX3	0.93	0.95	0.83	0.96	-0.30	-0.40	-0.30	-0.35	0.91
TANX4	0.93								
TANX5	0.90								

### **Data Analysis**

Data were analyzed using SPSS and SmartPLS (Ringle, Wende, & Will, 2005). We first look at the sample demographics. Next, data were analyzed utilizing a twostep process. In the first step, the measurement model is evaluated to determine the reliability and validity of the constructs. Next, the structural model is evaluated to determine the predictive relevance of the model, the magnitude of effects. and the variance explained (Anderson & Gerbing, 1988; Hair, Black, Babin, & Anderson, 2009; Henseler, Ringle, & Sinkovics, 2009).

In our pilot study sample, interestingly, our sample was somewhat skewed toward female respondents with 61.5 percent of the sample being female and 38.5 percent being male. A summary of the participant demographics showed that there was a disproportionate number of Whites, 73.1 percent, in the sample. All age groups were represented, and 80.4 percent of the respondents fell between the ages of 21 and 50. Table 2 provides the total demographics for the study.

### **Measurement Model**

Table 3 shows factor loadings, Cronbach alphas, average variance explained (AVE), and factor correlations. All factor loadings are greater than 0.78, which exceeds the 0.70 threshold and indicates good discriminant validity (Henseler, Ringle, & Sinkovics, 2009). In addition, since the square root of AVE (shown on the diagonal of the factor correlations in Table 3) for each latent variable is greater than the correlation of that variable with other latent variables the Fornell-Larcker criterion is satisfied (Fornell & Larcker, 1981). Cronbach alphas are all greater than 0.94, which indicates satisfactory internal reliability. Composite reliability values are all larger than 0.96, which indicates satisfactory internal consistency. In addition, all values for average variance explained (AVE) are greater than 0.81 which indicates good convergent validity (Henseler, Ringle, & Sinkovics, 2009).

### **Structural Assessment**

Figure 2 shows the structural model with path coefficients, significance levels of paths, and  $R^2$  values. All paths are significant and the proposed model explains 75 percent of the variance associated with continuance intention.



### Figure 2. Structural Model

Source: The Authors

### **Hypothesis Summary**

As a result of the analysis the eight hypotheses were found to be supported (Table 4).

### Table 4. Hypothesis Summary

	Hypothesis	Path Coefficient	P-value	
H1	Satisfaction positively impacts Continuance Intention	Supported	0.58	0.00
H2	Confirmation positively impacts Satisfaction	Supported	0.80	0.00
H3	Confirmation positively impacts Efficiency	Supported	0.32	0.00
H4	Confirmation negatively impacts Technology Anxiety	Supported	0.20	< 0.01
H5	Efficiency positively impacts Satisfaction	Supported	0.15	< 0.05
H6	Efficiency positively impacts Continuance Intention	Supported	0.30	< 0.05
H7	Technology Anxiety negatively impacts Continuance	Supported	-0.10	< 0.05
	Intention			
H8	Technology Anxiety negatively impacts Satisfaction	Supported	-0.07	0.00

### Discussion

This study, using Bhattacherjee's (2001) IS continuance model as the theoretical foundation, explored the impact of technology anxiety and efficiency on satisfaction and continuance intention. In addition, the impact of satisfaction on continuance intention was explored. The study also considered how self-checkout met consumer expectations by considering the impact of confirmation on both efficiency and technology anxiety. Satisfaction was found to have a strong positive impact (0.58) on continuance intention. Also, efficiency was found to have a positive impact on both satisfaction (0.15) and continuance intention (0.30). Interestingly, technology anxiety was found to have a negative impact on both satisfaction (-0.07) and continuance intention (-0.10). Confirmation, which was used to determine the degree to which the technology met the consumers expectations, was found to have a positive impact on both efficiency (0.76) and satisfaction (0.15), but was found to have a negative impact on technology anxiety (-0.3). Amorim, Lago, Moscoso and Prieto (2016) conducted a study in a large retail supermarket in Southern Europe,

which provided both traditional check-out and self-checkout. Customers were surveyed after they completed their transactions, and one aspect of the survey related to efficiency (speed of scanning, speed of payments). Process efficiency has a significant positive effect on overall satisfaction in the self-checkout lane. Additionally, satisfaction has a significant effect on intention to reuse (Amorim et al., 2016). These findings are consistent with the current study. Furthermore, public SSTs may cause even more technology anxiety than private ones (Gelbrich & Sattler, 2014). Hence, this study suggests that both technology anxiety and process efficiency significantly affect both satisfaction and intention to continue to use self-checkout. These factors must be considered and addressed when companies opt to offer self-checkout lanes. Another issue becomes continued use. Self-checkout lanes are not intended to be used only once, and for customers to continue using them, they must perceive the process to be efficient as well as having technology anxiety minimized.

#### Implications

This study makes significant contributions to both theory and practice. First, the study shows how Bhattacherjee's (2001) IS continuance model can be an effective tool for exploring factors impacting consumer intention to continue using new technologies. The study also highlights the importance of efficiency on the consumer's using self-checkout technology. From this study, it appears that efficiency is a strong positive factor impacting both the consumer's satisfaction and their intention to continue using the technology. Moreover, the systems seem to be meeting consumer expectations with regards to efficiency. However, the study shows that even in an environment where individuals are surrounded by technology anxiety negatively affects both satisfaction with self-checkout systems and continuance intention. Moreover, the study also suggests that self-checkout technology causes greater anxiety than what was initially expected by the consumer.

### **Managerial Impact**

Managers must be concerned with all aspects of a business, from the day-to-day operations to the long-term vision for the organization. They must stay up-to-date with emerging technologies and be able to attend to implementation and continued use. In the case of self-checkout, managers must be cognizant of what make their customers use the self-checkout and what factors may contribute to their lack of intent or continuance. They must understand how efficiency and technology anxiety affect their customers and how to best make use of this technology that can be beneficial to both the company and the consumer. The results of this pilot study indicate that customers want the self-checkout process to be efficient, so managers must discover the best ways to make them efficient so that a positive customer perception prevails. Additionally, managers must find ways to minimize technology anxiety that some customers might exhibit that keeps them from using self-checkout. They should find a way that offers assistance when needed but also allows for an efficient process. There are other factors that can contribute to a customer's intent to use or continued use of self-checkout, and this study aims to investigate other factors such as privacy concerns, usefulness, and social norms. Many factors that affect the use of self-checkout lanes.

As with any technology, there is a cost factor involved, and organizations want to get an acceptable return on investment from their use of self-checkout. Not only is self-checkout intended to make an organization more efficient and productive, but the shopping experience should be enhanced for the customer as well. Neither of these goals will be accomplished if management cannot find ways to bring customers to self-checkout. As self-checkout lanes become more widespread, organizations must determine ways to get customers to comfortably use them. Other factors that might be considered could include concerns about privacy, social norms, resentment, and social avoidance. It is important to explore the various factors that contribute to the continuance or non-continuance of using self-checkout lanes so that issues contributing to avoidance can be addressed. Managers must also be concerned with creating value for their customers. With self-service technologies such as self-checkout, managers have an environment of value co-creation with their customers. As part of this co-creation, the customers now become an integral part of the business process and their purchasing behaviors are no longer just a matter of buy or don't buy. Their mode of chosen service delivery affects the overall productivity and efficiency of the operations of the company, which is always a concern for managers at all levels of an organization. As self-checkout will inevitably become more commonplace, managers want to ensure that their investments brings both efficiency and value to customers and the organization alike.

### Limitations

As stated earlier, the purpose of this pilot study was to validate some assumptions by the researchers, validate the instrument being used, and confirm that the IS continuance model would provide the needed theoretical foundation to study self-checkout services. The pilot study did serve its intended purpose, however some issues discovered do need to be addressed prior to the full study. The primary issue with the pilot study had to do with sample size. Given the number of constructs and indicators in the model, ideally the sample should consist of between 200 and 300 responses (Hair, Black, Babin, & Anderson, 2010). It is the hope that by increasing the sample size and making some minor modifications to the survey instrument, some of the issues in the analysis may be reduced. For example, once the final sample has been established, it should increase the diversity of the sample. While there is a fairly equal distribution of age within the middle ranges, the final sample should contain a more equal distribution amongst gender and ethnicity. An extension of the data with a larger sample size will allow for more generalizability and insights. The study could also be replicated to explore other types of SSTs.

### References

- Akaka, M.A., & Vargo, S.L. (2014). Technology as an operant resource in service (eco) systems. Information Systems and E-Business Management, 12, 367-384.
- Amato-McCoy, D.M. (2008). A new tipping point. Chain Store Age, 34-46.
- Amorim, M., Lago, A., Moscoso, P., & Prieto, E. (2016). Assisted vs. self-checkout in retail: An empirical analysis of the impact of operational process dimensions on customer satisfaction, recommendation, and reuse. Journal of Service Science Research, 8, 1-39.
- Anand, A. (2011). Welcome valued customer . . . to more self-checkouts. Retrieved Mar 26, 2019, from NBC News: http://www.nbcnews.com/id/43729757/ns/business-retail/t/welcome-valued-customer-more-selfcheckouts/#.XJqSFfZFvUk
- Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bulletin, 103(3), 411–423.
- Arthur, W.B. (2009). The nature of technology: What it is and how it evolves. New York: Free Press.
- Behrend, T.S., Sharek, D.J., Meade, A.W., & Wiebe, E.N. (2011). The viability of crowdsourcing for survey research. Behavior Research Methods, 43(3), 800–813.
- Belle, R. (2019). PCC grocery stores to remove all self-checkout kiosks. Retrieved Mar 26, 2019, from KIRO7.com: https://www.kiro7.com/news/local/pcc-grocery-stores-to-remove-all-self-checkout-kiosks/911600132
- Bhattacherjee, A. (2001). Understanding information systems continuance: an Expectation-Confirmation model. MIS Quarterly, 25(3), 351–370.
- Castro, D. Atkinson, R., & Ezell, S. (2010). Embracing the self-service economy. The Information Technology & Innovation Foundation. Retrieved Mar 26, 2019, from http://www.itif.org/files/2010-self-service-economy.pdf
- Chicksand, D., & Rehme, J. (2018). Total value in business relationships: Exploring the link between power and value appreciation. Journal of Business & Industrial Marketing, 33(2), 174-182.
- Christopher, M. (2005). Logistics and supply change management, creating value-adding networks. Financial Times/Prentice Hall.
- Cohen, J. (1988). Statistical power analysis for the behavioral sciences, Mahwah, NJ: Lawrence Erlbaum Associates.
- Curran, J.M., & Meuter, M.L. (2005). Self-service technology adoption: Comparing three technologies. The Journal of Services Marketing, 19(2), 103-113.
- Darrow, B. (2015). Yay! Human cashiers prevail over automation at some CVS stores. Retrieved Mar 26, 2019, from Fortune.com: http://fortune.com/2015/10/20/cvs-self-check-out-stations/
- Demoulin, N.T.M., & Djelassi, S. (2016). An integrated model of self-service technology (SST) usage in a retail context. International Journal of Retail and Distribution Management, 44(5), 540-559.
- Dong, B., & Sivakumar, K. (2015). A process-output classification for customer participation in services. Journal of Service Management, 26(5), 726-750.
- Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39–50.
- Gelbrich, K., & Sattler, B. (2014). Anxiety, crowding, and time pressure in public self-service technology acceptance. Journal of Services Marketing, 28(1), 82-94.
- Hair, J., Black, W., Babin, B., & Anderson, R. (2010). Multivariate meta analysis. Upper Saddle, NJ.: Prentice Hall.

Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2009). Multivariate data analysis. NJ: Prentice Hall.

- Harris, S. (2019). Why some stores have pulled their self-checkout machines. Retrieved from CBC News: https://www.cbc.ca/news/business/canadian-tire-self-checkout-cashiers-automation-1.5011981
- Henseler, J., Ringle, C.M., & Sinkovics, R.R. (2009). The use of partial lease squares path modeling in international marketing. Advances in International Marketing, 20, 277–319.
- Ida, E. (2017). The role of customers' involvement in value co-creation behavior is value co-creation the source of competitive advantage? Journal of Competitiveness, 9(3), 51-66.
- Iqbal, M.S. Hassan, M.U., & Habibah, U. (2018). Impact of self-service technology (SST) service quality on customer loyalty and behavioral intention: The mediating role of customer satisfaction. Cogent Business and Management, 5, 1-23.
- Kittur, A., Chi, E.H., & Suh, B. (2008). Crowdsourcing user studies with Mechanical Turk. Proceedings of the 2008 SIGCHI Conference on Human Factors in Computing Systems, 453–456.
- Lusch, R.F., & Nambison, S. (2015). Service innovation: A service-dominant logic perspective. MIS Quarterly, 39(1), 155-175.
- McKinsey & Company (2014). Making stores matter in a multichannel world. McKinsey Quarterly, Dec, 1-11.
- McLaughlin, K. (2016). Safeway removes self-checkout from Century Drive store. Retrieved from BendBulletin.com: https://www.bendbulletin.com/business/4780047-151/safeway-removes-self-checkout-fromcentury-drive-store [Accessed on Nov 3, 2016]
- Meuter, M.L., Ostrom, A.L., Roundtreee, R.I., & Bitner, M.J. (2000). Self-service technologies: Understanding customer satisfaction with technology-based service encounters. Journal of Marketing, 64(3), 50-64.
- Oliver, R.L. (1993). Cognitive, affective, and attribute bases of the satisfaction response. Journal of Consumer Research, 20, 418-430.
- Pantano, E., & Viassone M. (2014). Demand pull and technology push perspective in technology-based innovations for the points of sale: The retailers' evaluation. Journal of Retailing and Consumer Services, 21, 43–47.
- Parthasarathy, M., & Bhattacherjee, A. (1998). Understanding post-adoption behavior in the context of online services, Information Systems Research, 9(4), 362-379.
- Ribiero, A.H.P., Monteiro, P.R.R., & Luttembarck, L. (2018). The use of "job be done" methodology to identify value co-creation opportunities in the context of the service dominant logic, Brazilian Business Review, 33-45.
- Ringle, C.M., Wende, S., & Will, A. (2005). SmartPLS 2.0 (beta).
- RIS Research. (2015). Store systems study: Making stores matter. http://risnews.edgl.com/retail-research/ 2015-RIS/IHL-Store-Systems-Study--Making-Stores-Matter97362.
- Ryan, R., & Deci, E., (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. Contemporary Educational Psychology, 25, 54–67.
- Sampson, S.E., & Froehle, C. (2006). Foundations and implications of a proposed unified services theory. Production and Operations Management, 15(2), 329-343.
- Seth, N., Deshmukh, S.G., & Vrat, P. (2005). Service quality models: A review. International Journal of Quality & Reliability Management, 22(9), 913-949.
- Simpson, P.M., Siguaw, J.A., & Baker, T.L. (2001). A model of value creation: Supplier behavior and their impact on reseller-perceived value, Industrial Marketing Management, 30(2), 119-134.
- Smedlund, A. (2012). Value creation in service platform business models. Service Science, 4(1), 79-88.
- Vargo, S.L., & Lusch, R.F. (2004). Evolving to a new dominant logic for marketing. Journal of Marketing, 68, 1-17.
- Winterman, D. (2009). The problem with self-service checkouts -- BBC News. [Accessed March 25, 2019 from http://news.bbc.co.uk/2/hi/8399963.stm]
- Zacharia, Z., Nix, N., & Lusch, R. (2011). Capabilities that enhance outcomes of episodic supply chain collaboration. Journal of Operations Management, 29, 591-603.

## THE INDUSTRY ARCHITECTURE: A VALUE CREATION AND VALUE APPROPRIATION MODEL FOR INDUSTRIES IN EMERGING MARKET Nicholaus Tutuba, Mzumbe University, Tanzania Jasinta Msamula, Mzumbe University, Tanzania Hawa Tundui, Mzumbe University, Tanzania

How does industry architecture drive value creation and value appropriation in the reliant industry? This qualitative exploratory study intends to analyze the industrial architecture through the business model canvas of existing firms in the beekeeping industry in Tanzania. The study uses a business model theory: an architecture of the value creation, delivery, and capture mechanisms. By using the interpretative data analysis approach, we analyzed the value chain of existing firms in the beekeeping industry focusing on the division of work (i.e. who does what), and value appropriation (i.e. who gets what.) In conclusion, for beekeeping industry architecture to create and capture value requires a collaborative construction of the business model by industry actors with different assets (even if they are generic) and competencies. The study contributes to the theoretical and empirical literature on industry architecture and the business model by positing that firms' ability to successfully create and capture value depends not only on non-generic assets but also on generic assets, capabilities and industry architecture.

### Introduction

Tanzania is among the countries in the world with the highest potential for production of bee products: it is the second largest honey producer in Africa, after Ethiopia, and tenth in the world (Guyo & Solomon, 2015; Nyatsande et al., 2014). But, this potential has not fully been utilized: productivity is still low and beekeeping markets are still under-served (Tutuba & Vanhaverbeke, 2018). The beekeeping industry is poorly organized, functions through disorganized channels, with uncoordinated actors: beekeepers remain local and relatively poor. Commercialization practices are still inefficient, weak, and disorganized (International Trade Centre [ITC], 2015). Consequently, the reconstruction of the beekeeping industry in Tanzania is inevitable: changing the architecture of the existing beekeeping industry structure so that captured value can efficiently be shared among value system actors. This study analyses how industry architecture co-create value and share value in the beekeeping industry in Tanzania? Answering this question is very important as it contributes to the reconstruction of the beekeeping business model in Tanzania. Furthermore, industry actors can decide about resources, networks, and positions to take in the value chain towards value creation and value capture. Similarly, the lives of rural beekeepers and other actors in the beekeeping industry will improve because the value of the pie will increase rather than increase the share value of individual firms in the value chain. The study is structured as follows. Following this introduction, we outline the industry architecture and business model concepts. Next, we briefly describe the approach and methods of the study. Thereafter, we describe the business model canvas of existing firms as to how they create value and appropriate value. The following section offers our interpretation of the evidence. We conclude by indicating the limitations of our study and point to directions for future research.

### **Industrial Architecture**

Complementary to the research on business model innovation, a new strand of work centered on the notion of 'industry architecture' (Jacobides, 2006) has emerged. Industry architecture defines the ways in which roles (labor) and profits (surplus) are distributed among firms in a value [creation] system. It defines the strategic constructs through which firms can co-create value to customers and capture value for participating firms in the particular construct (Liem & Aron, 2010; Jacobides, Knudsen, & Augier, 2006). Industry architecture defines both the division of labor between firms and the division of surplus in industries (Tee & Gawer, 2009). Therefore, industry architecture provides two models: firstly, a model showing the division of labor, *i.e. who does what*. Secondly, a model showing the division of revenue, *i.e. who gets what*. In an industry architecture, labor/work is divided among different firms that are linked together to make sure that the product [value proposition] reach the target market [customer]. Also, the surplus or profit is shared [appropriated] among those firms which participated in creating value to customers. Conversely, observation of today's complex business environment shows that value appropriation is not uneven: different (types of) actors compete to capture more value by fighting each other within the value system. They try to make their slice of the pie bigger by making someone else's slice smaller (Collins, Dent, & Bonney, 2015; Vanhaverbeke & Cloodt, 2006). For example, in a beekeeping industry, honey traders try to

increase their slice by reducing the value pie of the beekeepers. This has caused the beekeeping value system behavior to become opportunistic and play the market: customers (honey traders) switch suppliers (beekeepers) if they can get what they need elsewhere at a cheaper price. Also, suppliers let down customers if they get a better offer from someone else 'i.e. honey side selling' (Tutuba, Msamula, & Tundui, 2019). Correspondingly, business relations among industry actors are of short-term; i.e. transaction-by-transaction business model. This kind of business relationship limits the opportunity for collaboration and sharing of resources among industry actors as there is neither trust nor commitment among them. So, sustainable commercialization of the beekeeping industry in Tanzania becomes a challenge.

In contrast, management scholars (Vanhaverbeke, 2017; Jacobides, 2006) have analyzed the role of different types of architectures in the commercialization of business ideas/opportunities. They focus on how different firms with different resources, technologies and capabilities can be coordinated to efficiently create value to target customers; and cordially share the created value (Chesbrough, Vanhaverbeke, & West, 2006). Hence, firms reconstruct their industry architecture by sharing the same market opportunity and avoiding competition. This means they grow the size of the pie such that everyone's slice grows without taking part in someone else's. This brings challenges to rethink value creation not from a single firm's point of view, but as the outcome of the interconnected partners. Likewise, value capture can no longer be analyzed in terms of the negotiation power of individual firms as too much fighting among the participants for a share of the pie reduces the volume of the pie (Collins et al. 2015; Vanhaverbeke & Cloodt, 2006). Therefore, industries can be better analyzed as an architecture (Jacobides et al, 2006) of interconnected firms that co-create value and capture value for every participating firm in an industry.

However, some firms can capture more value than others (Jacobides et al., 2006). It all depends on the business model of participating firms (Tutuba et al., 2019; Schneider & Spieth, 2013), capabilities/capacities (Teece, 2018) and complementarity and mobility of assets (Tee & Gawer, 2009) or non-generic assets (Jacobides, Cennamo, & Gawer, 2018). But, firms can enjoy this architectural advantage when both factors, complementarity, and mobility, are high (Jacobides et al., 2006). This suggests that value creation depends on the value-creating system itself, within which different actors work together to co-produce value. And this can successfully be done by means of a business model (Jacobides, 2016; Vanhaverbeke, 2017) through which inter-organizational networks linking firms with different assets, capabilities, and competencies together in the response of new market opportunities.

### **Business Model: Value Creation and Value Appropriation Architecture**

Business models have emerged as an important means for commercializing businesses. Business models are argued to provide the architecture for a firm to create and capture value out of an innovative idea (Lindgardt et al., 2009; Chesbrough, 2007, 2010). A business model as a system that is designed and enabled by a local firm in order to meet perceived market needs (Amit & Zott, 2014). It articulates the logic, the data and other evidence that support value creation for the customer, and a viable structure of revenues and costs for the firms delivering that value (Teece, 2010). Basically, the business model should focus on how firms create, delivers, and captures value (Osterwalder & Pigneur, 2010) to a set of customers at a profit (Vanhaverbeke et al., 2012) or with the realization of economic value (Schneider & Spieth, 2013). At its heart, a business model should be built to perform two important functions: revenue/value creation and value capture (Vanhaverbeke, 2017; Chesbrough, 2010). First, it creates net value through a defined series of activities, from raw materials acquisition to disposal of scraps and consumer satisfaction. This is important because companies involved in an ecosystem won't participate if there is no net creation of value. Second, through its business model, each company captures part of the value that is created in the value-system. This is equally important because an unprofitable business is not sustainable. This model, therefore, fits in the industry architecture concept in explaining how labor is divided among firms in the value creation system (*i.e. who does what*).

Despite increasing academic interest, the theoretical understanding of a business model has been contained by the necessity to comprehend new ways of earning money (Schneider & Spieth, 2013). The focus has been on explaining the architecture's ability to work profitably. This raised attempts to refer to the business model as the representation of the architecture of the value creation, delivery, and capture mechanisms (Osterwalder & Pigneur, 2010). Similarly, the literature covering the elements and the process of conducting business model innovation has experienced a strong emphasis. Chesbrough (2010) points out the formulation of a competitive strategy as one of the core functions of a business model, along with governance and structure building elements. However, a business model is conceptually different from an organizational structure, product-market positioning strategy (Amit & Zott, 2014) or a value chain proposition. At a theoretical level, a business model is the designing of the firm's extant activity system or the discovery of fundamentally different architecture in an existing business (Schneider & Spieth, 2013). According to this understanding, despite the overlapping of building blocks, business model architecture is centered on *value proposition*. Therefore, the theoretical considerations of configuring elements of a business model
can become far more concrete as adopted from the business model canvas proposed by Osterwalder and Pigneur (2010). The next section presents the approach and methods used to analyze the industry architecture of the beekeeping industry in the view of the business model canvas.

#### Methods

This qualitative exploratory study was carried out in the rural areas of Tanzania, Mvomero district in particular. The area has beekeeping potential (ITC, 2015; Tutuba et al., 2019; Tutuba & Vanhaverbeke, 2018) and so is ideal for the study. The study population includes primary value chain actors/firms in the existing beekeeping value system. A sample of 19 firms: two suppliers, seven beekeepers, four honey processors, and six honey traders were purposively selected. Using triangulated data collection techniques – personal interview, group discussion, and observation, data were collected until saturation (Saunders et al., 2009; Yin, 2014). Also, data were validated through one validation session. The purpose of the study and data validation session was explained to the groups prior to data collection. Pictures, sound recording, short clips, and note-taking were used to capture information.

Data were transcribed by using a transcription software that included information with the guidance of research questions. Further, we utilized the interpretative data analysis approach (Elliott & Timulak, 2005) to analyze the division of labor and the sharing of profits among primary actors of the beekeeping value chain through their business model. Interpretation technique permits the conversion of data into research results through various stages. Therefore, the categorization of data uses interpretive strategies to analyze how firms in the beekeeping industry architecture create value to the customer and appropriate value for its participants. The next section presents the findings of the study which focused on analyzing the industry architecture of the beekeeping industry in Tanzania through the business model lens.

# Findings

This section presents the results of this study which was focusing on value creation and value appropriation of existing firms in the beekeeping industry using a business model structure. First, the section provides the descriptive features of industrial actors in the beekeeping value chain. Then the business models of the existing firms in the beekeeping industry as per the business model canvas (Osterwalder & Pigneur, 2010). Lastly, the industrial architecture of the beekeeping industry is presented to show how they influence value creation in the sector.

# **Industrial Actors in the Beekeeping Value Chain**

Understanding industry participants is an important element for constructing an effective and efficient business structure. By using the value chain model, we mapped the beekeeping value system and we found three primary actors: beekeepers, beekeeper-processors and honey traders. Answering the question on the division of labor or the activities they perform to bring value to honey consumers: what core activities do they do to create value? We found that production, aggregation, processing, and trading (wholesaling and retailing) are core activities performed in the beekeeping value system. Table 1 below summarizes the potential activities and features available in the beekeeping value system.

After presenting the work structure and characteristics of the beekeeping value chain actors, we present in the next section the findings on the elements of the business model canvas for existing actors in the beekeeping industry.

# Table 1. Characteristics of Firms in the Beekeeping Value Chain in Tanzania

Characteristics	Existing beekeeping value chain actors				
	Beekeepers	Beekeeper-processors	Honey traders		
Activities:	Honey production, processing (semi-refining), storage, and	Honey production, aggregation, processing,	Aggregation, processing (refining), packaging,		
	trading.	packaging, storage, and trading.	storage, and trading.		
Products:	Combed and semi-refined honey.	Refined honey.	Refined honey.		
Brand:	No brands, in most cases, honey is packed in recycled containers.	They have brands.	They have strong brands.		
Sales:	Volume-based: measured in liters.	Weight-based: measured in Kilograms.	Weight-based: measured in Kilograms.		
Market:	Rural markets.	Rural and urban markets.	Urban markets.		
Customer:	Households, local brewers, traditional healers, and honey	Households, hotels, restaurants, and honey	Households, hotels, and restaurants.		

# Elements of the Existing Business Models

This part presents the findings on the business model elements of the existing primary actors in the beekeeping industry architecture as illustrated by Osterwalder and Pigneur (2010).

#### **Customer Segments**

We found that households, traditional healers, local brewers, and honey traders are potential

Source: Own research, 2019

customers for beekeepers. Beekeeper-processors sell to households (mostly in urban markets and rarely in rural markets), hotels and restaurants, and honey traders. Honey traders serve the mass urban market. We also found that beekeepers serve the segmented rural market by using the honey processing per order approach, which allows the customization of honey products. Beekeeper-processors and honey traders serve the mass market by using the make-to-stock production approach, which permits the availability of ready-made products to customers.

# Value Proposition

We found that performance, brand, price and accessibility value is the value that is delivered to customers. The performance value delivered is the promise to provide the nutritional, medicinal and health benefits to customers. The customer's need they satisfy is the honey which has nutritional and health benefits. However, beekeepers are not offering brand (to both markets) and accessibility value to the urban market.

#### Channels

Regarding the distribution channel, direct own channels are mostly used by all firms in the beekeeping architecture. Also, most customers prefer direct channels. We found a few honey traders using indirect channel: retail shops and supermarket. Regarding the communication, we found that most value chain actors use on-road displays (beekeepers), customers' word of mouth and social media, mostly Instagram and Whatsapp.

#### **Customer Relationships**

Despite that there are no formal records of the served customers, social relations were found to be the most established customer relations in the beekeeping industry. In a few cases, self-service and personalized relationships were also observed.

#### **Revenue Streams**

Customers are willing to pay for quality honey and honey coming from well-known sources. We observed that the price of honey depends on packaging and brand image such that, proper packaging – nice containers, labeling, and sealing – commands more value from customers. With regard to the payment preferences, all industry actors prefer to be paid cash on delivery. However, in the urban market, both cash and credit sales are practiced. The payments are done through mobile finances commonly known as *M-Pesa*. Regarding pricing, both fixed and negotiated pricing model is used depending on the location, season, honey form, and packaging. In rural areas, the pricing mechanism is volume dependent (20 liters bucket) while in urban markets is weight dependent – ranging from 0.2 to 1kg. In Kigoma, for example, we found that a 20 liters bucket of combed honey is sold at Tshs 70,000 and semi-refined honey at Tshs 120,000. In Mafinga, combed honey is sold at Tshs 40,000 and the semi-refined costs Tshs 80,000 for a 20 liters bucket. In Morogoro, we found no beekeepers selling combed honey; semi-refined honey is sold at Tshs 140,000. In the urban market, a kilo of clear honey is sold at the price range of Tshs 10,000 – 15,000.

# **Key Resources**

All firms in the beekeeping value chain require different types of physical, financial and human resources. Production, processing, packaging, and storage materials are key physical resources required to work in a professional way. Apiary management, harvesting, and processing skills are human resources skills necessary to professionalize the sector. Beekeeping is a knowledge-intensive industry and upgrading these skills is crucial to professionalize beekeeping in Tanzania and, consequently, produce more and better honey and increase value creation in that way. Moreover, financial resources were found to be important for all firms in the beekeeping value system.

# **Key Activities**

For beekeepers, the most important activities are apiary managing and harvesting. For processors: production, aggregation, processing, packaging, storage, and selling. Honey traders: aggregation, honey blending, packaging, storage, and selling.

# **Key Partnerships**

There is no partnership among firms in the beekeeping industry in Tanzania. There are only transactional-bytransaction business relations that are short term and not sustainable.

# **Cost Structure**

Beekeeping tools and equipment are the most expensive resources to beekeepers while a processing house and machines are the most expensive resources to traders and beekeeper-traders. Moreover, production is the most expensive activity to beekeepers while packaging and selling are the most expensive activities for traders. The variable costs incurred by such beekeepers include bee suit hiring charges and labor charges for harvesting purposes. On the other hand, only a few beekeeper-traders have invested in processing rooms and machines. Their variable costs are related to packaging materials, transport, and labor charges for those working in the processing house. The next section presents the discussion of the findings.

#### Discussion

In this study, we analyze the beekeeping industry architecture through the existing business models perspectives of the different value chain actors in the beekeeping industry focusing on the value creation activities i.e. who does what, and value appropriation i.e. who gets what. The study postulated that beekeeping architecture is ruled by three types of participants: the beekeepers, beekeeper-processors, and honey traders. Beekeepers create value by managing bee colonies and hygienic handling of honey during harvesting, processing, and storage. However, the use of local hives and limited knowledge and skills in apiary management limits their ability to create more value. For example, local hives and commercial hives produce an average of 5kgs and 10kgs of refined honey per harvest respectively. This shows that commercial hives create more value than local hives. Similarly, if hives are not properly managed, absconding rate increases, occupancy rate decreases and hence productivity decreases. For example, if a beekeeper have 100 hives, and the occupancy rate is 60 percent (60 hives), the amount of honey which can be harvested is 600kgs, assuming a hive can produce 10kgs per harvest (60 hives  $\times$  10kgs per hive = 600kgs). If an occupancy rate can be increased to 80 percent (80 hives), this particular beekeeper can harvest up to 800kgs (an increase of 200kgs) of clear honey. This shows that beekeepers who can manage well their apiaries by decreasing absconding rate and increasing occupancy rate create more value than beekeepers who do not. But most beekeepers have failed to create this value because they have limited financial resources to buy commercial hives. Also, they have limited knowledge of colony management activities; they mostly depend on inherited beekeeping knowledge and skills. This limits their ability to improve the occupancy rate and minimize absconding rate, and hence limiting them to create and capture more value. Furthermore, honey is at its best as when it is in combs. More handling increases the risk of contamination: the less it is contaminated, the better the honey remains. If beekeepers cannot manage well their bee colonies, no good honey can be obtained. Similarly, if harvesting and comb handling are not proper and hygienic, then the quality and hence the value of honey will be compromised. Therefore, apiary management is the first important step in value creation in the beekeeping industry i.e. getting quality honey, requires proper and hygienic management of bee colonies.

Furthermore, beekeeper-processors create value through honey production, aggregation, processing, blending and packaging activities. Despite the production activity, beekeeper-processors have a decent and well-established honey processing facility; processing room, processing machines, packaging, labeling and selling point. They process honey in a hygienic environment, package in standard labeled containers, and sell at a retail shop. Honey is a food product, and most customers want to consume decent products. Therefore, having a nice processing facility add more value to the products. Another important value creation element to this segment is the aggregation of honey. The value in the beekeeping industry can be captured if a substantial quantity of honey is collected. But aggregation cannot be reached if industry actors are not collaborating. Working together removes the competition of reducing the pie share of competing firms and increase the pie as a whole for all actors in the value chain. Moreover, most beekeeper-traders have employed skilled people in both production and processing activities. This reduces post-harvest losses and improves productivity, product quality, and ensures hygiene.

Honey traders create value through aggregation, processing, packaging, and channel management. This segment does not engage in beekeeping activity in any way. They buy combed, semi-refined, and refined honey from both beekeepers and beekeeper-processors. Then, they add value by aggregating, processing and packaging of clear honey. During processing, most honey traders do honey blending – the process of mixing honey from different sources to get a homogeneous honey batch. This process is important for creating a homogeneous honey product: honey with similar taste, aroma, and appearance. However, honey blending can affect the quality of honey and traceability. Furthermore, honey traders create value by making honey products available to potential customers who previously lacked access to them. Beekeepers and beekeeper-traders are mostly serving the local rural markets which are less profitable. But there are potential individual household customers in cities and other town centers whom cannot be reached without honey traders and middlemen. Therefore, accessibility is an important way that honey traders create value in the beekeeping industry.

In this regard, the beekeeping industry architecture creates value through the following set of activities: honey production – proper apiary management and harvesting; processing – extraction, refining, aggregation, and honey blending; packaging – standard containers, sealing, and labeling; and honey trading – channel management, communication, and selling. We also found that, division of labor can be described as follows: beekeepers do the production – mostly in local ways which affect productivity – and trading in rural market which less profitable; beekeeper-processors do all the activities, however, they have invested/professionalize in production and processing activities, and less professional in channel management. Consequently, honey traders do all the activities except production; however, they have professionalized in channel management.

With regard to value capture i.e. who gets what or sharing of revenue, beekeepers capture value by selling both combed and semi-refined honey to segmented rural customers: households, traditional healers, local brewers, and honey traders. Beekeeper-processors capture value by selling refined and branded honey to both rural and urban customers; honey traders capture value by selling branded honey at both wholesale and retailing price in the urban market. Unit sale in the rural market is volume (liter) based while that of the urban market is weight (kilogram) based, losing some value by selling honey based on volume and not weight.

In the market, one kilo and one liter of refined honey have the same price of Tshs 10,000 and Tshs 6,000 at both retail and wholesale sales respectively. But in reality, one liter of liquid honey has an average weight of 1.3kgs: a 20 liters bucket of refined honey weighs 25kgs. In this case, based on volume, a bucket of refined honey is sold at an average price of Tshs 200,000 (i.e. 10,000×20lts) and Tshs 120,000 (i.e. 6,000×20lts) at retail and wholesale respectively. But based on weight, the same bucket is sold at an average price of Tshs 250,000 and Tshs 150,000 at retail and wholesale respectively. Therefore, beekeepers lose some value, about Tshs 50,000 and Tshs 30,000 in retail and wholesale respectively when they sell honey based on volume instead of weight. Therefore, the beekeeping industrial architecture should use standardized honey containers which pack semi-refined honey based on the weight measures. This will help all actors in the beekeeping industry to capture equal value regardless of the markets they are serving.

Furthermore, a 20lts bucket of combed and semi-refined honey is sold at an average of Tshs. 50,000 and Tshs 150,000 respectively. And on average, three buckets of combed honey can make two buckets of semi-refined honey. So, the average cost of Tshs 150,000 - the cost to buy three buckets of combed honey - can make an average revenue of Tshs 300,000 - the sales of two buckets of semi-refined honey. See more analysis in Table 2 below.

	Value/Cost Item	Value (Tshs)
Bucket of combed honey (	20 liters)	70000
Bucket of clear honey (20	liters)	150000
3 buckets of combed hone	у	$70000 \times 3 = 210000$
2 buckets of clear honey		$150000 \times 2 = 300000$
The value difference betwee	een clear and combed honey	300,000 - 210,000 = 90000
If 1 bucket of clear honey	= 25kgs, then 2 buckets of clear	$10000 \times 50 \text{kgs} = 500000$
honey = 50 kgs		
Selling at 10000 per kilo, t	hen	
	Additional (variable) costs:	110000
Packaging containers	$1,000 \times 50 \text{pcs} = 50000$	
Labels	$500 \times 50 \text{pcs} = 25000$	
Seal	$300 \times 50 \text{pcs} = 15000$	
Average transport	$400 \times 50 \text{pcs} = 20000$	
Total variable cost	110000	
The value captured by trad	lers from combed honey	500000 - 210000 - 110000 = 180000
The value captured by trad	lers from clear honey	500000 - 300000 - 110000 = 90000

Table 2.	Value	Transaction	between	Combed	and Sen	ni-refined	I Honey	in the I	Beekeeping	Value S	System
							•		C	,	•

Source: The authors

This table above shows that industry actors who have invested in assets such that they add value through process and packaging activities, they capture more value – about Tshs 180000 and Tshs 90000 when they process combed and semi-refined honey respectively. In this regard, honey traders capture almost twice the value captured beekeepers because they have not invested in the processing facility. This finding confirms the observation by Jacobides et al, (2006), and Chesbrough et al, (2006) on the ability of some firms to capture more value than others in an industry architecture depending on the complementarity and mobility of assets. In this case, the beekeeping industrial actors

can collaborate so that they can work in more satisfactory value appropriations. For example, beekeepers who are limited to the processing facility can collaborate with honey traders who have the processing facility. Then, beekeepers can take their combed honey to the honey processing area, process it, and sell refined honey to honey traders. In this case, beekeepers will create more value and also capture relatively higher value when they sell refined honey. Similarly, honey processors will capture value from honey processing service; beekeepers will have to pay some processing fees in monetary value or honey value.



Figure 1. The Business Model Canvas of the Beekeeping Industry Architecture in Tanzania

In this regard, value creation and value appropriation are influenced by business models and collective forms of firms participating in the industry architecture. This involves collective decisions among beekeeping industry actors to work together to create value propositions (i.e. co-create value) that meet the expectations of specific consumer segments. As a result, the value of the pie will increase due to an increase in revenue, and consequently the value share of all architecture members. When the benefits are shared across the chain members, suppliers and customers become partners rather than rivals. The business model is shown in Figure 1.

# **Conclusion and Implications**

Value creation and value appropriation within the beekeeping industry are challenged by increasingly dynamic relations between related industry actors. Beekeepers are doing great work, waiting for about six months for a bee colony to make honey, they do all the production activities. But they capture minimum value because they lack some assets for processing and packaging. Also, they cannot reach potential and profitable markets. Therefore, designing an industry architecture that can create value and allows for value capturing improvements for all participating firms requires a purposeful organization of assets, capabilities, and value creating structure. Furthermore, in this study, we also faced some limitations. Since this exploratory qualitative study and was limited to the beekeeping industry in developing areas in Tanzania, we would suggest that our findings may not be generalized to other study or industry settings. Also, the study has a theoretical limitation; it was analyzed by using the business model canvas hence focused on the business model literature that is important but may not be sufficient. But it could have been analyzed along with the dynamic capabilities (Teece, 2007), value chain analysis (Collins et al., 2015), or the relational view (Chesbrough et al., 2006). We suggest these theories be incorporated in future studies.

## References

- Amit. R., & Zott. C. (2014). Business model design: A dynamic capability perspective. The research report, Spanish Ministry of Economy and Competitiveness (Project ref: ECO2012-38131).
- Chesbrough, H. (2010). Business model innovation: Opportunities and barriers. Long Range Planning, 43, 354-363.
- Chesbrough, H., Vanhaverbeke, W., & West, J, (2006). Open innovation: Researching a new paradigm. London: Oxford University Press.
- Chesbrough. H. (2007). Business model innovation: it's not just about technology anymore. Strategy & Leadership, 35(6), 12-17.
- Collins, R.C., Dent, B., & Bonney, L. (2015). A guide to value-chain analysis and development for Overseas Development Assistance projects. Australian Centre for International Agricultural Research. Canberra ACT 2601, Australia.
- Elliott, R., & Timulak, L. (2005), Descriptive and interpretive approaches to qualitative research. A handbook of research methods for clinical and health psychology, 147-159. New York: Osford University Press.
- Guyo, S., & Solomon, L., (2015). Review on beekeeping activities, opportunities, challenges and marketing in Ethiopia. Journal of Harmonized Research in Applied Sciences, 3(4), 201-214.
- International Trade Centre, (2015). Tanzania honey sector synthesis report and development road map. Geneva: Switzerland.
- Jacobides, M.G, Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystem. Strategic Management Journal, 39, 2255-76.
- Jacobides, M.G. (2006), The architecture and design of organizational capabilities. Industrial and Corporate Change, 15(1), 151-171.
- Jacobides, M.G. (2016). In Augier, M. Teece, D.J. (eds.), The Palgrave Encyclopaedia of Strategic Management.
- Jacobides, M.G., Knudsen, T., & Augier, M. (2006). Benefiting from innovation: Value creation, value appropriation and the role of industry architectures. Research Policy, 35, 1200-1221.
- Liem V.N., & Aron, O. (2010). Value creation architecture and engineering: A business model encompassing the firm-customer dyad. European Business Review, 22(5), 496-514.
- Lindgardt, Z., Martin, R., George, S., & Michael, S.D. (2009). Business model innovation: When the game gets tough, change the game. Boston Consulting Group.
- Nyatsande, S., Andrew, C., & Innocent, S. (2014). Beekeeping in Zimbabwe, a Paper presented at the APIEXPO Africa 2014 conference, Harare, Zimbabwe, 6-11, October.
- Osterwalder, A., & Pigneur, Y. (2010). BM generation: A handbook for visionaries, game changers, and challengers. NJ: Wiley
- Saunders, M., Lewis, P., & Thornhill, A., (2009), Research methods for business students, 5e, Harlow: Pearson.
- Schneider, S., & Spieth, P. (2013). Business model innovation: Towards an integrated future research Agenda. International Journal of Innovation Management, 17(1), 1340001 (34 pages).
- Tee, R., & Gawer, A. (2009). Industry architecture as a determinant of successful platform strategies: A case study of the I-mode mobile Internet service, European Management Review, 6, 217-232.
- Teece, D.J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) Enterprise performance. Strategic Management Journal, 28, 1319-1350.
- Teece, D.J. (2010). Business models, business strategy and innovation. Long Range Planning, 43, 172-194.
- Teece, D.J. (2018). Business models and dynamic capabilities. Long Range Planning, 51, 40-49.
- Tutuba, N. B., & Vanhaverbeke, W. (2018). Beekeeping in Tanzania: Why is beekeeping not commercially viable in Mvomero? Afrika Focus, 31(1), 213-239.
- Tutuba, N.B., Msamula, J.S., & Tundui, H.P. (2019). Business model innovation for sustainable beekeeping in Tanzania: A content analysis approach. American Journal of Management, 19(1).
- Vanhaverbeke, W. (2017). Managing open innovation in SMEs. UK: University Printing House
- Vanhaverbeke, W. Ine, V., & Stijn, Z. (2012). Open innovation in SMEs: How can small companies and start-ups benefit from open innovation strategies? Published Research Report. Flanders DC. Belgium.
- Vanhaverbeke, W., & Cloodt, M. (2006). Open innovation in value networks. Chesbrough, H. Vanhaverbeke, W. and West, J. (eds.) Open Innovation: Researching a New Paradigm, Oxford University Press, 258-281.
- Yin, R.K. (2014). Case study research: Design and methods. LA: Sage.

# ESTABLISHMENT, GROWTH AND DECLINE OF FOREIGN SUBSIDIARIES IN THE CARIBBEAN: A QUALITATIVE RESEARCH OF PHARMACEUTICAL INDUSTRY IN PUERTO RICO SINCE 1950 TO 2017

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This exploratory qualitative research has two main purposes: first, documenting the beginning, growth and the process of pharmaceutical subsidiaries departure from Puerto Rico and second, the evaluation of divestiture decisions of the subsidiaries in the context of the evolution that has occurred in the global pharmaceutical industry. This paper is focused on the pharmaceutical industry which is global in nature and engages in M&A activity extensively. The longitudinal ethnographic analysis is divided into two parts: first 165 cases were identified in public data information of subsidiaries established in Puerto Rico since 1950 to 2017 and second, 70 events of partial and final divestiture episodes were identified. Our results show that the divestment activities of a subsidiary cannot be evaluated as an isolated event and it is important to understand the sequences of partial divestitures that the plant may have had before its final liquidation. It is shown that the permanence of a productive cluster requires the arrival of new operations to replace the plants that are closing and if not replaced, a process of reduction of the operations in the country begins.

# Introduction

This exploratory qualitative research has two main purposes: first, documenting the beginning, growth and the process of foreign pharmaceutical plants departure from Puerto Rico and second, the evaluation of disinvestment decisions of foreign manufacturing subsidiaries in the context of the evolution that has occurred in the global pharmaceutical industry. Although foreign subsidiaries investments and divestment decisions carry important economic implications for the industrial strategy of Puerto Rico, there has been a little empirical research on this issue. This research is based on the premise that to be plants disinvestment events, there first had to be the FDI and arrival of those subsidiaries to the country. As Stafford (1991) and Steenhuis and Brujin (2009) indicated, the foreign investment decisions could be followed by divestment decisions several years later. Specifically, Benito (2005) concludes that the majority of studies on the movement of foreign direct investment (FDI) among countries has focused capital attraction to country but a limited research work has been done about outflow process from countries.

A limitation that can be found in prior divestment literature is that most of it focused on independent subsidiaries situations (Song, 2014; Zhou, 2013), in a single country setting (Belderbos & Zou, 2006) and have had a territorial approach, primarily Europe, North America and Asia (Benito, 2005; Bichescu & Raturi, 2015; Moschieri & Mair, 2008; Pattnaik & Lee, 2014; Simões, 2005; Xia & Li, 2013). Previous empirical studies provide a partial explanation of divestiture activities but there is not enough empirical evidence from Caribbean manufacturing subsidiaries viewpoint. The objective of this longitudinal inductive research article is to partly fill the gap through a systematic study of investment and divestment decision process of foreign pharmaceutical subsidiaries in Puerto Rico, since 1950 to 2017. In order to make this study, the qualitative methodology was used to have a detailed description of the start and finish time of pharmaceutical manufacturing operations, as the foreign plants changing owners (partial divestitures), closing or being abandoned (final disposal) as decisions taken by pharmaceutical parent offices. The process of deciding to divest foreign subsidiaries of global manufacturing from the 1950s to the present is something scholars have not yet investigated. As Song (2014) mentioned, understanding the structuring and coordinating foreign subsidiaries, in our case pharmaceutical plants since 1950, is important for International Business (IB) scholars and managers. My research address these issues, looking specifically on studying the time of the operations of the foreign subsidies, and try to delineate how the decisions of divestiture of the foreign manufacturing plants change according to the global industry and the multinational companies evolve over time

The remain of this paper is structured as follows: The next section provides an overview of the international subsidiary investment and divestment decision literature, more specifically about merge, acquisitions and disinvestment activities in pharmaceutical industry and Puerto Rico. The third section presents our longitudinal multiple case study methodology. The fourth section is focused on the presentation of the arrival and establishment of pharmaceutical plants in the past fifty years and then it goes on to explain the events of disinvestment that progressively and in many cases concurrent are occurring in the pharmaceutical industry located in Puerto Rico. The findings, contributions to the theory of international divestment and future avenues are discussed in the final section.

# **Literature Review**

There is no single definition of divestiture. From an international business perspective, divestment is defined as the process of reducing the activities of an enterprises multinationals outside their country of origin, since the suspension of operations under a subsidiary abroad until the complete abandonment of all activities in a region (Benito & Welch, 1997), as the closure, sale or conversion into independent businesses of the subsidiaries or other assets owned by multinational companies (Mata & Portugal, 2002), as any procedure that decrease an MNC's activities outside its home country ranging from a minor suspension at a foreign company to the complete abandonment of all activities in the region (Griffin, 2003), as a reduction of ownership percentage in an active foreign investment on a voluntary or involuntary basis through complete or partial sale, liquidation, expropriation and or expropriation (Ketkar, 2006) and as a cessation of manufacturing by MNCs in an existing affiliates (Belderbos & Zou, 2007). More recently, Moschieri and Mair (2011) defined it as the parent company's disposal and sale of assets, facilities, product lines, subsidiaries, divisions and business units.

Two seminal studies that recognize the impact of previous mergers and acquisitions by Boddewyn (1979) and Duhaime and Schwenk (1985) concluded that divestment decisions frequently follow investment acquisitions that were made without careful pre-investment analysis and like other major strategic decisions involve ambiguity and a lack of structure. In similar spirit, Chastain (1987) indicated that divestiture is often the least costly alternative for fixing previous failures; Hayes-Goddar (1997) pointed out, from 1982 through 1992 divestment activities comprised 43 percent of previous global merger and acquisition transactions. Meyer, Brooks and Goes (1990) and Bergh (1997) clearly shown that divestiture, like mergers and acquisitions, are elements of a dynamic process of adaptation to a changing environment. Meanwhile, Benito and Welch (1997) indicated that merger and acquisitions, such as occurred in the global pharmaceutical industry, with substantial international operations will cause a duplication of process across nation and caused several divestiture activities.

In the context of foreign plants closure, Gerthman (1988) established that the essential in the maintaining the competitive position of the firm if the subsidiary and plant closed are responsible for proportion of the total cost of MNCs. Continuing this emphasis, it was concluded that managers decide to undertake a divestiture only when they fear the threat of an acquisition or are pressured by shareholders. Meanwhile, Capron, Mitchell and Swaminathan (2001), Shimizu, Hitt and Vaidynath (2004), Villalonga and McGahan (2005) and Brauer (2006) established that companies engage in divestitures when their structure, following acquisitions with overlapping businesses, becomes redundant. This is accordance to Tsetekos and Gombola (1992), Mata and Portugal (2000), Baquero and Longobardi (2014) and Kräkel (2014) who concluded that foreign divestiture does not necessarily indicates problems of foreign subsidiary nor in the parent company.

Existing literature depicts that pharmaceutical companies perform plant divesting events are reaction to patent expirations (Kester, 2009; Kesselheim, Murtagh, & Mello, 2011; Mao, 2007), due to pressures from shareholders, from insurance companies, government payers, patient advocacy groups who wish to lower the costs of medication, and from regulatory agencies to make safe and effective drugs widely (Mao, 2014). As Kaitin and DiMasi, (2000) and Schmid and Smith (2002, pointed out with soon-to-expire patents and no new patents in the pipeline, companies merged with or acquired other firms that held patents with greater longevity in order to infuse cash. Kräkel (2014) established that multiple plant firms, such as pharmaceutical companies, typically shut down single plants instead of just reductions of production facilities. Supporting Praet (2013) and Kräkel (2014) arguments, Baquero (2013) demonstrates that HQ pharmaceuticals realize a secret global shutdown contest between subsidiaries around world that requires the local subsidiaries managers to have a capacity to compare and defend their operations against arguments from other subsidiary team members that present their own arguments and analysis. Danzon, Epstein and Nicholson (2007) indicate that the pharmaceutical-biotechnology industry has become increasingly concentrated, in1985 the 10 largest firms accounted for about 20 percent of worldwide sales, whereas in 2002 the 10 largest firms accounted for 48 percent of sales.

During the last two decades in Puerto Rico a small but growing body of literature of research on the affiliate's divestment activities is beginning to develop but there no extensive literature on the pharmaceutical divestment decision process in Puerto Rico (Baquero, 2013; Baquero & Longobardi, 2014; Cordero, 1985; Cayuela, 1985; Cima de Villa, 1991; Castro, 2004; Franco, 1996; Ramcharran, 2011). According to Cordero (1985), the subsidiary plants were mainly from North American headquarters from which to promulgate such guidelines, procedures and corporate policies that applied to manufacturing operations conducted by the plants. In 1996, Franco focused on studying the impact of mergers and acquisitions of pharmaceutical companies during mid-1990s in the operations located in Puerto Rico and found that large pharmaceutical companies acquired small pharmaceuticals to obtain proprietary rights, to expand its participation in new markets, to acquire scare expertise resources like biotechnology and genetic engineering. The findings estimate that in the nineties Puerto Rico has 81 pharmaceutical plants and

about 25 healthcare product manufacturers and identified 21 pharmaceutical subsidiaries whose parent company were involved in a merge and acquisitions events as of December 1995. He pointed out that as result of previous mergers, many plants around the world were operating at 40 percent under capacity and there were competing with other plants to transfer existing products and product location of new owns.

According to Ramcharran (2011), the year 1997 had seventy-nine (79) plants of the Pharmaceutical Industry, a decrease of six (6) compared to the eighty-five in operation in 1996. Among the challenges for the retention of pharmaceutical operations were the Free Trade in North America, trade agreements promulgated by the GATT, the changes to Section 936, the liberalization of access to the economy United States and the development of the initiative of the Caribbean Basin that sought to develop manufacturing platforms in the Caribbean Islands. Also mentioned were the negotiations of the Free Trade Area of the Americas for the integration of all countries of America in a global trade bloc.

# **Qualitative Longitudinal Methodology**

In view of the exploratory character of this study and similar to previous works by Duhaime and Grant (1984), Eisenhardt (1989), Benito (1997) and Moschieri (2011) inductive longitudinal multiple activities over time were conducted. As Vissak (2010) and Mills, Durepos and Wiebe (2010) note, this case study investigates to understand the dynamics of headquarter/subsidiary relationships and divestment phenomena in a real-life environment. The document review includes the collection of information from secondary sources, including archival records from pharmaceutical divestment notifications that have been released publicly by revising published reports, Government documents, analysis reports and acknowledgment of these divestment activities in the local media. As Benito (1997), Duhaime and Grant (1984), Moschieri and Mair (2011) demonstrated, few studies have been conducted on international divestiture due the difficulty in getting data about divestment events.

#### **Longitudinal Research Findings**

Similar to Hassan, Patro, Tuckman & Wang (2007), this paper is focused specifically on the pharmaceutical industry because it is global in nature, engages in M&A activity extensively and my qualitative findings for the industry have broad applicability. This longitudinal ethnographic analysis is divided into two parts to achieve the objectives of the research. In the first stage of this study, I analyzed public data information of all pharmaceutical subsidiaries established in Puerto Rico since 1950 to 2017; 165 cases were identified in Table 1. In order to carry out this qualitative study on the outflow of foreign subsidiaries in the pharmaceutical industry, using the experience of operations in Puerto Rico, it was necessary to start the process by determining the start date of the operations of the plants, the acquisition and disposal of the plants as they passed the years until reaching the stage of final output of the plants of the productive structure of multinational companies. In the second stage, Table 2 entitled 70 events of partial and final divestiture episodes where a pharmaceutical manufacturing plant was involved.

The data analysis reveals the beginning of the operations of the pharmaceutical industry in Puerto Rico was established in 1950 with the start and operations of the Sterling Drug plant in 1950. In Table 1, we can see several patterns of direct investment that are interesting to mention. First, the first pharmaceutical plants that arrived in 1958, including Baxter and Becton remained in operation for almost fifty years and in the case of the Becton Dickinson. The significant increase in arrival and establishment of leader pharmaceutical plants occurred since the mid-1960s as a result of Puerto Rico's economic development strategies based on the attraction of foreign investors from US mainland, who established their plants on the Island and obtained tax exemptions benefits provided by the federal treasury of United States.

By 1960, Chase Chemical, Parke Davis, Baxter Laboratories, Steifel Laboratories, Warner Lambert and Johnson & Johnson, among others, had been established on the Island as are shown in Table 1. In the 1970s, there was a huge influx of foreign direct investment that resulted in the establishment of pharmaceutical plants of the multinationals Eli Lilly, Abbott Chemical, Searle & Co., American Hospital Supply, Merck Sharp & Dome, Up John, Pfizer, Allergan, Squibb Manufacturing, American Cyanamid, Roche, Dupont, AH Robbins Manufacturing, Richardson Merrell, Bristol and SmithKline, among others. The advantages offered by the Island for those decades were primarily related to Puerto Rico being a United States territory with commercial laws, common financial, bank and monetary system, commercial laws and availability of skill labor force at lower salaries.

Table 1 also shows the continues the arrival, in the 1980s, of pharmaceutical plants from European and American companies such as Rho Mu Corporation, Sartorious GMB, Becton Dickinson, Borlar, Janssen Pharmaceutical, CooperVision, Mylan, Stryker, Boston Scientific, St Jude Medical, Ayers Wyerst Pharmaceutical, Pall Bio Medical, A.J. Bart, Smith Kline & French, Rorer and Micropette. According to Cordero (1985), in 1962, there were already 28 pharmaceutical manufacturing operations in Puerto Rico, which increased to 60 operations in

1971, reaching 84 production operations in 1984. For the seventies, manufacturing plants were built for pharmaceutical companies such as Bristol, SmithKline, Squibb Mfg. Searle, Warner Lambert, American Home Products and American Cyanamid that in the eighties were part of large mergers and acquisitions events that led to its integration with other multinational pharmaceutical companies and its name in several cases ceased to exist. In the mid-seventies and throughout the eighties we can see how the industry is strengthened when pharmaceutical companies begin to establish several plants on the island making it in many cases the main center of global production of medicines blockbuster that provided greater profits to the pharmaceutical. For that time the arrival of foreign direct investment from England, French and German pharmaceuticals with the aim of serving the main global market, the United States, is observed.

Year of Entry US Pharmaceutical Companies in Puerto Rico							
1950	1958	1960	1961	1962	1965		
Sterling Drug	Baxter Labs Carolina	Chase Chemical	American Dietaids	Barnes Hinds Pharma	Baxter Labs. Jayuya		
	Becton Juncos	Parke Davis	Western Fehrs Labs	Stiefel Laboratories			
				J&J Hermiférica			
1966	1970	1971	1972	1973	1974		
Eli Lilly	Bristol Alpha Corp	Allergan Pharma.	Carter Wallace	Adria Laboratories	Alcon Laboratories		
Forest Laboratories	Smithkline	American Hospital Sup	Cooper Laboratories	American Homes Prod	American Cyanamid		
1968	Technicon	Reid Provinent Labs.	Merck Sharp & Dohme	ICN Pharmaceuticals	Richardson Merrell		
Abbott Chemicals	Searle and Co. #2	Abbott Pharmaceuticals	Shering Corp PR	Johnson & Johnson	AH Robins Mfg. Co.		
	Carrillo Mer Las	Duin the set for a	Duistal Laboratoria	U. I. I. Manufastan	Denver Chemical		
Endo Laboratories	Squibb Mig. Inc.	Brischem Inc.	Cooper Vision Dharma	Diggen	Huma Dorecel Laboratorica		
Abbott Chemicais	Travenor Labs, Inc.	Bristor Alpha Barce	Cooper vision Pharma	USV Labs Inc -	Dorasof Laboratories		
Eli Lilly & Co. May	Warner Lambert	Bristol Alpha Humacao	Schering Pharma	Revlon	Sein Mendez Labs, Inc.		
	in amor Eamoont	Distorripin	Senering Pharma	Key Pharmaceutical	Som Mendel Editor men		
		Searle and Co. #3	Warner Lambert	PR	Vicks Olay, Inc.		
1975	1976	1977	BD Las Piedras	Laboratorio Stiefel	Pall Corporation		
Block Drug	Morton Norwich	SCM	1978	McNeil Labs. Dorado	•		
Culbro	Schering Antibiotics	PCR de PR Humacao	SK&F Co. #1	1979	1981		
Syntex (FP) Inc	Alleragn America	Lederle Piperacilline	1980	Bilchem Ltd	Ohio Medical Products		
American Dade	- moragii - mioriou	Roche Prod. Inc.	2,000	Difficient Dia	Schering Industries		
Aguada	Cyanamid Agricultural	Manati	Alcon Labs of PR Hum	Bristol de PR	Inc.		
Arbrook Mfg. Corp	Eaton Labs P&G	Travenol Labs Inc.	Lederle Parentals	Boerhinger Manheim	Anaquest Guayama		
	USVPR						
Dupont Pharm	DevelopRevlon		Convidien Ponce	Ortho Pharma Manatí	Bristol Caribbean Inc		
Dupont Pharm Manatí	Abbotts Hospital Inc	1984		Syntex Puerto Rico	Dupont Pharm Manatí 2		
					Schering Industries		
Ex-Lax Inc.	1983	J.L.I. Cayey	1985	1986	Inc.		
Novartis Humacao	McNeil Consumer Co.	Abbott Diagnostics	A.J. Bart Gurabo	Caribbean Micro Part	Schering Biochemical		
1982	Mentholatum Group	Janssen Inc	Ayers Wyeth Pharm.	Rorer PR Inc.	Bard Humacao		
					SmithKline &French		
Janssen Gurabo	Rho Mu Corp.	USVPR Prod.Revlon	Borlar Laboratories	S-P Products Inc.	#2		
BD Disconduction Correct	Santonius CMD	Victor Vapors	Chalasa Laha Cariba	SV&ECo #2	1087		
BD Diagnostico Cayey	Sationus Owib	Zenith Labs Caribe	Cheisea Laus Caribe	3K&I CO. #3	1707		
1989	Smith Kline Beecham	Inc.	Eli Lilly Industries	IPR Pharma Carolina	Mylan Caguas		
Lifescan San German	1993	Borlar Pharmaceutical	Micropette Inc	2004	Galephar Carolina		
Stryker Arroyo	Amgen Juncos	BD San Lorenzo	Pall Bio Medical	Eli Lilly	St. Jude Medical P R		
Sujier mojo	Thigen value of	McNeill Consumer	T un Dio incultur		bu vado modioar rina		
Boston Scientific	1994	Prod	2001	Patheon Carolina	2006		
ProMed Caribe							
Dorado	OMJ San German	CooperVision	Biovail Dorado	Patheon Caguas	Haemonetics Fajardo		
AbbVie	1995	2000	2002	Patheon Manatí	Abraxis BioSicences		
1992	Danhurry Pharma	BASE Manatí	Advance Medical Optics	2005	2007		
_//=	Duncary Finarina	Cardinal Health	opies				
Zimmer Ponce	Baxter San German	Añasco	2003	Abbott Barceloneta	Lifescan Aguadilla		
	AstraZeneca		Classic Industries				
2008	Canovanas	2012	Ponce	Heraeus Noble Light	BD Biosciences Cayey		
St. Jude Arecibo	2010	Fresenius Kabi	2014	2016	Fenwall International		
			Romark				
Heraeus Medical Co.	Blu Pharmaceutical	2013	Laboratories	Pura Cap (China)	Legacy Pharmaceutical		
				Biogen S.A.			
	Cardena Compound	Actavis Fajardo		(Colombia)			

Table 1. Arrival of Pharmaceutical Subsidiaries

My longitudinal documentation allows me to establish that until 1987 the industry had a continuous arrival of manufacturing operations for new plants built or for the continuation of operations in plants that changed their name due to being part of mergers or acquisitions made globally. Supporting the arguments of Heracleus and Murray (2001) that indicated in the pace of industry consolidation, in 1988 the top 10 pharmaceutical companies commanded a 25 percent market share while to 1998 this had risen to almost 40 percent. The most important mergers defined by Danzon, Epstein and Nicholson (2007) including Glaxo-SmithKline's antecedents include Glaxo, Welcome, SmithKline French and Beecham; Aventis is the cross-national consolidation of Hoechst (German), Rhone-Poulenc (French), Rorer, Marion, Merrill, Dow (all US); Pfizer is the combination of Pfizer, Warner-Lambert, and Pharmacia, which included Upjohn led to some hectic consolidation events of manufacturing operations on the island that included an excessive number of plants that in the next few years required their sales, closures and even abandonment by local management not finding buyers for these facilities.

According to results in Table 1, in the nineties the industry had a wave of change due to the arrival of Biotechnology companies such as Amgen, St Jude, Abbot, Becton-Dickinson Biosciences, making the pharmaceutical conglomerate of the Island one of the most advanced and specialized in the world. Thereafter and for the subsequent years the industry began a significant decline in the attraction of new operations, including that in the years 1988, 1990, 1991, 1996, 1997 and 1998 our documentation reveals a total absence of arrival or opening of new production plants. It is important to point out that for those years the global industry and the United States were facing various challenges such as the new regulations of the Federal Government of the United States on generic drugs, the impact of mergers and acquisitions of global pharmaceuticals that led to excess capacity of plants that required the initiation of disinvestment processes that imputed operations globally. Supporting the arguments of Franco (1996) that the attractiveness of pharmaceutical industry deteriorates as US Congress passed in 1984 the Drug Price Competition and the Patent Restoration Act. These new rules gave opportunity to negotiate lower prices, simplified the requirements for FDA approval of generic, greatly reducing the research necessary for entry into some segments. Evidence that it is important the distinction between the reasons for closing a plant and the factors influencing the selection of a specific plant for closure (Kirkham, Richbell, & Watts, 1998)

As Table 1 shows, from 2000 onwards, there is a new wave of pharmaceutical plants of emerging multinational companies that acquired the plants that were going to close after many years to acquire know-how, skill labor force, certified production centers that would allow them to sell their generic products in the major markets, including Biovail (Canada), Blu Pharma (US) and Neopharma (Mexico). Among the companies I can mention Mova Pharmaceutical, the first and only Puerto Rican pharmaceuticals. Finally, although the arrival of new plants has decreased, it has not stopped receiving new direct investments from emerging countries in the pharmaceutical industry such as Mexico, and Israel (Teva), Spain (Romark Labs, 2014), German (Sartorius, 2016) and Colombia (Biogen, 2016). A very important mention that must be made is the arrival of the investment from China Pure Cap Pharmaceutical (2016) with the acquisitions of US Blu Pharma (2010) that was previously the Canadian Biovail Pharma operations and was originally McNeil - J&J operations (1983).

Table 2 shows how the partial disinvestment events increased as a result of the plants that were acquired in Puerto Rico cluster after global merger of pharmaceutical companies. These qualitative data suggest that pharmaceutical mergers and acquisitions had an adverse impact at the Puerto Rico level where the main decisions to sell or close plants came as a result of the global analysis and realignment of production operations to get out of excess production capacity and unwanted business lines for future operations. For example, there were cases such as Baxter that after its merger with American Hospital Supply in 1985, came to have 11 plants in Puerto Rico of which 82% were divested, including several abandoned plants. This also happened with the case of Pfizer that entered into a series of mergers with Warner Lambert in 1987, Pharmacia (UpJohn) and 1995 and Wyeth in 2009. These merges decisions resulted in an increased from two to seven in Puerto Rico. After a shutdown contest five production were part of partial divestments events, being sold to other pharmaceutical companies that produced generic drugs or were looking to expand their productive capacities to serve the United States market. These data support the arguments of Kaitin and DiMasi, (2000), Schmid and Smith (2002), Kirkham, Richbell and Watts (2006), Mao (2007), Baquero and Longobardi (2014), and Kräkel (2014) that foreign divestiture does not necessarily indicate problems of foreign subsidiary nor in the parent company, and in many cases, the plants failed to defend themselves in the global contest against other plants within the production system. Our findings in Table 2 show that, for example, in the last few years' investments were made in Mexico by the acquisition of the Pfizer plant in Caguas, which was previously Pharmacia and which originally came as a Searle plant. This is also the case of the Pfizer plant in Fajardo, which was part of six events of partial disinvestment from Warner Lambert (1985) to Pfizer (2004) to Warner Chillcott (2009) to Actavis (2011) to Allergan (2024) and finally become an operation of the Israeli Teva pharmaceutical in the last few years. Our documentation shows that unfortunately, a final divestment process plants such as Cordis in

San German, LifeScan (J&J) in Cabo Rojo, Eli Lilly in Mayaguez and Carolina are vacant, closed, available for sale or rent, deteriorated and almost abandoned because it was not acquired by other arrival companies. This shows that the substitution process has already begun to run out.

US Pharmaceutical Companies Divestment Events in Puerto Rico						
1992	1997	2000	2004	2005		
Baxter Toa Alta	Dade Aguada	Abbott Oximetrics	Pfizer Warner Chillcott	Fenwall San German		
				Eli Lilly Mayaguez (40		
1995	Fenwall Aguada	Bentley (Baxter)	Mova Caguas	yrs)		
Boots Pharma						
Jayuya	1998	Edwards (Baxter)	Mova Carolina	Jostra Bentley		
Bilchem Ponce	Abbott Barceloneta	Fenwall (Baxter)	Mova Manatí	Pfizer Cruce Arecibo		
Dupont Manatí	Baxter Carolina	2001	2006	Lifescan Cabo Rojo		
Roche Manatí	Baxter Culebra	McNeill Vega Baja	Cardinal Health Hu	IPR Pharmaceutical		
1996	Eli Lilly Carolina	Allergan Hormig	Teva Pharma Cidra	2007		
SKB Guayama	Chiron Canovana	WestPharma Canova	Schering Plough Ma	BMS Barceloneta		
	MarionHoescht					
	Man	WestPharma VegaBa	Pall Corporation	Watson Humacao		
2008	Roche Manatí	2012	2015	Ivax Caguas		
BMS Mayaguez	1999	Legacy Pharma Humacao	Essilor	Cardinal Health		
Pfizer Barceloneta	Hoescht Marion	Cordis LLC San German	Abbott Diagnostics B	Mova InterAmerica		
	J&J Medical					
Glaxo SMK Cidra	Gurabo	2013	Merck (Merial Sanofi)	BBraun Of PR		
Biovail Dorado	2010	Warner Chillcott Faja	2016	Abbott Barceloneta		
Biovail Carolina	Heraeus NobleLight	Pharmacia (Searle)	Pura Cap (China)	P&G Cayey		
	2014	2017	Eli Lilly Guayama	Ivax Pharm (Teva)		
	Merck(Avara					
	Pharm)	Pfizer (Avara Pharm)	LifeScan Aguadilla			

# **Theoretical Implications**

Based on this comparative analysis, we have generated several arguments that capture the theoretical insights that emerged from this qualitative study. My result advances knowledge of investment and divestment decision process. Specifically, I find that I was able to document for the first time the events of investment and disinvestment of global pharmaceutical industry evidenced in the operations that have taken place in Puerto Rico for a period of more than fifty years. Supporting what was raised by Kaitin and DiMasi, (2000), Schmid and Smith (2002), Kirkham, Richbell and Watts (2006), Mao (2007), Moschieri and Mair (2011), Song (2014), Baquero and Longobardi (2014) and Kräkel (2014) that the divestment activities of a subsidiary cannot be evaluated as an isolated event and I showed that it is important to understand the history of partial divestitures that the plant may have had before its liquidation final. Our results may also help understand that regarding the small countries of isolated economies, such as Puerto Rico, have had periods of development of emerging economies based on the attraction of foreign subsidiaries and that the sustainability of this growth process depends on the process of replacing closed plants and maintaining other operations long years. It showed that if not replaced, a process of reduction of the operations in the country begins. It is difficult to reverse. The majority of the events that occurred in the years of 2000 in advance were subsidiaries that were in operation for more than 20 years. I was also interested in understanding whether divestiture are single events. I found that in the vast majority of the announcements of closures made in operations in Puerto Rico, the management of the parent company announced the closure of other plants within the global production network in countries such as the United States, Ireland, Mexico, and Italy, among others. Our data shows that executives strived to maintain the plants in good condition to attract potential buyers and save the plant's operations. In many cases, the plant was acquired by pharmaceutical companies emerging from the generic or emerging companies from China, Mexico and Colombia that sought to acquire the knowledge and specialized manufacturing operations offered by the plants that were available for sale or that were announced as a close in the future. Finally, our research shows something very important that has been little studied in international business, which must recognize that ownership of manufacturing operations can be totally different to what multinational company owns them at the time of final settlement.

#### Conclusions

I hope that the present findings serve as useful foundation or future empirical research on pharmaceutical plant closing. This paper enhances the knowledge on plant divestiture in several ways. One of the most important contributions is to demonstrate the need to carry out longitudinal investigations of disinvestment activities, because up to now, the analysis of divestment decisions is studied transversally at a specific time and are not studied as a chain of consecutive and interdependent events.

# **Limitations and Future Research Directions**

The results from this study might be useful to international business analysts and researchers; however, some limitations are pointed out. Interpretations of this study, as indeed of any study, should be tempered by the acknowledgment of its limitations. First, the results of the study are based on the experiences of Puerto Rico pharmaceutical industry operations, therefore, the findings of this study might be different if one collects the views of other subsidiaries around the world. Second, except Duhaime (1984), Cordero (1985), Franco (1996), Hayes (1997), Griffin (2003), Benito (2005), Ketkar (2006) and Ramcharran (2011), little is published or available in public records about the details of subsidiaries divestment decision process. Third, the accessibility to internal documents from pharmaceutical companies or reports from the government of Puerto Rico has been affected by the passage of time, the disappearance of corporations as a result of mergers and acquisitions (M&A) and incomplete files on plants that no longer exist on the island.

#### References

- Baquero, L.M. (2013). Foreign subsidiary divestment decision process: A descriptive model based on the multiple case studies of Puerto Rico pharmaceutical industry. The Journal of International Business Research and Practice 7(1), 86-103.
- Baquero, L.M., & Longobardi, T. (2014). Foreign subsidiary divestment decision process: The pharmaceutical industry experience. Fórum Empresarial, 19(2), 1-30.
- Belderbos, R., & Zou, J. (2006). Foreign investment, divestment and relocation by Japanese electronics firms in East Asia. Asian Economic Journal, 20(1), 1-27.
- Belderbos, R., & Zou, J. (2007). On the growth of foreign affiliates: Multinational plant networks, joint ventures, and flexibility. Journal of International Business Studies, 38(7), 1095-1112.
- Benito, G.R. (1997). Divestment of foreign production operations. Applied economics, 29(10), 1365-1378.
- Benito, G.R. (2005). Divestment and international business strategy. Journal of Economic Geography, 5(2), 235-251.
- Benito, G.R., & Welch, L.S. (1997). De-internationalization. Management International Review, 7-25.
- Bergh, D.D. (1997). Predicting divestiture of unrelated acquisitions: An integrative model of ex ante conditions. Strategic Management Journal, 18(9), 715-731.
- Bichescu, B., & Raturi, A. (2015). The antecedents and consequences of plant closing announcements. International Journal of Production Economics, 168, 197-210.
- Boddewyn, J.J. (1979). Foreign divestment: Magnitude and factors. Journal of International Business Studies, 10(1), 21-26.
- Brauer, M. (2006). What have we acquired and what should we acquire in divestiture research? A review and research agenda. Journal of Management, 32(6), 751-785.
- Capron, L., Mitchell, W., & Swaminathan, A. (2001). Asset divestiture following horizontal acquisitions: A dynamic view. Strategic management journal, 22(9), 817-844.
- Castro, M. (2004). Estudio exploratorio sobre los códigos de conducta en las multinacionales de la industria farmacéutica. Unpublished MBA thesis. University of Puerto Rico, Rio Piedras.
- Cayuela, J. (1985). El posible efecto a la industria farmacéutica en Puerto Rico, de eliminarse la Sección 936 del Código de Rentas Internas Federal. Unpublished MBA thesis. University of Puerto Rico, Rio Piedras.
- Chastain, C.E. (1987). Divestiture: Antidote to merger mania. Business Horizons, 30(6), 43-49.
- Cima de Villa, E. (1991). Transfondo histórico de la industria farmacéutica: Hallazgos sobre los efectos de los cambios tecnológicos en la relación entre empleados de la empresa farmacéutica Baxter Healthcare Corporation. Unpublished MBA thesis. University of Puerto Rico, Rio Piedras.
- Cordero, I. (1985). Descripción analítica del sector de la industria farmacéutica en Puerto Rico. Unpublished MBA thesis. University of Puerto Rico, Rio Piedras.

- Danzon, P.M., Epstein, A., & Nicholson, S. (2007). Mergers and acquisitions in the pharmaceutical and biotech industries. Managerial and Decision Economics, 28(4-5), 307-328.
- Duhaime, I.M., & Grant, J.H. (1984). Factors influencing divestment decision-making: Evidence from a field study. Strategic Management Journal, 5(4), 301-318.
- Duhaime, I.M., & Schwenk, C.R. (1985). Conjectures on cognitive simplification in acquisition and divestment decision making. Academy of Management Review, 10(2), 287-295.
- Eisenhardt, K.M. (1989). Building theories from case study research. Academy of management review, 14(4), 532-550.
- Franco, R. (1996). The impact of mergers and acquisitions in the pharmaceutical industry on employment in Puerto Rico. Unpublished MBA thesis. University of Puerto Rico, Rio Piedras.
- Ghertman, M. (1988). Foreign subsidiary and parents' roles during strategic investment and divestment decisions. Journal of International Business Studies, 19(1), 47-67.
- Griffin, R. (2003). Subsidiary divestment: The case of CDMI Ireland 1970-2002. Irish Journal of Management, 24(1).
- Hassan, M., Patro, D.K., Tuckman, H., & Wang, X. (2007). Do mergers and acquisitions create shareholder wealth in the pharmaceutical industry? International Journal of Pharmaceutical and Healthcare Marketing, 1(1), 58-78.
- Hayes-Goddar, S. (1997). Drivers for the divestment of foreign subsidiary: An exploratory study. Unpublished doctoral dissertation). Temple University, Pennsylvania.
- Heracleous, L., & Murray, J. (2001). The urge to merge in the pharmaceutical industry. European management journal, 19(4), 430-437.
- Kaitin, K.I., & DiMasi, J.A. (2000). Measuring the pace of new drug development in the user fee era. Drug Information Journal, 34(3), 673-680.
- Kesselheim, A.S., Murtagh, L., & Mello, M.M. (2011). Pay for delay-settlements of disputes over pharmaceutical patents. The New England Journal of Medicine, 365(15), 1439–1445.
- Kester, S. (2009). Divestitures and their impact on the innovative capacity of firms. Unpublished MBA research). Erasmus University, Rotterdam.
- Ketkar, S. (2006). Multinational corporation's foreign subsidiary divestiture modes and sustainability of competitive advantages. Unpublished doctoral dissertation. Temple University, PA.
- Kirkham, J.D., Richbell, S.M., & Watts, H.D. (1998). Downsizing and facility location: Plant closures in multiplant manufacturing firms. Management Decision, 36(3), 189-197.
- Kräkel, M. (2014). Shutdown contests in multi-plant firms. Review of Managerial Science, 8(1), 121-144.
- Mao, R. (2007). The effects of core business divestments on innovations within the pharmaceutical industry: A public policy analysis. George Mason University, WA, unpublished doctoral dissertation
- Mao, R.J. (2014). The effects of core business divestments on innovations within the pharmaceutical industry: A public policy analysis (Doctoral dissertation).
- Mata, J., & Portugal, P. (2002). The survival of new domestic and foreign-owned firms. Strategic Management Journal, 23(4), 323-343.
- Meyer, A.D., Brooks, G.R., & Goes, J.B. (1990). Environmental jolts and industry revolutions: Organizational responses to discontinuous change. Strategic Management Journal, 11(5), 93-110.
- Mills, A.J., Durepos, G., & Wiebe, E. (2010). Encyclopedia of case study research: L-Z; index (Vol. 1). CA: Sage.
- Moschieri, C. & Mair, J. (2008). Research on corporate divestitures: A synthesis. Journal of Management & Organization. 14(4), 399-422.
- Moschieri, C. (2011). The implementation and structuring of divestitures: The unit's perspectives. Strategic Management Journal, 32(4), 368-401.
- Moschieri, C., & Mair, J. (2011). Adapting for innovation: Including divestitures in the debate. Long Range Planning, 44(1), 4-25.
- Pattnaik, C., & Lee, J.Y. (2014). Distance and divestment of Korean MNC affiliates: The moderating role of entry mode and experience. Asia Pacific Business Review, 20(1), 174-196.
- Praet, A. (2013). Family firms and the divestment decision: An agency perspective. Journal of Family Business Strategy, 4(1), 34-41.
- Ramcharran, H. (2011). The pharmaceutical industry of Puerto Rico: Ramifications of global competition. Journal of Policy Modeling, 33(3), 395-406.
- Schmid, E.F., & Smith, D.A. (2002). Discovery, innovation and the cyclical nature of the pharmaceutical business. Drug Discovery Today, 7(10), 563–568.

- Shimizu, K., Hitt, M., & Vaidyanath, D. (2004). Theoretical foundations of cross-border mergers and acquisitions: A review of current research and recommendations for the future. Journal of International Management, 10(3), 307-353.
- Simões, V.C. (2005). Disivestment by foreign-owned (firms?): Factors in a general framework. Transnational corporations and economic development: from internationalization to globalization, Palgrave Macmillan, Basingstoke.
- Song, S. (2014). Subsidiary divestment: The role of multinational flexibility. Management International Review, 54(1), 47-70.
- Stafford, H.A. (1991). Manufacturing plant closure selections within firms. Annals of the Association of American Geographers, 81(1), 51-65.
- Steenhuis, H.J., & Bruijn, E. (2009). International divestment: An overview and analysis. Academy of Management Conference, July, p. 36.
- Tsetsekos, G.P., & Gombola, M.J. (1992). Foreign and domestic divestments: Evidence on valuation effects of plant closings. Journal of International Business Studies, 23(2), 203-223.
- Villalonga, B., & McGahan, A.M. (2005). The choice among acquisitions, alliances, and divestitures. Strategic Management Journal, 26(13), 1183-1208.
- Vissak, T. (2010). Recommendations for using the case study method in international business research. The Qualitative Report, 15(2), 370-388.
- Xia, J., & Li, S. (2013). The divestiture of acquired subunits: A resource dependence approach. Strategic Management Journal, 34(2), 131-148.
- Zhou, W. (2013). Sequential divestiture and firm asymmetry. Economics Research International.

# RETURN TO EDUCATION IN THE DOMINICAN REPUBLIC, 2010-2016: ENDOGENEITY AND SAMPLE SELECTION

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Although several investigations on the profitability of education in the Dominican Republic have been carried out, they have not considered the two main difficulties faced by the measurement of educational performance: the econometric problem of the endogeneity of the education variable and bias in the sample selection. The present study aims to demonstrate that the existence of these two difficulties alters the results on the profitability of education in the Dominican Republic. Based on a traditional Mincerian model using OLS, reference coefficients were obtained. Applying instrumental variables (IV), the initial model and the other modalities (extended Mincer model and sheepskin) were re-estimated so that the problem of endogeneity was controlled. Likewise, the selection bias of the sample was addressed using the Heckman method. Empirical evidence is presented showing that the existence of a sampling selection bias and the endogeneity problem of the education variable skew downwards the profitability of education. Our report shows that the returns to education estimated using the conventional OLS model with or without controls, are inferior to the values obtained by the instrumental variables model.

#### Introduction

The theory of human capital (HCT) establishes that the productivity of an individual is determined to a large extent by the educational level that they reach and that this translates into higher income as the individual accumulates levels of instruction (Becker, 1964; Mincer, 1974; Schultz, 1961). In this particular, Mincer (1974) analyzed wage determinants based on the behavior of individuals in their educational decisions assuming that individuals expect to receive a higher level of income throughout their lives by accumulating years of education. Specifically, under the assumption that all individuals have identical and observable skills, as well as the same opportunities to be employed and that the flow of income received is constant during working life, this model states that the cost of educational investments of the Individuals, cost incurred to receive the training and the opportunity cost that represents to stop receiving income during the training period, will be less than future earnings when entering the labor market. One of the theories that has emerged after the HCT was that of Signaling, supported by Arrow (1973), Spence (1973) and Stiglitz (1975), which considers education as a signaling process for job seekers rather than as an investment in human capital. They argue that hiring an individual in the labor market has a component of uncertainty because, before hiring, the employer does not have information about the productive capacities of the individual. However, the employer has information on personal characteristics that, although they do not directly indicate their productive capacities, serve as a signal to identify pre-existing differences in relation to the talents they possess. Therefore, according to Layard and Psacharopoulos (1974), if education has any social value, it would be a signaling mechanism that helps place the right person in the right job. However, in an extension to this theory called the Sheepskin effect these authors stressed that, although it is true that individuals maximize their well-being by accumulating years of schooling when these years of study include a diploma, the benefits are substantially greater.

The problem with the consistency of this models is that the schooling variable is considered exogenous, although according to the HCT this is an endogenous decision variable. This means that in the Mincer specification the term of disturbance captures unobservable individual effects that can influence educational decisions and induce a correlation between the schooling variable and the error term in the income function - a common example of this is the undiscovered ability. Therefore, if education is endogenous, the estimate by ordinary least squares will yield biased estimates of the returns to education (Fiaschi & Gabbriellini, 2013; Harmon, Oosterbeek, & Walker, 2000; Skalli, 2007). In this regard, international literature shows the use of different techniques that allow us to consider the endogeneity of the schooling variable in the estimates of education returns. One of these techniques is the method of instrumental variables. According to Angrist and Krueger (2001), this method allows estimating the coefficient of interest consistently and free of asymptotic bias from omitted variables, without needing to have data of this or know what they are.

In a study carried out by Card (1993) geographic differences in university access are identified as a potential exogenous source of variation in educational decisions. When using this variable as an exogenous determinant of schooling, the author obtained implicit estimates of the return to education between 25 and 60 percent higher than

those obtained using the ordinary least squares method, which indicates that conventional OLS generates a bias to the low in the estimates. For the case of Italy, Brunello and Miniaci (1999) used variables such as the educational level reached by the father and the occupation of the father and mother of the head of household interviewed. They also used a dummy variable to capture the effects of the educational reform of 1969, which liberalized access to higher education and therefore, could have influenced the decision to reach a higher educational level in the cohort of individuals born after 1951. In Finland, Uusitalo (1999) showed that variables such as education and the ability of the father, as well as their socioeconomic status, had a high and significant impact on the schooling equation, evidencing the need to incorporate these variables as instruments. Freire and Teijeiro (2010) used as an instrument the educational level of parents and living in a town hall of more than 6,000 inhabitants. In all cases, including that of Blackburn and Neumark (1995), the results gave a more significant conclusion than when endogeneity is not controlled. In the case of the Dominican Republic, although there have been developed several investigations that address the profitability of education these researches have not considered the problem of the endogeneity of the education variable and the bias of the sample selection.

# **Dominican Labor Market: General Trends**

# Trends of the Main Indicators of the Labor Market

In the study period, the effective use of human resources available for economic activity has fluctuated in a range of 47.3 - 50.8 percent, which indicates that about half of the population of working age is employed and receiving a salary. The average employment rate is higher in the case of men than in women, with a gap of 24.4 percentage points at the end of 2016. The trajectory of the data suggests that the gap has been decreasing over time, mainly because there has been a positive evolution of the participation gap, which during the period experienced a reduction of 3.4 percentage points from 19.5 to 16.1 percent. In the case of unemployment, as of 2010, there is a general reduction.

However, when disaggregated by gender, there was a slight increase in the female case, going from 7.5 percent in 2010 to 8.3 percent in 2016. For the male case, a reduction is evidenced, with the rate in 2010 of 5.6 percent and in 2016 of 4.8 percent. The data shows that individuals who reached higher levels of education tend to be occupied in a higher proportion. But when the indicators are analyzed from the gender perspective the outlook change. When disaggregated by gender and educational level, for the female case it is observed that for each additional year of education the levels of occupation increase with respect to those women who have not acquired instruction. In the case of men, it is evident that an additional year of education does not represent significant variations in the levels of occupation of this group.

#### Trends of the Main Variables under Study

In the last three years, there has been an increase in the real wage, after remaining a stagnant period. In 2010, an average employee earned RD\$60.8 per hour, in six years and after perceiving slight variations to the downside, the real wage registered an increase of 11.6 percent. The increase corresponds to a period of labor reforms implemented by the state as of 2015 -in which a minimum wage increase was stipulated by law- and a stable situation regarding prices. On the other hand, the gender analysis suggests that in the case of females, the magnitude of the increase is significantly greater. Situation that has determined the reduction of the wage gap throughout the analyzed period. In 2010, men earned a salary twice as high as women, for 2016 there was a slight fall of 2.9 percentage points. When disaggregating by the level of education, it is observed that on average the income of the population that managed to complete the university studies is two times higher than the one of individuals who only studies secondary. On average, university men receive an income one and a half times higher than women with the same level of education.

However, it is observed that in both sexes the population of university students receives higher remunerations than individuals from lower studies. In other words, a higher level of human capital is positively associated with higher labor productivity. In the specific case of years of schooling, it is observed that on average the schooling years of the individuals have increased slightly over time. For the last year of this study, on average the woman has a year of additional instruction to that obtained by men.

# Methods

In order to obtain estimates of the returns to education consistent and unbiased, several steps were followed. Initially a Mincerian model was estimated to obtain the reference coefficients. From this model, the instrumental variables were used, and the previous model was re-estimated as well as the other modalities (extended and sheepskin) to correct the problem of endogeneity. Finally, the Heckman method was applied to eliminate bias of sample selection. The methodology followed on each one of these steps is explained below.

Segments	Period	Hour Entry (RD\$)	Typical Deviation	Schooling (Years)	Typical Deviation	Experience (Years)	Typical Deviation	Sample
	2010	46.61	87.20	9.01	4.80	21.72	15.20	33854
	2011	45.62	92.40	9.10	4.71	21.73	15.30	33445
	2012	45.96	96.28	9.24	4.73	21.97	15.29	32975
Total	2013	44.38	74.47	9.32	4.70	21.84	15.36	33120
	2014	45.80	73.73	9.44	4.70	22.02	15.30	32137
	2015	48.58	72.89	9.61	4.68	21.89	15.34	31151
	2016	52.66	84.18	9.73	4.63	21.83	15.37	31167
	2010	60.83	91.96	8.68	4.71	21.90	14.95	17023
	2011	60.44	94.96	8.77	4.61	21.76	15.13	16917
	2012	58.87	107.06	8.87	4.63	22.08	15.07	16676
Men	2013	57.44	84.69	8.98	4.63	21.74	15.12	16687
	2014	59.63	83.33	9.10	4.61	22.14	15.04	16137
	2015	63.73	79.96	9.24	4.60	22.01	15.16	15602
	2016	67.93	96.71	9.32	4.52	21.87	15.18	15702
	2010	32.97	80.05	9.32	4.86	21.56	15.43	16902
	2011	31.23	87.64	9.41	4.78	21.71	15.47	16528
	2012	33.49	82.67	9.60	4.81	21.87	15.51	16356
Women	2013	31.73	60.36	9.65	4.75	21.94	15.60	16433
	2014	32.33	60.02	9.79	4.75	21.92	15.54	16000
	2015	34.12	62.09	9.98	4.75	21.77	15.52	15549
	2016	37.95	66.78	10.13	4.70	21.78	15.55	15465

Table 1. Descriptive Statistics and Number of Observations, 2010-2016

# **Mincer Equation**

The classical Mincerian equation used to evaluate the impact of education on income will be estimated by Ordinary Least Squares (OLS) in each year of the period 2010 - 2016. The model states that earnings increase through the formation of the individual which is divided into two types, the general, which is the education received in schools and that is applicable in any job, and the specific which is the one received to develop a certain job and that is defined as work experience. In addition, it is controlled by age, sex, area of residence and type of employment, the generalized form of the income equation to be estimated can be specified in the following expression:

$$\ln W = \beta_0 + \beta_1 S + \beta_2 X + \beta_3 X^2 + \sum_{n=1}^m \varphi_n Y_n + \varepsilon$$

It is a semi-logarithmic model whose dependent variable is the logarithm of income (ln W) and as independent variables the years of education (S), work experience (X) and the square of it, as well as demographic control variables ( $Y_n$ ).  $\varepsilon$  is the error term.

The work experience of the individuals is calculated through the potential experience (Mincer, 1974), defined as the number of years X that the individual could have worked, supposing that he began his education at six years,

which ended S years of schooling in exactly S years and that began to work immediately after. That is, years of experience are age (E) minus years of schooling (S) minus six:

$$X = E - S - 6$$

Likewise, the squared experience is used to capture the non-linear effect of the experience on income, that is, the diminishing returns of an additional year of experience. The average return to schooling or average rate of return of an additional year of study owned by workers is the coefficient  $\beta_1$  of the variable years of education (S). Because the model assumes that individuals have identical skills and equal opportunities, the term constants  $\beta_0$  and the coefficients  $\beta_1$ ,  $\beta_2$  y  $\beta_3$  they are identical for all individuals. It is expected that the estimate  $\beta_1$  y  $\beta_2$  be positive and that of  $\beta_3$  be negative.

An alternative way of analyzing the influence of human capital on salary performance is to estimate the profitability associated with the different levels and teaching programs through the Spline equation, a variant of the classical model. The Mincerian Spline equation distinguishes between the effects on income produced by the marginal year of primary education of those who are the result of the marginal year of secondary education, higher education. The specifications of the model are the following:

$$\ln W = \beta_0 + \beta_1 S + \beta_2 D_1 (S - 8) + \beta_3 D_2 (S - 12) + \gamma_1 X_i + \gamma_2 X_i^2 + \sum_{n=1}^m \varphi_n Y_n + \varepsilon$$

Where  $D_1$  is a dummy variable that takes the value one if the last year studied corresponds to the secondary and zero otherwise; analogously,  $D_2$  takes the value one if the last year corresponds to higher education or university and takes the value zero otherwise. The sum of the coefficients  $\sum_{i=1}^{n} \beta_i$  would be the differential of income caused by a year of marginal education of the educational level *t*. So the coefficient  $\beta_1$  indicates the return of primary education and the sum  $\beta_1 + \beta_2$  the return to secondary education.  $\beta_1 + \beta_2 + \beta_3$  is the return to higher education or university. The other terms of the equation would behave similarly to the previous formulation.

The equation to estimate the Sheepskin effect is presented as follows:

$$\ln W = \beta_0 + \beta_1 BI + \beta_2 BC + \beta_3 SI + \beta_4 SC + \beta_5 UI + \beta_5 UC + \gamma_1 X_i + \gamma_2 X_i^2 + \sum_{n=1}^{m} \varphi_n Y_n + \varepsilon$$

Where, **BI** is a fictitious variable that takes value one if the individual has incomplete basic studies, that is, he has made the first seven of basic education, and zero otherwise, and **BC** takes value one if the individual has complete basic education, which in the Dominican Republic is eight years to complete that level; the rest of the *dummies* are interpreted in the same way for the educational levels of incomplete secondary (**SI**) with 9, 10 and 11 years of instruction, complete secondary (**SC**) with 12 years of instruction, incomplete university studies (**UI**) with 13, 14 and 15 years of instruction and complete university studies (**UC**) where the individual has been trained for more than 16 years. The other terms of the equation would behave similarly to the previous formulation.

#### Method of Instrumental Variables (IV)

An important issue in the estimation of the profitability of education is the potential endogeneity of education, which may come from the decision-making process of the individual to determine his level of optimal education, of omitted variables and errors in the measurement. The method to be used to control this problem is that of instrumental variables (IV), which consists in finding good instruments, variables correlated with the endogenous variable (education),  $(Z_i, S) \neq 0$ , but independent of the error term in the equation of interest,  $Cov(Z_i, u_i) = 0$ , that is, has no impact on income.

In this order, the salary equation of Mincer would be part of a system of simultaneous equations:

$$\ln W = \beta_0 + \beta_1 S + \beta_2 X + \beta_3 X^2 + \sum_{\substack{n=1\\m \neq n}} \varphi_n Y_n + \varepsilon$$
$$S = \alpha_0 + \alpha_1 V + \alpha_2 X + \alpha_3 X^2 + \sum_{\substack{n=1\\n=1}}^m \varphi_n Y_n + v$$

We estimate a regression of the education variable (S) according to its instrument (V) and all the exogenous variables included in the interest regression. v is a random variable with zero mean and constant variance. In general terms, the variables or instruments used in the literature collect family background information, that is, the educational, occupational and, in general, socio-economic characteristics of the different members of the household, due to the high correlation that results between the family characteristics and educational level of the individual (Blackburn and Neumark, 1995, Haveman and Wolfe, 1995, Peraita and Sanchez, 1998). Other instruments are related to natural experiments such as the birth quarter (Angrist and Krueger, 1991) or compulsory schooling laws (educational reform) (Harmon and Walker, 1995). In the case of variables about family characteristics, Lema and Casellas (2009) used the average education of the family members, Rojas, Angulo and Velásquez (2000) used in their estimates the education instrument of the head of the family and Freire and Teijeiro (2010) the education of father and mother. Ginther (2000) took into consideration the family structure, being the instrument used the presence of both parents in the home. Pons and Gonzalo (2001) used characteristic of the work of the father or mother, like the level of responsibility, occupation, type of contract and sector. With respect to the influence of economic conditions on education, Salas (2007) and Uusitalo (1999) used family income as an IV. Likewise, Barceinas (2003) used macroeconomic variables that have the capacity to reflect the causal relationship of the macroeconomic-schooling environment, being these the Real Gross Domestic Product per capita and the Actual Spending in Education per capita.

In relation to the choice of instruments as sources of variation in educational decisions because of the institutional structures on the supply side of the education system, educational reforms (mandatory minimum age of schooling, compulsory schooling, etc.) have been widely used (Arrazola, De Hevia, Risueño, & Sanz, 2001; Barceinas, Alonso, Raymond, & Roig, 2001; Zuluaga, 2009) as well as the geographical proximity to the school (Card, 1993; Ginther, 2000; Pons & Gonzalo, 2001). On the other hand, to determine if the potential endogeneity of schooling has a significant effect on the performance parameter of education, a Hausman exogeneity test was applied.

# **Correction of Sample Selection Bias**

This research aims to know the effect of education on the salary of all people of working age, however, the sample to be used is composed of busy income earners, that is the unpaid workers have been excluded (unemployed and inactive). In this sense, the estimations of income equations by OLS would produce inconsistent estimators since they are performed for a group of people who have not been selected randomly but who went through a process of self-selection to enter the labor market, a problem known as incidental truncation which is considered as a case of the problems of sampling selection. To control by sample selection, the method proposed by Heckman (1979) is used, estimating the probability of belonging or not belonging to the group of employed persons (selection equation) together with the wage equation (interest equation) to avoid bias in the estimates. That is, the correction by sampling selection is performed by maximum likelihood.

In this order, given the equation of selection or participation

$$z_i^* = \alpha w_i + u_i \tag{1}$$

Where  $w_i$  is a vector of variables that influence the probability of participation. And the equation of interest

$$y_i = \beta \boldsymbol{x}_i + \boldsymbol{\varepsilon}_i \tag{2}$$

Where  $y_i$  is observed when  $z_i^* > 0$ , otherwise,  $z_i^* \le 0$ ,  $y_i$  is not observed. The existence of a bivariate normal distribution of errors is assumed  $u_i$  and  $\varepsilon_i$  with the following structure:

$$\binom{\varepsilon_i}{u_i} \approx N \binom{0}{0} \binom{\sigma_{\varepsilon}^2 \quad \rho \varepsilon_i}{\rho \varepsilon_i \quad 1}$$
(3)

Then for an individual the probability of observing both the selection variable  $z_i^*$  and the outcome variable  $y_i$  is calculated together. As there are two types of observation, each group will have a different likelihood function:

**1**.  $y_i$  is observed when  $z_i^* > 0$ . For these observations, the likelihood function is the probability of observing jointly the event  $y_i y z_i^* > 0$ . Using Bayes rule:

$$P(y_i, z_i^* > 0 | \mathbf{x}, \mathbf{w}) = f(y_i)P(z_i^* > 0 | y_i, \mathbf{x}, \mathbf{w}) = f(\varepsilon_i)P(u_i > -\alpha w_i | \varepsilon_i, \mathbf{x}, \mathbf{w})$$

$$= f(\varepsilon_{i})P\left(\frac{u_{i}-\frac{\rho\varepsilon_{i}}{\sigma_{x}}}{\sqrt{1-\rho^{2}}} > \frac{-\alpha w_{i}-\frac{\rho\varepsilon_{i}}{\sigma_{x}}}{\sqrt{1-\rho^{2}}} |\varepsilon_{i}, \mathbf{x}, \mathbf{w})\right)$$
(4)  
$$= \frac{\exp\left(-\left(\frac{1}{2}\right)(\varepsilon_{i})^{2}/\sigma_{x}^{2}\right)}{\sigma_{x}\sqrt{2\pi}}\left[1 - \Phi\left(\frac{-\alpha w_{i}-\frac{\rho\varepsilon_{i}}{\sigma_{x}}}{\sqrt{1-\rho^{2}}}\right)\right] = \frac{\exp\left(-\left(\frac{1}{2}\right)(\varepsilon_{i})^{2}/\sigma_{x}^{2}\right)}{\sigma_{x}\sqrt{2\pi}}\left[\Phi\left(\frac{\alpha w_{i}+\frac{\rho\varepsilon_{i}}{\sigma_{x}}}{\sqrt{1-\rho^{2}}}\right)\right]$$
$$P(y_{i}, z_{i}^{*} > 0 | \mathbf{x}, \mathbf{w}) = f(y_{i})P(z_{i}^{*} > 0 | y_{i}, \mathbf{x}, \mathbf{w}) = f(\varepsilon_{i}) P(u_{i} > -\alpha w_{i} | \varepsilon_{i}, \mathbf{x}, \mathbf{w})$$
$$= f(\varepsilon_{i})P\left(\frac{u_{i}-\frac{\rho\varepsilon_{i}}{\sigma_{\varepsilon}}}{\sqrt{1-\rho^{2}}} > \frac{-\alpha w_{i}-\frac{\rho\varepsilon_{i}}{\sigma_{\varepsilon}}}{\sqrt{1-\rho^{2}}} | \varepsilon_{i}, \mathbf{x}, \mathbf{w})\right)$$
$$= \frac{\exp\left(-\left(\frac{1}{2}\right)(\varepsilon_{i})^{2}/\sigma_{\varepsilon}^{2}\right)}{\sigma_{\varepsilon}\sqrt{2\pi}}\left[1 - \Phi\left(\frac{-\alpha w_{i}-\frac{\rho\varepsilon_{i}}{\sigma_{\varepsilon}}}{\sqrt{1-\rho^{2}}}\right)\right]$$
$$= \frac{\exp\left(-\left(\frac{1}{2}\right)(\varepsilon_{i})^{2}/\sigma_{\varepsilon}^{2}\right)}{\sigma_{\varepsilon}\sqrt{2\pi}}\left[\Phi\left(\frac{\alpha w_{i}+\frac{\rho\varepsilon_{i}}{\sigma_{\varepsilon}}}{\sqrt{1-\rho^{2}}}\right)\right]$$

To move from line two to line three (4), was used the joint density function of the errors  $f(u_i | \varepsilon_i)$  and the assumption of joint normal distribution.

2.  $y_i$  is not observed when  $z_i^* \le 0 = P(z_i^* \le 0) = P(u_i \le -\alpha w_i)$ =  $\Phi(-\alpha w_i)$ =  $1 - \Phi(\alpha w_i)$  (5)

In this way, considering the likelihood function for all the elements of the sample, the following expression would be obtained:

$$\ln L\left(\beta, \alpha, \rho, \sigma_{\varepsilon}, datos\right) = \sum_{z=0} \ln\left[1 - \Phi\left(\alpha w_{i}\right)\right] + \sum_{z=1} \ln\left[\frac{\exp\left(-\left(\frac{1}{2}\right)(\varepsilon_{i})^{2}/\sigma_{\varepsilon}^{2}\right)}{\sigma_{\varepsilon}\sqrt{2\pi}}\left[\Phi\left(\frac{\alpha w_{i}+\frac{\rho_{\varepsilon_{i}}}{\sigma_{\varepsilon}}}{\sqrt{1-\rho^{2}}}\right)\right]\right]$$
(6)

Where  $\varepsilon_i = y_i - \beta x_i$ .

The obtained estimators will be consistent and with greater efficiency than those derived by the Heckman sample selection correction method in two stages. The latter consists in estimating in a first step a Probit type model to calculate the probability that an individual decides whether to be occupied or not (estimation of the selection equation). From this estimation, we obtain the statistical inverse Mills ratio  $\left(\hat{\lambda} = \frac{\phi(\alpha w_i)}{\phi(\alpha w_i)}\right)$  that captures the magnitude of the bias and is incorporated as a regressor to the original regression model (estimated by OLS). The estimated coefficients, although they are consistent, present efficiency problems, which is why the method arises by maximum likelihood.

#### Data

The study will be carried out mainly with microdata from the Encuesta Nacional de Fuerza de Trabajo [National Labor Force Survey] (ENFT) for the periods 2010-2016. This research will be complemented with microdata from the Module of Education, Expectations, and Perceptions made in the ENFT of April 2015 by JPAL, MINERD, IDEICE, AVE-RD and BCRD. The objective of this module was to capture the heterogeneity between postsecondary studies and educational institutions, as well as to obtain a retrospective view of people about their investment decisions in education. The surveyed population consisted of all household members aged 18 and over. About 55 variables were investigated and an effective sample of approximately 17,034 individuals was obtained.

# Results

Table 2.	Estimated	Returns	Rate	hv	Model.	2010-2016
I abit 2.	Estimateu	<b>NCUII II5</b>	nau	D y	muuu,	2010-2010

Model	Returns to	2010	2011	2012	2013	2014	2015	2016	Δνα
Widder	Without controls	7.01	6.85	6.48	6.98	7.03	677	7 19	6 90
	Controlled	7.30	6.93	6.51	7.05	7.03	6.87	7.19	7.03
	Women	8.74	8.39	8.16	8.95	8.93	9.07	9.63	8.84
Classic	Men	6.97	6.97	6.53	6.91	6.97	6.53	6.83	6.81
Mincerian	Urban	7.63	7.39	6.88	7.52	7.36	7.19	7.90	7.41
Widdel	Rural	5.70	6.11	5.88	6.22	6.64	6.26	6.76	6.22
	Formal	9.78	9.65	9.42	10.05	10.00	9.89	10.29	9.87
	Informal	5.06	4.59	4.22	4.61	4.75	4.19	4.73	4.59
	Total	9.12	8.38	8.32	8.66	8.80	8.65	9.17	8.73
	Women	11.09	9.82	10.43	10.43	10.91	10.58	11.26	10.65
	Men	8.46	7.81	7.55	8.02	8.08	7.86	8.27	8.01
	Urban	9.49	9.12	8.93	9.38	9.45	9.21	9.99	9.37
	Rural	7.34	7.19	7.39	7.39	7.71	7.72	7.70	7.49
	Informal	6.94	6.33	6.24	6.24	6.24	5.95	6.39	6.33
	Formal	11.67	10.96*	11.18*	11.81	12.18	11.95	12.20	11.71
	Primary (E.M.)	2.97	2.83	2.80	2.77	2.88	2.93	3.47	2.95
Method of	High school (E.M.)	12.50	11.20	10.60	11.20	11.30	10.50	11.60	11.27
Instrumental	Academic (E.M.)	28.40	27.90	26.30	27.80	27.80	27.80	29.90	27.99
(IV)	Incomplete Elementary (S.M.)	3.23	3.08	2.94	2.68	2.98	2.89	3.85	3.09
	Complete Primary (S.M.)	30.40	25.70	25.00	27.20	28.50	27.00	30.90	27.81
	Incomplete Secondary (S.M.)	18.40	14.90	14.00	15.20	16.40	13.70	16.00	15.51
	Completed secondary (S.M.)	50.30	44.90	41.10	43.70	44.60	40.40	45.60	43.38
	Incomplete University (S.M.)	31.80	29.40	25.90	27.80	27.70	25.80	28.20	28.09
	Full University (S.M.)	123.70	119.00	112.80	120.00	120.10	120.30	129.30	120.74
	Without controls	6.84	6.70	6.29	6.90	6.90	6.61	7.04	6.75
Heckman	controlled	8.23	7.87	7.49	7.77	7.78	7.54	8.14	7.83
Treekingii	Women	11.97	11.43	11.43	11.45	11.45	11.42	11.88	11.57
	Men	7.07	6.99	6.72	7.01	7.01	6.54	6.81	6.88
*Significant a	*Significant at the 0.10 level (1 tailed).								

# Mincer's Classical Regression

The results suggest that the rate of return on investment in one year of education for adult income earners has grown slightly compared to 2010. However, it can be seen that the behavior exhibited is characterized by slight volatility during the period 2010-2016. In 2010, an additional year of education translated into an increase of 7.30 percent of real income for hours worked. In 2016, an additional year was associated with an increase of 7.48 percent, an increase of 0.18 percentage points compared to 2010. In the second approach, the divergence of the rate of return is observed when controlled by the sex of the individual. The results show that the rate of return is higher among the

group of women from 18 to 65 years than in the group of men of similar ages. According to Dougherty (2005), since women perceive lower income than men, their rate of return is higher because education has a double effect, increases their productivity and skills while the wage gap with men is reduced. Similar results were found by Psacharopoulos and Patrinos (2004) in a sample of Latin American and Caribbean countries.

The results for the urban and rural area suggest that the tendency of both series is to convergence. For 2010, adults residing in urban areas received returns 1.93 percentage points higher than those captured by residents in rural areas and for 2012 this difference was reduced to 1.00 percentage point. For 2014, the gap reaches its lowest level, presenting a difference of 0.72 percentage points. When the profitability of education is analyzed by the type of employment of the individual in question, it is obtained that the results are greater for an employee of the formal sector, finding its highest point during the year 2016. While in the case of an employee of the informal sector there is a downward trend that reflects overpopulation in the sector, a poorly trained human capital as well as an average low salary.

#### Method of Instrumental Variables (IV)

In order to correct the potential endogeneity problem of the education variable, they were used as instrumental variables related to the educational characteristics of the family of each individual such as the educational level of the head of family, mother or father due to their significant influence the decisions of individuals (Pons & Gonzalo, 2001). Likewise, it is considered a dichotomous variable that measures the coverage of the educational reform implemented in 1997, in order to obtain the return of education from consistent and unbiased estimators.

Table 3 shows the results of the Sargan Test which contrasts the null hypothesis that the equations are correctly over-identified and Heckman (Reverse Reason of Mills - RIM), which contrasts the existence of sample selection bias under the null hypothesis that the coefficient is equal to zero. The values obtained by the model confirm that there is a sampling selection bias, given that the coefficient of the inverse ratio of Mills is significant for all years so that its correction is appropriate, and the equations are correctly over-identified at 5 percent of significance, in the years 2011-2012 and 2014-2016. For the years 2010 and 2013, the equations are correctly over-identified at 1 percent of significance. When comparing the results of the estimation made by the method of Ordinary Least Squares (OLS) and that of Instrumental Variables (i.e. MLE) it is observed that the profitability obtained by the latter method is higher than in the case of OLS, this evidence suggests that the conventional OLS model produces a downward bias in the profitability of education. According to the estimates of the classical model, the rate of return in 2010 was 7.30 percent, while by the method of instrumental variables the return was 9.12 percent, 1.82 percentage points higher. Results of this type are obtained by Psacharopoulos and Patrinos (2004), for middle-income countries, as is the case of the Dominican Republic. The rate of return obtained thrugh IV is higher than in OLS by an average of 1.8 percentage points in the female case and 1.2 points in the male case. Similar results are shown when controlling for area of residence and sector.

of institumental variables, 2010-2010.							
Doriod	Try Sargan		Heckman (RIM)				
Fellou	Critical value P-value		Coefficient	P-value			
2010	5.20	0.02	0.89	0.00			
2011	2.70	0.10	0.91	0.00			
2012	2.55	0.11	0.70	0.00			
2013	5.59	0.02	0.84	0.00			
2014	0.92	0.34	0.66	0.00			
2015	2.80	0.09	0.65	0.00			
2016	0.45	0.50	0.75	0.00			

# Table 3. Significance tests of the models by the method of instrumental variables, 2010-2016.

#### **Extended Mincerian or Spline Regression**

The estimations of the expanded mincer model show that the higher the levels of instruction acquired, the greater the profitability obtained. For the year 2010, having basic education represented an increase of 2.97 percent of the labor income of one person with respect to another who did not have any level of education. In the same year, an individual who had reached a secondary level received a 12.50 percent higher income for the years of instruction acquired compared to a person with no level of education. If the person managed to reach a university level or higher, his rate of return would be 25.4 percentage points above the

primary level and 15.9 percentage points with respect to the secondary level, which meant a return of 28.40 percent at the university level. For 2016, it is observed that the returns of the primary and university level have presented a rise, this could suggest a shortage of personnel with the skills required by the level (higher demand of qualified workers would increase the salary offered and therefore the return to education). In the case of the secondary level the returns have declined. Similar results were found by (Psacharopoulos & Patrinos, 2004).

# **Regression Effect Sheepskin**

The Sheepskin effect shows the return of education in a more disaggregated version than in the extended model, allowing evaluating the existence of the diploma effect in the Dominican case, and analyzing the variation presented in profitability when a level is completed. On average, if an individual manages to complete the primary or basic level receives a return of 27.81 percent, this is 24.72 percentage points more than what he would receive if he had not completed the level. In the case of the secondary level, a person who manages to complete his studies has a return of 43.38 percent, more than double what an individual who has not completed. A result of interest arises from comparing complete primary and incomplete secondary, because it is observed that the performance of this last level without completing is lower than the primary level completed. This means that having achieved years of extra training to those of the basic and not having completed does not represent an increase in labor income. The highest returns are observed at the university level or higher, which suggests that employers attribute a greater importance to university achievements, interpreting this result as an influential factor in the productivity of an individual.

# **Correction of Sample Selection Bias**

The composition of the sample used in which the unpaid, the unemployed and the inactive are excluded could imply that the estimators obtained are inconsistent when calculating the OLS income equations. The fact that it is done for a group of people who have not been randomly selected but were self-selected to enter the labor market and get a job, leads to a problem known as incidental truncation. In this sense, when correcting the selection bias the resulting rates are lower than in the initial IV model, finding the highest level in 2015. When analyzing the performance disaggregated by the gender of the individual, like the results obtained by OLS, it is observed that women receive a higher return than men for each level of education attained. But, comparing with the results of the initial IV model, the estimated returns of women are higher after de correction while the returns of men are lower.

#### Conclusions

In this work, empirical evidence is presented about the existence of the sampling selection bias and the problem of endogeneity of the education variable that skews the profitability of education. The report showed that the rate of educational return, estimated using the conventional OLS model with or without controls, is inferior to the IV model. When comparing with the results of the IV model by gender, the estimated returns for women are higher after the correction than men.

#### References

- Angrist, J.D., & Krueger, A.B. (1991). Does compulsory school attendance affect schooling and earnings? The Quarterly Journal of Economics, 106(4), 979-1014.
- Angrist, J.D., & Krueger, A.B. (2001). Instrumental variables and the search for identification: From supply and demand to natural experiments. Journal of Economic Perspectives, 15(4), 69-85.
- Arrazola, M., De Hevia, J., Risueño, M., & Sanz, J.F. (2001). Estimación y comparación de las tasas de rendimiento de la educación en España (Working Paper No. 2/01). Retrieved from: https://www.researchgate.net/publication/28078719\_Estimacion\_y\_comparacion\_de\_tasas\_de\_rendimiento\_de\_1 a\_educacion\_en\_Espana

Arrow, K. (1973). Higher education as a filter. Journal of Public Economics, 2(3), 193-216.

- Barceinas, F. (2003). Endogeneidad y rendimientos de la educación. Estudios Económicos, 18(1), 79-131.
- Barceinas, F., Alonso, J.O., Raymond, J.L., & Roig, J.L. (2001). Rendimiento público de la educación y restricción presupuestaria (Working Paper No. 86), Retrieved from: https://www.etla.fi/PURE/Rendimiento.pdf.
- Becker, G.S. (1964). Human capital: A theoretical and empirical analysis, with special reference to education. University of Chicago Press, Chicago.
- Blackburn, M.L., & Neumark, D. (1995). Are OLS estimates of the return to schooling biased downward? Another look. The Review of Economics and Statistics, 77(2), 217-230.
- Brunello, G., & Miniaci, R. (1999). The economic returns to schooling for Italian men. An evaluation based on instrumental variables. Labour Economics, 6(4), 509-519.
- Card, D. (1993). Using geographic variation in college proximity to estimate the return to schooling. Retrieved from: https://www.nber.org/papers/w4483.pdf. [Accessed December 1, 2016]
- Dougherty, C. (2005). Why are the returns to schooling higher for women than for men? Journal of Human Resources, 40(4), 969-988

- Fiaschi, D., & Gabbriellini, C. (2013). Wage functions and rates of return to education in Italy. Retrieved from: http://www.ecineq.org/ecineq\_bari13/filesxbari13/cr2/p253.pdf [Accessed November 15, 2016]
- Freire, M.J., & Teijeiro, M. (2010). Las ecuaciones de Mincer y las tasas de rendimiento de la educación en Galicia in Investigaciones de Economía de la Educación (285-304). Zaragoza, Spain: Asociación de Economía de la Educación.
- Ginther, D.K. (2000). Alternative estimates of the effect of schooling on earnings. The Review of Economics and Statistics, 82(1), 103-116.
- Harmon, C., & Walker, I. (1995). Estimates of the economic return to schooling for the United Kingdom. American Economic Review, 85(5), 1278-1286.
- Harmon, C., Oosterbeek, H., & Walker, I. (2000). The returns to education a review of evidence, issues and deficiencies in the literature. London: Center for the Economics of Education.
- Haveman, R., & Wolfe, B. (1995). The determinants of children's attainments: A review of methods and findings. Journal of Economic Literature, 33(4), 1829-1878.
- Heckman, J.J. (1979). Sample selection bias as a specification error. Econometrica, 47(1), 153-161.
- Layard, R., & Psacharopoulos, G. (1974). The screening hypothesis and the returns to education. Journal of Political Economy, 82 (5), 985-998.
- Lema, D., & Casellas, K. (2009). Retornos a la educación en zonas rurales. Argentina Agricultural Economics Review, XI (1), 75-94.
- Mincer, J. (1974). Schooling, Experience and earnings. Cambridge: NBER Books.
- Peraita, C., & Sanchez, M. (1998). The effect of family background on children's level of schooling attainment in Spain. Applied Economics, 30(10), 1327-1334.
- Pons, E., & Gonzalo, M.T. (2001). Returns to schooling in Spain. How reliable are IV estimates? (Working Paper No. 446). Retrieved from: https://www.qmul.ac.uk/sef/research/workingpapers/2001/items/446.html.
- Psacharopoulos, G., & Patrinos, H. (2004). Returns to investment in education: A further update. Education Economics, 12(2), 111-134.
- Rojas, M., Angulo, H., & Velásquez, I. (2000). Rentabilidad de la inversión en capital humano en México. Economía Mexicana, 9(2), 113-142.
- Salas, M. (2007). El rendimiento de la inversión en capital humano: El caso de las profesiones médicas. Estadística Española, 49 (166), 531-561.
- Schultz, T.W. (1961). Investment in human capital. The American Economic Review, 51(1), 1-17.
- Skalli, A. (2007). Are successive investments in education equally worthwhile? Endogenous schooling decisions and non-linearities in the earnings-schooling relationship, Economics of Education Review, 26(2), 215-231.
- Spence, M. (1973). Job market signaling. The Quarterly Journal of Economics, 87(3), 355-374.
- Stiglitz, J.E. (1975). The theory of "screening," education, and the distribution of income. The American Economic Review, 65(3), 283-300.
- Uusitalo, R. (1999). Return to education in Finland. Labor Economics, 6(4), 569-580.
- Zuluaga, B. (2009). Different channels of impact of education on poverty: An analysis for Colombia. Retrieved from: https://core.ac.uk/download/pdf/6978976.pdf [Accessed February 8, 2017].

# WOMEN WHO FILL THE INSTITUTIONAL VOIDS: WHY DOES YAKULT SUCCEED IN OBTAINING EMERGING MARKETS? Koichi Nakagawa, Osaka University, Japan Tomomi Imagawa, Osaka University, Japan

This study examines why the Yakult's specific marketing method *Yakult Lady System* is effective in developing and emerging markets. Yakult, a Japanese beverage maker, established a unique marketing method called Yakult lady system in Japan during 20<sup>th</sup> century. It utilizes the system in emerging markets and obtained stable market shares in more than ten emerging countries. Previous studies have revealed that the Yakult lady system is consistent with the philosophy of sustainable development, such as poverty alleviation and improvement of social status of women. In fact, the system was followed by many firms such as Hindustan Lever and Grameen Danone in several emerging markets for sustainable community development. However, sufficient research has not been done as to why the Yakult lady system is effective in acquiring the market shares in emerging markets. Because Yakult succeeded in more than a dozen emerging countries worldwide, it is natural to think that there exists a sort of competitive rational mechanism that meets the unique environments of emerging countries. Using the theoretical framework of institutional voids, this paper reveals that the Yakult lady system can effectively acquire the market because it works as a mean to fill in several institutional voids.

#### Introduction

This study examines why the Yakult Group's sales method *Yakult Lady System* is effective in developing countries and emerging markets though the case study. Yakult established its own marketing method called "Yakult Lady System" in postwar Japan, and as shown in Figure 1, it has acquired a stable market in more than ten countries by using that method (Sugawara, 2010). This method has a high philosophical affinity with businesses in emerging markets. Bottom of the pyramid (BOP) business is a way of thinking that business opportunities will be created by redefining the poor people in the world, which had previously been targeted for assistance (Prahalad, 2004). In other words, this system provides employment opportunities for women in emerging countries, who are often socially vulnerable, and contributes to the sustainable development of the economy and society by achieving economic independence through their self-help efforts.



by country (2017) Source: Adapted from Yakult Honsha Website (September 8th, 2018)

While the philosophical conformity received significant attention, the competitive rational aspect of *why the Yakult Lady System can achieve stable success in emerging markets* is unclear. Because the Yakult Group has been successful in emerging markets in more than a dozen countries, the world-unique marketing method of the Yakult Lady System will have some kind of competitive rationality adapted to the emerging markets' specific competition environment. It is reasonable to think that there is a mechanism. This study tries to clarify the logic behind it by analyzing the mechanism.

The analysis of the Yakult Lady system brings about an important theoretical contribution to literature, rather than just describing a unique case. This study reveals that the Yakult Lady system solves social problems caused by *institutional voids* (Khanna & Palepu, 2010) that characterize emerging markets. So far, it has been discussed how the effects of institutional voids impact the economy and corporate behavior of emerging countries, and what measures are effective for each void. However, when

each emerging market is viewed as an integral part of various institutions, it is not clear what business system can work there. In this study, we propose the Yakult Lady system as a solution to the social issues such as health and poverty.

#### Literature Review

There is a certain amount of research accumulated about the Yakult Group and its unique marketing method, the Yakult Lady System (Sugawara, 2010; YHCHC, 2014). The Yakult Lady System, built by the Yakult Group, is a mechanism to handle local women as independent business operators that sell dairy products including functional

beverage "Yakult" while establishing close relationships with customers as sales personnel. The prototype of the Lady system is the professional department called *Eigyo*, which developed a mechanism in postwar Japan. Japan's unique Eigyo is responsible for both strategy planning and execution in the field where it is divided into marketing, which is a strategy that headquarters considers in other countries, and sales, which is its execution unit in various countries (Johansson & Nonaka 1996). In order to make that possible, Japanese *Eigyo* are given greater authority than overseas sales, and it is required to act while thinking on their own. In addition to this, *Eigyo* will build a solid personal relationship with the customer's purchasing department, and build a customer network that brings stable sales to the company. The Yakult Lady System, like the *Eigyo* system in Japan, leaves all product sales strategies to Yakult Lady, who will manage the products and sell themselves.

The Yakult Lady system centers on this kind of Japanese sales system, but there are some differences. In other words, although the person in charge of sales is an employee conventionally employed by a company, in this system, local women are engaged in sales as Yakult Lady who is an independent self-employed person. Remuneration is paid from the Yakult according to the results. The customer acquisition strategy and the relationship maintenance are completely left to Yakult Lady. The Lady is given a big incentive to earn income according to the volume instead of risking not earning money (Sugawara, 2010). The reason why Yakult's lady system attracts attention in recent years is due to its high consistency with the philosophy of BOP business (Prahalad, 2004; Sugawara, 2010). By joining local people as the important economic stakeholders, and by casting business risks to them, they get motivated by economic incentives and try to maximize their own economic return. Under such a mechanism, the sustainable development of the local area is likely to be expected (London & Hart, 2004; Prahalad, 2004). The feature of the lady system that the local woman is set as a self-employed agent, is ideally consistent with this BOP business philosophy. Yakult lady system that gives employment opportunities to women who are often socially vulnerable, makes them learn management skills and be independent economically, contributing to improving the sanitary condition by healthy drink Yakult. As people understood the Yakult lady system's significance to BOP, some followers emerged and utilized the same method such as Danone lady by Grameen Bank and Danone, Shakti of Hindustan Lever, Polygul Lady of Japan Polygul, etc. (Jacob & Kwok, 2011; Rangan & Rajan, 2007; Sugawara, 2010).

We point out that there remains the academic gap in understanding the competitive rational aspect of Yakult's lady system. Although it is claimed that the Yakult Lady System is in line with the idea of the business of emerging countries that local human resources develop with their own support efforts in previous research (Rangan & Rajan, 2007; Sugawara, 2010), it has not been clear about why the mechanism is effective. Therefore, this research attempts to analyze why Yakult's lady system can be effective in emerging markets focusing only on its competitive-rational side and daring to exclude its philosophical aspect.

# **Analytical Framework: Institutional Voids**

As a framework that meets the conditions, we focus on the fact that the lady system has successes in more than 10 emerging countries, and the analytical framework used here can capture the common characteristics in various emerging markets. In this study, we use the institutional voids (Khanna & Palepu, 2010) as an analysis framework. They found that the major difference between emerging and developed markets is the efficient functioning of the market mechanism. They called this institutional deficiencies 'Institutional voids' and argued that completion to that would be an inherent success factor in emerging markets. Infrastructure is considered to be a system here (Hoskisson, Eden, Lau, & Wright, 2000; Khana & Palepu, 2010), and it is thought that economic activity cannot be carried out in the same way as developed markets, because there is something wrong with that. It analyzes from the three aspects of product market, labor market and capital market.

First, the critical institutional voids to be considered as product market issues are concentrated on the channel issues connecting consumers and producers and the contract fulfillment issues. The issue of the channel connecting consumers and producers, that is, the distribution network, is pointed out first as a widespread problem in emerging markets (Anderson & Markides, 2007. In emerging markets, there are no major distributors with networks throughout the country, and the logistics network may not reach completely in the country. That immature distribution system makes it difficult for companies to transact with consumers in emerging markets. Contract non-performance in the product market, which is the problem of collecting funds at the point of sale, is also a problem (Hoskisson et al., 2000; Miller, Lee, Chang, & Le Breton-Miller, 2009). This is a problem that arises not only in transactions with consumers but also in transactions with wholesale and retailers. Because, consumers and distributors in emerging markets have poor solvency compared to developed countries, and in some areas, credit transactions are difficult, it is difficult to obtain quick turnaround funds from capital markets. The inadequacies in

the legal system also heighten the risk of opportunistic behavior. Therefore, the company that enters into emerging markets has to respond to the risk of contractual default.

Second, looking at the labor market, two problems that prevent efficient transaction exists: lack of skills and incentives. Regarding the quality of labor, educational infrastructure from primary to higher education is sometimes not in place in emerging countries, and thus skills of labor sometimes come to be insufficient in doing highly technological operations or structured marketing and sales (London & Hart, 2004). For that reason, it sometimes become impossible to do the same business operation as in the developed countries (Hoskisson et al., 2000; Khanna & Palepu, 2010). The company heading into emerging markets often faces the trouble with employees about the contract implementation. Because of the lack of law, regulations, social norms, or practices, workers sometimes blew off their work. They often leave their jobs or work illegally. It is a problem about incentives. Adequate incentive systems would improve the situation and people can be motivated by those incentives to do the job (London & Hart, 2004; Reficco & Márquez, 2012).

Third and finally, looking at the capital market, companies often feel trouble in getting funds when the local financial institutions and stock markets are not developed well (Chakrabarty, 2009; Dhanaraj & Khanna, 2011). Thus, they often understand that it is difficult to make large investments to construct a new facility, to hold a big promotion campaign, or to develop their own distribution network. In such cases, companies must rely on money transfer from home country headquarters. After that, a certain degree of business result will be required from an early stage so as to meet the investment. Moreover, even in situations where the turnover funds may be temporarily tightened to continue business activities, companies will experience difficulties in countries where capital markets are not developed.

By focusing on those institutional voids, it becomes possible to grasp the characteristics of each emerging market (Mair, Martí & Ventresca, 2012; Puffer, McCarthy, & Boisot, 2010). This research also uses this framework to examine why the Yakult Lady system is effective.

#### Methodology

In this research, we take a case study method that derives solutions inductively from actual observations. Considering the open-ended nature of the question on why Yakult lady system works effectively in emerging countries, it seems difficult to generate hypotheses a priori from the theory, and thus we should take explorative approach to find an answer for the why-type question (Eisenhardt, 1989; Glaser and Strauss, 2017; Miles and Huberman, 1994; Yin, 2017). In addition, it seems suitable to take qualitative approach because this study tries to capture the whole structure of Yakult lady system and emerging markets where various factors interact (Eisenhardt 1989; Yin, 2017). Based on the replication logic of the multiple case study (Eisenhardt, 1989), we observe some Yakult's overseas business cases and try to get convergence about the causal mechanism of the phenomenon. The case method is often regarded as suspect since sample bias implies problems for external validity (Bryman, 2001). However, in replicating some similar cases we could reach the convergence of the causal structure of the phenomenon (Yin, 2017), while a basic lack of knowledge about how variables are causally related also warrants explorative research based on small number of samples (Doz, 2011; Johnson & Foss, 2011). As a replication procedure, at first, we listed the similar cases in Yakult; i.e. overseas subsidiaries operating in emerging markets that sold products only in that country and kept performing well financially. Next, we asked them randomly to accept our survey. We started field-based research from Indonesian subsidiary in 2017, and then proceeded Mexico, China and Brazil duing 2017-2018. After finishing the Brazil survey, we found that we got convergence about the mechanism. Thus our study is based on four cases that has the same properties.

In addition, we also interviewed the executive of the Japanese Headquarters of Yakult to validate the understanding of the mechanism and function of the Yakult lady system. We interviewed the current situation and strategy of Yakult's global business, and also gained an understanding on how Yakult lady system is considered in its overseas business. In order to conduct an in-depth survey on the business activities of the company, we took the consent and cooperation of the company and the handling of personal information. First, when asking for an interview, we carefully explained the purpose of the survey and started with the consent of the company.

When presenting the study, we had the permission from the company for the information obtained from the interview. Details of the survey are as shown in Table 1. In each case, we interviewed more than two layers of the overseas subsidiary. We interviewed senior managers always, middle managers sometimes, and *ladies the* other times. In addition, we observed in the field: how the ladies operated sales activities in each country. In this research, we approach questions by using a case study method in which we try to derive solutions inductively from observation of the actual situation. Based on the replication logic of the multiple case study (Eisenhardt, 1989), we observe four Yakult's overseas business cases and try to get convergence about the causal mechanism of the

phenomenon. In addition, we also interviewed the executive of the Japanese Headquarters to validate the understanding of the mechanism and functioning of the Yakult lady system. Details of the survey are as shown in Table 1.

Table 1. Summ	nary of survey	
Case	Data	Date
	collection	
	method	
P.T. YAKULT	Interview	President 5 November 2015, 25 October 2016
INDONESIA		Board of director 5 November 2015, 25-28
PERSADA		October 2016
(Indonesia)	Observation	Meeting 5 November 2015, 25 October 2016
		Sales 26 October 2016, 28 October 2016
YAKULT S.A.	Interview	President 19 December, 2017
DE C.V.		Sales director 19 December, 2017
(Mexico)		a lady 20 December, 2017
	Observation	Meeting 20 December, 2017
		Sales 20 December, 2017
GUANGZHOU	Interview	President 11 January, 2018
YAKULT CO.,		Vice president 11 January, 2018
LTD.		a lady 12 January, 2018
(China)	Observation	Meeting 12 January, 2018
		Sales 12 January, 2018
YAKULT S/A.	Interview	President 19 April, 2018
IND.E COM.		Sales Managers 19 April, 2018
(Brazil)		a lady 18 April, 2018
	Observation	Meeting 18-19 April, 2018
		Sales 18-19 April, 2018
YAKULT	Interview	Manager 22 January, 2018
HONSHA CO.,		Board of director 22 January, 2018
LTD.	Observation	Meeting 22 January, 2018
(Japan)		Sales 22 January, 2018

#### Findings

# Establishing Distribution Network in Own Company

The important institutional voids found in many emerging countries are undeveloped distribution channels and transportation infrastructure. Observation results show that the introduction of the Yakult Lady system constitutes a distribution channel by Yakult itself, so that it is possible to reach consumers in each country regardless of the development status of the distribution channel. In other words, trading with consumers directly by *Yakult Lady* is the main way to sell. So, regardless of the development level of distribution network, they could access the end consumer (Sugahara, 2010).

At Yakult's observed base of the four countries, each sales area is divided and one *Yakult Lady* is adopted and allocated first. By

arranging Yakult Lady gently in each country's market, they build a direct sales route.

The situation and characteristics of the distribution network were different in the four countries, but in any countries, Yakult build its own distribution network by Yakult Lady System. In Indonesia, it was difficult to build the same distribution as developed countries. There were many narrow alleys in the capital Jakarta where products could not be delivered by car, but in those areas Yakult Lady entered by foot and delivered products. In Mexico and Brazil, regions with low population density in rural areas are not developed. There were places where existing distribution networks have not reached. Even in these areas, local women in each rural area will sell, so they can build a distribution channel that distributes products from its sales offices to customer's home in each region. As a result, Yakult could access areas that other companies cannot reach. By placing Yakult Lady in every area and enabling distribution in any area, opportunities for sales will increase.

# Trust Collateral of the Transaction Bidirectional by Using Local Social Capital

Regarding the response to the information infrastructure in the case of this research, the basic product information could flow. However, as consumers' education level is insufficient, consumers are not fully aware of information such as mechanisms the product contributes to the health and "Yakult" was treated as a preference item. In consideration of this situation, Yakult Lady told consumers about the product in details. The provision of product information to customers by Yakult Lady System enables product explanations that match the customer's physical condition and the climate of the day. It was more effective information than advertisements using mass media such as TVCM could provide. However, the initial Yakult Lady does not have sufficient knowledge as well as consumers. Therefore, the Yakult Group has established a fulfilling training system to train all Yakult Ladies as information providers. For New Yakult Lady, they conduct a classroom training and set up learning opportunities for knowledge on detailed products. And from the first customer's home visit, they receive on-site training from the employees about product explanation to customers. By making customers have a deep product understanding and recognize the product features through a conversation with Yakult Lady, it is possible to make customers recognize the necessity of "Yakult" and continue to purchase as a result.

# **Cash Collection by Trading Products with Cash**

About the cash collection problem at the time of sale, the Yakult Lady system responded by dealing with cash and the products thoroughly. In the observed countries except Brazil, Yakult adopts a way to sell the products and receive the cash on the spot, not to miss the timing of cash collection. In other words, Yakult doe not use credit sales

and monthly sales. In addition, in the cases of these many countries, the rules of exchange of cash and products on the spot were thoroughly carried out even in the transaction between Yakult Lady and Yakult. Yakult Lady does not have the incentive to declare the sales record fraudulently because overstocking or under stocking will happen if she makes a false declaration. This cash collection between customer and Yakult Lady makes it possible that collection of sales proceeds quickly.

# Social Capital as an Alternative to Skills

The local human relationship possessed by Yakult Lady, as mentioned above, also played a role in replacing advanced marketing skills. In all four observations, in adopting Yakult Lady, Yakult did not require her to having a high level of sales skills. In all four countries, prior to start selling in the area, Yakult's employee will decide the sales route of Yakult Lady. He sets up the sales route for Mondays to Saturdays and Yakult Lady follows it, so they can get customer trust. The trust relationship was the basis for building relationships with customers. For example, Yakult Lady, who has good business results in Indonesia, will generally have a longer stay at customer's home. Because of trust, the customer self-discloses and has a lively conversation, and Yakult Lady can make use of the information obtained from the conversation for the next business. In Mexico, Brazil and China, security is bad, and urban areas have a lot of tower apartments with severe security issues. Home delivery is possible even in such residences because customers living there trust Yakult Lady and open the gate for Yakult Lady as their guests. In addition, as part of the Yakult Lady System, Yakult trained them thoroughly after adopting Yakult Lady. Although Yakult Lady does not require special skills to start a business, time for education and training was established in all countries. Yakult was keen to establish a long-lasting contractual relationship with Yakult Lady and grow them to have special knowledge and advanced communication skills over several years.

# Offering Yakult Lady an Incentive with Individual Agency Contract

As confirmed in the preceding research, it is a distinguishing feature of the Yakult Lady system even after comparing with the sales system of similar Japanese companies that Yakult has an individual distributor contract with Yakult Lady. That is, she is not a regular employee of the company. We confirmed this system in all cases observed. Both by Japanese executive and all the expatriates in four countries, the reason why this system is adopted is that to make Yakult Lady work on their own efforts and ingenuity by linking the sales and income. From here, it is inferred that the Yakult considers that the individual agency contract of Yakult Lady as a mechanism to give incentives to work for Yakult Lady. However, as an interesting way, Yakult thinks it to be an incentive design. That is, instead of setting high incentives to grow a few elite Yakult Ladies, rather Yakult plans all "Yakult Ladies" can get average income. Yakult thinks Yakult Lady as the main distribution channel. The margins of each product is so small that it has to sell them large volumes. Therefore, it is more desirable that the situation promotes some excellent Yakult Lady who make big sales while all average "Yakult Ladies" in the country gets enough sales. Therefore, the company does not plan extremely high incentives and focuses on sales that every Yakult Lady has enough sales. In addition, from the observation results, it becomes clear that a simple incentive design without considering the local circumstances has resulted in leaving their job of Yakult Lady. It is important to have a system that allows every Yakult Lady to make stable sales. In all four countries we observed, there is a big gap between the rich and the poor. When Yakult introduced the Yakult Lady System, some Yakult Ladies could raise sales without having difficulty while others could not even if they made a considerable amount of effort. So the "Yakult Ladies" felt unfairness and as a result, quit their jobs. In response to these circumstances, each subsidiary that we observed redesigned incentive design by expatriates. For example, in Indonesia, the reform was conducted mainly by expatriates. They actually walked around to estimate income levels and number of households in each place and precisely recalculated sales in their area. As a result, incentive design was revised so that any Yakult Lady could earn stable income from the initial stage of inauguration.

# **Gradual Expansion Does Not Require Large Investment of Funds**

From the observation of the case, it also became clear that a reason why the Yakult Lady System is easy to function in emerging markets is not to require a huge investment to develop business. When starting a business in any country, Yakult starts with adopting a minimum number of Yakult Ladies that the business can hold. It is at most a few dozen Yakult Ladies. At this time, the necessary funds are only personnel expenses until the immediate sales are made, and if their sales activities are on track to a certain extent, Yakult will be able to pay salaries to Yakult Ladies from sales they made. For example, in an Indonesia subsidiary, which established in 1991, it started with dozens of Yakult Ladies initially. As the company's management base and funding ability increased, the pace of expansion increased with 500 people in the year 2000, more than 1000 people in 2007, and 5000 people in 2013.

# **Expatriates Learning for Local Adaptation**

Finally, although it is different from the direct measure against the institutional voids, in all cases observed, it gives strong authority to the expatriate who sent from Yakult headquarters, and allow them to modify the detail of Yakult Lady System freely at the site. Yakult has developed a standard form of the Yakult lady system for overseas in the 1980s and when the company goes overseas, it basically introduces a common Yakult lady system for each country. At the same time, it was given as a mission for expatriates to correct the Yakult Lady system according to the local circumstances. After that, combining the in-depth understanding of the Yakult Lady system obtained in Japan with an understanding of the local situation, they will modify the sales system with a great deal of authority.

#### Discussion

The facts revealed in the cases are summarized in Table 2. From this table, at first it can be pointed out that the state of the institutional voids was different for each country. And it also shows that, although Yakult has been making modifications to accommodate the differences in those countries, the sales method was operated under the same idea in any country.

Table 2. Summary	of the findings			
	Indonesia	Mexico	Brazil	China
Product market :	narrow alleys	Defect of local tran	sportation network	No difficulty
Physical channel				
defect				
Correspondence	Buildi	ng own distribution ne	etwork by "Yakult L:	ady"
Product market :		Product function is	not understood	
information				
channel defect				
Correspondence		Product description b	by "Yakult Lady"	
Product market :	It can occur for be	oth consumer and	Little di	fficulty
Contract	distrik	oution		
fulfillment risk				
Correspondence	Omit intermedi	ate circulation	Omit	Omit
	Cash spo	t trading	intermediate	intermediate
			circulation	circulation
			Recommend	Use Cash spot
			Cash spot trading	trading for the
				main
Labor market :	Often th	ere are problems with	advanced marketing	skills
Quality assurance				
of labor				
Correspondence	Supplem	ent skill shortage with	h building trust relati	onship
		Training after :	recruitment	
Labor market :		Need a mechanism	to motivate labor	
Incentive design				
Correspondence	Enter into contract s	ales agency contracts	with "Yakult Ladi	es", Provide sales
		support for inco	me guarantee	
Capital market :		It may be difficult		There is little
Financing				challenge
Correspondence		Start business on	a small scale	
	] ]	Extended by subsidia	ry internal reserves	
Modification of	Fixed accord	ing to the local situati	on centering on expa	triate staff
"Yakult lady				
system"				

Based on Table 2, Table 3 summarizes how the "Yakult Lady System" responded to the institutional voids and what kind of outcomes were obtained as a result. The institutional voids in product market are as follows: the problem of distribution channel and traffic infrastructure; local women are overcome by accessing by walking and using a bicycle. Similarly, the institutional voids in the product market are resolved as follows: lack of information infrastructure is solved by Yakult Lady providing information directly at the time of delivery. In addition, Yakult has prepared a training system to back it up. The institutional voids in the Labor Market System are as follows: problem about difficulty of securing human resources with sophisticated marketing skills, Yakult prepares a mechanism and training system to create social capital to complement it.

The institutional voids in Labor Market are resolved as follows: the lack of labor normative, Yakult provides appropriate incentives by separately contracting sales agency contracts with Yakult Lady. Institutional voids in the capital markets present as follows: difficulty in collected proceeds due to lack of funding ability, a system that exchanges goods and cash at almost the same time, preventing the omission of payment collection. Similarly, resolving institutional voids of capital markets are: the difficulty of financing; Yakult made it possible to cover within cash flow by expanding gradually. From the above discussion, it is clear that various features seen in emerging countries correspond to institutional voids. Because of these characteristics, sales steadily increase in each country as seen in Figure 1.

However, it is emphasized here that even though the basic framework of the Yakult lady system is unchanged, Yakult gives expatriates great authority to change detailed implementation of the system along with each country's specific condition. Although basic features such as small start are gradually expanding, employing women from local communities, own distribution network, spot trading were unchanged in any observation case,

	Institutional voids and	Characteristics and	The effect that the "Yakult
	the problems it bring	mechanism of "Yakult Lady System" corresponding to institutional voids	Lady System'' directly brings
Product market	Because the distribution channel is pre-modern and transportation infrastructure is not well developed; goods cannot be delivered to nationwide consumers efficiently.	Construct a distribution network that utilizes walks and bicycles of local women.	Yakult is also accessing consumers in areas where transport infrastructure is not in place to create sales opportunities. Since Yakult does not use intermediate distribution, it is possible to avoid wholesale margin. In addition, lead time to consumers is accelerated, so that sales trends to consumers can be grasped by daily sales.
	Product information is not understood because consumer education level is low.	When Yakult Lady delivers customer's home, she will describe the product information in accordance with the customer's physical condition and the climate of the day. Designed Yakult Lady training so that she can explain to customer sufficiently.	Yakult Lady politely explains the product to consumers with low education level, so that customers deepen product understanding. Such a customer increases the loyalty and purchase products in continuous high frequency.
Labor market	Because of the low level of education, it is difficult to secure human resources with advanced marketing skills.	Replacing marketing skills with social capital. Provide skill training after adoption.	Even in Yakult Lady who did not have marketing skills, by building a relationship of trust with customers, it is possible to successfully sell products and to increase sufficient sales.
	Because there is no implicit norms of labor, incentive design is required to have the workers work adequately.	Does not regard Yakult Lady as regular employee, but contract sales agency which is separate from each other.	Draw out Yakult Lady 's efforts and creative ingenuity by giving appropriate incentives and increase in sales per Yakult Lady and retention rate.
Capital market	Difficulty in collecting funds after sale due to lack of funds.	Exchange products and cash at almost the same time.	Avoid missing payment collection. There is no need to take labor for collecting funds later, so no extra cost is incurred.
	Financial institutions and stock market do not function sufficiently, and thus financing is difficult.	Gradual expansion that does not require large investment of funds.	Without relying on funding from outside, it is possible to expand the scale by using the increased cash flow due to increased sales.

 Table 3.
 Summary of Cases

though there are differences in the concrete method employed in each country. Basically, the change was made by the initiative taken by the expatriates. Expatriates have been educated about the operation of the Yakult Lady System in their home countries for at least several years to learn the local situation. As a person who is familiar with both the Yakult lady system and the local situation, Yakult's Japanese expatriate managers are key person in-charge of making the Yakult lady system workable in local settings with keeping its unchangeable basis and spirit.

#### **Contributions and Limitations**

The academic contribution of this research is in the logical examination that the Yakult Lady system is a welladapted system as a business system that can benefit emerging markets where some institutional voids are observed. An academic case study exploration was carried out to understand (1) how the clearance of the system affects the market characteristics and corporate behavior in emerging countries across the individual systems (Khanna & Palepu, 2010; Mair et al., 2012; Puffer et al., 2010), and (2) what kind of measures should be taken into account in order to improve the quality of female life. However, if various emerging-market markets are viewed as a whole as various system conditions are acting in a mixed manner, what kind of business system is effective that can deal with it, is not clearly clarified. This research contributes to the proposal of one success example along with its reasons, which is important in the sense that it will be empirical evidence for future comparisons and studies that try to capture emerging markets and the management approach theoretically.

Therefore, as future research, it is necessary to analyze its superiority and inferiority as compared with cases working in emerging countries as a business system and to describe the features and advantages of Yakult Lady System. We should also consider the possibility of duplicating the Yakult Lady system at other companies and improve on its limitations. Although some follow-up examples including Hindustan Lever have already appeared (Rangan & Rajan, 2007), there is room for consideration whether it is widely applicable. Further qualitative investigations that broaden the scope of observation, and if a certain number of replication cases appear in the future, it will be necessary to verify them through quantitative analysis.

Finally, we would like to mention the practical implications of this research. This research suggests that it is necessary to establish a total system that functions without depending on the condition of institutional voids if we want to get profit from several emerging markets. In the case of Yakult, it built the distribution by themselves, regardless of the maintenance situation of the distribution network, and sold it by utilizing the community regardless of the skill level of the workers. Adaptation to local conditions by expatriates also contributes greatly to success. However, the reason why this system is applicable in various countries because it has characteristics which are hardly influenced by conditions of each country. Such a mechanism may be created not only for sales but also for production, logistics, or research and development. In order to overcome institutional voids, we should aim to construct a business system that does not depend on the status of institutional development.

#### References

- Anderson, J., & Markides, C. (2007). Strategic innovation at the base of the pyramid. MIT Sloan Management Review, 49(1), 83-88.
- Bryman, A. (2001). The nature of qualitative research. Social Research Methods, 365-399.
- Chakrabarty, S. (2009). The influence of national culture and institutional voids on family ownership of large firms: A country level empirical study. Journal of International Management, 15(1), 32-45.
- Dhanaraj, C., & Khanna, T. (2011). Transforming mental models on emerging markets. Academy of Management Learning & Education, 10(4), 684-701.
- Doz, Y. (2011). Qualitative research for international business. Journal of International Business Studies, 42(5), 582-590.
- Eisenhardt, K.M. (1989). Building theories from case study research. Academy of Management Review, 14(4), 532-550.
- Glaser, B.G., & Strauss, A.L. (2017). Discovery of grounded theory: Strategies for qualitative research. NY: Routledge.
- Hoskisson, R.E., Eden, L., Lau, C.M., & Wright, M. (2000). Strategy in emerging economies. Academy of Management Journal, 43(3), 249-267.
- Jacob, S., & Kwok, P. (2011). Improving lives in the base of pyramid, profitably. Social Space, 48-53.
- Johansson, J.K., & Nonaka, I. (1996). Relentless: The Japanese way of marketing. NY: Harper Business.
- Jonsson, A., & Foss, N.J. (2011). International expansion through flexible replication: Learning from the internationalization experience of IKEA. Journal of International Business Studies, 42(9), 1079-1102.

- Khanna, T., & Palepu, K. (2000). Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups. The Journal of Finance, 55(2), 867-891.
- Khanna, T., & Palepu, K.G. (2010). Winning in emerging markets: A road map for strategy and execution. Harvard Business Press.
- London, T., & Hart, S.L. (2004). Reinventing strategies for emerging markets: Beyond the transnational model. Journal of International Business Studies, 35(5), 350-370.
- Mair, J., Martí, I., & Ventresca, M.J. (2012). Building inclusive markets in rural Bangladesh: How intermediaries work institutional voids. Academy of Management Journal, 55(4), 819-850.
- Miles, M.B., Huberman, A.M., Huberman, M.A., & Huberman, M. (1994). Qualitative data analysis: An expanded sourcebook. CA: Sage.
- Miller, D., Lee, J., Chang, S., & Le Breton-Miller, I. (2009). Filling the institutional void: The social behavior and performance of family vs non-family technology firms in emerging markets. Journal of International Business Studies, 40(5), 802-817.

Prahalad, C. K. (2004). The fortune at the bottom of the pyramid. Delhi: Pearson.

- Puffer, S.M., McCarthy, D.J., & Boisot, M. (2010). Entrepreneurship in Russia and China: The impact of formal institutional voids. Entrepreneurship Theory and Practice, 34(3), 441-467.
- Rangan, V. K., & Rajan, R. (2007). Unilever in India: Hindustan lever's project Shakti-marketing FMCG to the rural consumer. Boston, MA: Harvard Business School.
- Reficco, E., & Márquez, P. (2012). Inclusive networks for building BOP markets. Business & Society, 51(3), 512-556.

Sugawara, H. (2010). Japanese business and poverty reduction. Society and Business Review, 5(2), 198-216.

YHCHC (2014). Yakult Headquarters Corporate History Committee: Yakult 75 Years History. Yakult Honsha Webshite (2018) http://www.yakult.co.jp/company/ir/finance/results/pdf\_tanshin/h30\_04\_shiryou.pdf [Accessed on 19 June, 2018)

Yin, R.K. (2017). Case study research and applications: Design and methods. CA: Sage.

# SUBSCRIPTION VALUE OF YOUTUBE INFLUENCERS: UNDERSTANDING RELATIONSHIP OF SUBSCRIPTION VALUE BETWEEN TIME, TOTAL SUBSCRIPTIONS AND INDUSTRIES Nazan Colmekcioglu, Nottingham Trent University, UK

This quantitative study examines subscription value as a possible way to measure estimated reach of marketing message through YouTube influencers as compared to pure number of subscribers to help marketers select YouTube influencers. This study uses correlational archival research with YouTube and Social Blade as information sources as well as applied Tears model in sampling. The findings indicate that subscription value of average YouTube influencers (1) changes negatively over time, (2) decreases as the number of total subscriptions increases, (3) differs between gaming, cooking and fitness categories, and (4) varies its homogeneity within a single sector. The implications of the study for mangers are that (1) long-term relationship with a single influencer may be not optimal due to declining subscription value of the YouTube influencers over time; (2) subscriptions, therefore YouTube influencers with lower subscription levels can deliver higher reach; (3) certain sectors may have higher return on investment from the use of social media influencers; and finally; (4) varying levels of subscription value should be expected among YouTube influencers within the same sector.

# Introduction

Social media influencer marketing is a rapidly growing method of meaningful advertising to Millennials, who engage heavily with social media platforms. However, despite great interest of scholars that influencer marketing attracts, there is an ambiguity regarding how to select appropriate social media influencers. More specifically, the assumptions among scholars and marketing practitioners indicate that the number of subscribers directly translates to reach of the marketing message. As a consequence, many companies select social influencers inappropriately, which is essential to drive profitability. Baer and Naslund (2011) develop more effective metrics that would estimate reach of the influencer, rather than popularity. The subscriptions to views conversion rate referred as subscription value in this research study has the potential to provide accurate estimates of reach that the marketing message created by social media influencers is likely to have; however, no research has been done in regard to subscription value. Therefore, this research study strives to shed light on how the subscription value of YouTube influencers differs across time, level of subscriptions and industries.

This study provides background information regarding current social media usage which revolutionized influencer marketing through the creation of social media influencers and outlines the technological and demographic relevance of the research. Afterwards, the research study shifts direction towards the attractiveness of social media influencers and how subscription value could solve the existing problem within the selection of social media influencers in terms of reach. Second, this research study investigates the literature on both traditional and social media influencers in order to gain insights on selection of appropriate sample of YouTube influencers. Also, the research study compares the effectiveness in the marketing context to understand the success of social media influencer marketing and what could influence subscription value of YouTube influencers. Next, the potential strategies of using social media influencers are explored to decide which strategy would be most optimal given the results of subscription value. Finally, this study investigates the existing literature regarding the selection process of influencers, while marketers may erroneously assume that higher number of followers directly transfers to higher reach of the message.

# Shift from Traditional to Social Media Influencers

As early as 1980s, marketers started to utilize the word of mouth marketing, where they encouraged customers to recommend the loved products to their family and friends. Also, scholars quickly acknowledged the potential power of word of mouth marketing as personal recommendations were more credible than other forms of advertising, as customers believed it to be an authentic declaration (Rogers & Cartano, 1962). Consequently, the idea that everyone could be opinion leader, and thus influencer was born. However, the social circles of ordinary person were very limited to closest friends and family, which drastically reduced the impact that their word of mouth could have. Therefore, marketers did not focus on ordinary individuals but rather relied on word of mouth through testimonials from well-known figures such as actors, doctors and athletes in TV commercials and magazines. More specifically,

the celebrity endorsement strategy is so popular that roughly every fifth advertisement includes a celebrity (Halonen-Knight & Hurmerinta, 2010); e.g. where Pepsi is endorsed by Beyonce, and Nike by Cristiano Ronaldo, among others. Currently, the nature of influential marketing has changed with the rise of the Internet which gave life to social media influencers who are ordinary individuals that use social media to share opinions across their large social network. As a result of the evolution of social media websites, word of mouth marketing has experienced a revolutionary change, from which marketers can benefit by capitalizing on new and unique way of reaching consumers, especially millennials.

More specifically, previously social networks were limited to physical interactions, whereas social media enables individuals to grow their social networks beyond geographical boundaries (Rizqia & Hudrasyah, 2015). In effect, social media websites have intensified the connectivity between customers, and products and services (Hall 2017; Nielsen, 2016), thus making word of mouth marketing a powerful tool for advertising. Indeed, 74 percent of consumers rely on social media such as Facebook, YouTube, Instagram and Twitter to influence their purchasing decisions, where around 40 percent of respondents purchased an item online after seeing it being used by an influencer of YouTube, Instagram or Twitter (Karp, 2016). Recently, many marketers have started to include social media influencers in their marketing strategy as they can be extremely attractive for marketers with Millennials as target market for several reasons. The nature of videos and interactions through comments allows for YouTubers to have more open communications with their fans, mirror their personality and mimic real-life conversations, which breed trust and familiarity more effectively than traditional influencers such as celebrities, athletes or any other traditional influencers (Nielsen, 2012). Additionally, young generation is accustomed to seeking useful information from people with high online status, and the long history of YouTube has provided enough time for many YouTubers to establish themselves as experts in their specific niche that their channel focuses on.

# **Social Media Influencers**

Social media influencers are everyday individuals who operate on numerous types of social media such as Instagram, YouTube, Twitter or blogs and share contents, which influence the opinions of their large following (Abidin, 2016; Freberg et al., 2011) as their opinions are valued by a considerable number of social media users (Snee, 2008) in a specific niche group of people (Marwick, 2013). This study acknowledges the fact that there are also social media influencers who are brands in their own right. So for the purpose of the study, only social media influencers who are clearly individuals who can be used as brand ambassadors will be taken under consideration.

# The Importance of Influencers in Marketing

Influencers are perceived by social media users as creators of their own messages about the brand, thus do not associate them with advertising. This para-social relationship (Horton & Wohl, 1956) gives the followers the illusion of having an actual real-life relationship with the social media influencers (Chen, 2014), which grows as influencers comment, like, share back to followers (Marwick, 2016). Therefore, due to the para-social relationships between social media influencer and followers, marketers can take advantage of this high-quality relationship and large social networks to spread the brand message across their social networks (Kirby & Marsden, 2006). More specifically, by building high quality relationships with followers, the influencers are perceived as highly relatable and trustworthy, and thus have higher probability of encouraging followers to try the product. Brown and Reingen (1987) and Frenzen and Nakamoto (1993) confirm that the stronger the ties between influencers and followers, the stronger the influential power between them. As a consequence, due to the loss of ability to connect with an ever-increasing number of followers, the subscription value would be much lower for mega influencers, and thus they would be less effective for marketing communications. Keller et al. (2007) discovered that offline word of mouth marketing is more prevalent in entertainment than children related products, and thus similar principles can apply for online word of marketing spread by social media influencers. Therefore, in the context of this study, we examine whether the subscription value differs for YouTube influencers between the different categories within YouTube, while remaining fairly homogenous between YouTube influencers within the same topic category.

# **Strategies of Using Social Media Influencers**

Brown and Hayes (2007) identify three forms of using social media influencers. First, marketers can *advertise to influencers* where the aim of marketers would be to make the influencer aware of the brand and hope that they would recommend the brand. Second, marketers can *advertise through influencers* where the aim of marketers would be to use influencers to surge the brand's awareness. Third, marketers can *advertise with influencers* by transforming the social media influencers into brand advocates where the brand would sponsor the social media influencer to create videos. Regarding this research, social media influencers engaged with any of those activities will be eligible to be selected for the research sample. Many researchers (Halonen-Knight & Hurmerinta, 2010;
Uzunogʻlu & Kip, 2014) recommend taking a long-term perspective for using social media influencers in marketing strategies where influencers become brand advocates. This is insightful as it encourages the researcher to explore whether such strategy would be indeed effective, bearing in mind that subscription value of YouTube influencers may decrease over time due to loss of interest and para-social relationship with the followers.

Even though everyone has the potential to become a social media influencer, it is important to note that some social media influencers are more influential than others due to their reach, credibility and experience (Ferguson, 2008). Therefore, in order to maximize the effectiveness of influencer marketing and achieve considerable ROI on the YouTube influencers, it is important for companies to identify relevant and powerful YouTube influencers (Chau & Xu, 2012; Gillin & Gillmore, 2012; Kim & Han, 2009; Li, Lin, & Lai, 2010; Li, Lai, & Chen, 2011; Usunog`lu & Kip, 2014). According to the TEARS model, influencer's trustworthiness, expertise, attractiveness, respect and similarity significantly affect the campaign's success. The compatibility of this model to be used on celebrity endorsers as well as influencers, made it incredibly well known and used among scholars. Interestingly, the research of Bassile (2009) confirming that social influencers who produce sticky content and personality resonating with the brand is crucial consideration when selecting social media influencers, made the researcher of this research study realize that variations will be likely in subscription values for YouTube influencers within the same sectors due to the difference between the quality of content produced by the influencers.

Therefore, this indicates that scholars and marketers are aware of the importance to achieve the balance between the scale of the influence and best fit of values, however there is no specific guidelines for marketers on how to evaluate each of those criteria, which may be problematic especially in terms of its reach. The number of average YouTubers that individuals have subscribed to increases, yet they are physically restrained to watch all videos from all subscribed YouTubers. Therefore, number of subscribers may not directly transfer to the number of subscribers viewing the content of social media influencer. Baer and Naslund (2011) extend this argument further by suggesting that number of followers is an indicator of popularity and thus online social proof in the online community, but not necessarily an indicator of a good performance. Therefore, they recommend developing a framework for measuring influence of social media influencers rather than popularity. As a consequence, this research study aims to use subscription value as the framework for measuring reach more effectively.

# **Aims, Objectives and Research Questions**

The primary aim of this research is to explore the potential relationship of subscription value of YouTube influencers with time, total subscriptions and sectors within YouTube. Therefore, the following objectives were formed to measure: subscription value of YouTube influencers across six months period; relationship between subscription value of YouTube influencers and total subscription level; differences between YouTube influencers within the same sector; and, the difference between YouTube influencers across three different categories on YouTube. The four following research questions will be addressed in this study: (1) To what extent does subscription value change over time for average YouTube influencers; (2) To what extent does the subscription value of YouTube influencers change depending on the number of total subscriptions; (3) To what extent does the subscription value remain homogenous between YouTube influencers within the same sector, and (4) How does subscription value of YouTube influencers differ across three different categories on YouTube?

#### **Research Design, Method and Analysis**

This study has three distinct sample that will be utilized for analysis: YouTube content categories, YouTube influencers, and the set of YouTuber's content that were used for the analysis. To initiate recruitment of YouTube influencers for this study, the researcher personally searched the Internet engine for potential participants by the way of scanning through popularity rankings and assessing their eligibility for participation. Due to the limited time and resources, the analysis of all of the sectors in which Youtubers operate in on YouTube would not be realistic for this study. Therefore, the research study has analyzed the most popular categories of content within YouTube (Mediakix, 2017). Based on the data, gaming, cooking and fitness categories were chosen. The reasoning behind the selection was the additional insight in that those categories (1) were megatrends, thus have high probability of staying relevant in the near future, (2) resonated with a high proportion of population, and (3) benefited from continuous influx of new viewers and subscriptions, which was crucial in the context of the study to find solid and growing categories in order to try to measure subscriber value. Finally, those three categories. This study has assigned only five YouTube influencers for each category, meaning that overall 15 YouTube influencers were analyzed for the research study. In terms of the videos selected for the research study analysis, all videos of YouTube influencers

from the period of six months ranging from 1<sup>st</sup> February and 31<sup>st</sup> July were analyzed. First, the researcher examined whether the YouTube influencers had very individualistic nature which would fit the definition of influencer of Freberg et al. (2011) and Marwick (2013), compared to Tasty YouTube channel, where it is difficult to associate one face with this YouTube channel. Therefore, the researcher has excluded all the YouTube influencers that resembled a firm. Second, the researcher explored whether the potential YouTube influencer has previously worked with other firms to promote the products. This was easily determined as YouTubers openly admit of being sponsored. Third, the YouTube influencers were assessed in terms of their relatability to Millennial target audience, which was subjectively judged by the researcher by analyzing the personality and demographic of the influencer.

The subscription levels of YouTube influencers and viewership levels for YouTube influencer's videos are clearly a numerical data. In order to display the quantitative data in a precise and organized manner across categories, this study used tabulation tables. Used figures in the study display the data of all YouTube influencers for each category on a monthly basis from 1<sup>st</sup> February to 31 July, 2018 regarding the (1) subscription to views conversion rate averages (2) monthly change rate of total subscriptions averages, and (3) subscription to views conversion change rate averages for YouTube influencers within the gaming, cooking and fitness category.

## Results

### **Cross-Industry Comparison**

In comparison to the cooking and the gaming sector, the fitness sector is the only sector exhibiting a reduction of growth rate trend for obtaining new subscriptions. Furthermore, the gaming sector shows the highest consistency levels of the growth rate of total subscriptions with only July breaking away from the pattern, whereas the cooking sector shows the highest fluctuations between the results. Overall, all of the sectors display that even if the rate decreases, there is still a positive growth rate of total subscriptions as their average monthly change rate of total subscription averages per influencer do not seem to show any major trends due to the drastic fluctuations of the change rate values within the groups of influencers. The only similarity is that all influencers experience a positive change rate.

# **General Results**

All in all, the study reveals that total subscriptions increase with the average rate of 3.33 percent per month, yet the

]	AVG	Average monthly change rate of total subscriptions					
1	3.31%	3.97%	3.40%	3.28%	2.81%	3.10%	
AVG	Average subscription to views conversion rate						
0.32	0.33	0.28	0.32	0.29	0.32	0.40	
	AVG	Average subscription to views conversion change rate A					
1	-7.91%	-2.07%	-11.12%	-0.47%	-9.04%	-16.85%	

total subscription change rate gains momentum over time, thus the rate of total subscriptions constantly grows as time passes. This suggests that as the change rate of total subscription increases, the change rate of subscription value increases. Therefore,

as YouTube influencers experience an influx of subscriptions, they also experience dropping subscription value. This means that the YouTube influencers with higher numbers of total subscriptions receive less views per subscription. As the total subscriptions increase steadily, the influencers also steadily experience a drop in subscription value. In addition, as the rate of growth for total subscriptions increases, the drop rate in subscriber value also increases. On the other hand, the growing total subscriptions can be explained through growing interests in influencers. Moreover, the increasing growth rate of total subscriptions can be explained through higher numbers of shares which lead to more subscriptions. Consequently, this study suggests marketers to use subscription value to estimate the potential reach of the message more accurately.

Further, there is a clear pattern of reducing subscription to views conversion rate in both cooking and fitness sector; however, the fluctuations within gaming sector prevent any trend to be established within the short time period of the study. This means that fitness influencers are the weakest at converting their subscriptions to views, where for every 1000 subscriptions they will receive 100 views on average. On the other hand, gaming sector influencers convert their subscription at a rate of 660 views per 1000 subscribers. This means that subscribers have short interest lifespan in the cooking and fitness sectors, meaning that they subscribe but are not active content users. Consequently, this research finding recommends brand managers in gaming sector to use YouTube influencers as brand ambassadors since the subscription value is the highest among other sectors. In contrast, for brands in cooking and fitness sector shows similarities between influencers in the subscriptions to views conversion rate; the average influencer in fitness sector can be expected to yield 100 views per 1000 subscription on average. This means that fitness influencer's conversion rate is bounded by the viewership rather than individuals' content. On the other hand, the cooking sector

shows similar pattern for majority of influencers, however it is possible that some influencers are better at converting subscriptions to views, indicating the need for further research. However, most influencers will have similar conversion rates. Lastly, within the gaming sector, it is clear that influencers will have different conversion rates, indicating that it is difficult to predict average influencers conversion rate within the gaming sector.

#### **Practical and Theoretical Contributions**

First, by understanding how subscription value of YouTube influencers change over time on average, marketers would know what to expect of the subscription value of YouTube influencers as time passes. Second, marketers would benefit from the understanding of how, if at all, subscription value differs between sectors. Such information will provide insight for marketers of whether it is even worth considering using YouTube influencers for such industry, as subscription value would reflect return on investment that marketers could expect. Third, marketers would find it valuable to understand whether they should or should not expect different levels of subscription value among YouTube influencers within the same sector.

This study is the first to measure the worth of a single subscriber in terms of views, providing a useful tool to estimate potential reach of the marketing message created by YouTube influencers. As a consequence, this study encourages other researchers to investigate subscription value in more depth, and contribute to the development of even more useful metrics to estimate meaningful reach of the influencers. Also, because many researchers overlooked YouTube as social media platform for analysis regarding influencers, this study makes a significant contribution for being the first to do so.

# Conclusion

The social media influencer is a rapidly growing method of advertising to target Millennials, yet there is an ambiguity regarding the selection of most effective social media influencers. This quantitative study addresses the research problem of selecting YouTube influencers effectively through the use of subscription value by answering the research questions regarding the extent to which subscription value (1) changes over time for average YouTube influencers, (2) changes depending on the number of total subscriptions that YouTube influencer has (3) is homogenous between YouTube influencers within the same sector, and (4) differs across gaming, fitness and cooking categories on YouTube. Through the use of correlational archival research, the research study discovered that subscription value of average YouTube influencers (1) changes negatively over time, (2) decreases as the number of total subscriptions increases, (3) differs between gaming, cooking and fitness categories, and (4) is not homogenous within a single sector. Further, this study demonstrates to marketers that (1) long term relationship with a single influencer may not be optimal due to declining subscription value of the YouTube influencers over time, (2) subscriptions do not directly transfer to reach of the marketing message due to the dead subscriptions, therefore YouTube influencers with lower subscription levels may deliver higher reach, (3) certain sectors may have higher return on investment from the use of social media influencers, and (4) varying levels of subscription value should be expected among YouTube influencers within the same sector.

# References

Abidin, C. (2016). Aren't these just young, rich women doing vain things online? Influencer.

- Baer, J., & Naslund, A. (2011). The now revolution: 7 shifts to make your business faster, smarter, and more social. Hoboken, N.J: Wiley.
- Basille, D. (2009). Social media influencers are not traditional influencers. Available at: http://www.briansolis.com/2009/11/social-mediainfluencers-are-not-traditionalinfluencers/ [Accessed 30 July. 2018].

Brown, D., & Hayes, N. (2007). Influencer marketing: Who really influences your customers? NY: Routledge.

- Brown, J., & Reingen, P. (1987). Social ties and word-of-mouth referral behavior. Journal of Consumer Research, 14(3), 350-362.
- Chau, M., & Xu, J. (2012). Business intelligence in blogs: Understanding consumer interactions and communities. MIS Quarterley, 36, 1189–1216.
- Chen, C. (2014). Forming digital self and parasocial relationships on YouTube. Journal of Consumer Culture, 16(1), 232-254.

Ferguson, R. (2008). Word of mouth and viral marketing: Taking the temperature of the hottest trends in marketing. Journal of Consumer Marketing, 25(3), 179-182.

- Freberg, K., Graham, K., McGaughey, K., & Freberg, L. (2011). Who are the social media influencers? A study of public perceptions of personality. Public Relations Review, 37(1), 90-92.
- Frenzen, J., & Nakamoto, K. (1993). Structure, cooperation, and the flow of market information. Journal of Consumer Research, 20(3), 360.
- Gillin, P. (2007). The new influencers, a marketer's guide to the new social media. CA, USA: World Dancer Press.

Hall, J. (2017). Top of mind. NY: McGraw-Hill.

- Halonen-Knight, E., & Hurmerinta, L. (2010). Who endorses whom? Meaning transfer in celebrity endorsement. Journal of Product & Brand Management, 19(6), 452-60.
- Horton, D., & Wohl, R.R. (1956). Mass communication and parasocial interaction: Observations on intimacy at a distance. Psychiatry, 19(3), 215-29.
- Karp, K. (2016). New research: The value of influencers on Twitter. Twitter. Available at https://blog.twitter.com/2016/new-research-the-value-of-influencers-ontwitter [Accessed July 8, 2018].
- Keller, E., Fay, B., & Berry, J. (2007). Leading the Conversation: Influencers' Impact on Word of Mouth and the Brand Conversation. The Keller Fay Group, Word of Mouth Marketing Research Symposium.
- Kim. E.S., & Han, S.S. (2009). An analytical way to find influencers on social networks and validate their effects in disseminating social games. Social Network Analysis and Mining, International Conference on Advances in, pp. 41–46.
- Kirby, J., & Marsden, P. (2006). Connected Marketing. Amsterdam: Elsevier.
- Li, Y., Lai, C., & Chen, C. (2011). Discovering influencers for marketing in the blogosphere. Information Sciences, 181(23), 5143-57.
- Li, Y., Lin, C., & Lai, C. (2010). Identifying influential reviewers for word-of-mouth marketing. Electronic Commerce Research and Applications. 9.
- Marwick, A. (2013). They're really profound women; they're entrepreneurs: Conceptions of authenticity in fashion blogging. Presented at the International Conference on Web and Social Media. Cambridge, MA.
- Marwick, A. (2016). You may know me from YouTube: (Micro-) Celebrity in social media. In Marshall, P.D., & Redmond, S. (Eds.), A Companion to Celebrity (pp. 333- 350). West Sussex, UK: Wiley.
- Mediakix (2017). The 20 Most Popular Types of YouTubers: Genres, Examples. [Online] Mediakix | Influencer Marketing Agency. Available at http://mediakix.com/2017/10/most-popular-types-of-youtubers/#gs.K0kk7YM [Accessed Sep. 11, 2018].
- Nielsen (2016). Global Connected Commerce. Is e-tail therapy the new retail therapy? Available at: http://www.nielsen.com/us/en/insights/reports/2016/globalconnectedcommerce.html [Accessed 11 September. 2018]
- Nielsen. (2012). Global Trust in Advertising and Brand Messages.
- Rizqia, C., & Hudrasyah, H. (2015). The effect of electronic word-of-mouth on customer purchase intention (case study: Brandung culinary Instagram account). International Journal of Humanities and Management Sciences, 3, 155-160.
- Rogers, E.M., & Cartano, D.G. (1962). Methods of measuring opinion leadership. Public Opinion Quarterly, 26(3), 435-441.
- Snee, H. (2008). Web 2.0 as a social science research tool. British Library, 4, 1-34.
- Uzunogʻlu, S.M., & Kip (2014). Brand communication through digital influencers: Leveraging blogger engagement. International Journal of Information Management, 34, 592-602.
- Wiedmann, K.P., Hennigs, N., & Langner, S. (2010). Spreading the word of fashion: Identifying social influencers in fashion marketing. Journal of Global Fashion Marketing, 1(3), 142-153.

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