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Abstract: Healthcare costs worldwide continue to increase at an alarming rate. Within healthcare, supply chain costs are becoming one of the most critical areas of expense. Some firms have attempted to mitigate supply chain expenses and risks through strategic partnerships and outsourcing. One way to view these strategic relationships, and the risks they bring, is through the lens of transaction cost economics (TCE). Specifically in the United States, dynamic changes from reform efforts to healthcare delivery systems, and the industry as a whole, require a systematic re-thinking of all aspects of partnerships and outsourcing. The purpose of his article is to apply the lessons learned from Williamson's 2008 article on TCE and the supply chain as they directly relate to healthcare. Additional insight is provided based on the authors' unique professional background in the discipline.

Abstract: This research provides a valuation model for the pricing of second-hand bulk carriers. The valuation process relies on a cash flow analysis and on the manner by which it can be combined with co-integration methodologies. Previous research on ship valuation and, generally, on the shipping industry suggest that the second-hand market of vessels can be interpreted in terms of supply and demand. This research introduces the term operating profit and margin of the loan in the valuation process of vessels. In addition, it applies multi-factor co-integration methodologies in low frequency data by implementing Vector Error Correction Model (VECM), which identifies more co-integration relationships between variables. Findings suggest that small-sized vessels are more market-driven compared to the medium to large-sized vessels. In addition, Capesize and Handysize vessels are more capital intensive assets and their operating profit does not affect the medium to large-sized vessels, which is in contrast with existing research.

EDITORIAL

The South African food and beverage industry is fast growing and despite economic difficulties, the demand for fast food is increasing. The growth in the fast food industry is attributed to the industry's ability to adapt to new market trends, technological innovations, demographic changes and increased levels of food safety. The industry is, however, very competitive and marketers should continuously explore innovative ways to effectively communicate and influence consumers to patronise fast food restaurants. Word-of-mouth (WOM) communication is viewed as one of the most effective and credible marketing tools a marketer can use to influence consumers and their purchasing behaviour.

WOM communication refers to any informal communication that takes place that relates to the appraisal of a product. The influence of WOM is said to become even stronger with the increased use of social networking sites and the proliferation of opportunities to expand WOM communications through global online forums. Consumers are increasingly sharing their experiences and opinions based on their purchasing behaviour through online word-of-mouth (eWOM) as traditional communication tools are becoming less effective. The role that eWOM can play can therefore not be ignored in a world increasingly dominated by social media. The amount of information that consumers seek prior to a purchase of a product depends on the level of involvement the consumer exhibits towards the particular product. Highly involved consumers actively seek information about the product. Doing so enables them to be more knowledgeable about the product and increases their ability to influence the behaviour of other consumers. The more consumers are involved with a product the more influenced they are by WOM.

WOM is underpinned by two dimensions namely WOM intensity and WOM valence. WOM intensity refers to the regularity with which consumers engage in WOM while WOM valence refers to the nature of the messages they send. These dimensions are dependent upon the type of consumer and the product concerned. EWOM is easily spread, reaches a larger number of consumers at once and has the ability to influence customer awareness, satisfaction and loyalty, making it an important aspect to research. The importance of researching product involvement and eWOM cannot be disputed, especially in the food and beverage industry and in South Africa due to its cultural complexity. The primary objective of first paper by Cristine F. De Meyer and Daniel J. Petzer was therefore to investigate the relationship between product involvement and eWOM in the fast food industry of South Africa. The authors investigated whether significant differences exist in product involvement, eWOM dimensions, and how eWOM is spread amongst fast food restaurant customers based upon demographic characteristics and fast food restaurant patronage habits.

The research was descriptive and quantitative in nature. The target population of the study included those who have patronised a fast food restaurant during the six months prior to the study being conducted, and those who do go online to send messages, share content, thoughts and opinions. Convenience sampling was used to select the sample and data was collected through a paper-based self-administered questionnaire. The questionnaire measured respondents' demographic characteristics and fast food restaurant and online patronage habits. Multi-item scales were used to measure the level of product involvement and the extent of word-of-mouth (intensity and valence) with respect to the fast food restaurants respondents purchased from, as well as and how respondents spread word-of-mouth online. The multi-item scales were either adapted or adopted from existing scales. The researchers ensured face validity and assessed internal consistency reliability of the measurement scales. Data obtained from the questionnaires was analysed using SPSS version 20. Both parametric and non-parametric test were used to test the hypotheses formulated for the study.

The results of De Meyer and Petzer study indicate that the majority of respondents access the Internet through their cellphone, making a mobile site and developing relevant mobile application necessary for fast food marketers. Product involvement pertaining to the fast food restaurant of respondents proved to be fairly high. Significant differences based upon demographic characteristics and fast food restaurant and online patronage habits were uncovered between respondents with respect to product involvement. These findings can guide marketers in identifying those groups of customers who tend to be significantly more involved with their products and those who are not. The De Meyer and Petzer study found that respondents spread WOM about their favourite fast food restaurants, albeit with significantly higher levels of WOM valence than WOM

intensity. Respondents are thus positive about their favourite fast food restaurant, but not equally willing to speak about it. Black customers exhibit significantly higher levels of WOM intensity than white customers. It is also evident that regular customers are more willing to spread positive WOM. These findings can guide marketers in segmenting the market based upon different levels of WOM valence and WOM intensity different groups of consumers' exhibit.

Results indicate that respondents do not really engage in eWOM. Those that do, mainly do so by posting messages about their fast food restaurant on a social networking site. Therefore fast food restaurants need to ensure that they are active on social networking sites and create opportunities for consumers to "like" the restaurant or send a link to others. Significant and positive correlations exist between the levels of product involvement respondents' exhibit towards fast food restaurants WOM intensity, WOM valence and eWOM. This suggests that fast food restaurants should aim to increase the level of product involvement consumers have towards the brand in order to increase the intensity and valence of the word-of-mouth spread about the fast food restaurant. The results of the De Meyer and Petzer study confirm previous studies that the level of product involvement influences WOM intensity and WOM valence. From the results it was found that from a South African perspective, culture influences the level of product involvement and that respondents do not really engage in eWOM as traditional WOM is still prevalent in this market.

Despite the extensive research undertaken in the subject area of services marketing, much is still unknown about services internal marketing, specifically internal marketing mix elements and how they affect brand awareness in services organizations. The second study by Elizabeth Conradie, Mornay Roberts-Lombard and HB Klopper attempted to address this limitation. No change revolved around eight internal marketing mix elements and their influence on brand awareness dimensions in the South African car rental industry.

Services organizations of which car rental companies are an example play a vital role in South Africa's economy, as services organizations contribute about 74% to the country's Gross Domestic Product (GDP). Car rental companies like many other services organizations, are operating in a complex and extremely competitive environment. In order to attract and retain external customers, car rental companies need to focus on programs to enhance their services delivery. Employees are the most valuable asset of an organization, especially in the services environment. Internal marketing programs aimed at employees are crucial to motivate them to improve service delivery to external customers. The four traditional internal marketing mix elements, namely internal product, price, promotion and place, as well as the three services internal marketing mix elements, namely internal people, process, and physical evidence are well known in product and services markets. However, Elizabeth Conradie, Mornay Roberts-Lombard and HB Klopper's study contributed to the body of knowledge by adding one recent internal marketing mix element, namely performance.

Brand awareness refers to the strength of a brand's presence in the customer's mind. Awareness is measured according to the different ways in which customers remember a brand, ranging from recognition (exposure to the brand) to recall (what can be recalled about the brand). Brand awareness recall is associated with three dimensions, namely trustworthiness, overall evaluation and loyalty. In order to establish the influence of the eleven internal marketing mix elements on the brand awareness as perceived by the customers of selected car rental companies, an empirical investigation was conducted. The primary objective of Elizabeth Conradie, Mornay Roberts-Lombard and HB Klopper's study was to determine the perceived influence of the different elements of internal marketing on the brand awareness as perceived by selected car rental customers in South Africa.

Company A, Company B and Company C were prepared to participate in this study. Combined they have a market share of more than 55%, thus it was believed that they were a fair representation of the car rental industry in South Africa. Probability sampling in the form of directly proportional stratified sampling was used in terms of selecting only customers of the three car rental companies, not including employees. The purpose of their study was to determine the effect of internal marketing on the brand awareness perceived by customers, therefore, only customers were selected for the purpose of the study. The sample unit included customers who rented cars from Company A, Company B and Company C over a period of three months, namely November 2010 until January 2011. The sampling elements were customers who rented vehicles at airports, namely OR Tambo, Cape Town, Durban, Bloemfontein, Port Elizabeth, East London, George, Nelspruit, Kimberley and Lanseria and city branches, including Johannesburg, Cape Town, Durban,

Bloemfontein, Port Elizabeth, East London, George, Neispruit and Kimberley. The required sample size of respondents was between 375 and 750 and the actual sample size was 581. The measuring instrument was a questionnaire. The main technique for analyzing data was structural equation modeling.

The empirical investigation conducted among customers of Company A, Company B and Company C revealed that significant positive relationships existed between the services internal marketing element process and brand recognition, trustworthiness, overall evaluation and loyalty; as well as between the recent internal marketing element internal performance and trustworthiness, overall evaluation and loyalty. These relationships imply that if car rental companies improve their internal process and performance, the brand awareness of the car rental company would improve. Other internal marketing mix elements that positively influenced brand awareness were people (employees) and physical evidence.

Based on the positive relationships described above, as well as the strong influence internal process and performance have had on brand awareness, a model as guideline to car rental companies was developed. The purpose of the model is to emphasize internal marketing elements on which car rental companies should focus to improve brand recognition, trustworthiness, overall evaluation and loyalty amongst their customers. In addition to the model the Elizabeth Conradie, Roberts-Lombard and Klopper's study indicated that car rental companies should implement strategies to improve their internal marketing programs. These strategies would contribute to improvement of employees' satisfaction and subsequently customer satisfaction. Satisfied customers would remain customers of their car rental company and ultimately profits and competitiveness of the particular car rental company would prosper. Eventually employees, customers and car rental companies and the whole economy of South Africa would benefit.

The third paper by Ayse Yuce and Mauricio Zelaya investigates the role of various factors that influence company foreign direct investment decisions and the amount of investment decision. The paper also examines how the foreign direct investments affect company performance after the investment. While U.S. companies created the most foreign direct investment projects China and India received the largest number of inbound foreign direct investment projects. The results of Yuce and Zelaya's study indicate that company size and profitability are the major factors in both investment decision and on size of investment and that larger firms that are less profitable are more likely to engage in Foreign Direct Investment (FDI). The firms prefer to invest in target economies where they have friendly business regulations while not being overly concerned with the ability for these economies to protect investors. Foreign Direct Investment projects increase the profitability of the companies. The return on asset ratios of those companies with foreign direct investment increase more than 30% compared to those matched companies without foreign direct investments one year after the investments.

Healthcare costs worldwide continue to increase at an alarming rate. Within healthcare, supply chain costs are becoming one of the most critical areas of expense. Some firms have attempted to mitigate supply chain expenses and risks through strategic partnerships and outsourcing. One way to view these strategic relationships, and the risks they bring, is through the lens of transaction cost economics (TCE). Specifically in the United States, dynamic changes from reform efforts to healthcare delivery systems, and the industry as a whole, require a systematic re-thinking of all aspects of partnerships and outsourcing. The purpose of the fourth paper by James Stephens, Karl Manrodt, Gerald Ledlow, Richard Wilding and Christopher Boone is to apply the lessons learned from Williamson's 2008 article on TCE and the supply chain as they directly relate to healthcare. Additional insight is provided based on the authors' unique professional background in the discipline.

Specifically, the authors focus on a single article written by Williamson (2008) on transaction cost economics. First, the paper describes various types of relationships a firm can have with their suppliers, ranging from transactions to strategic partnerships. Second, his focus is on improving the performance of the supply chain. Finally, while the analysis provides insights on how these lessons relate to healthcare, many of them can also apply to other disciplines and industries as well. This paper is divided into three main parts. In the first part the authors begin with a brief overview of Transaction Cost Economics (TCE). Then, the paper starts to apply his insights into ten specific lessons for health care professionals. This will be completed in the third part along with a discussion of future implications.

The main reason Williamson's work is so useful to Stephens et al. is that his work with mathematical and economic models aligns nicely with what was learned in the authors' applied case base research on Vested Outsourcing, Performance-Based Outsourcing and Collaborative supplier relationships:

- Win/win relationships are a must when there are complex requirements. Not only is win-win a common sense thing to do – but applying "muscular" win-lose thinking actually increases the cost of outsourcing. We call this establishing a WIIFWe (What is in it for We) versus WIIFMe (What is in it for Me) foundation.
- An effective outsourcing arrangements should include a shared vision and a "predicted alignment" with clearly defined and measurable desired outcomes that guide the decisions of how the companies work together.
- Focusing on price alone only provides a partial picture of the true TCE of an outsourcing relationship. Companies need to establish transparent pricing models with incentives that optimize for cost/service tradeoffs. These pricing models should include a well thought out exit management plan with the desire to drive continuity of service.
- Putting in place a good governance structures is essential. The contract should be seen as a flexible framework, augmented with well thought out governance structure designed to manage the business with the understanding that the business environment will likely change.

The maritime sector is a capital-intensive industry in which fixed assets are instantly liquidated and employed. The ship owner must go through the decision-making process involved in acquiring a vessel and estimating all variables, both endogenous and exogenous. The valuation incorporates all future cash inflows and outflows of the vessel during the ownership of the asset. However, a significant dilemma arises in the final decision stage: whether to acquire a new ship or a second hand vessel. New vessels construction price is difficult to estimate, since most of the associated costs are determined by various factors, and the available databases do not incorporate all the required (and valuable) information. Additionally, the construction period varies among shipyards because of their different slot capacities. A ship owner has the option to weigh the price of a new structure against the value of a second hand vessel and determine which the optimal choice is for the particular period and conditions of the shipping market.

The valuation process involved in purchasing a second hand vessel may be more feasible, since most of the variables that determine the price can be easily obtained from various databases. To describe the seaborne trade, the shipping market can be divided into four integrated and interconnected markets, namely the new building market, the second-hand market, the freight market, and the scrap market. From these markets researchers gather variables that they are interconnected in terms of supply and demand for the seaborne trade and influence the price of a second-hand vessel. A valuation model of an asset includes the cash inflows and outflows over the lifetime of the asset. Therefore, in the fifth paper, Eleftherios I. Thalassinos and Evangelos P. Politis found correct to change the gross earnings of the vessel with the net earnings, which are calculated after taking off the operating costs. Another reform in vessel valuation models is the introduction of the loan margin. Libor does not reflect the finance cost for the capital used in the asset acquisition. On the other hand loan margin rates are not disclosed from any financial institute. In this case the optimal solution is to use U.S Treasury bond yields, which measure the cost of capital in a global scale. Finally, industrial production ratio is used in this model as a performance indicator of the world economy and the expectations for seaborne trade levels.

Considering all the above parameters and incorporating modern econometric theory, Thalassinos and Politis developed a model that includes variables from the shipping market, the finance market and the international economy. Then, they estimated this model with monthly data for a period of 11 years, beginning from 2000, gathered for four different categories of dry bulk vessels. Estimation process relies on vector error correction model (VECM) and co-integration theory. The results were consistent with those of other studies pertaining to the shipping environment, which suggest that there are indicative differences between small-sized and large-sized vessels—differences which have a significant effect on vessel prices.

Nejdet Delener, Ph.D.
Editor-in-Chief

NOTE FROM THE EDITORS

As an interdisciplinary indexed journal, *The Journal of Global Business and Technology (JGBAT)* serves academicians and practitioners in the fields of global business and technology management and their related areas. The *JGBAT* is also an appropriate outlet for manuscripts designed to be of interest, concern, and applied value to its audience of professionals and scholars.

Readers will note that our attempt to bridge the gap between theory and practice has been successful. We cannot thank our reviewers enough for having been so professional and effective in reiterating to contributors the need to provide managerial applications of their research. As is now obvious, the majority of the articles include a section on managerial implications of research. We wish to reiterate once again our sincere thanks to *JGBAT* reviewers for having induced contributors to answer the "so what?" question that every *Journal of Global Business and Technology* article is required to address.

Thank you for your interest in the journal and we are looking forward to receiving your submissions. For submissions guidelines and requirements, please refer to the Manuscript Guidelines at the end of this publication.

Nejdet Delener, Ph.D., Editor-in-Chief
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PRODUCT INVOLVEMENT AND ONLINE WORD-OF-MOUTH IN THE SOUTH AFRICAN FAST FOOD INDUSTRY

Christine F De Meyer and Daniel J Petzer

ABSTRACT

Word-of-mouth (WOM) impacts on satisfaction, loyalty and profitability, while the level of product involvement influences the extent to which consumers engage in WOM. The Internet furthermore allows for the rapid diffusion of WOM. This study investigates product involvement and online WOM in the South African fast food restaurant industry. Data was collected through self-administered questionnaires distributed through convenience sampling (n = 264). Results indicate that respondents exhibit high levels of product involvement and spread positive WOM to others about their favourite fast food restaurant, but do not tend to engage in online WOM. Positive correlations exist between product involvement and WOM and significant differences were uncovered between respondents.

Key words: fast food restaurant industry, product involvement, word-of-mouth intensity, word-of-mouth valence, online word-of-mouth.

INTRODUCTION

WOM is seen as one of the most effective and credible marketing tools a marketer can use to influence consumer attitude, perception and their purchasing behaviour (Yang, Hu, Winer, Assael & Chen, 2012, p. 952). According to Berger and Schwartz (2011, p. 870) this is especially true in the fast food restaurant industry - the focus of this study. It has been established that consumers exhibit different levels of product involvement depending on the product or service involved (Phau, 2010, p.47). Those who exhibit high levels of product involvement seek continuous information, have high levels of experience and interest in the product, and have the ability to influence other consumers' purchasing behaviour (Wu & Wang, 2011, p. 449). According to Riegner (2007, p. 443), consumers' levels of product involvement influence their levels of word-of-mouth

Christine De Meyer is Associate Professor and Head of Department at the Department of Marketing Management at the University of Johannesburg, South Africa. She obtained her PhD in Marketing Management from the North-West University in 2008. Her main areas of interest are Services Marketing and Relationship Marketing. She has collaborated on international research projects and publications with academics in Norway and the United States of America. She has published in a number of South African journals as well as international journals such as the Journal of Services Marketing and has presented papers at national and international level. Christine is currently supervising eight Master students and one PhD student in the field of Marketing. In 2012, she won the award for the Best Emerging Researcher in the Faculty of Management at the University of Johannesburg.

Danie Petzer is a Professor of marketing at the North-West University, South Africa in the School of Business Management where he is the Programme Leader for Research as well as for the Marketing programme offered by the School. He is also an Honorary Professor at the Oslo School of Management. His research specialises in the field of marketing, more specifically Services Marketing and Consumer Behaviour. He holds a PhD in Marketing Management from the North-West University. Danie has authored and co-authored numerous journal articles and textbooks. He has also presented several papers at national and international conferences.

(WOM) engagement. Xue and Zhou (2011, p. 45) explain that due to the increased use of social networking sites on the Internet, increased opportunities for expanding word-of-mouth communications through an online forum exist, especially on a global platform. This has led to consumers to share more experiences and opinions based on their purchasing behaviour and engaging in online word-of-mouth (eWOM) (Chen, 2011, p. 1). Marketers therefore cannot ignore the role of the Internet in spreading WOM. This study investigates product involvement, WOM and online WOM. It determines the relationship between these constructs in the fast food restaurant industry of South Africa and uncovers significant differences between groups of respondents. After the research methodology and results have been discussed, managerial implications and recommendations are presented.

LITERATURE REVIEW

South Africa's food and beverage industry (which includes the fast food and restaurant sectors) has seen increased sales since 2007/2008 with a 9% increase from 2011 to 2012 (Statistics South Africa, 2012, p. 2, Ntloedibe, 2011). Maumbe (2012, p. 149-150) adds that fast food outlets contributed 30% and employed 24.1% people in the industry. Despite economic woes, the demand for fast food has increased with 25.3 million people purchasing fast food at least once a month (Vallie, 2012). The fast food and restaurant sectors in South Africa can attribute this growth to its adaptation to new market trends (such as healthier food options), technological innovations, demographic changes and increased levels of food safety (Maumbe, 2012, p. 147).

According to Samson (2010, p. 61) "product involvement is the degree of interest of a consumer in a product category on an on-going basis". Xue and Zhou (2011, p. 8) add that it is based on the relevance that a product or service has in consumers' minds based on their needs and interests. Wu and Wang (2011, p. 449) explain that consumers can experience either high (e.g. risky purchase) or low levels (low-risk purchase) of product involvement. Consumers, who exhibit high levels of product involvement, seek continuous information on the product and have high levels of experience and interest in the product, and will easily influence other consumers' purchasing behaviour (Wu & Wang, 2011, p. 449). Xue and Zhou (2011, p. 52) explain that consumers' level of product involvement will be influenced by word-of-mouth (WOM) communications spread by others. Riegner (2007, p. 443) supports this by stating that word-of-mouth will influence consumers who have higher levels of product involvement (such as in the purchase of technology), but is less likely to influence purchases of low involvement products (such as apparel).

According to Ahmad (2012), WOM is defined as "an informal type of communication between private parties concerning the evaluation of goods and services" (p. 104). WOM includes any form of communication such as, face-to-face, phone or email, and can expressed as either positive or negative (Xue & Zhou, 2011, p. 47, Goyette, Ricard, Bergeron & Marticotte, 2010, p. 8, Mukhola, 2009, p.31). WOM is, however, not within marketers' control although free of charge (Lee & Hsu, 2010, p. 81). WOM is seen as being one of the most effective marketing tools when influencing consumers and their purchasing behaviour (Yang *et al.*, 2012:952) where at least 70% of consumers' purchasing decisions (especially in industries such as food and beverage, banking and technology) are influenced by WOM (Berger & Schwartz, 2011:870). Chen, Wang and Xie (2011, p. 239-240) explain that WOM is characterised by two dimensions, namely intensity and valence. These authors clarify that WOM intensity refers to the volume of messages expressed by consumers (i.e. how often and the amount of information expressed). WOM valence refers to the type of message expressed (i.e. whether the message is positive or negative). WOM intensity and valence are influenced by the type of product as well as the type of consumer – such as a consumer's personality, social class and culture – and will influence other consumers' attention to messages and their purchase behaviour (Nekmat & Gower, 2012, p. 88, Lam, Lee & Mizerksi, 2009, p. 56).

Xue and Zhou (2011, p. 45) explain that due to the increase of people using social networking sites on the Internet, the opportunities for expanding word-of-mouth communications through an online forum have increased, especially on a global platform. Chen (2011, p. 2) defines online word-of-mouth (eWOM) as when consumers or potential consumers research a product or service online, and then share their experiences and opinions about the products and services with others through an online platform. According to Nekmat and

Gower (2012, p. 85), eWOM is influenced more greatly by WOM valence and intensity than traditional WOM. This is since eWOM is more permanent in nature, can easily be spread by other online users, and can reach a large number of consumers at once, although eWOM could be seen as less credible if the reader does not know the source (Wu & Wang, 2011, p. 449). As with traditional WOM, eWOM has also been found to have an influence on customer satisfaction and customer loyalty since customer satisfaction is a key determining factor of customer loyalty (Wu & Wang, 2011, p. 448, Polyorat & Sophonsiri, 2010, p. 66).

PROBLEM STATEMENT, OBJECTIVES AND HYPOTHESES

Berger and Schwartz (2011, p. 870) explain that the food and beverage industry is influenced by WOM messages spread by other consumers. Chen *et al.* (2011, p. 240) state that WOM intensity and valence play an important role as they enable product information to be entered into the market place and can increase the level of consumer awareness. Trusov, Bucklin and Pauwels (2009, p. 90) mention that understanding WOM is becoming more important due to the changes in consumers' behaviour and the influence of social media. The authors reiterate that traditional methods of communication are losing their effectiveness placing more pressure on understanding the influence of online word-of-mouth through social media. The need for researching eWOM in cultures outside the US and other Western cultures has become vital due to the lack of studies in other cultures except Western cultures (Xue & Zhou, 2011, p. 46). From the information presented above, the importance of researching product involvement and eWOM cannot be disputed, especially in the food and beverage industry and in South Africa due to its variety of cultures. Additionally, the authors are unaware of such a study having been undertaken from a South African perspective. The primary objective of this study is to investigate the nature of the relationship between product involvement and eWOM in the fast food industry of South Africa and to determine whether respondents differ significantly with respect to the mentioned constructs.

Based on the primary objective stated previously, the following secondary objectives have been formulated for this study:

- Develop a demographic profile of respondents taking part in the study.
- Determine the fast food restaurant and online patronage habits of respondents.
- Determine the level of product involvement respondents exhibit towards fast food restaurants.
- Determine the extent of word-of-mouth generated by respondents with respect to the fast food restaurants.
- To measure how online word-of-mouth is spread with respect to fast food restaurants.

The following alternative hypotheses have been formulated for the study:

- H1: Respondents exhibiting different demographic characteristics (gender, race and age) differ significantly in the level of product involvement they exhibit towards fast food restaurants.
- H2: Respondents exhibiting different fast food restaurant patronage habits (length of time and patronage frequency) differ significantly in the level of product involvement they exhibit towards fast food restaurants.
- H3: Respondents exhibiting different demographic characteristics (gender, race and age) differ significantly in the extent of word-of-mouth they generate with respect to the fast food restaurant they buy from.
- H4: Respondents exhibiting different fast food restaurant patronage habits (length of time and patronage frequency) differ significantly in the extent of word-of-mouth they generate with respect to the fast food restaurant they buy from.
- H5: There is a significant and positive correlation between the level of product involvement respondents exhibit towards fast food restaurants and the extent (intensity and valence) to which they generate word-of-mouth in the fast food restaurant industry.

- H6: There are significant and positive correlations between the level of product involvement respondents exhibit towards fast food restaurants and how they spread online word-of-mouth, Table 7 provides the results.

RESEARCH METHODOLOGY

The research design followed in this study is descriptive and quantitative in nature. The target population of the study included people 50 years and younger, who reside in the Gauteng Province of South Africa, who have patronised a fast food restaurant during the six months prior to the study being conducted, and those who do go online to send messages, share content, thoughts and opinions. The province is ideally suited for this research since it represents the diversity of South Africa (Mpinganjira & Mbango, 2013, p.40). Convenience sampling was used to select respondents and a paper-based self-administered questionnaire was designed to collect data from respondents. Section A gathered information regarding respondents demographic as well as fast food restaurant and online patronage habits. Section B included multi-item scales measuring the level of product involvement as well as the extent of word-of-mouth (intensity and valence) with respect to the fast food restaurant respondents purchased from. Finally, another scale measured how respondents spread online word-of-mouth. The measurement scales measuring the extent of word-of-mouth (intensity and valence) were adapted from the work of Goyette *et al.* (2010, p. 12). The measurement scale measuring product involvement was adopted from the work of Wu and Wang (2011, p. 471). The items measuring how online word-of-mouth is spread were adapted from the work of Riegner (2007, p. 446). The researchers ensured face validity before including these items in the questionnaire. Confirmatory factory analyses (CFA) were also undertaken to assess the structure validity of the first three scales referred to above. The CFAs confirmed the structure validity of each of these scales since one factor explaining 55.435%, 76.648% and 74.807% of the variance could be confirmed in each instance. The internal consistency reliability of the measurement scales was assessed by calculating Cronbach's alpha coefficients. The three measurement scales realised Cronbach's alpha coefficients between 0.849 and 0.932, which indicate that the scales are reliable and an overall mean score could be calculated for each (Pallant, 2010, p. 6).

Trained fieldworkers fielded the questionnaires. The completed questionnaires were checked for completeness, consistency of answers and whether they were free of interviewer cheating. Data obtained from the questionnaires was analysed using SPSS version 20. The researchers relied on a confidence level of 95% and subsequent significance level of 5% (p-value = 0.05) when testing hypotheses. The paired samples t-test was used to compare the overall mean scores for word-of-mouth valence and word-of-mouth intensity. The independent sample t-test or the Mann-Whitney U test was used to compare the means of two groups where appropriate (Pallant, 2010, p. 214). The one-way Anova or the Kruskal-Wallis test was used to compare the means of more than two groups where appropriate (Pallant, 2010, p. 214). The Pearson product moment correlation determined whether significant relationships exist between the normally distributed continuous variables. The correlation coefficient (r) indicates the direction and strength of the correlation.

RESULTS

In terms of the demographic profile of respondents it was observed that the majority of respondents are female (55.3%), white (57%) followed by African (21.0%) and between the ages of 18 to 25 years (41.8%). In terms of the fast food restaurant and online patronage habits of respondents most respondents indicated Nando's (21.9%) as their favourite fast food restaurant followed by KFC (20.7%) and McDonald's (17.6%). Just over a quarter of the respondents (25.5%) have been supporting their favourite fast food restaurant for 3 years or longer but less than 5 years, followed by those who have been supporting their favourite fast food restaurant for longer than 10 years (22.1%). The majority of respondents buy from their favourite fast food restaurant at least once a month (29.9%), followed by those buying from their favourite fast food restaurant at least once every two weeks (27.3%). Most respondents access the internet through their cellphone (39.2%), followed by those using a notebook or laptop computer (17.7%).

Table 1 presents the standard deviation and mean for each item measuring respondents' level of product involvement on a seven-point semantic differential scale. The Table also provides an overall mean score for respondents' level of product involvement with fast food restaurants. It can be seen from Table 1 that respondents rated their level of product involvement when it comes to fast food restaurants fairly high (mean = 4.47). Respondents assigned the most positive ratings to fast food restaurants being needed (mean = 4.80), relevant (mean = 4.69) and valuable (4.51). The lowest ratings were assigned to fast food restaurant being involving (mean = 4.08) and fast food restaurants being fascinating (mean = 4.18).

Table 1: Respondents' level of product involvement

Item	SD	Mean
Unimportant; important	1.640	4.48
Boring; interesting	1.442	4.43
Irrelevant; relevant	1.477	4.69
Unexciting; exciting	1.484	4.45
Means nothing to me; means a lot to me	1.536	4.24
Unappealing; appealing	1.467	4.84
Dull; fascinating	1.389	4.18
Worthless; valuable	1.430	4.51
Uninvolving; involving	1.577	4.08
Not needed; needed	1.708	4.80
Overall mean score	**1.1.37**	**4.47**

Table 2 indicates the level of agreement respondents expressed with respect to items measuring the extent of their word-of-mouth (intensity and valence) towards their current fast food restaurant on a scale where 1 = 'strongly disagree' and 5 is 'strongly agree'. The standard deviation and mean for each item as well as the overall mean score for the scale are reported. It is evident from Table 3 that items measuring word-of-mouth intensity obtained means above the mid-point of the scale of 2.50 with 'I speak of my brand of fast food restaurant much more frequently than about any other brand of fast food restaurant' realising a mean of 2.98. 'I speak of my brand of fast food restaurant much more frequently than about brands of any other type', and 'I speak of my brand of fast food restaurant to many individuals' both realised a mean of 2.59, just above the mid-point of the scale. The overall mean score for word-of-mouth intensity is therefore also above the mid-point of the scale (mean = 2.72). With respect to word-of-mouth valence, all items realised a mean above 3.00 with the item 'I mostly say positive things to others' realising the highest mean of 3.31, followed by 'I speak favourably of my brand of fast food restaurant to others' (mean = 3.29). The item 'I speak of the good side of my brand of fast food restaurant' (mean = 3.15) realised the lowest mean which is, however, well above the midpoint of the scale. A paired samples t-test confirms that the overall mean score for word-of-mouth valence (mean = 3.23) is significantly higher than the overall mean score for word-of-mouth intensity (mean = 2.72). An overall mean score for the extent of word-of-mouth of 3.06 has been realised.

Table 2: Respondents' extent of word-of-mouth

Item	SD	Mean
WOM intensity		
I speak of my brand of fast food restaurant much more frequently than about any other brand of fast food restaurant.	1.122	2.98
I speak of my brand of fast food restaurant much more frequently than about brands of any other type.	1.119	2.59
I speak of my brand of fast food restaurant to many individuals.	1.091	2.59
Overall mean score	**0.974**	**2.72**
WOM valence		
I recommended my brand of fast food restaurant.	1.162	3.20
I speak of the good side of my brand of fast food restaurant.	1.064	3.15
I am proud to say to others that I am a customer of this fast food restaurant brand.	1.168	3.20
I strongly recommend people buy products from my brand of fast food restaurant.	1.163	3.20
I mostly say positive things to others.	1.052	3.31
I speak favourably of my brand of fast food restaurant to others.	1.091	3.29
Overall mean score	**0.962**	**3.23**
Overall mean score for extent of word-of-mouth (intensity and valence)	**0.888**	**3.06**

Table 3 presents the standard deviation and mean for each item measuring how online word-of-mouth is spread by respondents regarding fast food restaurants. Each item is measured on a scale where 1 is 'never' and 5 = 'always'. From Table 3 it can be seen that all items realised means well below the mid-point of the scale of 2.50 with 'I talk to friends online about fast food restaurants' (mean = 1.91) obtaining the highest mean, and 'I write reviews/stories or rate fast food restaurants online' (mean = 1.52) the lowest mean.

Table 3: How respondents spread word-of-mouth online

Item	SD	Mean
I talk to friends online about fast food restaurants.	1.118	1.91
I send/forward emails about fast food restaurants.	1.117	1.79
I talk about fast food restaurants in a chat room/forum.	0.920	1.54
I meet other people online who like fast food restaurants.	0.934	1.56
I write about fast food restaurants on a personal page, blog or website.	0.973	1.57
I write reviews/stories or rate fast food restaurants online.	0.913	1.52
I post messages on Facebook/MySpace/Twitter about fast food restaurants.	1.132	1.85
I share content related to fast food restaurants online.	1.043	1.74

With regard to H1 that respondents exhibiting different demographic characteristics (gender, race and age) differ significantly in the level of product involvement they exhibit towards fast food restaurants, the independent sample t-test indicate that blacks and whites differ significantly in the level of product involvement they exhibit towards fast food restaurants (p-value < 0.0005). Blacks (mean = 4.89) exhibit significantly higher levels of product involvement than whites (mean = 4.18). H1 can therefore not be rejected only in terms of race, since blacks exhibit significantly higher levels of product involvement than whites towards fast food restaurants.

With regard to H2 that respondents exhibiting different fast food restaurant patronage habits (length of time and patronage frequency) differ significantly in the level of product involvement they exhibit towards fast food restaurants, the following findings were made:

- The results of the Mann-Whitney U test indicate that groups of respondents who have been supporting their favourite fast food restaurant for different lengths of time differ significantly in the level of product involvement they exhibit towards fast food restaurants (p-value = 0.047). Those supporting their favourite fast food restaurant for 3 years or longer (mean rank = 132.90) exhibit significantly higher levels of product involvement than those supporting their favourite fast food restaurant for less than 3 years (mean rank = 113.46).
- The results of the Mann-Whitney U test indicate that groups of respondents who buy from their favourite fast food restaurant at different frequencies differ significantly in the level of product

involvement they exhibit towards fast food restaurants (p-value = 0.001). Those who buy once a week or more (mean rank = 150.51) exhibit significantly higher levels of product involvement than those buying less than once a week (mean rank = 117.46).

H2 can therefore not be rejected. Those supporting their favourite fast food restaurant for 3 years or longer and those who buy once a week or more from their favourite fast food restaurant exhibit significantly higher levels of product involvement.

H3 (respondents exhibiting different demographic characteristics (gender, race and age) differ significantly in the extent of word-of-mouth they generate with respect to the fast food restaurant they buy from), tested through an independent samples t-test indicate that blacks (mean = 2.90) exhibit significantly higher word-of-mouth intensity than whites (mean 2.58; p-value = 0.008). H3 can therefore not be rejected only in terms of race, since blacks exhibit significantly higher levels of word-of-mouth intensity than whites towards fast food restaurants they buy from.

With regard to H4 that respondents exhibiting different fast food restaurant patronage habits (length of time and patronage frequency) differ significantly in the extent of word-of-mouth they generate with respect to the fast food restaurant they buy from results of the Mann-Whitney U test indicate that those who buy once a week or more (mean rank = 157.56), however, exhibit significantly higher levels of word-of-mouth intensity than those buying less than once a week (mean rank = 121.05; p-value < 0.0005). H4 can therefore not be rejected only in terms of those who buy once a week or more who exhibit significantly higher levels of word-of-mouth intensity than those buying less than once a week.

H5 (there is a significant and positive correlation between the level of product involvement respondents exhibit towards fast food restaurants and the extent (intensity and valence) to which they generate word-of-mouth in the fast food restaurant industry), the Pearson product moment correlation indicates a significant and positive (p-value < 0.0005 and $r = 0.508$) correlation with a large effect between the level of product involvement respondents exhibit towards fast food restaurants and the extent (intensity and valence) to which they generate word-of-mouth in the fast food restaurant industry. H5 can therefore not be rejected. There is a large significant and positive correlation between the level of product involvement respondents exhibit towards fast food restaurants and the extent (intensity and valence) to which they generate word-of-mouth in the fast food restaurant industry.

With regard to H6 that there are significant and positive correlations between the level of product involvement respondents exhibit towards fast food restaurants and how they spread online word-of-mouth, it was observed that there are significant and positive correlations between all items measuring how word-of-mouth is spread (eWOM) and the level of product involvement. Only two items exhibit a medium effect namely, 'I talk to friends online about fast food restaurants' ($r = 0.359$) and 'I share content related to fast food restaurants online' ($r = 0.316$) while the other items exhibit small effects. H6 can therefore not be rejected.

MANAGERIAL IMPLICATIONS AND RECOMMENDATIONS

The results indicate that the majority of respondents access the Internet through their cellphone. This makes a mobile site and developing relevant mobile application indispensable for marketers who wish to increase traffic to the site and subsequently encourage product involvement. The results of the study indicate furthermore that respondents exhibit fairly high levels of product involvement pertaining to the fast food restaurant they patronise most frequently. Respondents indicated that they view fast food restaurants as something that is needed, relevant and valuable. In order to increase product involvement, marketers of fast food restaurants could capitalise on these sentiments of their customers. Black respondents also exhibit significantly higher levels of product involvement than white respondents. Those respondents who have been patronising the fast food restaurant for three years or longer and purchase from the fast food restaurant once a

week or more, exhibit higher levels of product involvement. These findings can guide marketers in identifying those groups of customers who tend to be significantly more involved with their products than others.

It was furthermore found that respondents spread WOM about their favourite fast food restaurants. The results indicate significantly higher levels of WOM valence than WOM intensity. Respondents are thus positive about their favourite fast food restaurant, but not equally willing to speak about it. Marketers of fast food restaurants therefore have to work on strategies to encourage their customers to voice the positive feelings they have towards the particular fast food restaurant. Black respondents exhibited significantly higher levels of WOM intensity than white respondents. Marketers can capitalise on the sentiments of their black customers to convert a large untapped segment of the market. In addition, research should be undertaken to uncover the significantly lower levels of WOM intensity amongst white customers. The challenge is, however, to get customers to voice their positivity (WOM intensity) to the same extent that they experience it (WOM valence). From the results it is evident that those who patronise fast food restaurants once a week or more, exhibited higher levels of WOM intensity than those who patronise the fast food restaurant less than once a week. It is thus is evident that regular customers are more willing to spread positive WOM.

With respect to the levels of eWOM respondents participate in the following was found: The study showed that respondents do not really engage in eWOM. Of those respondents that do engage in eWOM, they mainly do so by posting messages about their fast food restaurant on a social networking site such as Facebook or mySpace. This could be attributed to cultural aspects, where South Africans are known to engage in higher levels of traditional WOM (i.e. talking directly to friends and family) than eWOM. As most online WOM messages are spread via a social networking site, fast food restaurants need to ensure that they are active on social networking sites (i.e. have their own Facebook page which consumers can "friend") and create opportunities for consumers to "like" the restaurant or send a link to others.

Overall, it was found that significant and positive correlations exist between the level of product involvement respondents exhibit towards fast food restaurants and the characteristics of WOM (namely intensity and valence) as well as eWOM. This suggests that fast food restaurants should aims to increase the level of product involvement consumers have towards the brand and service in order to increase the intensity and valence of the word-of-mouth spread about the fast food restaurant. This once again could be done by engaging with consumers about the products and services they require from the fast food restaurant and perhaps allow consumers the ability to customise their own fast food meal to increase the level of product involvement. By engaging with consumers on social media, fast food restaurants could increase the level of product involvement and encourage the spreading of WOM both in the traditional sense and online.

CONCLUSION

Researching the relationship between product involvement, WOM intensity and valence and eWOM is necessary for organisations aiming to increase the levels of customer satisfaction and loyalty. This is also true for South Africa with its numerous cultures, and especially in the fast food industry which is dealing with changing consumer demands and tighter budgets. The results of the study confirm previous studies that the there is a relationship between the level of product involvement and WOM intensity and valence. From the results it was also found that from a South African perspective, culture influences the level of product involvement and that respondents do not really engage in eWOM. This indicates that traditional WOM is still prevalent in this market.

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BRAND AWARENESS IN THE SERVICES SECTOR INFLUENCED BY EIGHT INTERNAL MARKETING ELEMENTS

Elizabeth Conradie, Mornay Roberts-Lombard, and HB Klopper

ABSTRACT

The internal marketing mix for services typically consists of seven elements (product, price, place, promotion, people, processes and physical evidence). In this study another element, performance, was added to the mix to determine the influence of these eight elements on the brand awareness as perceived by customers of car rental companies in South Africa. Although car rental companies may have a strong brand position, the brand's successful awareness depends on the role the employees play in delivering the service (Wilson, Zeithaml, Bitner & Gremler, 2012:249). This research aimed to provide guidance to South African car rental companies to improve their respective brand awareness, enabling them to expand customer bases whilst retaining existing customers through improvement of internal marketing programmes.

KEY WORDS: Services organisations, Internal services marketing mix elements, Brand awareness, and Structural equation modelling

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INTRODUCTION

he internal marketing mix for services typically consists of seven elements (product, price, place, promotion, people, processes and physical evidence). In this study another element, performance, was added to the mix to determine the influence of these eight elements on the brand awareness as perceived by customers of car rental companies in South Africa. Irrespective of the fact that service organisations, such as car rental companies, may have developed a well-conceived positioning for their brand, the brand's successful positioning and awareness depend on the role the employees play in delivering the service (Wilson, Zeithaml, Bitner & Gremler, 2012:249). In order to achieve the goal of internal marketing, service organisations need to recognise that marketing strategies should not only be aimed at external customers, but should also be implemented internally and achieve better internal communication (Lindman, Pennanen, Rothenstein, Scozzi & Vincze, 2012:3). This research aimed to provide guidance to South African car rental companies to improve their respective brand awareness, enabling them to expand customer bases whilst retaining existing customers through improvement of internal marketing programmes.

LITERATURE REVIEW

The traditional marketing mix for products consists of the well-known four elements, product, price, place and promotion. A key factor distinguishing the services marketing from the marketing of physical products is the human element. The distinctive characteristics of services require the addition of three more Ps to overcome the limitations of the traditional marketing mix (Wilson et al., 2012:23). The elements of the three additional Ps of the marketing mix are:

- People – the appearance and behaviour of service personnel;
- Process – how the service is delivered, the actual procedures and flow of activities; and
- Physical evidence – everything from the appearance, design, layout of the service setting, to brochures, signage and equipment.

The unique characteristics of services cause customers to search for evidence of the service in each of their interactions with the organisation. The additional elements of the service mix, namely people, process and physical evidence, provide customers with that evidence and allow them to form their own judgement (Chen, Chen & Huang, 2012:107). Since employees are a powerful element tool of customer persuasion and a major parameter affecting the customer's perception on the delivered service quality, Grove, Fisk and John (2000) added performance of employees as another critical element to the marketing mix (Gummesson, Lusch & Vargo, 2010:13; Constantinides, 2006:421).

Kotler & Keller (2009:288) stated that marketing and branding theories support the idea that there is a functional connection between the marketing of services and the awareness of the brand. Establishing favourable brand awareness is an important factor to ensure business success (Park, Cho & Kandampully, 2009:134). Brand awareness refers to the strength of a brand's presence in the customer's mind. Awareness is measured according to the different ways in which customers remember a brand, ranging from recognition (exposure to the brand) to recall (what can be recalled about the brand) to first in the mind (the brand appearing first in the mind) and finally to dominant (the only brand recalled) (Brewer & Zhao, 2010:36). Brand awareness is created by increasing the familiarity of the brand through repeated exposure and strong associations with the relevant cues enabling the customer to recall the brand effectively. Brand associations are divided into three major categories, these being attributes, benefits and attitudes (Keller, 2009:139). In this study attributes refer to the trustworthiness of the vehicles; benefits refer to perceived quality, translating into the overall evaluation of the service customers receive; and attitudes refer to the customer's loyalty towards the brand (Kapferer, 2005:149).

In order to enhance the brand awareness of a service organisation, the organisation has to adapt its marketing activities to mix and match the internal marketing mix elements that will reinforce the brand awareness (Song, Hur & Kim, 2012:332). Car rental companies need to implement internal marketing programmes that include at least some of the internal marketing mix elements to ensure employees deliver service excellence to customers, thereby improving the awareness of their brand amongst external customers. Customers who are aware of the brand of car rental companies and who receive excellent services should become committed to the company and will most likely remain long-term and loyal customers of the specific car rental company (Boshoff & Du Plessis, 2009:15). Since employees of car rental companies create the customer's perceptions and awareness of the brand during the service encounter, it is important that they are exposed to internal marketing programmes. If the programmes are implemented effectively, customers have a satisfactory experience and positive brand awareness is created.

Although most South African car rental companies' brands are well-known, formal research is required as it is not evident that internal marketing programmes are implemented in these companies. Furthermore, it is also not evident what the influence of internal marketing is on brand awareness of car rental companies as perceived by their customers.

Problem Statement

Although car rental companies have internal programmes, such as loyalty and other incentive programmes to motivate employees, the success of these programmes have not been researched nor linked to the internal marketing elements applicable to this study (First Car Rental, 2011; Hertz, 2011; Avis, 2009). Furthermore, despite a strong interest in internal marketing research amongst marketing researchers, little research has been conducted related to brand awareness in service brands (Song et al., 2012:331).This is relevant because if all elements of the internal marketing mix do not contribute positively to the overall brand awareness of car rental companies in South Africa, it could receive reduced attention, which could damage the overall image of the brand of the car rental company. Additionally if certain activities demonstrate ineffectiveness, they could be altered and improved, thereby creating more competitiveness for car rental companies. Customers in a services environment become aware of the brand through their experience during consumption of the service, which is created by employees of the organisation. This raises the question of whether the internal marketing (internal product, price, promotion, place, people, processes, physical evidence and performance) presented to employees have a positive influence on brand awareness (brand recognition, trustworthiness, overall evaluation and loyalty) as perceived by the external customers of car rental companies.

Research Objectives

The primary research objective is to determine the perceived influence of eight internal marketing mix elements on the brand awareness of selected car rental companies in South Africa.

The secondary research objectives are:

- To determine whether there is a difference between the perceived influences of the eight internal marketing mix elements on brand awareness of selected car rental companies in South Africa.
- To determine which of the eight internal marketing mix elements have the largest influence on brand awareness of selected car rental companies in South Africa.

Conceptual Framework

For the purposes of the study, empirical research was applied to measure the building blocks or concepts identified by the services marketing and branding theories. Concepts are generally accepted as bundles

of meanings or characteristics associated with certain events, objects, conditions, situations and behaviours (Cooper & Schindler, 2008:39). However, a bundle of meanings does not provide a clear framework for research. Therefore, constructs are used to turn these bundles of meaning into an image or idea specifically invented for a given research and/or theory-building purpose (Zikmund & Babin, 2010:39). In this study the constructs derived from the concepts contribute to the empirical investigation of the research objectives.

Research constructs are described as unobservable abstract concepts that are measured indirectly by a group of related variables. Variables are described as latent variables (independent or exogenous) and observable variables (dependent or endogenous) which are measurable elements of an object and are measured directly (Hair, Bush & Ortinau, 2009:233). Therefore, the latent variables that will be measured in this study are the eight internal marketing elements, namely product, price, place, promotion, people, process, physical evidence and performance. These elements are the independent (exogenous) variables or constructs, since they predict or explain the outcome variable of interest (Hair et al., 2009:234). Brand awareness can be measured as recognition of the brand and recall of the brand (Sophonsiri & Polyorat, 2009:55). For the purpose of this study, the dimensions of brand recall are trustworthiness of the vehicles, overall evaluation and loyalty towards the brand. The brand recognition and brand recall are the dependent or endogenous variables or constructs as they are the variables the researcher is seeking to explain (Hair et al., 2009:234).

The influence of the eight internal marketing mix elements on the brand awareness derived from the research objectives has been formulated in hypotheses that could be tested among customers. The aim of the study is to determine the relationship between the constructs that are being tested due to the influence of the constructs on one another. The relationship can either be positive or negative. A positive relationship between two constructs indicates that the two constructs increase or decrease together, compared to a negative relationship that suggests that as one construct increases, the other one decreases, or vice versa (Hair et al., 2009:234).

Should there be no relationship between the eight internal marketing elements and the brand awareness of selected car rental companies in South Africa, the null hypothesis will be relevant. If the null hypothesis is accepted, it comprises that the constructs are not related in a meaningful way (Hair et al., 2009:235). If, on the other hand, the null hypothesis is rejected, the alternative hypothesis indicates that the two constructs are related in a way that may prove useful for the car rental companies.

RESEARCH METHODOLOGY

Research design

A quantitative process was used to seek data that could be expressed in numbers and statistically analysed (Zikmund & Babin, 2010:92). The research format was described as descriptive research. As recommended by Aaker, Kumar, Day and Leone (2011:345), this research included a descriptive survey design to gather the necessary data from a large sample size. As the objectives of this research were to describe a current situation, a cross-sectional format was appropriate.

Population and sample

The target population in this study includes car rental companies in South Africa. Although seven car rental companies were invited by the researcher to participate, only three agreed to participate, namely Company A, Company B and Company C. Therefore, the sampling unit for this study included customers of Company A, Company B and Company C over a period of three months, between November 2010 and February 2011. These three companies are representing car rental companies in South Africa due to all three companies having more than 30 branches and fleets in excess of 6 000. Company A, Company B and Company

C combined have a market share of more than 55%, thus it was believed that they were a fair representation of the car rental industry in South Africa. They are also regarded as large (Company A), medium (Company B) and small (Company C) car rental companies, so all three categories were represented.

Probability sampling in the form of directly proportional stratified sampling was used in terms of selecting only customers of the three car rental companies, not including employees. The purpose of this study was to determine the effect of internal marketing on the brand awareness perceived by customers, therefore, only customers were selected for the purpose of the study. In probability sampling, there is a likelihood that any given population element will be included in the sample, because the final sample elements are selected objectively by a specific process (Iacabucci & Churchill, 2010:287). Directly proportionate stratified sampling was used in the study, as the goal was to draw a probabilistic sample from a population to describe the population's characteristics or parameters, based on statistics calculated from the sample. A stratified sample divides the population in mutually exclusive and exhaustive subgroups and samples are chosen from each of the subgroups (Churchill, Brown & Suter, 2010:340). In a directly proportionate stratified sample the population is divided into groups according to characteristics (Aaker et al., 2011:345). In this study, the subgroups were Company A, Company B and Company C customers because of the car rental company of which they are customers. The 80-20 rule was applied, as customers of the car rental companies rented vehicles regularly during the period of observation.

The sample unit that was used in the study included customers who rented cars from Company A, Company B and Company C over a period of three months, which included business and holiday months. The sampling elements were customers of Company A, Company B and Company C who rented vehicles at airports, namely OR Tambo, Cape Town, Durban, Bloemfontein, Port Elizabeth, East London, George, Nelspruit, Kimberley and Lanseria, and city branches, including Johannesburg, Cape Town, Durban, Bloemfontein, Port Elizabeth, East London, George, Nelspruit and Kimberley. The airports and related cities were identified as the major airports in South Africa and therefore they were selected for this study. The required sample size of respondents was between 375 and 750 and the actual sample size was 581.

The customers of car rental companies would aid in measuring the perceived influence of internal marketing elements on the brand awareness of the selected car rental groups.

Data collection and analysis

The data collection was conducted by means of a survey. The questionnaire included a demographic section to classify respondents, being customers. In the second section of the questionnaire, the eight internal marketing mix elements were tested based on information from the literature. The third section of the questionnaire focused on brand awareness, namely brand recognition and brand recall (trustworthiness, overall evaluation and loyalty). A five-point Likert scale, ranging from 'strongly disagree' to 'strongly agree', was used for all questions within the questionnaire (Vagias, 2006:1).

Statistical analyses procedures to process the quantitative data collected were performed in this research. The measuring instrument used and the data gathered were subjected to thorough analyses to determine the reliability and the empirical results of the hypothesised relationships among the variables investigated.

Structural equation modelling (SEM) was the statistical technique used for the empirical investigation because SEMs are well recognised as the most important statistical method to evaluate a series of simultaneous hypotheses about the impacts of latent variables and manifest variables on other variables, and take the measurement errors into account (Lee, 2007:1). Hair, Black, Babin and Anderson (2010:634) describe SEM as a multivariate statistical technique for building and testing statistical models, sometimes called causal models. It is a hybrid technique that encompasses aspects of confirmatory factor analysis (CFA), path analysis and multiple regression to estimate a series of interrelated dependence relationships simultaneously (Hair et al., 2010:634). SEM has the ability to assess relationships comprehensively and therefore it is suited for theory testing which focuses more on a systematic and holistic view of research problems than on theory development

(Hair et al., 2010:635). Furthermore, SEMs are suitable to incorporate latent variables into the analysis, and to account for measurement error in the estimation process (Cooper & Schindler, 2008:583; Lee, 2007:2).

The data analysis consisted of conducting descriptive statistics, such as the frequency distributions and means in order to summarise the sample data. Cross-tabling the internal marketing elements and the brand awareness constructs was also performed.SEM was conducted to determine the model fitness. Goodness-of-fit tests determine if the structural framework being tested should be accepted or rejected. Goodness-of-fit information included, for example, the Chi-square test, the Root Mean Square Error of Approximation (RMSEA), the Chi-square test of model fit (CFI/TLI) and Standardised Root Mean Square Residual (SRMR). The validity of the questionnaire (measuring instrument) was considered by evaluating the validity of its constructs. SEM also has a built-in testing of reliability. Validity and reliability were confirmed by the goodness-of-fit results. The hypothesised relationships were tested by evaluating the point and interval estimates of the parameters provided during the SEM procedure. This allows the researcher to reject or accept hypotheses based on the results. Therefore, SEM was used to examine a series of interrelated dependence relationships simultaneously, was applied to test and estimate relationships between the independent (exogenous) and dependent (endogenous) variables.

Findings

Descriptive statistics, namely frequency and percentage provide information on the demographics of respondents.

The majority of respondents were in the age category 56 years or older (22%; n = 122), followed by respondents between the ages 36 and 40 years (15.9%, n = 88). Only 11 (2.0%) of the respondents were between 18 and 25 years old. The majority of respondents were male (69.4%, n = 385), while females were represented by 170 (30.6%). The highest number of respondents were white (66.7%, n = 370), followed by blacks (24.3%, n = 130). The lowest number of respondents, 4 (0.7%) were "other", who referred to Middle Eastern, next were coloureds representing 16 (2.9%) respondents.

The majority of respondents hired vehicles most often from Company A with 225 (40.5%) respondents and Company B with 207 (37.3%) respondents. Most respondents use car rental for business travel as indicated by 343 (61.8%) respondents, while 212 (38.2%) respondents indicated that they use car rental for leisure purposes. The survey was done covering the business months, November and January, as well as December, which represents the holiday season, but still the majority of customers 316 (56.9%) travelled for business purposes.

It was assumed that business customers did not have a choice in car rental, since the company they work for normally has an agreement with a particular car rental company. Therefore, respondents were requested to indicate that if they had a choice, would they choose the same company to which the majority of respondents (80.5%, n = 447) answered yes. Only 38 (6.9%) respondents indicated that the question was not applicable.

The demographics, namely age, gender and race of respondents were cross-tabled with the internal marketing elements and the brand awareness constructs. The statistical results, following a Chi Square test of significance, are listed next:

- The age of respondents had a significant influence on internal promotion, with the majority of respondents experiencing there was a lack of internal promotion ($x^2(182) = 216.950$, $p < 0.05$).
- The gender of respondents had a significant influence on internal price, with a slight majority of respondents feeling that employees paid a high price by being an employee of the car rental company ($x^2(27) = 43.704$, $p < 0.05$).

- The gender of respondents had a significant influence on internal promotion, with a slight majority of respondents feeling that the car rental company they were using had done internal promotion ($x^2(26) = 41.165$, $p < 0.05$).
- The race of respondents had a significant influence on the traditional internal marketing element product, with respondents feeling that employees were friendly and knowledgeable ($x^2(88) = 132.265$, $p < 0.05$).
- The race of respondents had a significant influence on the traditional internal marketing element price, agreeing that employees kept their promises and were accountable ($x^2(104) = 105.651$, $p < 0.05$).
- The race of respondents had a significant influence on the services internal marketing element physical evidence, agreeing that the car rental company's offices and employees conduct were professional ($x^2(88) = 126.771$, $p < 0.05$).
- The race of respondents also had a highly significant influence on the recent internal marketing element performance, agreeing that the car rental company's performance was not efficient ($x^2(116) = 176.488$, $p < 0.05$).

Structural equation modelling

Hair et al. (2010:672) indicated that for a sample size larger than 250, as in the case of this study, the x^2 normally resulted in insignificant *p*-values, even with a good fit. Therefore, more emphasis was placed on the other goodness-of-fit indices. Generally accepted values are as follows: Normed Chi-square (x^2/df): < 3; RMSEA: between 0.05 and 0.08; CFI: > 0.9; TLI: > 0.9; and SRMR: < 0.05.

The exogenous variables had a goodness-of-fit, because three of the values, namely CFI, TLI and SRMR for all constructs were within the stipulated norms.

Table 1: Goodness-of-fit indices for the exogenous latent variables

Variables	x^2(df)	RMSEA	CFI	TLI	SRMR
Product	1.877	0.043*	0.997	0.990	0.012
Price	2.125	0.048*	0.994	0.989	0.014
Promotion	1.470	0.031*	0.997	0.991	0.014
Place	3.505*	0.075	0.980	0.940	0.024
People	(7.551*)	0.122*	0.961	0.922	0.029
Process	1.971	0.047*	0.989	0.978	0.020
Physical evidence	(5.402*)	0.100*	0.956	0.911	0.033
Performance	(5.163*)	0.106*	0.965	0.931	0.035

** Values not meeting the required minimum levels*

Table 1 confirmed satisfying levels of goodness-of-fit, because three of the values, namely CFI, TLI and SRMR for all constructs were within the stipulated norms. Therefore, the RMSEA values can actually be ignored due to the sample size as indicated by Hair et al. (2010:672).

The endogenous constructs were also tested to determine their goodness-of-fit. Brand awareness was broken down into brand recognition and recall, and recall consisted of trustworthiness, overall evaluation and loyalty. The values of these constructs are displayed in Table 2.

The endogenous constructs indicated a moderate goodness-of-fit. Recognition and trustworthiness especially did not provide a good fit, but since the TLI value for both was close to 0.9, it was still acceptable to maintain the constructs for further analysis.

Table 2: Goodness-of-fit indices for endogenous latent variables

Variables	x^2(df)	RMSEA	CFI	TLI	SRMR
Recognition	6.830*	0.110*	0.860*	0.791*	0.131*
Trustworthiness	11.903*	0.150*	0.860*	0.790*	0.186*
Overall evaluation	5.240*	0.102*	0.975	0.924	0.022
Loyalty	(7.838*)	0.129*	0.967	0.902	0.035

** Values not meeting the required minimum levels*

In order to improve the goodness-of-fit of the final structural model, the researcher also examined the paths between the constructs. The paths with factors significant at the 0.05 level or less were trustworthiness on process (0.009); trustworthiness on performance (0.001); and loyalty on performance (0.006).

The traditional marketing mix elements had no significant paths with any of the endogenous constructs. Interestingly, no paths were found between the endogenous constructs and place. One possible reason could be that the four traditional Ps, namely product, price, promotion and place are more important in a product market environment, while marketing mix elements, such as process and performance have a more important role to play in a services environment, like the car rental industry.
To improve the fitness of the model, the traditional marketing mix elements, namely product, price, promotion and place, which seemed to be insignificant, were omitted for further analysis. After omission of the traditional four marketing mix elements, the goodness-of-fit of the exogenous latent variables had clearly improved. The results can be seen from the comparative indices in Table 3.

Table 3: Comparison of goodness-of-fit indices for exogenous latent variables

Index	Results for exogenous latent variables	Refined results for exogenous latent variables
RMSEA	0.048	0.056
CFI	0.897	0.906
TLI	0.888	0.896
SRMR	0.057	0.056

The indices in table 3 display an improved model fit. According to the criteria stated by Hair et al. (2010:672), the RMSEA (0.056) in the refined data was still within the parameter of the recommended < 0.07 value. The CFI and TLI improved to be closer to the recommended 0.9 level (0.096 and 0.896 respectively), and the SRMR value of 0.056 was very close to the recommended 0.05 value. The refined data was fit to the model and the results are displayed in Table 4.

Table 4: Goodness-of-fit indices for the final SEM model

Index	Result for SEM model
RMSEA	0.055
CFI	0.865
TLI	0.860
SRMR	0.086

The SEM results indicated a standard scaled Chi-square measure of 2877.632. The normed Chi-square (x^2/df) for the hypothesised SEM model was 2.359. Since the normed Chi-square was within the recommended value of 3 or less as recommended by Hair et al. (2010:672), it can be concluded that the data had a reasonable fit with the model. As can be seen from the results above, the RMSEA equalling 0.055 indicated a good fit for the model as it was well within the recommended value of less than 0.07. The CFI (0.865) and TLI (0.860) were very close to the recommended 0.9 level and were regarded as indications of a satisfactory model fit. Although the SRMR was slightly above the 0.05 recommended value at 0.086, the goodness-of-fit of the model still proved to be satisfactory.

The estimated parameters of hypothesised relationships were not all positive and therefore indicated that not all independent variables had a positive influence on and a positive relationship with the dependent

variables. The positive estimated parameters indicated that the customers of car rental companies regarded these factors as satisfactory when they were utilising the services of the car rental company. Table 5 indicated the hypothesised relationships that were statistically significant at the 0.05 level of significance.

Table 5: Parameter estimates and p-values to evaluate hypotheses

		ESTIMATE	P-value
Services Ps			
Brand recognition	<- - - People	-.310	0.081
Brand recognition	<- - - Process	.537	**0.014***
Brand recognition	<- - - Physical evidence	.112	0.723
Brand recognition	<- - - Performance	.120	0.556
Trustworthiness	<- - - People	-.303	0.078
Trustworthiness	<- - - Process	.986	**0.001***
Trustworthiness	<- - - Physical evidence	-.558	0.170
Trustworthiness	<- - - Performance	.908	**0.000**
Overall evaluation	<- - - People	.160	0.183
Overall evaluation	<- - - Process	.398	**0.033***
Overall evaluation	<- - - Physical evidence	.014	0.958
Overall evaluation	<- - - Performance	.291	**0.026***
Loyalty	<- - - People	-.397	0.082
Loyalty	<- - - Process	.717	**0.043***
Loyalty	<- - - Physical evidence	-.064	0.897
Loyalty	<- - - Performance	.829	**0.001***

*significant at 5% level

FINDINGS

The findings from the SEM analysis are described next:

- *Process had a significant influence on all four dependent variables, namely brand recognition, trustworthiness, overall evaluation and loyalty.*
- *Performance had a significant influence on trustworthiness, overall evaluation and loyalty.*
- *Performance and trustworthiness were the second strongest relationship (estimate .908; $p < 0.05$).*
- *There was a strong relationship between performance and loyalty (estimate .829; $p < 0.05$).*
- *Physical evidence was the factor that had the smallest or lowest influence on brand recognition (estimate .112; $p \leq 0.05$) at a 0.05 level of significance.*
- *People (employees) had a negative influence on brand recognition, trustworthiness, overall evaluation and loyalty.*
- *The empirical investigation indicated that process had a stronger influence on brand recognition, trustworthiness, overall evaluation and loyalty than the other factors.*

The fact that people (employees) had a negative influence on brand recognition, trustworthiness, overall evaluation and loyalty was an interesting finding, since the literature states that employees played a significant role in creating a positive customer experience, especially in a services industry. This means that car rental companies have to focus more on employees to ensure that they are correctly trained and equipped to deliver a positive service experience. Based on the findings of the research, the hypotheses were accepted.

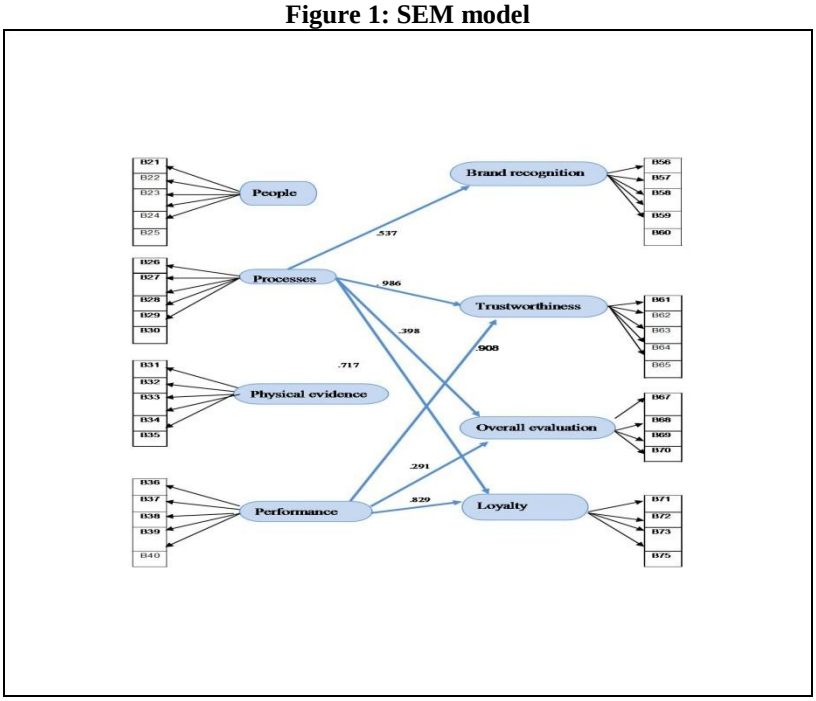
Since the traditional marketing mix elements, namely product, price, promotion and place did not have a significant influence on brand awareness constructs, the null hypothesis for traditional elements is accepted. The alternative hypotheses of the services internal marketing elements, including the recently added element (performance) were accepted due to the difference in influence and difference in the level of influence of the services elements on brand awareness constructs. The accepted hypotheses are as follows:

There is a *difference in the influences* of the services internal marketing elements *(people, process, physical evidence and performance)* on brand awareness *(recognition, trustworthiness, overall evaluation and loyalty)* of selected car rental companies in South Africa.

There is *a difference between the level of influence* of the services internal marketing elements *(people, process, physical evidence and performance)* on brand awareness *(recognition, trustworthiness, overall evaluation and loyalty)*.

Based on the final results of the SEM and hypotheses testing, the final SEM model is depicted in Figure 1. Due to the complexity of the model and space constraints, the arrows and circles that connect the errors with the scale items were not indicated in the Figure. The negative relationships and influences were also not included in the Figure, as well as the positive influences, which were not statistically significant.

Figure 1: SEM model



MANAGERIAL IMPLICATIONS FOR CAR RENTAL COMPANIES

The findings of the study indicated some areas where car rental companies could improve their internal marketing efforts to enhance the overall brand awareness of the company as experienced by customers.
People displayed negative or weak positive relationships with trustworthiness, overall evaluation and loyalty. Therefore, people require special attention by car rental companies to improve the relationships and influence of brand awareness constructs as perceived by customers.

To provide a service that addresses the expectations of customers, it is vital for the car rental company to match customers to the company's capabilities. Although the service itself remains important, people and social processes add value. Interactions may include negotiations and sharing of insights in both directions (Roberts-Lombard & du Plessis, 2011:24). Therefore, employee attitudes and behaviours, such as customer orientation, job satisfaction, organisational commitment and role stress, are contributing factors to the interaction between the car rental company and customers. Employees have to be motivated and willing to participate at all levels of the company to act in a marketing capacity, generate and disseminate information, and respond in a customer-focused way to the best interest of the company (Lings & Greenley, 2009:43).

On the other hand, customers are the co-creators of value, which is a desirable goal because it assists organisations to understand customers' point of view and identify their needs and wants (Payne, Storbacka & Frow, 2008:90; Lusch & Vargo, 2006:284). However, customers will only participate if they anticipate benefits from the relationship. Car rental companies should therefore realise that employees cannot choose to accept or reject customers' participation, but their interactions with customers shape the returns they gain from the interaction process (Chan, Yim & Lam, 2010:50).

The dialectic process between employees and customers further requires that managers understand the value proposition involved, and that capturing this interactive process is important for successful service definition, development and delivery. However, these interaction points with customers provide many opportunities for mistakes, and therefore, car rental companies need to pay specific attention to their front-line staff and the services they are providing (Angelis, De Lima & Siraliova, 2010:11).

Process, on the other hand, was ranked as one of the most important aspects to have a positive overall evaluation and establish customer loyalty. Car rental companies should therefore ensure that their processes are of high standard to retain existing customers and to build their reputation to attract new customers. Car rental companies provide accessibility through numerous branches nationally and some internationally and thereby increase the accessibility of their services and products to customers. However, all branches have to ensure that their processes are well planned, consistently implemented and coordinated throughout the organisation. The internal process has to be reliable and must have integrity to provide a satisfying experience to the external customer in delivering the service or product. Car rental companies should review their internal process from time to time and make improvements where required. Feedback from customers is also very valuable to assess if existing internal processes have a positive effect on the service delivery to customers. If car rental companies ensure that processes are functioning optimally, customers regard them as trustworthy.

The fact that there were weak positive relationships between physical evidence and brand awareness displays that customers are relatively satisfied with the offices of the car rental companies. They are also reasonably satisfied with the offices in their overall evaluation of car rental companies. The level of influence is a further indication that physical evidence does not play a major role when car rental customers make use of car rental services. Physical evidence represented the physical dimensions, including ambient condition, space, signs, symbols and artefacts, as well as servicescape, namely personal experience and spatial context.

Customers of car rental companies regarded performance of the company as very important. This implies that if car rental companies improve their performance and ensure that such performance is of a high standard, customers will trust the car rental company. Customers that trust their car rental company results in loyalty towards the car rental company.

Employees of car rental companies play a significant role in the performance of the organisation, and car rental companies will only be able to perform well if their internal performance is managed effectively. Employees should have the same values as the company and should be able to adopt the culture of the car rental company. Performance cannot be sustained if there is no measurement in place. Therefore, car rental companies have to measure employee performance, as well as the overall performance of the organisation.

Constructive feedback from employees should be encouraged and management and employees should be committed to each other. They should also have fun together, be helpful and compassionate about one another. Employees who are satisfied tend to put more effort in to ensure that the organisation performs better, and therefore continuous training and performance measurement are imperative to increase the car rental

company's overall performance. Furthermore, satisfied employees who are motivated to perform well, create satisfied and loyal customers who have trust in the organisation.

SUGGESTIONS FOR FUTURE RESEARCH

Future research regarding the topic of the research can be extended to include employees of car rental companies and comparative studies can be conducted between employees and customers. The research can also be extended to other services industries, such as the banking or insurance industries, and comparisons between those studies and this study can be drawn. The model and measuring instrument of this study can be applied to other industries, for example, the tourism and hospital industries could perhaps benefit. It is also possible that other constructs, not included in this study, can have an influence on the brand awareness of car rental companies' customers. It is observed that structural equation models, such as the one used in this study, suffer from the shortcoming that data can never confirm a model; it can only fail to disconfirm it. Thus, it is possible that other models with different constructs could possibly also fit the data collected, and therefore the internal marketing mix elements and brand awareness of car rental companies' customers need further empirical testing.

CONCLUSION

The model developed through the findings of this study provides car rental companies with a guidance on what internal marketing elements are important for positive brand awareness as perceived by their customers. In addition to the model, the study indicated that car rental companies should implement strategies to improve their internal marketing programmes. These strategies will contribute to improvement of employees' satisfaction and subsequently customer satisfaction. Satisfied customers will remain customers of their car rental company and ultimately profits and competitiveness of the particular car rental company will prosper. Car rental companies function in a very competitive industry and therefore they should recognise the importance of the brand awareness they are creating with customers. They are also participating in a global economy. Should they succeed in ensuring positive brand awareness, employees, customers and car rental companies and the whole economy of South Africa will eventually benefit from their successes.

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FOREIGN DIRECT INVESTMENT DECISIONS OF MULTINATIONAL COMPANIES

Ayşe Yüce and Mauricio Zelaya

ABSTRACT

This paper investigates the role of various factors that influence company foreign direct investment decisions and the amount of investment decision. We also examine how the foreign direct investments affect company performance after the investment by using a world-wide data base that contain all the foreign direct investments. The results indicate that company size and profitability are the major factors in both investment decision and on size of investment. The return on asset ratios of those companies with foreign direct investment increase more than 30% compared to those matched companies without foreign direct investments one year after the investments.

Keywords: Foreign direct investment, multinational companies

INTRODUCTION

In the last three decades, globalization and international investment by both companies and individual investors have increased tremendously. Although investing in new projects by foreigners is evaluated favourably by local governments and public, acquisitions of local companies by foreign companies and individuals are generally evaluated as bad news. It is very timely to examine how inward and outward foreign direct investments affect local economy also how these investments affect performance of multinational companies that make these decisions. OCO Monitor, FDI Markets database reports that 4.49 trillion U.S dollar has been invested in foreign direct investment projects in the entire world and 13,490,875 new jobs have been created since 2003. At the same period 58,204 total projects have been recorded.

This paper examines what factors affect multinational companies in their foreign direct investment projects. What will be the effect on profits of the companies? Do they manage the projects effectively and increase their return on investment after these projects? The paper is organized as follows: Section II shows the previous studies, Section III investigates the characteristics of the all foreign direct investment projects between 2003 and 2008. In Section IV, we show how different factors affect size of the company foreign direct

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investments. In Section V, we examine the important variables that influence foreign direct investment decisions. Effects of foreign direct investment on company performances before, during and after the foreign direct investment are analyzed in Section VI.
We conclude the paper in Section VII.

PREVIOUS STUDIES

We can classify foreign direct investment research into four different areas: those papers that concentrate on the motivations of foreign direct investment, studies that examine the location choices of the foreign direct investment, technology spillovers of inward foreign direct investment and finally individual country studies.

Market access, access to high technological environment, cheap labour and resources are the most cited factors that motivate companies for foreign direct investment (Makino, Lau and Yeh (2002), Chan, Makino and Isobe (2006), Cheng (2006)).

There exist many country-level studies that directly examine the foreign direct investments in a specific country or in a region. Contractor (1984) finds strategy and entry choices by U.S. multinationals are influenced by both country factors and industry characteristics. Grosse and Trevino (1996) find that bilateral trade, home country GDP and the exchange rate affect foreign direct investment into USA.

Banerji and Sambharya (1996) show that keiretsu affiliation, previous experience and higher dependence of core firms on affiliate firms, contributed to foreign direct investment decision of Japanese firms. Buckley, Clegg and Wang (2007) study both the inward and outward foreign direct investment of China to conclude that it is very important to reform the state-owned enterprises to obtain full benefits of inward foreign direct investments. Hejazi and Pauly(2003) conclude that Canadian foreign direct investment is motivated by market access, price differences, and intra-firm trade.

Harris and Ravenscraft (1991) find in their study that the majority of cross-border takeovers are in the research and development industries, whereby almost three fourths of the cross-border transactions between buyer and seller are in the same industry. Furthermore, their studies conclude that higher wealth gains are made by purchasing foreign firms than American firms. Chang and Chang (2012) examine the performance of international greenfield investments by U.S. firms and conclude that these investments can create value when they involve entering a host country for the first time or entering a developing country.

Foreign direct investment in the financial industry is investigated by Moshirian (2001) by developing a model for banking industry in the US, UK and Germany. The empirical results of the paper show that bilateral trade, banks' foreign assets, the cost of capital, relative economic growth, exchange rates are the major determinants of banking sector foreign direct investment. Moshirian (2006) examine the banking services in Latin America, Eastern Europe and in Asia and conclude that the benefits of foreign direct investment in banking services exceed the costs of multinational banks related to investing in a foreign country. Focarelli and Pozzolo (2007) and Buch and Lipponer (2007) study the factors that affect bank and insurance companies' decisions to invest in foreign countries and conclude that comparative advantage is the major determining factor and that more profitable and larger banks and insurance companies are more likely to expand internationally than smaller banks.

This is also seen in Claessens and Huizinga (2001), where they show that foreign banks diminish local profitability of local banks by acquiring a larger share of domestic profits in the local economy. The primary motive of multinational banks to enter foreign markets stems from the eclectic ideology of foreign profits. This is seen in Magri, Mori, and Rossi (2004). They find that the local market opportunities and the level of profitability are the main determinants for multinational banks to enter a host economy. Specifically, their study suggests that foreign banks would enter Italy once the Italian financial market regulations were relaxed, which would allow for multinational banks to expand and exploit excess profitability. This is important as our paper

theorizes that larger and more profitable firms are prime determinants for foreign direct investments. However, Moeller and Schlingemann (2005) provide evidence that cross-border takeovers actually have lower announcement stock returns relative to domestic takeovers.

The Dewenter paper (1995) provides evidence that a depreciating U.S. dollar is associated with higher levels of foreign acquisitions into the United States. This is consistent with Froot and Stein (1991) study the relationship between exchange rates and foreign direct investment. However, after controlling for investment levels and relative corporate wealth, there is no direct link between exchange rates and changes in foreign direct investment. This result is inconsistent with what has been seen in the past.

China receives the largest amounts of foreign direct investment. Ali and Guo (2005) examine the determinants of these projects by using questionnaire responses of multinational companies. Although joint ventures have been the major entry mode into China, recently more and more companies choose to do wholly foreign owned enterprises as the entry mode. Their results show that China's large market size and growth rate the most important determinants in company decisions.

Role of political risk on the foreign direct investment decisions into the MENA region is investigated by Al Khouri and Khalik (2013). They conclude that along with the market size, political risk is a major determinant of the investment decisions. Their results show that the level of corruption and the level of external conflict have close association with the amount of foreign direct investment flows. On the other side of the world the outbound foreign direct investment decisions of the Latin American multinationals are examined by Afriyie and et al. (2012) to conclude that internal management capabilities in deploying resources create differences in value creation by these companies in their foreign direct investment projects.

This study examines the foreign direct investments in different countries, different regions and investigate world wide foreign direct investments between 2003 and 2008. This paper will be the first extensive foreign direct investment study that will combine company foreign direct investments with the country level data.

CHARACTERISTICS OF FOREIGN DIRECT INVESTMENT PROJECTS

We obtained the data for all foreign direct investment transactions from a comprehensive database called OCO Monitor, FDI Markets. The database gives the details of foreign direct investments of all the companies in the world. We got the amount, location, industry and methods of company foreign direct investments along with created jobs from this database. The financial statistics and balance sheet, income statement and cash flow statement of companies were obtained from the Datastream database.

Table 1 shows the number of FDI projects initiated by different companies between 2003 and 2008. We only have partial data from year 2008. If we exclude the year 2008, we observe that the number of foreign direct investment projects increased steadily. The number of foreign direct investments and number of companies making foreign direct investments reached the highest numbers of 11,684 and 6171 respectively in year 2007. The biggest increase in the number of FDI projects is witnessed between years 2005 and 2006 with 1248 more projects in year 2006. During the whole period 19,961 companies made investment in foreign countries with total projects of 58,204.

Table 1: Foreign direct investment projects

	Number of FDI Projects	Number of Companies
2003	9400	4789
2004	10164	5052
2005	10354	5280
2006	11602	5563
2007	11684	6171
2008	5000	3025
Total	58204	19961

Table 2 gives the summary statistics of all the projects between 2003 and 2008. The mean investment amount for the projects is $148,416,920 and estimated investment for the remaining life of the projects is $46,237,345. As it is apparent from the table foreign direct investment projects cause big amount of monetary investments and create jobs in the host countries. Maximum number of jobs created are 40,000 and mean of the jobs created are 266 by a foreign direct investment project. Mean and maximum number of estimated jobs is 223 and 3,000 respectively.

As companies do not always release information on investment amount or job creation, a proprietary econometric model estimates, accurately, the jobs and investment where the actual value is not known. The algorithm makes an estimate for a project with missing data based on other projects with similar criteria i.e. same destination country, same sector, and same business function.

Table 2: 2003-2008 Summary statistics

	Investment	*Estimated Investment*	*Jobs*	*Estimated Jobs*
Mean	148,416,920	46,237,345	266	223
Standard Deviation	646,305,237	165,205,637	830	467
Kurtosis	311	11,327	654	20
Skewness	15	81	19	4
Maximum	20,000,000,000	24,194,600,000	40,000	3,000
Sum	2,623,714,319,680	1,873,814,630,000	3,201,434	10,289,441
Count	17,678	40,526	12,020	46,184

Foreign Direct Investments are done in every industry. Table 3 represents the number of foreign direct projects in 39 industries. The data for the 2008 is partial, and do not represent the whole year. The highest number of projects is in the software and IT services industry with 5997 total projects, followed by financial services with 4432 total projects and business services with 3062. On the other hand, 190 projects have been invested in the minerals industry.

Table 3: Industry classification

	2003	2004	2005	2006	2007	2008	Total
Aerospace	89	102	111	142	131	103	678
Alternative/Renewable energy	48	41	75	169	302	141	776
Automotive Components	380	403	345	363	354	96	1941
Automotive OEM	354	337	309	296	285	60	1641
Beverages	139	156	92	120	114	44	665
Biotechnology	46	69	75	77	93	83	443
Building & Construction Materials	130	145	156	182	162	43	818
Business Machines & Equipment	129	176	175	148	110	357	1095
Business Services	412	547	563	716	800	24	3062
Ceramics & Glass	38	41	35	34	72	143	363
Chemicals	434	412	313	350	371	130	2010
Coal, Oil and Natural Gas	437	258	320	269	292	201	1777
Communications	335	361	523	541	488	53	2301
Consumer Electronics	249	224	236	190	160	166	1225
Consumer Products	393	431	402	571	440	146	2383
Electronic Components	264	315	353	345	312	55	1644
Engines & Turbines	53	50	45	65	67	631	911
Financial Services	631	638	779	1066	1122	196	4432
Food & Tobacco	539	596	584	589	536	29	2873
Healthcare	49	47	37	54	62	134	383
Hotels & Tourism	304	281	260	287	269	258	1659
Industrial Machinery, Eq. & Tools	317	397	422	502	582	34	2254
Leisure & Entertainment	211	185	129	170	99	48	842
Medical Devices	83	92	92	129	97	192	685
Metals	431	366	537	421	458	17	2230
Minerals	36	27	49	21	26	31	190
Non-Automotive Transport OEM	41	57	48	54	67	51	318
Paper, Printing & Packaging	134	129	126	116	120	81	706
Pharmaceuticals	205	202	199	187	190	95	1078
Plastics	222	229	231	249	226	261	1418
Real Estate	235	224	260	463	510	33	1725
Rubber	52	62	73	69	80	60	396
Semiconductors	217	247	182	214	160	525	1545
Software & IT services	933	1192	1191	1283	1379	19	5997
Space & Defence	18	25	27	32	57	164	323
Textiles	422	588	400	488	476	158	2532
Transportation	176	265	352	390	439	37	1659
Warehousing & Storage	110	153	149	170	107	28	717
Wood Products	104	94	99	70	69	0	436

Table 4 shows the different outbound projects originated by companies in various countries during the whole period. As we can observe the United States companies have invested the largest amount of approximately $31 billion in foreign investments and estimated to create the largest number of jobs with 71,000 during the whole period, followed by UK with $27 billion dollars of FDI capital expenditure and 6,500 jobs. Japanese, Dutch, German, and French companies are the top job creators through their foreign direct investments. Out of 102 countries examined in this study, 15 countries had no outbound investment projects.

As previously mentioned, where there is no data available for the amount of outbound investment and number of outbound investment jobs created, the OCO monitor database employed an econometric model based on similar project criteria to estimate these values which appears on tables as outbound estimated investment and number of outbound estimated jobs.

Table 4: **Outbound investment projects from different countries**

Year 2003- 2008	Number of Outbound Investment Projects	Amount of Outbound Investment ($)	Outbound Estimated Investment	Number of Outbound Investment Jobs Created	Number of Outbound estimated jobs
Algeria	0	0	0	0	0
Antigua	0	0	0	0	0
Argentina	4	0	41,800,000	15	116
Armenia	0	0	0	0	0
Australia	55	3,423,260,000	5,660,800,000	250	19,682
Austria	68	5,775,250,000	1,441,900,000	2,354	31,817
Azerbaijan	6	10,000,000	747,600,000	0	547
Bahamas	1	0	6,800,000	0	51
Bahrain	13	10,006,200,000	1,484,500,000	0	4,891
Bangladesh	1	0	77,200,000	200	0
Belgium	67	1,142,360,000	1,410,400,000	2,220	7,889
Bermuda	20	0	930,100,000	1,699	2,469
Brazil	27	4,655,720,000	1,321,500,000	30	10,677
Bulgaria	2	62,600,000	0	0	738
Canada	94	20,276,200,000	3,069,600,000	1,699	16,169
Cayman Islands	2	100,000,000	9,600,000	0	516
Chile	6	14,000,000	168,100,000	370	253
China	72	10,073,770,000	4,890,500,000	2,367	29,573
Colombia	6	47,000,000	42,600,000	0	972
Croatia	3	28,100,000	21,300,000	0	493
Cuba	0	0	0	0	0
Cyprus	1	4,500,000	0	0	89
Czech Republic	6	15,700,000	792,600,000	40	333
Denmark	42	659,840,000	1,200,700,000	1,835	4,801
Dominican Republic	0	0	0	0	0
Ecuador	2	0	48,300,000	0	59
Egypt	8	158,000,000	169,700,000	0	668
El Salvador	0	0	0	0	0
Estonia	8	3,580,000	209,700,000	0	1,408
Finland	69	1,175,210,000	1,846,900,000	2,077	9,332
France	310	13,458,270,000	11,007,300,000	13,491	62,311
Germany	394	11,462,060,000	13,602,300,000	14,635	60,161
Greece	24	823,950,000	1,102,300,000	161	7,371
Greenland	0	0	0	0	0
Guyana	0	0	0	0	0
Hong Kong	69	4,632,550,000	3,427,500,000	1,036	27,525
Hungary	5	2,388,170,000	34,300,000	0	6,155

Table 4: Outbound investment projects from different countries (Table 4 continued)

Year 2003- 2008	Number of Outbound Investment Projects	Amount of Outbound Investment ($)	Outbound Estimated Investment	Number of Outbound Investment Jobs Created	Number of Outbound estimated jobs
Iceland	5	0	121,900,000	60	574
India	109	4,839,900,000	3,171,500,000	1,995	26,233
Indonesia	2	0	196,300,000	0	361
Iran	3	60,000,000	743,500,000	0	628
Ireland	25	331,290,000	873,100,000	902	1,498
Israel	32	3,035,720,000	522,800,000	1,190	11,710
Italy	118	7,772,410,000	3,312,500,000	4,368	26,202
Japan	346	17,017,708,000	11,182,000,000	24,426	65,886
Jordan	8	2,000,000,000	157,000,000	0	3,376
Kazakhstan	2	0	70,000,000	0	138
Kenya	7	10,000,000	405,000,000	300	162
Kuwait	18	5,781,000,000	473,300,000	0	7,444
Kyrgyzstan	1	0	46,700,000	0	58
Latvia	2	0	37,000,000	3	89
Lebanon	4	0	53,700,000	0	56
Libya	0	0	0	0	0
Liechtenstein	2	13,000,000	0	160	0
Lithuania	2	365,800,000	21,000,000	0	3,089
Luxembourg	16	937,080,000	418,200,000	0	6,130
Macau	0	0	0	0	0
Macedonia	0	0	0	0	0
Malaysia	42	3,111,010,000	1,855,800,000	191	11,260
Malta	1	0	27,900,000	0	179
Mauritius	1	0	20,500,000	225	0
Mexico	10	452,390,000	80,100,000	170	3,860
Morocco	1	500,000,000	0	0	458
Netherlands	113	3,783,650,000	8,548,200,000	19,685	28,520
New Zealand	8	14,400,000	191,800,000	0	1,350
Nigeria	7	0	423,900,000	0	202
Norway	26	1,782,830,000	516,000,000	80	4,801
Oman	5	2,400,000	72,400,000	0	599
Pakistan	5	1,062,000,000	106,300,000	0	6,191
Peru	1	0	2,900,000	0	29
Philippines	7	3,000,000	170,000,000	0	542
Poland	13	656,600,000	92,900,000	1,043	1,791
Portugal	37	1,549,950,000	1,688,600,000	1,908	9,493
Puerto Rico	0	0	0	0	0

Table 4: Outbound investment projects from different countries (Table 4 continued)

Year 2003- 2008	Number of Outbound Investment Projects	Amount of Outbound Investment ($)	Outbound Estimated Investment	Number of Outbound Investment Jobs Created	Number of Outbound estimated jobs
Qatar	24	2,828,400,000	1,902,800,000	0	12,635
Romania	4	0	91,800,000	0	2,637
Russia	65	2,788,700,000	6,017,500,000	3,417	16,891
Saudi Arabia	15	1,880,000,000	1,217,900,000	0	6,142
Serbia & Montenegro	1	0	35,800,000	0	8
Singapore	77	1,396,760,000	7,792,100,000	418	36,563
Slovakia	2	0	37,500,000	0	137
Slovenia	8	15,400,000	217,400,000	830	369
South Africa	9	85,000,000	342,900,000	915	271
South Korea	80	15,585,680,000	1,823,700,000	2,273	45,332
Spain	143	3,949,090,000	3,733,700,000	1,638	30,509
Sri Lanka	1	0	6,100,000	0	22
Sweden	86	3,630,550,000	1,699,300,000	3,539	16,254
Switzerland	136	3,514,850,000	4,406,600,000	2,616	15,932
Syria	2	0	350,800,000	0	2,109
Taiwan	50	2,543,620,000	1,543,800,000	3,920	29,662
Thailand	16	254,750,000	137,700,000	0	2,986
Tunisia	2	23,600,000	71,400,000	0	1,146
Turkey	22	779,220,000	815,400,000	485	10,189
UAE	72	22,009,290,000	6,136,600,000	330	49,865
UK	353	27,320,743,000	12,171,800,000	6,541	70,032
Ukraine	8	252,630,000	90,400,000	0	1,539
Uruguay	0	0	0	0	0
USA	1433	30,710,536,000	52,319,200,000	71,072	210,608
Venezuela	0	0	0	0	0
Vietnam	10	32,000,000	1,194,100,000	100	1,650
Yemen	4	0	168,600,000	0	84
Zimbabwe	0	0	0	0	0

We can examine inbound projects in Table 5. The largest amount of investments has been made to China with $20 billion investment followed by India with $19 billion with 609 and 384 inbound investment projects respectively. These projects are estimated to create 190,021 jobs in China and 126,650 jobs in India. Other major FDI receivers are Australia, Kazakhstan, Libya, Malaysia, Nigeria, Romania, Russia, Tunisia and Vietnam. Out of 102 countries, 6 countries received no foreign investments.

Table 5: Inbound investment projects from different countries

Year 2003- 2008	Number of Inbound Investment Projects	Amount of Inbound Investment Projects($)	Inbound Estimated Investment ($)	Inbound Investment Jobs Created	Inbound Investment Estimated Jobs
Algeria	14	1,298,430,000	574,100,000	0	7,897
Antigua	0	0	0	0	0
Argentina	30	868,800,000	518,500,000	1,190	6,649
Armenia	4	0	151,600,000	0	184
Australia	62	9,516,370,000	2,340,100,000	1,297	14,780
Austria	33	206,800,000	603,300,000	465	1,681
Azerbaijan	15	0	638,200,000	0	3,144
Bahamas	0	0	0	0	0
Bahrain	18	40,000,000	1,068,500,000	0	1,555
Bangladesh	2	350,000,000	0	0	2,619
Belgium	49	353,770,000	1,444,500,000	1,723	1,861
Bermuda	0	0	0	0	0
Brazil	60	4,362,490,000	1,239,900,000	3,153	13,022
Bulgaria	29	3,377,240,000	388,500,000	550	10,962
Canada	52	984,000,000	1,349,100,000	1,667	3,451
Cayman I.	0	0	0	0	0
Chile	14	160,680,000	308,300,000	525	995
China	609	20,628,000,000	29,803,500,000	21,156	190,021
Colombia	16	353,000,000	126,200,000	395	4,214
Croatia	6	148,500,000	1,335,600,000	900	1,271
Cuba	1	0	22,400,000	0	167
Cyprus	5	0	111,500,000	7	264
Czech Republic	43	229,690,000	1,731,100,000	2,265	6,536
Denmark	19	28,520,000	669,600,000	254	995
Dominican Rep.	4	565,000,000	38,100,000	500	822
Ecuador	1	0	14,200,000	0	381
Egypt	25	1,356,200,000	1,504,300,000	0	8,487
El Salvador	2	40,000,000	8,500,000	0	2,095
Estonia	13	290,000	380,400,000	460	1,442
Finland	10	1,484,520,000	208,900,000	20	4,166
France	162	3,134,600,000	6,530,200,000	20,507	9,233
Germany	121	4,629,020,000	3,719,300,000	858	12,095
Greece	9	1,608,000,000	251,900,000	0	2,547
Greenland	0	0	0	0	0
Guyana	1	694,000,000	0	0	2,548
Hong Kong	68	1,250,000	1,853,000,000	97	4,847
Hungary	55	1,284,750,000	774,800,000	2,340	7,541

Table 5: Inbound investment projects from different countries (Table 5 continued)

Year 2003- 2008	Number of Inbound Investment Projects	Amount of Inbound Investment Projects($)	Inbound Estimated Investment ($)	Inbound Investment Jobs Created	Inbound Investment Estimated Jobs
Iceland	1	0	43,800,000	0	66
India	384	19,543,070,000	14,571,800,000	21,375	126,650
Indonesia	32	7,675,910,000	2,968,900,000	0	12,457
Iran	2	0	23,500,000	0	40
Ireland	40	363,943,000	559,300,000	1,323	1,408
Israel	10	19,100,000	135,400,000	776	262
Italy	50	1,407,950,000	1,042,300,000	209	5,879
Japan	62	268,550,000	2,823,700,000	110	10,454
Jordan	12	771,470,000	768,400,000	0	9,515
Kazakhstan	12	12,380,000,000	962,600,000	0	13,782
Kenya	6	0	205,700,000	0	1,216
Kuwait	5	0	631,400,000	0	1,891
Kyrgyzstan	2	40,000,000	42,600,000	0	482
Latvia	9	552,600,000	169,200,000	20	6,138
Lebanon	1	0	12,200,000	0	22
Libya	11	10,766,400,000	1,992,000,000	0	5,058
Liechtenstein	0	0	0	0	0
Lithuania	10	186,540,000	113,400,000	0	1,524
Luxembourg	7	0	75,000,000	23	126
Macau	2	0	210,200,000	0	284
Macedonia	7	155,990,000	146,200,000	500	910
Malaysia	85	7,645,320,000	4,999,400,000	1,410	25,273
Malta	2	1,100,000	12,700,000	50	99
Mauritius	6	70,000,000	92,700,000	0	443
Mexico	106	8,132,890,000	2,328,700,000	9,137	26,553
Morocco	27	2,568,610,000	1,943,400,000	3,110	8,830
Netherlands	40	941,450,000	1,292,400,000	193	4,228
New Zealand	15	0	280,800,000	84	1,278
Nigeria	5	15,020,000,000	294,600,000	1,900	2,236
Norway	15	0	210,500,000	31	617
Oman	15	3,067,600,000	1,138,400,000	0	7,867
Pakistan	7	3,197,650,000	540,100,000	0	2,930
Peru	17	1,640,000,000	467,100,000	735	4,459
Philippines	36	1,302,490,000	786,600,000	2,780	8,071
Poland	116	4,704,910,000	6,073,000,000	11,249	29,858
Portugal	23	1,636,520,000	566,900,000	1,518	2,960
Puerto Rico	1	0	39,000,000	200	0

Table 5: Inbound investment projects from different countries (Table 5 continued)

Year 2003- 2008	Number of Inbound Investment Projects	Amount of Inbound Investment Projects($)	Inbound Estimated Investment ($)	Inbound Investment Jobs Created	Inbound Investment Estimated Jobs
Qatar	18	1,578,000,000	731,300,000	24	4,167
Romania	110	8,795,310,000	2,217,400,000	6,592	46,690
Russia	141	8,206,010,000	5,398,300,000	1,257	55,437
Saudi Arabia	25	3,047,000,000	4,241,900,000	900	9,038
Serbia & Montenegro	33	1,445,380,000	511,600,000	2,472	5,721
Singapore	89	3,645,591,000	2,199,700,000	1,403	12,121
Slovakia	30	255,070,000	738,500,000	2,306	3,773
Slovenia	3	74,090,000	45,400,000	300	76
South Africa	21	789,300,000	2,699,600,000	0	6,580
South Korea	29	4,166,860,000	1,867,800,000	304	15,941
Spain	148	2,644,940,000	3,993,000,000	4,237	15,764
Sri Lanka	4	131,000,000	390,400,000	0	2,777
Sweden	28	31,850,000	832,800,000	105	1,200
Switzerland	51	721,278,000	905,500,000	1,381	2,604
Syria	7	537,000,000	1,213,400,000	0	3,946
Taiwan	27	466,390,000	1,344,600,000	633	6,858
Thailand	101	4,255,140,000	2,218,100,000	8,412	18,073
Tunisia	14	10,007,890,000	990,400,000	2,860	3,662
Turkey	44	1,737,260,000	1,917,000,000	2,758	8,078
UAE	137	6,670,040,000	10,295,100,000	1,246	38,367
UK	209	3,199,310,000	6,012,400,000	11,556	20,353
Ukraine	34	782,900,000	1,042,500,000	8	7,588
Uruguay	1	2,200,000	0	500	0
USA	674	10,267,765,000	18,120,800,000	22,255	52,860
Venezuela	7	0	1,321,200,000	0	2,525
Vietnam	112	17,737,090,000	3,881,400,000	6,276	51,596
Yemen	3	0	184,300,000	0	195
Zimbabwe	2	300,000,000	23,100,000	0	642

Next, we investigate the factors that affect size of the foreign direct investments by the multinational companies.

SIZE OF COMPANY FOREIGN DIRECT INVESTMENT PROJECTS

We would like to explore the effects of various macroeconomic and firm specific factors on the size (measured in dollars) of foreign direct investment projects. These firm specific factors include financial performance measures such as firm profitability and asset size, and macroeconomic measures such as country risk from both source and destination countries of the FDI, contract rigidities from the host countries, the exchange rate and labour costs from the destination country, and a cultural distance measure. We also included in our model ordinal ranking of proxies to measure qualitative characteristics of target FDI countries such as the ability to protect investors, enforce contracts, and the ease of doing business to determine whether these factors quantitatively affect the decision making process in the final amount that is invested abroad. We further hypothesized that the industry of the host multinational firm may have an impact on the dollar amount allocated for the FDI. We estimate a Fixed-effect regression model of the following form to test our hypotheses:

$$\ln(investment) = \beta_0 + \sum_{i=1}^{4} industry_i\,\beta_i + \beta_5 country\ risk\ source\ country + \beta_6 country\ risk\ destination\ country + \beta_7\ cultural\ distance\ (UAI) + \beta_8 firm\ size + \beta_9 firm\ profitability + \beta_{10} contract\ rigidity + \beta_{11} exchange\ rate + \beta_{12} labor\ cost + \beta_{13} ease\ of\ doing\ business + \beta_{14} protecting\ investors + \beta_{15} enforcing\ contracts + \sum_{j=1}^{n} control\ variables_j\,\beta_j + \varepsilon$$

The industry dummy variables represent the industries that the host firm participates in. The firms are categorized under the following industry:

1) Chemicals/Pharmaceuticals/Medical Devices/Biotechnology
2) Industrial manufacturing/textile/construction
3) Service industry
4) Goods/Consumer industry
5) Metals/Coal/Mining

As with categorical data, to measure the effect the industry of the firm has on the size of the investment, we have four dummy variables, where each result of the independent industry dummy variable is now interpreted relative to the reference industry. In this case, the Chemicals//Biotechnology industry is the reference industry.

The Country risk index employed was published by the International Country Risk Guide. This composite risk rating measures country risk in three areas: Political, financial, and economic risk. The index ranges from values of 1 to 100, where the larger the value indicates less the country risk.

The cultural distance variable measures the difference or distance between cultures, based on Geert Hofstede's uncertainty avoidance index. It is calculated as:

$$CD(UAI) = (UAI_{host} - UAI_{destination})^2 / \sigma^2_{UAI}$$

Clearly, greater values indicate greater differences or distance in culture from the host to the destination country of the FDI.

The size of the host firm was measured by calculating the average between the asset value (measured in thousands in USD) of the firm one year prior to the FDI and the asset value of the firm the year of the FDI. The same methodology was used in calculating the firm's profitability, where it is measured as the Return on Assets (ROA) for each host firm.

The contract rigidity variable is measured as the total amount of labour strikes per source country of each firm. The data was compiled by the International Labour Organization (ILO), where we calculated the contract rigidity as the amount of strikes that occurred in the source country one year prior to the FDI date. We hypothesize that the lack of reliance, or perceive lack of confidence in the host labour force may have a negative effect on the decision and the monetary size of the FDI. More specifically, the amount of strikes that occur during the past year in the host country of the firm's specific industry may deter domestic firms to continue operation locally and look for opportunities elsewhere.

The exchange rate variable, measured in dollars per one unit of local currency, represents the official annual US to target country exchange rate determined by the national authorities during the year of the FDI. This annual exchange rate is calculated as the annual average based on monthly averages. The data were obtained from the International Monetary Fund database. The relationship between Foreign Direct Investment and the behaviour of exchange rates has been extensively covered (see Froot and Stein (1991), Goldberg and Kolstad (1995)). While modern theory of FDI suggests the idea of perfect capital mobility, where no additional returns may be had in the event of favourable changes in the exchange rate from the target country, Froot and

Stein (1991) reveal that FDI inflows of the United States are positively correlated to the domestic exchange rate (a depreciation), given asymmetric information. We thereby assume asymmetries in information at the firm specific level and hypothesize in our study that there would be a positive relationship between depreciation (a decrease in the amount of domestic currency per one unit of foreign currency) in the exchange rate and the total value of the FDI. In addition, the target country's currency depreciating may present an attractive opportunity to domestic firms in investing to the target country.

The labour cost variable is measured as the monthly wage (converted to US dollars. For countries where only hourly data was available, the hourly wage rate was increased by a factor of 160 to simulate a 40 hour work week for four weeks) for each target FDI country in each specific industry the firm invests in during the year of the FDI. The data were retrieved from the International Labour Organization (ILO) database. We find that papers such as Bevan and Estrin (2004) find that labour costs negatively affect the FDI's that flow from the EU-14 countries to emerging European transition economies. However, this study, among others (see Brainard(1997)), only capture the role labour costs have in aggregate FDI net flows within countries and not firms, which is our focus. Although we do agree that unit labour costs of the target country will have a negative effect on the decision and the amount allocated to a foreign project, the purpose of this variable is to capture the variation of FDI flows to target economies that invest there solely for the purpose of cheap labor.

The ease of doing business, protecting investors, and enforcing contract variables are measured as an ordinal ranking index of 183 global economies retrieved by the World Bank. Each variable has its respective index which ranks economies from 1 to 183. The ease of doing business index rank is based on 10 indicators that measure various factors that allow the transition of doing business in a particular country effortless. Some of these measures are the difficulty of hiring employees, dealing with construction permits, registering property, and obtaining credit. For full comprehensive coverage of all indicators and its methodology we direct you to the Doing Business report published by the International Finance Corporation.

The protecting investor index is comprised of various sub-indices that measure the strength of investor protection, the extent of disclosure, the extent of director liability, and the ease of shareholders suits. These measures were compiled by the World Bank, while the methodology for the strength of investor protection was developed by Djankov et al (2008).

The enforcing contract variable measures the efficiency of the judicial system of these economies in resolving a commercial dispute. This index factors in the time and cost to resolve the dispute, as well as the legal procedure to do so. The methodology to quantify contract enforceability was developed by Djankov (2003).

The control variables consist of year and source country dummy variables to adjust for any potential unobserved variation in the data that was due to the year the FDI occurred or the country where the FDI originated from. This approach is appropriate as each country with more-or-less different cultures may have an unquantifiable level of risk when investing abroad, which would directly affect the level of funding the domestic firm would allocate in a FDI. Furthermore, we cluster our standard errors by source country of the FDI to avoid biasness in our results. We test the following hypotheses:
Hypothesis 1: The size of a firm will have a positive impact on the amount of the investment, while larger firms will also be more likely to engage in outward FDI. As larger firms are more likely to have access to capital, this will entice firms to continually seek and finance profitable projects, whether be it local or abroad. As cross-border transactions are increasingly becoming the norm in multinational firms, this access to foreign markets may provide a competitive advantage to the firm in the global market. Multinational firms seeking foreign projects may also be linked to the lack of profitability in the firms host market.

Hypothesis 2: Firms that are less profitable are more likely to allocate greater funds to FDI and are also more likely to engage in FDI, relative to highly profitable companies. It is possible that a decrease in profits or possible losses that have accrued from the past make the firm more open to investing in foreign countries. These types of firms may believe that since any additional returns may have been exhausted locally (creating lower local profits), they are now choosing to be involved in FDI to seek higher returns elsewhere. However, these firms do take into consideration the level of country risk when allocating funds to foreign countries. Through our empirical analysis, we will provide sufficient evidence that those unprofitable firms, or firms with lower

levels of profitability, are more likely to engage in FDI while also providing larger funds to the FDI to stay competitive in today's market. These hypotheses are linked to the idea proposed by Barell and Pain (1999), where they provide evidence that financial performance of foreign owned firms are greater than their domestic owned counter-parts. We take a step back and hypothesize that only relatively less profitable large firms are more likely to engage in these FDI's, and thus having more incentive to run the firm more efficiently. If our hypotheses are correct, we would be supporting the claims of Barell and Pain (1999).

Hypothesis 3: The presence of country risk of the target country will have a negative effect on the size and the decision for a FDI to occur in that target country. While Lankes and Venables (1996) provide an extensive survey of the link between FDI and country risk via correlation coefficients of managers of FDI projects perceived level of risk for each target country, our focus is based on local firms willing to invest in foreign firms that are located in safer countries than the local firm's respective country. Specifically, firms are more likely to heavily invest in countries that have low level of country risk, which are perceived as 'safe' countries to invest in. Similar to Chang and Chari (2008), we believe that local firms will only invest in foreign firms where the distance or difference in culture from the local firm's country and the FDI target firm's country is minimal.

Hypothesis 4: The decision of an FDI and the level of funding for the project will be highly influenced by the perception of the target countries efficient judicial system in protecting investors and enforcing contracts. We are measuring the perceived level of a stable governance infrastructure by the ordinal ranking system offered by the World Bank.

Hypothesis 5: Target countries with the most business friendly regulations will attract external sources of capital. Friendly business regulations are measured by the ordinal ranking system of global economies. We believe that there is yet to be a study that incorporates this ordinal ranking measure of qualitative data as a factor in the decision process of a FDI.

Table 6 provides initial results from our pooled-fixed effect regression. We see with 99% certainty that there is a positive statistical significant relationship between the pharmaceutical industry and the change in the value amount of the FDI to the industry. Specifically, the pharmaceutical industry provides about 20% of the outgoing FDI. Surprisingly, after controlling for the host country, year, and industry effects, we see that generally smaller firms (measured in total asset size) are more likely to invest abroad. This may be that smaller firms may feel the need to seek opportunities overseas as the domestic market may be too competitive and convoluted. However, the size of the firm negatively affects the size of the outward FDI by less than a thousandth of a percent. Although statistically significant, we can mildly reject our first hypothesis. This initial regression further measures the elasticity between firm profitability and investment. Although we see that a one percent increase in ROA increases the level of FDI investment by about 3%, it is statistically insignificant. In spite of statistically insignificant, this initial result may provide significant insight in the possible positive relationship between profitability and level of FDI. Although this is the opposite relationship that we theorized in our second hypothesis, we do not have sufficient evidence to support this new finding.

We further see that the predicted signs are correct for source country risk and the cultural distance measure, but remain statistically insignificant. While firms are looking for opportunities elsewhere, our results also indicate that these firms prefer to invest in target economies where they have friendly business regulations while not being overly concerned with the ability for these economies to protect investors. This is implied by the negative and positive estimated coefficients that represent these aforementioned factors. Specifically, we can say that an increase in one unit of the economy's friendly business regulation ranking (smaller values indicate higher ranking), FDI increases by about .86201%. Thus, we can conclude that Hypotheses 1, 2, 3, and 4 are rejected in this pooled regression, while hypothesis 5 can be accepted at the 10% confidence level.

Table 6: Investment size

$$LN(investment_i) = \beta_0 + \sum_{i=1}^{4} industry_i\,\beta_i + \beta_5 country\ risk\ source\ country + \beta_6 country\ risk\ destination\ country + \beta_7\ cultural\ distance(UAI) + \beta_8 firm\ size + \beta_9 firm\ profitability + \beta_{10} contract\ rigidity + \beta_{11} exchange\ rate + \beta_{12} labor\ cost + \beta_{13} ease\ of\ doing\ business + \beta_{14} protecting\ investors + \beta_{15} enforcing\ contracts + \sum_{i=1}^{n} control\ variables_i\beta_i + \varepsilon$$

	Coefficients	*Robust Standard Error*	*t Stat*	*P-value*
Intercept	20.34693	2.199617	9.25**	0.000
Industry2	.0774058	1.387705	0.06	0.956
Industry3	.4433142	1.247355	0.36	0.725
Industry4	-.9069554	1.154024	-0.79	0.438
Industry5	-.1173329	1.234556	-0.10	0.925
Country Risk Source Country	-.0257495	.0230209	-1.12	0.271
Country Risk Destination Country	-.0215473	.0267724	-0.80	0.427
Cultural Distance(uncertainty avoidance)	-.0802939	.1796441	-0.45	0.658
Firm Size	-6.49e-10	1.28e-10	-5.09**	0.000
Firm Profitability(ROA)	.0328675	.0410106	0.80	0.429
Labour rigidity	.0037396	.0026122	1.43	0.162
Exchange Rate	-.3426485	.3997966	-0.86	0.398
Labor costs	-.0000413	.0000311	-1.33	0.192
Ease of doing business	-.0086201	.0050676	-1.701*	0.0910
Protecting Investors	.0099305	.0048318	2.06**	0.048
Enforcing Contracts	.0017801	.0046154	0.39	0.702

** Significant at the 95th percentile
* Significant at the 90th percentile

Table 7: Investment size - us as source country

$$LN(investment) = \beta_0 + \sum_{i=1}^{4} industry_i\,\beta_i + \beta_5 country\ risk\ destination\ country + \beta_6\ cultural\ distance(UAI) + \beta_7 firm\ size + \beta_8 firm\ profitability + \beta_9 exc\square ange\ rate + \beta_{10} labour\ cost + \beta_{11} ease\ of\ doing\ business + \beta_{12} protecting\ investors + \beta_{13} enforcing\ contracts + \sum_{i=i}^{2} time\ dummy_i\,\beta_i + \varepsilon$$

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	1.389e+01	5.172e+00	-2.686**	.0107
Industry2	2.674e-01	6.024e-01	0.444	0.6596
Industry3	-2.928e-01	6.119e-01	-0.479	0.6350
Industry4	6.152e-02	7.317e-01	0.084	0.9334
Industry5	1.014e+00	1.520e+00	0.667	0.5088
Country Risk Destination Country	3.289e-02	6.150e-02	0.535	0.5959
Cultural Distance(uncertainty avoidance)	9.685e-02	3.092e-01	0.313	0.7558
Firm Size	7.730e-09	1.097e-08	0.705	0.4854
Firm Profitability(ROA)	3.893e-02	8.729e-02	0.446	0.6582
Exchange rate	-4.630e-02	5.073e-01	-0.091	0.9278
Labour Costs	-8.244e-06	9.150e-05	-0.090	0.9287
Ease of doing business	4.167e-03	1.436e-02	0.290	0.7732
Protecting Investors	8.277e-04	8.157e-03	0.101	0.9197
Enforcing Contracts	-6.126e-03	7.601e-03	-0.806	0.4253

** Significant at the 95th percentile
* Significant at the 90th percentile

Now we focus on the determinants that may affect the size of the FDI for firms that were located in the United States and firms who invested into the United States. Tables 7 and 8 are results from a modified version

of our initial model. We have similar results in that both models, where the Chemicals/Pharmaceuticals/Medical Devices/Biotechnology industry are more likely to invest larger amount abroad relative to the other industries. As previously shown in Table 6, we see that more profitable firms invest more in foreign projects, but we see different behavioural patterns between foreign and American firms; that is, only *larger* U.S. firms will allocate large funds to FDI (as seen by the positive estimated coefficient in Table 7), whereas *smaller* foreign firms will allocate greater funds to FDI projects *into* the United States (as seen by the negative value in Table 8). Despite these cultural differences, these results are not statistically significant. Although statistically insignificant, we continue to see a positive relationship between the level of outward FDI and firm profitability. These results continue to show that we can reject hypotheses 1 and 2.

Table 8 also suggests that there is also a strong negative relationship (with 95% certainty) between a host firm in the service industry and the amount allocated to a FDI into the United States. This result may reflect the relatively higher hourly labour cost in the United States that may discourage firms in host countries with low labour costs to invest into the United States. In this case, all else equal, a firm within the service industry will on average have a .787% lower investment than a firm within the pharmaceutical industry. However, our results also suggest that host countries that have minimal distance or difference in culture to the United States are more likely to invest into the United States. Interestingly, this result supports our third hypothesis.

Table 8: Investment size- us as destination country

$$\mathrm{LN}(investment) = \beta_0 + \sum_{i=1}^{4} industry_i\,\beta_i + \beta_5\, country\ risk\ source\ country + \beta_6 cultural\ distance\,(UAI) + \beta_7 firm\ size + \beta_8 firm\ profitability + \beta_{10} Strike + \varepsilon$$

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	1.225e+01	4.632e+00	2.645**	0.02139
Industry2	-9.937e-01	6.688e-01	-1.486	0.16316
Industry3	-2.012e+00	6.873e-01	-2.928**	0.01266
Industry4	-6.792e-01	9.368e-01	-0.725	0.48233
Country risk source country	7.227e-02	5.831e-02	1.239	0.23886
Cultural Distance(uncertainty avoidance)	-2.300e+00	6.048e-01	-3.803**	0.00252
Firm Size	-6.112e-10	7.398e-10	-0.826	0.42486
Firm Profitability(ROA)	4.137e-01	4.630e-01	0.894	0.38913
Strike	-1.412e-04	4.733e-04	-0.298	0.77056

** Significant at the 95th percentile

* Significant at the 90th percentile

The next logical step was then to modify our initial model but only focus on firms within industries specified above. Tables 9 provide evidence of the positive statistical significant relationship between the amount of labour strikes in the host firm one year prior to the FDI and the size of the investment within the Manufacturing/Construction industry. This is a powerful result. The manufacturing industry, an obviously labour intensive industry, will invest in a higher amount abroad when there are issues pertaining to labour supply in the host country. Also, at the 10% significance, we can say that host firms within the manufacturing/Construction industry do not prefer to invest in target countries where they provide sufficient protection to investors. This result goes against our fourth hypothesis. Table 10 provides evidence the source country risk rating is a strong determinant (at the 5% level) in affecting the size of the investment for firms within the service industry. Specifically, we can say that the FDI will increase about 8% for every unit that increases country risk. ICRG measure the Country risk with greater numbers indicating less risk. A one unit decrease in the value of country risk indicates a riskier country. This result supports our third hypothesis.

Table 9: Investment size, industrial/manufacturing/construction industry

$$\text{LN}(investment) = \beta_0 + \beta_1\, country\ risk\ source\ country + \beta_2 country\ risk\ destination\ country + \beta_3 cultural\ distance(UAI) + \beta_4 firm\ size + \beta_5 firm\ profitability + \beta_6 labor\ rigidity + \beta_7 exchange\ rate + \beta_8 labour\ cost + \beta_9 ease\ of\ doing\ business + \beta_{10} protecting\ investors + \beta_{11} enforcing\ contracts + \varepsilon$$

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	1.426e+01	4.482e+00	3.181**	0.0026
Country risk source country	2.566e-02	4.728e-02	0.543	0.5899
Country risk destination country	3.468e-03	5.465e-02	0.063	0.9497
Cultural Distance(uncertainty avoidance)	-1.993e-01	2.331e-01	-0.855	0.3968
Firm Size	-2.366e-10	4.305e-10	-0.549	0.5853
Firm Profitability(ROA)	8.941e-02	7.300e-01	0.122	0.9030
Labour rigidity	8.254e-04	4.526e-04	1.824*	0.0745
Exchange rate	-2.453e-01	6.627e-01	-0.370	0.7130
Labour costs	-1.128e-04 -	9.207e-05	1.225	0.2265
Ease of doing business	-1.904e-02	1.468e-02	-1.296	0.2011
Protecting Investors	1.854e-02	9.709e-03	1.910*	0.0622
Enforcing Contracts	1.306e-02	8.799e-03	1.484	0.1445

** Significant at the 95th percentile
* Significant at the 90th percentile

Table 10: Investment size- service industry

$$\text{LN}(investment) = \beta_0 + \beta_1\, country\ risk\ source\ country + \beta_2 country\ risk\ destination\ country + \beta_3 cultural\ distance(UAI) + \beta_4 firm\ size + \beta_5 firm\ profitability + \beta_6 labor\ rigidity + \beta_7 exchange\ rate + \beta_8 labour\ cost + \beta_9 ease\ of\ doing\ business + \beta_{10} protecting\ investors + \beta_{11} enforcing\ contracts + \varepsilon$$

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	2.374e+01	4.829e+00	4.915**	1.12e-05
Country risk source country	-8.217e-02	3.818e-02	-2.152**	0.0366
Country risk destination country	-1.698e-02	4.492e-02	-0.378	0.7072
Cultural Distance(uncertainty avoidance)	1.794e-01	1.987e-01	0.903	0.3712
Firm Size	-4.106e-10	7.457e-10	-0.551	0.5845
Firm Profitability(ROA)	-5.754e-04	8.076e-02	-0.007	0.9943
Labour rigidity	-4.082e-05	4.239e-04	-0.096	0.9237
Exchange rate	-1.185e-01	5.217e-01	-0.227	0.8213
Labour cost	-6.403e-05	8.402e-05	-0.762	0.4498
Ease of doing business	-1.171e-02	9.064e-03	-1.291	0.2029
Protecting investors	3.866e-03	4.487e-03	0.862	0.3933
Enforcing contracts	3.884e-03	5.752e-03	0.675	0.5028

** Significant at the 95th percentile
* Significant at the 90th percentile

FOREIGN DIRECT INVESTMENT DECISION

We now shift focus on the possible systemic and idiosyncratic factors that affect the *decision* to engage in a foreign direct investment. Our new sample now includes multinational firms that have not participated in an FDI. In essence, we found firms that were similar to those multinational firms that have engaged in FDI in terms of asset size and location. To test these factors that may have possible effects on the decision of engaging in a foreign direct investment, we have a model that takes the following form:

$$FDI = \beta_0 + \sum_{i=1}^{4} \beta_i industry_i + \beta_5 Foreign + \beta_6 firm\ size + \beta_7 firm\ profitability + \beta_8 country\ risk\ of\ source\ country + \beta_9\ labour\ rigidty + \beta_{10} ease\ of\ doing\ business + \beta_{11} protecting\ investors + \beta_{12} enforcing\ contracts + \varepsilon$$

The Foreign variable takes on a value of 1 if the firm is located outside of the United States, and zero otherwise. This will capture any unobserved variation in the data that results from decision making process between firms located in the United States and elsewhere. All other independent variables are the same as our previous model. However, as the dependant variable now only has a binary outcome; that is a value of either 0 or 1, where 1 represents a firm that has engaged in an FDI, and 0 otherwise, a probit model is appropriate rather than a linear probability (ordinary least squares) model. This is true as the predicted probability of a linear probability model may predict outside the [0,1] range, which would be illogical to interpret, while also suffering from heteroskedasticity. Thus, applying a probit model would be sufficient. The probit model is estimated via maximum likelihood. The likelihood is set up as:

$$L(\beta) = \prod_{i=1}^{n} prob\left(FDI = 1 \middle| x_i'\beta\right)^{FDI} prob\left(FDI = 0 \middle| x_i'\beta\right)^{(1-FDI)}$$

Or more formally, the Log-likelihood:

$$L(\beta) = \sum_{i=1}^{n} FDI \log F\left(x_i'\beta\right) + (1 - FDI) \log\left(1 - F\left(x_i'\beta\right)\right)$$

Our initial results are presented in Table 11. We now find that at the 5% level, relatively large domestic firms will decide to enter a FDI while less profitable firms are more likely to invest in FDI. However, the latter results are statistically insignificant. Our former results support our claims in our first hypothesis at the 5% level, while the latter results provide insufficient significance to accept the second hypothesis. We also see that these large domestic firms seem to be influenced by the relative simplicity in doing business in these target countries when making a decision to invest their, as indicated by the negative statistically significant coefficient. This result supports our claims in hypothesis 5. Furthermore, our results also show that firms put less importance in countries that can protect investors or enforce contracts. Perhaps it is the case that the host firms will primarily invest in target countries where there is a relative effortless transition in doing business at the expense of the relatively weak level of governance infrastructure put for investors in these economies. Our analysis also indicates that neither industries are more likely to invest in FDIs and that macroeconomic factors such as labour strikes or country risk play any significant role in determining whether a firm should invest abroad. These initial results provide sufficient evidence that we can accept our first and last hypothesis, while rejecting the fourth hypothesis. We can further extend this model to US firms and firms within the Manufacturing/Construction and Service industry.

Table 11: Investment decision--Probit model

$$FDI = \beta_0 + \sum_{i=1}^{4} industry_i\ \beta_i + \beta_5 country\ risk\ source\ country + \beta_6 country\ risk\ destination\ country + \beta_7\ cultural\ distance(UAI) + \beta_8 firm\ size + \beta_9 firm\ profitability + \beta_{10} contract\ rigidity + \beta_{11} labor\ cost + \beta_{12} ease\ of\ doing\ business + \beta_{13} protecting\ investors + \beta_{14} enforcing\ contracts + \varepsilon$$

Probit	*Coefficients*	*Standard Error*	*t Stat*	*P-value*
Intercept	7.815e-01	2.523e+00	0.310	0.75675
Industry2	9.487e-02	3.443e-01	0.276	0.78293
Industry3	4.266e-01	3.322e-01	1.284	0.19908
Industry4	2.696e-01	4.042e-01	0.667	0.50482
Industry5	-3.912e-01	4.010e-01	-0.975	0.32933
Foreign Firm	-7.051e-01	2.614e-01	-2.697**	0.00699
Firm Size	3.179e-06	6.142e-07	5.176**	2.26e-07
Firm profitability(ROA)	-2.651e-01	2.313e-01	-1.146	0.25172
Country Risk (Source Country)	-1.941e-02	3.168e-02	-0.613	0.54009
Labor rigidity	1.000e-04	1.987e-04	0.503	0.61472
Ease of doing business	-3.064e-02	1.254e-02	-2.443**	0.01455
Protecting investors	1.503e-02	5.556e-03	2.705**	0.00683
Enforcing Contracts	1.023e-02	5.461e-03	1.874*	0.06096

** Significant at the 95th percentile
* Significant at the 90th percentile

The results are found in Tables 12, 13, and 14 respectively. Table 12 continues to support our first and second hypothesis that the main determinants for US firms in pursuing a FDI were the size of the firm and its level of profitability. For US firms, relatively large firms with lower levels of profitability are more likely to pursue an FDI. Further results also suggest that US firms do not factor in the efficient law system (to protect investors or enforce contracts) and the relative simple integration in doing business in these target countries, as implied by the statistically insignificant results. It seems that only large companies with sufficient resources will pursue a FDI because of its poor local financial performance. Our remaining hypotheses were not supported in this specific framework.

Table 12: Investment decision--Probit model- us firms

$$FDI = \beta_0 + \sum_{i=1}^{4} industry_i\ \beta_i + \beta_5 firm\ size + \beta_6 firm\ profitability + \beta_7 contract\ rigidity + \beta_8 ease\ of\ doing\ business + \beta_9 protecting\ investors + \beta_{10} enforcing\ contracts + \varepsilon$$

Probit	*Coefficients*	*Standard Error*	*t Stat*	*P-value*
Intercept	-3.307e+00	4.788e+00	-0.691	0.4897
Industry2	-1.442e+00	9.101e-01	-1.584	0.1131
Industry3	1.348e-01	5.721e-01	0.236	0.8137
Industry4	2.172e-01	9.461e-01	0.230	0.8185
Industry5	-1.335e-01	6.741e-01	-0.198	0.8430
	3.083e-05			
Firm Size	2.98e-05	7.383e-06	4.175**	2.98e-05
Firm profitability(ROA)	-7.367e-01	3.574e-01	-2.061**	0.0393
Labor Rigidity	-1.429e-02	5.511e-02	-0.259	0.7954
Ease of doing business	-8.736e-01	9.099e-01	-0.960	0.3370
Protecting Investors	8.518e-01	1.337e+00	0.637	0.5241
Enforcing Contracts	1.631e-01	3.390e-01	0.481	0.6305

Table 13 provide similar results seen previously in that the main determinants in pursuing a FDI are the size and profitability of the firms within the Manufacturing/Construction industry. Specifically, larger but less profitable firms within the Manufacturing/Construction industry are more likely to pursue a foreign investment. Furthermore, we see that at the 10% level, there is a strong negative relationship between the rank

of the business friendly target country and the decision of a FDI. This implies that firms within the Manufacturing/Construction industry put high emphasis on the relatively simplistic integration of doing business in foreign economies. As the ease of doing business index is a function of the simplicity of hiring employees, dealing with construction permits, and registering property (among others), it would thus be optimal for firms in the Manufacturing/Construction industry to invest economies that are efficient in these factors. Hypothesis 1, 2, and 5 continue to be supported.

Table 13: Investment decision-- Probit model- industrial/manufacturing/construction industry

$$FDI = \beta_0 + \beta_1 foreign + \beta_2 firm\ size + \beta_3\ firm\ profitability + \beta_4 country\ risk\ of\ source\ country + \beta_5\ labour\ rigidty + \beta_5 ease\ of\ doing\ business + \beta_6 protecting\ investors + \beta_7 enforcing\ contracts + \varepsilon$$

Probit	*Coefficients*	*Standard Error*	*t Stat*	*P-value*
Intercept	7.498e+00	8.334e+00	0.900	0.368295
Foreign Firm Dummy	2.835e-02	8.804e-01	0.032	0.974307
Firm size	1.745e-05	4.591e-06	3.800**	0.000145
Firm profitability(ROA)	-6.913e-01	4.117e-01	-1.679*	0.093165
Country Risk (Source Country)	-1.213e-01	1.089e-01	-1.113	0.265502
Labor rigidity	-7.614e-05	4.911e-04	-0.155	0.876792
Ease of doing business	-7.922e-02	4.677e-02	-1.694*	0.090303
Protecting Investors	2.918e-02	2.167e-02	1.347	0.178136
Enforcing Contracts	2.743e-02	1.689e-02	1.624	0.104298

** Significant at the 95th percentile
* Significant at the 90th percentile

Finally, Table 14 provides results from our analysis within the Service industry. Our results indicate that the only firm specific factor to affect the decision making process of pursuing a FDI is the large size of the firm. We also see that at the 90% confidence level, macroeconomic factors such as the country risk of the host country and labour rigidity positively affect the decision on whether to pursue a FDI. These results echo what we have seen previously for the service industry. We continue to see that the firms place high importance on how easy it is to work in the target country while these same firms do not place great importance on the ability for these economies to protect them if an issue arises.

Table 14: Investment decision--Probit model- service industry

$$FDI = \beta_0 + \beta_1 foreign + \beta_2 firm\ size + \beta_3\ firm\ profitability + \beta_4 country\ risk\ of\ source\ country + \beta_5\ labour\ rigidty + \beta_6 ease\ of\ doing\ business + \beta_6 protecting\ investors + \beta_7 enforcing\ contracts + \varepsilon$$

Probit	*Coefficients*	*Standard Error*	*t Stat*	*P-value*
Intercept	-9.499e+00	4.981e+00	-1.907*	0.05652
Foreign Firm Dummy	-8.155e-01	5.112e-01	-1.595	0.11065
Firm size	1.771e-06	5.997e-07	2.952**	0.00316
Firm profitability(ROA)	-1.147e-01	1.336e-01	-0.858	0.39079
Country Risk (Source Country)	-1.193e-01	6.351e-02	-1.879*	0.06027
Labor rigidity	8.726e-04	4.486e-04	1.945*	0.05175
Ease of doing business	-8.189e-02	3.735e-02	-2.193**	0.02833
Protecting Investors	1.087e-02	1.108e-02	0.982	0.32631
Enforcing Contracts	3.508e-02	1.765e-02	1.988*	0.04684

** Significant at the 95th percentile
* Significant at the 90th percentile

Although statistically significant, the positive value of the enforcing contract coefficient does not necessarily imply that firms prefer economies with weak investor protection, but rather these firms may place a subjectively low probability of dealing with legal actions in these economies and thus do not place great importance to this issue. For the service industry, we see that hypotheses 1, 3, and 5 are accepted, while hypotheses 2 and 4 are rejected.

Next section examines the effects of foreign direct investment on company performance by analysis of financial data before and after the foreign direct investment.

EFFECTS OF FOREIGN DIRECT INVESTMENT ON COMPANY PERFORMANCE

Based on the theory, the main criteria to measure the effectiveness of foreign direct investment will be profitability, efficiency, output, and employment on the firm level, as well as the real economic growth and employment on the macroeconomic level. These criteria are widely used measures of success in the foreign direct investment literature.

We obtained financial data on multinational companies from the Datastream database. We have analyzed the balance sheet, income statement, cash flow statements and different financial ratios of the companies during -1 and +4 year window. We have separated those companies that have made a single foreign direct investment from those with multiple projects and report the changes in profitability, assets and debt amount of these companies during the investment to investigate the effect of foreign direct investments on company performance.

We can now perform a controlled experiment. As we now have a clean sample size of multinational firms that have not engaged in an FDI, we essentially have a control group that allows us to formally investigate potentially *what would have happened* to the firm's financial performance in the absence of a foreign direct investment. Table 15 presents the means per each financial ratio for each year relative to the FDI period and Table 16 presents the equality of means test for firms that have participated in a single FDI. The table is organized so that the FDI occurred at time zero. If we focus on the equality of means test between year zero and year one, we see that the logarithmic profits and assets are significantly different. More specifically, the difference in means is statistically significant at the 95% level. Furthermore, the estimated coefficients from these results indicate that the assets and profits from these firms have increased during this time period. However, there may be an identification issue. It may very well be the case that changes in assets and profits may be completely unrelated to the Foreign Direct Investment. More formally, if we set up the equality of means test as:

$$y_{it} = \alpha + \varphi D_t + \varepsilon_{it} \; where$$
$$y_{it} = outcome\ of\ interest$$
$$D_t = \begin{cases} 1\ if\ t = 1, year\ after\ the\ FDI \\ 0\ if\ t = 0, \quad time\ of\ FDI \end{cases}$$

So that that $\hat{\varphi} = E(y_{it}|t = 1) - E(y_{it}|t = 0)$ or the difference in means.

However, the time dummy variable may be correlated with the residuals, as there may be other explanations as to the changes iny_{it}. Thus,$E(D_t, \varepsilon_{it}) \neq 0$, and we may have bias and inconsistent estimates.

A solution to this issue is to use our control group and apply the difference-in-difference estimator. As we observe our control and FDI group for two periods (the period in which the FDI occurred, and the potential gains/losses that are received the period after), this method is most appropriate. As both groups in the first period have not received any gains/losses from an FDI, while only one group is receiving the returns of the FDI in the second period from the investment in the first period, we can subtract the average gain/loss of the FDI from the group who pursued the FDI by the average gain/loss from the control group. This method eliminates any biases that could result from aggregate factors that could have affected both groups over time, and any permanent differences between the groups. This model takes the following form:

$$ROA_{it} = \gamma_0 + \gamma_1 FDI_i + \gamma_2 time_t + \gamma_3 (FDI_i * time_t) + \gamma_4 control\ variables + \varepsilon_{it}$$

The FDI variable is a binary variable where a firm who partakes in FDI receives a 1, and zero otherwise. Therefore, $\widehat{\gamma_1}$ represents the raw difference in ROA between groups before the 'policy' change. The time variable is also a binary variable where it receives a 1 for the period after the FDI occurred, and zero during the time of the FDI. Thus, $\widehat{\gamma_2}$ represents the aggregate factors over time that would affect the ROA for both groups. Finally, the interaction term represents the difference-in-difference estimator. Thus,

$$\widehat{\gamma_3} = [\, E(ROA|FDI = 1, time = 1) - E(ROA|FDI = 1, time = 0)] - [E(ROA|FDI = 0, time = 1) - E(ROA|FDI = 0, time = 0)]$$

Table 15: Company performance after foreign direct investment

Mean Years	-1	0	1	2	3	4
ROE	-0.41536	-0.21573	0.00769	-0.35130	0.022717	-0.22723
ROA	-0.08569	-0.03964	-0.08037	-0.06766	-0.03534	-0.00745
Debt Ratio	0.253451	0.243722	0.24547	0.242789	0.236215	0.247425
Ln Debt	12.67957	12.83057	12.99972	13.01796	13.10063	13.14685
Ln Assets	13.66610	13.89070	13.96708	14.09568	14.20672	14.31688
Ln Profits	11.90099	11.65658	11.88202	11.97173	12.14031	12.22483

Table 16: Company performance after foreign direct investment--Equality of means

Years	-1 0	0 1	0 2	0 3	0 4
ROE					
Est. Coeff.	-0.44738	0.223428	-0.13557544	0.23845	-0.011506357
t-stat	(-0.44738)	(1.0899162)	(-0.48698)	(1.150495422)	(-0.03393)
ROA					
Est. Coeff.	0.037967	-0.04073	-0.02802	0.004292	0.032184
t-stat	(0.79209347)	(-1.2371363)	(-0.64822536)	(0.18967184)	(1.45033066)
Debt Ratio					
Est. Coeff	-0.00933	0.001756	-0.00093	-0.00751	0.003704
t-stat	(-0.963653838)	(0.171853)	(-0.05628)	(-0.58634)	(0.259529)
Ln Debt					
Est. Coeff	-0.02303	0.169151	0.187392	0.270065	0.316287
t-stat	(-0.30121)	(1.632048)	(1.49095371)	(2.036714)*	(1.83373297)
Ln Assets					
Est. Coeff	0.09319	0.076379	0.20498	0.316015	0.42618
t-stats	(2.69755154)*	(2.49097420)*	(4.669306)*	(6.214670071)*	(6.286458)*
Ln Profits					
Est. Coeff	0.198389	0.225436	0.315148	0.483724	0.568246
t- stats	(2.445784157)*	(2.52686018)*	(2.691905817)*	(4.145994473)*	(5.272274807)*

* Significant at 95%

Note: Employed a paired t-test to compare the values of the means from two data sets where

H_0: No difference between the mean in the two data sets, ie ($\mu_i = \mu_j$) and

H_1: There is a difference between the mean in the two sets of data ie. ($\mu_i \neq \mu_j$)

The results are followed in Table 17. After controlling for time and permanent difference biases between both groups, the ROA is approximately 31.36% higher for firms that did participate in a FDI, but it is not statistically significant.

Table 17: Company performance after foreign direct investment

Diff-in Diff	*Coefficients*	*Standard Error*	*t Stat*	*P-value*
Intercept	.0698842	.1652081	0.42	0.672
FDI	-.3974538	.2300878	-1.73*	0.085
Time	-.0405365	.2341797	-0.17	0.863
FDI*time	.3136085	.3261234	0.96	0.337

* Significant at the 90th percentile

CONCLUSION

We have examined the characteristics of all inbound and outbound foreign direct investment projects in the world between 2003 and 2008. While U.S. companies created the most foreign direct investment projects, China and India received the largest number of inbound foreign direct investment projects. The majority of the projects are in Information Technology sector. We also find that larger firms that are less profitable are more likely to engage in FDI, while these firms are more likely to invest into countries with friendly business regulations at the expense of minimal investor protection and contract enforceability.

Our results indicate that the firms prefer to invest in target economies where they have friendly business regulations while not being overly concerned with the ability for these economies to protect investors. We also see that these large domestic firms seem to be influenced by the relative simplicity in doing business in these target countries when making a decision to invest. The firms put less importance in countries that can protect investors or enforce contracts. Perhaps it is the case that the host firms will primarily invest in target countries where there is a relative effortless transition in doing business at the expense of the relatively weak level of governance infrastructure put for investors in these economies.

After controlling for time and permanent difference biases, the return on assets is approximately 31.36% higher for firms that did participate in a FDI, but it is not statistically significant. It may very well be that firms do not see significant returns of a foreign direct investment one period after their initial investment.

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A TWIST ON OLIVER: TEN LESSONS TO TRANSFORM HEALTHCARE PERFORMANCE

James Stephens, Karl Manrodt, Gerald Ledlow, Richard Wilding OBE, and Christopher Boone

ABSTRACT

Healthcare costs worldwide continue to increase at an alarming rate. Within healthcare, supply chain costs are becoming one of the most critical areas of expense. Some firms have attempted to mitigate supply chain expenses and risks through strategic partnerships and outsourcing. One way to view these strategic

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relationships, and the risks they bring, is through the lens of transaction cost economics (TCE). Specifically in the United States, dynamic changes from reform efforts to healthcare delivery systems, and the industry as a whole, require a systematic re-thinking of all aspects of partnerships and outsourcing. The purpose of his article is to apply the lessons learned from Williamson's 2008 article on TCE and the supply chain as they directly relate to healthcare. Additional insight is provided based on the authors' unique professional background in the discipline.

KEY WORDS: Healthcare, supply chain management, transaction cost economics, vested outsourcing, outsourcing

INTRODUCTION

Without a doubt, health care costs continue to rise. In the United States, health care costs are expected to reach $4.8 trillion by 2021 (Centers for Medicare & Medicaid Services, 2013). According to the World Bank, health care cost were approximately 17.9% of GDP in 2011 (World Development Indicators, 2013). Supply chain management in hospitals can account for as much as 30 percent of total hospital costs (Schwarting et al, 2011, p.2). Some experts, such as Bruce Johnson, CEO of GHX, states that "The supply chain is the second largest and fastest growing expense for healthcare providers; with only labor costing most providers more" (HIT Consultant, 2013). Approximately one third (31%) of annual operating expense can be attributed to the healthcare supply chain (Nachtmann, and Pohl, 2009).

The technology of healthcare delivery is heavily dependent on supply chain decisions, operations and status. Adding to the concern of the healthcare supply chain are the tensions on reduced reimbursements for healthcare services, inflationary pressure of pharmaceuticals, high preference supply items, high volume supply items and the move to 'accountable care organizations.' According to Vance Moore, CEO of ROi (the supply chain entity within the Sisters of Mercy Health System based in St. Louis, Missouri), in a 2008 presentation in Chicago, the trend in the cost of the healthcare supply chain continues to grow such that, if the trend continues, supply chain could equal labor cost for annual operating expenses for hospitals and health systems between 2020 and 2025 (Moore 2008). Clearly, maximizing efficiency of the healthcare supply chain is an increasing concern. From an analysis of charges for fiscal year 2003, approximately 36% of inpatient nursing floor unit supply charge capture items were actually being charged correctly (Bacon and Pexton 2010).

Other industries have mitigated their market risks and cost increases through the use of strategic partnerships and outsourcing (Vitasek, Ledyard and Manrodt, 2010). Firms like McDonald's, Proctor & Gamble and Microsoft have obtained cost saving, flexibility, transformation and innovation by developing key strategic partnerships (Vitasek, Manrodt, Kling, 2012). Relationships, partnerships and alliances for organizations can generate more opportunities than threats (van Aduard de Macedo-Soares and Moraes, 2013). These efforts must also hold firms responsible (Brusseau, Chiagouris and Fernandez Brusseau, 2013). The purpose of this article is to explore the possibility of reducing costs, increasing flexibility and transforming the work processes in healthcare through strategic relationships.

One way to view these strategic relationships is through the lens of transaction cost economics. This lens has been used by several researchers in the health care field over the past two decades (Donato, 2010; Parker and Hartley, 2003; Coles and Hesterly, 1998; Ashton, 1998; Pelletier-Fleury, Fargeon, Lanoe and Fardeau, 1997).

Specifically, we focus on a single article written by Williamson (2008) for several reasons. First, the article describes various types of relationships a firm can have with their suppliers, ranging from transactions to strategic partnerships. Second, his focus is on improving the performance of the supply chain. Finally, while our analysis provides insights on how these lessons relate to healthcare, many of them can also apply to other disciplines and industries as well.

This articles is divided into three main parts. In the first part we begin with a brief overview of Transaction Cost Economics (TCE). Second, we start to apply his insights into ten specific lessons for health care professionals. This will be completed in the third part in the series. Finally, we will discuss future implications.

What Exactly is Transaction Cost Economics?

Transaction costs are the costs that occur when participating in a market. To use a very simple example, when buying a book, there is not only the purchase price of the book but also the costs you incur in purchasing the item. These could include your energy and effort in selecting the book, the costs of traveling to the store or using the internet, the time waiting, the effort and costs of making the payment. The costs that go beyond the books price are the transaction costs. Transaction costs include actual monetary costs, expertise, flexibility, risk, asset specificity, the cost of managing the relationship, and supplier set up and switching costs to name only a few that must be considered.

Transaction cost economics adopts a contractual approach to the study of economic organizations. Briefly, TCE is best thought of as accounting for all the costs of a deal or contract, both the obvious and hidden costs.

Williamson (2008) notes there are transaction costs whether a firm decides to make or buy a product or service. A company should strive to use TCE as the basic unit of analysis to determine these costs to make better, more meaningful decisions. A firm has to decide whether to do the work internally (make) or procure the service (buy) and it should consider all of the transaction costs – taking special care to identify hidden transaction costs. If a company does decide to outsource, it should work to reduce transaction costs with regards to how the companies work together – including the remaining internal transactions. That is, there is still a cost associated with managing the relationship that need to be accounted for.

It is important to understand that there are transaction costs ranging from the simplest one-on-one commodity contract to the costs associated with vertical integration. There is no such thing as a zero transaction cost: there is a cost for bureaucracy and there is a cost for operating in the market. There is a cost in partnerships and alliances for each party to learn, reevaluate and readjust to the relationship (Elmuti, Abou-Zaid, and Jia, 2012). The goal then becomes to identify and quantify these and optimize for how you do business.

10 KEY TCE LESSONS FOR HEALTH CARE PRACTITIONERS

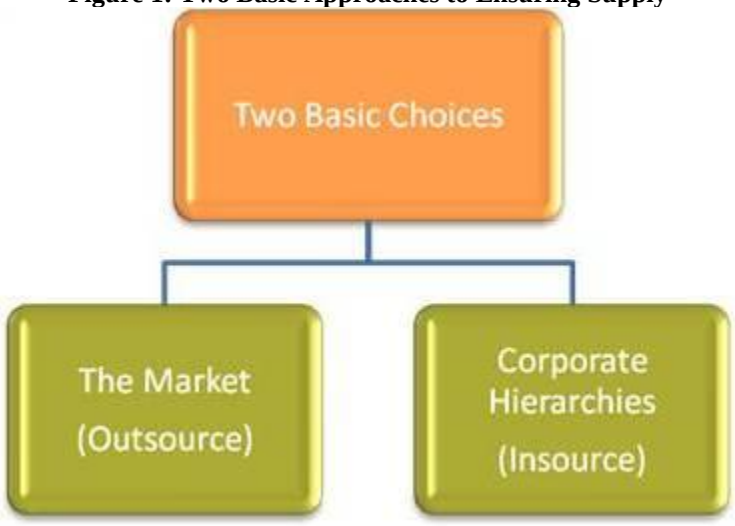
A key element of Williamson's work is to explain how behaviors and approaches to the contract can impact transaction costs. This section of the article examines ten key lessons that are directly applicable to outsourcing and supply chain professionals. Each lesson is discussed, and is illustrated by an example drawn primarily from the health care field.

Lesson 1: Outsourcing is a continuum, not a destination.

In 2004, Peter Drucker said, "Do what you do best and outsource the rest!" Most companies jumped on the outsourcing bandwagon and used conventional procurement methods for negotiating often large and complex outsourcing deals. For the most part the conventional approaches meant using contracting philosophies and approaches that were used for buying supplies and commodities.

Under conventional thinking about outsourcing there are basically two approaches: going to "the market" and the other is building "corporate hierarchies" and bringing the capability within the organization. Companies have generally made a make versus buy decision when it comes to outsourcing, and if they outsource they use conventional free market economy and market-based approaches for developing the contract.

Figure 1: Two Basic Approaches to Ensuring Supply



Source: Vitasek, Manrodt, Wilding and Cummins

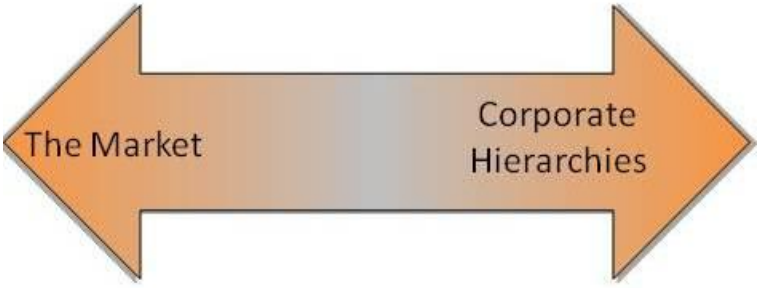
The market (buy/outsource) mode has an incentive for its use. There is little administrative control and well established contract law to rely on. The market mode assumes an unrestricted market, or basically an ideal transaction featuring an absence of dependency and with governance accomplished through competition. Neither the buyer to the supplier relies on the other. If one acts poorly, they can easily exit the relationship.

The downside to the market mode is that service providers are often "competed" into outsourcing agreements that pose hidden risks. In this, organizations do not characterize an autopoietic view (Lawrence and Botes, 2011). For example, Williamson points out that service providers might have "specialized investments" that can easily expose the business to significant lose if the contract fails and for which no safeguards have been provided. When this happens service providers will raise their price to reflect the level of risk they have taken on. To counteract this and thus provide a more acceptable price to the customer, service providers will often negotiate heavily for contract safeguards in the absence of certainty. For each safeguard that is put in place, the service provider typically reduces the price charged. This "give and take" is a normal part of market-based negotiations.

The other traditional choice, the corporate hierarchy (make/insource) is exactly the opposite: low incentives, high administrative control and a legal system that is "deferential to the management." As a consequence, innovations that might come from the market or third parties are not shared or developed. Because there are additional bureaucratic costs involved in taking a transaction out of the market and organizing it internally, it is usefully thought of as the "organizational form of last resort," (Williamson 2008, p. 5). In other words companies should not in-source services that are not core unless they absolutely have to.

Perhaps the best way to think of Williamson's work is to consider outsourcing in terms of a continuum with free-market force on one side and corporate hierarchies on the other.

Figure 2: A Continuum of Outsourcing Solutions



Source: Vitasek, Manrodt, Wilding and Cummins

Williamson (2008) advocates for a third "hybrid approach" to contracting as the preferred method for dealing with complex services that need to be performed under an outsource arrangement. Under a hybrid contracting approach (where the majority of outsource contracting resides), added security and contractual supports "take the form of interfirm contractual safeguards." Unfortunately, he also notes that when companies have taken the hybrid approach, it works well - "but not surpassingly well" – because often companies don't approach contracting as wisely as they should. Williamson (2008) states, "The viability of the hybrid turns crucially on the efficacy of credible evidence (penalties for premature termination, information-disclosure and verification mechanisms, specialized dispute settlement and the like), the cost-effectiveness of which varies with the attributes of transactions."

Insight

Insourcing does have its costs – and consequences – for poor performance. These costs are not just monetary, as this example highlights.

One of the authors served as an Executive Vice-President and Chief Operating Officer of a large 560-bed regional medical center. The organization made a decision to outsource the dietary services to an international hotel corporation. The purposes of outsourcing this service were the following:

A. To increase the quality satisfaction level of meals from our inpatients, employees, medical staff members, and outside families and guests.
B. To decrease the cost of providing meals to this large customer base.
C. A significant portion of our patients and employees were Hispanic; therefore, special dietary meals needed to be considered.
D. The group purchasing through the international hotel corporation allowed for significant rebates in dietary food purchases.
E. The contract with the international hotel chain allowed for the recruitment of qualified and experienced department directors, service-line managers, and dietitians.

The medical center was a complex organization that provided approximately 1,500 meals to inpatients each day, 3 daily meals to an employee group of 3,000, a medical staff of 700 and over 500 volunteers. We believed there could be significant cost reductions associated with providing dietary services for all these constituency groups. Not only was total cost of dietary services extremely important, but the satisfaction of patients and the morale of the various internal work groups were also at stake.

Before we contracted with an international corporation for dietary services, our cost per meal was significantly high compared to bench-mark standards in our industry; and the satisfaction level of patients through patient surveys was low, as were the employee satisfaction surveys. The decision to outsource this nonclinical area resolved both cost and quality issues.

Before we made the change, our Dietary Department Director decided to change the morning breakfast menu. With about 50% of our employees being Hispanic, we had provided on the breakfast menu beans, tortillas, peppers, etc. He removed those items from the breakfast menu, and the medical center almost had an employee uprising. Even though the Department Director did not directly report to me, I felt a need to step in and request that all items taken off the menu be placed back, and that breakfast be provided free to employees for a week. Now we knew that changes were needed for this department.

Clearly, there were several costs that were hard to quantify based on the current insourced solution. Employee satisfaction and customer service were not being met. By moving to the other end of the continuum, we were able to meet the needs of both parties, and reduce many of our apparent and less visible costs in dietary services.

Lesson 2: Develop Contracts that create "Mutuality of Advantage."

Once a company has answered the make/buy decision, an organization must determine the strategy for working with its suppliers. Williamson (2008) cites fellow economist James Buchanan, who stated that the notion of economics as a 'science of contract' rather than as a 'science of choice' is underdeveloped. Buchanan (2001, p. 29) writes that "Mutuality of advantage from voluntary exchange…is the most fundamental of all understandings in economics."

Williamson (2008) points to the power of win-win approaches, which in the realm of performance-based and Vested Outsourcing includes Game Theory, Behavioral Economics, Solutions concepts and the Non-Zero Sum Game. A game in the context of outsourcing includes a set of companies, a set of moves (or strategies) available to those businesses, and details of the payoffs for each combination of strategies applied.

Win/Win /Game Theory thinking has grown in popularity among academics studying mathematics and economics. To date eight Nobel Prizes have been awarded to Game Theorists, the first being John Nash in 1994 for his famous "Nash Equilibrium." However, it is important to understand that win-win thinking is more than just a popular phrase saying that companies need to collaborate better. Win-win thinking should be a key strategy for companies. What most practitioners do not realize is that droves of economists and mathematicians have simulated and strategically proven that agreeing to play a win-win game enables individuals and organizations to come out ahead.

In outsourcing, achieving equilibrium among the parties by committing to a win-win strategy through collaboration, flexibility and foresight can grow the both organizations businesses. As Nash demonstrated, the key lies in players working together toward a mutually beneficial strategy that optimizes for the cumulative payoff. The idea is not to optimize for the status quo, but to look for ways to change the game, or the contract process, to achieve a larger payoff for everyone. In other words, work to create more opportunities to grow profitable work for both organizations. Companies can and should work together to find ways to create more opportunities. By working together they can identify opportunities to reduce costs, increase services, expand into new markets, or develop new products or services for the market place.

Our collective experiences have shown that even when companies talked win-win they often still contracted under typical win-lose thinking. For example, we often hear business people talk about "collaboration" and the "long term" but their contracts would clearly spell out 30 or 90-day terms for convenience clauses. A panel of shippers described how important their carriers were to their success, yet none of these contracts lasted longer than a single year. That is like telling a five year old to sit still for an hour in order to get a treat. That's a strategy that won't work very well for the short or the long term.

Insight

As a large health system with an embedded supply chain operation, consolidated service center and distribution system for twenty hospitals and 83 clinics across five states, creating an environment of "Mutuality of Advantage" was critical to reduce costs for high cost and high volume purchases. In the cardiology service line, for cardiac rhythm management items such as pace makers and drug eluding stents, the health system was spending over $109 million. These manufactured items were necessary to meet the standard of care of the service line.

Approximately five vendors were being used to procure the items for the health system. A team consisting of the clinical staff, cardiologists and cardiac surgeons were consulted to reduce the vendors and SKUs of the service line in an attempt to discount current pricing. After a considerable amount of effort, two vendors were adopted as the primary vendors for the service line. This reduced costs, with compliance of purchasing from the health system, but it became clear that further costs could be reduced for both the vendors and the health system.

To this end the health system adopted a strategy of being the vendors' 'low cost but high margin/profit' partner. Contract negotiation resulted in finding elements that would reduce vendor and manufacturer costs, reduce distribution/shipping costs while meeting the needs of the health system. The result was an annual reduction in cost to the health system of approximately $20.1 million as long as compliance to the contract, that included a high percentage of exclusivity, was at 90% or above. The vendors and manufacturers reduced their costs by approximately 7% while improving their margin/profit by 4.3 to 4.8%. The "Mutuality of Advantage" principle was used in this partnership to advantage of all parties.

Lesson 3: Understand the Transaction Attributes and their Impact on Risk and Price.

Once a company understands that outsourcing should be seen as a continuum instead of a simple insource vs. outsource decision, the question then should become "what is the best approach for structuring the relationship and contract" to drive out non-value added transaction costs.

Williamson (2008) points out that companies need to understand three attributes of their business environment in order to help them make better discussions with outsource providers and ultimately lead to better contracts. Each of the attributes is identified in the table below.

Understanding these three attributes and how companies view them can and does have a direct influence on how a company and a service provider will "behave" when it comes time to write a contract because each element can and does add risk to a service provider.

In a perfect world, a company and the service provider can take a snapshot of the business and create an agreement that allows for the service provider to price the work under a set of given circumstances. The service provider clearly understands the task and the attributes of the work and provides a "price" to the company.

Table 1: Impact of Attributes On Risk to a Service Provider

ATTRIBUTE IMPACTING RISK	RISK TO SERVICE PROVIDER	
	Low	High
Asset specificity	Widely available and generic assets can be used to provide services	High degree of customization and investment needed in order to provide services
Uncertainty of work	Static environment; little likelihood of the work changing or be eliminated	Dynamic environment; high degree of work scope changing or being eliminated
Variable frequency	Consistent levels of work to amortize over assets	Inconsistent levels of work to amortize over assets

Source: Vitasek, Manrodt, Wilding and Cummins

Unfortunately, the world of business is not perfect. Williamson (2008) says that the more an outsource agreement contains higher risk in the three attributes noted above (asset specificity, uncertainty, and variable frequency), the more a service provider will feel potential risks and will want to put in "safeguards" into a contract to protect them from the risk of changes. It is recognized by Williamson that many firms are opportunistic and act with self intent. Therefore he advocates safeguards to protect against opportunism.

Williamson (2008) suggests that if asset specificity is high, and disturbances are high, one can assume that transaction costs are at their highest. In these instances it would be less expensive – from a TCE perspective – to keep things in-house. If the asset specificity is low and disturbances are minimal, then transaction costs are much more predictable and therefore lower.

His logic is fairly simple. The higher a customer's need for asset specificity, the more uncertain and the less frequent the work, the higher the transaction costs, or price that they should expect to pay. From a service provider's perspective, the greater the degree that these attributes are present – the higher the risk for the service provider. As a result the service provider will need to charge a premium for the work.

As mentioned previously, companies should consider the total costs of all transactions – not just the price paid. Organizations should address these attributes in a transparent and open dialogue and work towards optimizing the best way to mitigate the risks associated with each attribute. In other words, by reducing the degree that these attributes are present, the team can minimize risk and costs associated with the work.

Let's look at two real world examples to put this into perspective.

Example 1: There is a significant risk associated with the uncertainty of currency fluctuations for a back office procure-to-pay BPO (business process outsourcing) project between Microsoft and Accenture. In this example, the contract originally stated that Accenture would manage the currency fluctuations associated with the accounting processes it managed. However, after monitoring the impact of the currency fluctuations, it was determined that this was causing Accenture to bear too much risk. Rather than raise the price to cover this risk, the two companies agreed that Microsoft would be better suited to bear the risk of currency fluctuations. Accenture still manages the procure-to-pay process under the outsourcing agreement, but Microsoft manages the currency fluctuations and "hedges" in order to beat the market and create further value. By recognizing that currency fluctuations were an uncontrollable risk, the companies could evaluate which one was best suited to bear the risk. In the end, Microsoft was able to use its hedging skills to best manage the risk while still leveraging Accenture's skills in managing the actual accounting process.

Example 2: A conventional way to price for transportation is on a per-mile basis. Trucking companies must pay for the fuel. If fuel costs rise, the trucking company bears the risk and the cost increase eats into their profit. As such, most trucking companies will impose a "fuel surcharge," which is often the cause of contentious debate and negotiations. Rather than fall back to negotiating, one company looked at fuel rates and the impact on the trucking rates and then created an outsourcing arrangement whereby the cost of fuel was removed from the transportation costs. With non-controllable costs burdened by the company, the company's carrier

agreement was then centered around having the carrier manage and optimize transportation efficiency and service levels.

Anticipating network cost improvements also leads to contentious negotiations, often resulting in complex management protocols to ensure the cost savings are shared between the parties. This drives up transaction costs, often outweighing the savings to both parties.

A more successful approach was to place the telecommunications costs outside of the contract and provide incentives for the service provider to improve network utilization and implement management and technology innovation to reduce costs.

Insight

In the healthcare supply chain world, medical and surgical supplies are different than pharmaceutical and biological supplies. As health systems and hospital networks attempt to reduce costs, understanding price and risk are paramount.

A large health system in the Mid-west analyzed the composition, transaction costs, inventory and management costs, quality control costs, information system costs and operational costs of the entire supply chain. Based on the pricing/costs and risks of the myriad of supply items, the health system determined that insourcing the medical and surgical supply chain to a great degree while outsourcing the pharmaceutical and biological supply chain was in the best strategic interest of the health system. This accounted for approximately 3,500 to 5,000 SKUs in the medical and surgical side of the equation and 500 to 1,500 in the pharmaceutical and biological arena.

Given the volatile nature of the pharmaceutical and biologicals pricing and availability, directly linked to pricing and risk, and the regulatory nature of the pharmaceutical aspect of the supply chain, partnering with a well-respected pharmaceutical company was the best approach. Over time, synergy of the partnership created a superior working relationship where costs are reduced for both partners while margins and profit have improved. The decision to insource (much directly from the manufacturer and not using a distributor) the medical and surgical supply chain and outsource the pharmaceutical and biological supply chain was based on pricing and risk.

Lesson 4: The More Bilateral Dependencies, the More the Need for Preserving Continuity.

Unfortunately, the world of business is not static or perfect and companies and their service providers will try to develop a relationship that can best address a dynamic environment. This can create a bilateral dependency that makes it difficult to "undo" an outsource agreement. For example, often a service provider invests, develops or creates assets or skill sets to be used specifically for a specific customer. This could be the purchase of a facility near the client's site, or hiring specialized labor to manage specific needs of the customer. The cost of redeploying these assets to alternative uses becomes increasingly difficult, placing the service provider at risk should the contract expire.

This came home to one of the authors who was interviewing a large high technology firm on a different research project. During the discussion the firm noted that they needed a software link to be written between themselves and a third party logistics firm. The third party logistics firm offered to write the software; this offer was flatly and quickly turned down. This would have meant that the program would have been owned by the supplier. As a result, it would have been harder to undo the relationship if either party needed to do so in the future.

Alternatively, service providers gain additional information about the processes that are performed and at some point may be more skilled at performing work than the customer. This places the customer at risk, as they could fall victim to predatory pricing. Care is taken to make sure the service provider is good, but not too good.

In other cases, both service providers and customers increase their asset specificity over time as well, such as by creating interdependent processes and systems. These bilateral dependencies can make it costly to undo a relationship if things go wrong over time. Williamson (2008) argues that contracts should have a "preserving governance provision." In other words, there should be a governing structure in place to avoid a loss in the first place. The governance structure should be flexible enough to account for "disturbances," or "maladaptations" when things go wrong.

Unfortunately, a recent International Association of Contracting and Commercial Management (IACCM, 2010) study highlights the problem of these dependencies and how opportunistic behavior can take place. According to the report, "Many powerful organizations simply ignored inconvenient terms and insisted on their renegotiation. Others made unilateral, non-negotiable changes, in particular in areas such as payment terms (interestingly, the fact that suppliers felt forced to accept such changes led buyers to see 'increased collaboration', whereas the suppliers felt that collaboration had taken a hefty negative blow). (IACCM, 2010, p.2)."

Insight

At a large integrated health system in the Midwest, it was our corporate policy to develop and preserve long-term agreements with major vendors for either operating and/or capital purchases. I will never forget one year when a healthcare entrepreneur made an appointment to meet with me about a major outpatient center proposal. It included an outpatient surgery center, rehabilitation facility, and a radiology center, which included the installation of an open-end MRI unit (which at this time was new technology to the market).

The entrepreneur's offer to our corporation was 50% of the enterprise if we agreed to up-front 50% of the capital cost. He mentioned that he had negotiated an agreement for the purchase of the open-end MRI unit. Our market area had yet to acquire such a unit because the technology was so new. In our health system, we already operated an outpatient surgical center and were building a major rehabilitation and cancer center. However, it was our strategic goal to be the first in the market with an open-end MRI unit. The entrepreneur gave me his business card and stated we had a week to decide on his offer. After that, he would approach one of our rivals in our healthcare market.

I contacted our main vendor for radiology equipment, which happened to be one of the world's largest corporations in this specific technology market for MRIs, CATs, and other radiological equipment. They advised me it would take 18 months to deliver a new open-end MRI, and I stated we needed one in 8 weeks or I would lose market share and significant revenue stream. Because we were a member of a multiple-billion dollar national health system and had a long-term working relationship with this corporation, we were able to receive the delivery of an open-end MRI unit in 12 weeks. The unit was $1.3 million and the preparation of the room to install was at a cost of $400,000 in addition to sending radiologic technicians to training on the new technology.

Such reactions to market changes in technology would never have happened if we had a history of frequent transition of new suppliers each year. The long-term relationship with a major supplier of high level radiology technology preserved continuity of maintaining our position as the market leader in healthcare services.

Lesson 5: Use a Contract as a Framework – Not a Legal Weapon.

Ian Macneil was ahead of his time when he professed that business-to-business contracts should be instruments for social cooperation (Macneil, 1968). Unfortunately, many companies have lawyers that are creating outsourcing contracts that are so tightly defined with self interested terms that their contracts are legal weapons instead of instruments of social cooperation.

Yet the world of business is not static; it changes and evolves over time. As such, Williamson (2008, p. 6) argues that organizations "need to come to terms both with bounds and rationality." He points out that "all complex contracts will be incomplete – there will be gaps, errors, omissions and the like." And, as human actors we are bounded by our inability to know everything. For this reason he advises that a contract should provide a flexible framework and a process for understanding and managing the parties' relationship as the business world changes.

A common mistake that companies make today is that they create a detailed statement of work (SOW) and try to define too tightly the work to be done. Williamson (2008) advises that the contract should have "the effect of which is to facilitate adaptation, preserve continuity and realize mutual gain during contract implementation." Contracts should be structured with flexibility to deal with unanticipated disturbances so as to relieve potential maladaptations.

IACCM's research also supports this finding (IACCM, 2010). According to the previously cited IACCM study, today's contracts are filled with terms designed to protect self-interest rather than promote collaboration between companies. Their study found the terms receiving the most emphasis are about self protection, indicating that companies are using their contracts as legal weapons to protect themselves in from unforeseen risks. Table 2 highlights the terms that are negotiated with the greatest frequency.

It is difficult to see how focusing on these terms will provide the framework needed to be adaptable in a changing environment. Instead, these terms – coupled with overly prescribed Statement of Works - create a rigid operating environment. When the business does change (as it always does) the parties begin to get uncomfortable creating tension between the parties. A simpler approach is to realize that the business environment can and will change – and that companies need to address how to best mitigate the risk versus trying to shift it to the partners.

Table 2: Terms that Were Negotiated With The Greatest Frequency

Limitation of Liability
Indemnification
Price / Charge / Price Changes
Intellectual Property
Confidential Information / Data Protection
Payment
Service Levels and Warranties
Delivery / Acceptance
Liquidated Damages

Source: IACCM, 2010, page 5.

What makes this more interesting is that using a contract as a legal weapon is something that is done by choice – not by law. That is, in business contractual obligations are undertaken by the parties, and not necessarily imposed by the law. In other words, companies choose to design contracts with terms that defeat collaboration; they are not required by law to do otherwise. If we have chosen the contractual obligations we are imposing on ourselves, shouldn't they be beneficial to everyone involved?

Insight

One of the authors was new to our healthcare system, where they served as CEO. Prior to joining the system there had been an ongoing issue with the contracted radiologist group. The radiology group had 10 radiologists and a contract with the health system for over 20 years. The previous system CEO would not challenge the radiologist group on issues relating to poor working relationships with the medical staff—especially the surgeons for night and weekend emergency coverage—and poor working relationship with the health system employees and the health system executive team. Finally, they had little interest in technological advancements in their own specialty. For these reasons the strategic future of this major clinical service was at jeopardy and unclear. After a year of little success in working with the group, the entire radiology group was given a 90-day notice of contract cancellation.

The medical staff leadership and system executives to determine a new contract process to successfully recruit a technologically advanced and highly motivated radiology group who would be shared partners in our mission. The new contract was designed where the radiologist group would focus all their attention on the needs of the medical center patients and medical staff and not have other outside contractual relationships. This had not been the case with the previous radiology group. The second major change in the process was that the new radiology group would meet regularly with leaders of the medical staff and the executives of the medical center to resolve issues and to assist in the development of strategic initiatives for the health system. Finally, we agreed to be the most advanced radiology department in the market by purchasing the newest and most advanced radiology equipment and by recruiting radiologists and radiology technicians with advanced training.

The new radiology contract increased the medical center radiology department's revenue by a million dollars in their first year of the contract with continued increases each year afterward. Because the health system focused on the process and tools to be used in a new contract, there was significant increase in patient, physician, and health system employees' satisfaction level, which allowed us cement a dominant position for radiological services in the market.

Lesson 6: Develop Safeguards to Prevent Defection.

A flaw in human nature is that people (and organizations) are often tempted to act in a self-interested manner. We tend to deflect responsibility when risks are high or when things go wrong. In laymen's terms, organizations will defect from a contract if the advantage from defecting is better than staying. Williamson (2008) notes that, due to bounded rationality, costly breakdowns continue in spite of efforts to develop sound contracts. A key reason for contractual breakdowns is that business and market dynamics can and do change the economics of the agreement. What was once a viable contract may become a burden to all.

Many have heard of the horror stories of suppliers closing up shop or companies that outsource invoking their "terms of convenience" clauses. In either case – one party is left holding the proverbial bag and feels the pain associated with defection. The conventional approach is to negotiate safeguards to "protect" each party's interest. Suppliers do this by increasing their price. Companies that outsource protect their interests with terms of convenience clauses.

Rather than be fearful of the risks associated with a bad contract, organizations should work to develop proper safeguards that allow for organizations to disentangle their relationship in a fair and equitable manner without harming the other party. We like to think of this as an off-ramp or exit management clauses. Whatever you call it, the purpose it to develop safeguards that protect either party in the event that one of the parties no longer wants to continue to do business under the contract. By addressing the transaction costs associated with exiting the business arrangement, companies can address the risk and costs head-on rather than hide the costs. Typically off-ramps and exit management clauses will tend to make one of the parties "whole" if the contract is terminated prematurely. For example, if a service provider invests in a specific piece of equipment or other

asset, and their client invokes their term of convenience, the off-ramp would likely have a provision to payback some or part of the suppliers investment.

Where should the work go when business relationships go sour and need to be terminated? Williamson (2008, p. 9) warns companies against the temptation of bringing the work back in-house. This is due to the additional "bureaucratic costs" involved in taking a transaction out of the market and organizing it internally. He warns that an "internal organization is usefully thought of as the organization of last resort."

Insight

Our primary market began to experience heightened competition. There was a new strategic entrance to our patient market area by the two largest health corporations in the state. One was the 12th largest hospital in the United States who had recently merged with the state's only medical school/medical center, in addition to a very prominent children's hospital, and the second was the largest insurance not-for-profit healthcare payer in the state. Both of these health organizations had the same strategic intent, which was to acquire 40-60 primary care physicians associated with our health system. If either healthcare organization was successful, or even if they split the physician acquisitions among them, it would have serious long-term consequences for our health system's revenue streams and existing market share. Even though our health system did not believe purchasing physician practices was the best strategic and/ or financial initiative, it was important for us to realize that drastic market changes were going to occur with severe consequences if we failed to respond.

The acquisition of the primary care physicians by the state's largest insurance payer was our biggest concern. While both corporations had the capital funds to purchase 40-60 physician practices, we could not allow the insurance payer to have this leverage during our annual contract negotiations. If we did not agree to specific contract terms, then changes in patient flow to other rival hospitals might occur. The second health organization interested in acquisition of our primary care physicians became less of an external threat as time went by because our physicians did not like their arrangement offer or the centralized structure of their existing physician practice.

Because the majority of our primary care physicians were young in age (the health system had spent five years in a successful major physician recruitment plan), we already had a significant investment in this physician group. Our health system then developed a three-stage approach into acquiring physician practices. The first was to quickly execute contracts with the multiple physician groups; the second was to encourage those physicians in private practice to form group practices; and the third was to acquire those who wanted to remain in a private practice environment. We researched and obtained consulting advice in determining fair and equitable acquisition cost of the practice, salaries and bonus incentives, benefit plans, and office operations by specialty (general practice, internal medicine, OB-GYN, and pediatrics). We were particularly interested in the general practice, internal medicine, and the GYN part of the OB-GYN physicians because of payment reimbursement for these physician types.

The first concern relating to this significant strategic development and change in our market was to assure our health system that cost was clearly identified with any termination of the contracts and that the terms of the contract were fair and equitable so the physicians would remain associated with our health system even if the contracts were terminated in the future. After capital acquisition of the practices, salary, benefits, etc. were finalized for each physician group and/or private practice, the contract had a clause whereby the physicians had an exit plan that occurred at the 8th year of the contract. The exit term allowed each party to have safeguards to remain "whole" at the contract conclusion.

The health system was quite particular in which physicians were targeted for our acquisition. Such targeted acquisition was based on evidence-based medical practice, the quality of the practice, cost focus and long-term loyalty to the mission of the health system. We did not want to acquire all the 60 primary care physicians but only those who we had designated as solid and effective partners. The market was changing at a fast rate so we planned to acquire 48 practices in 18 months. The actual result was 42 physician practices

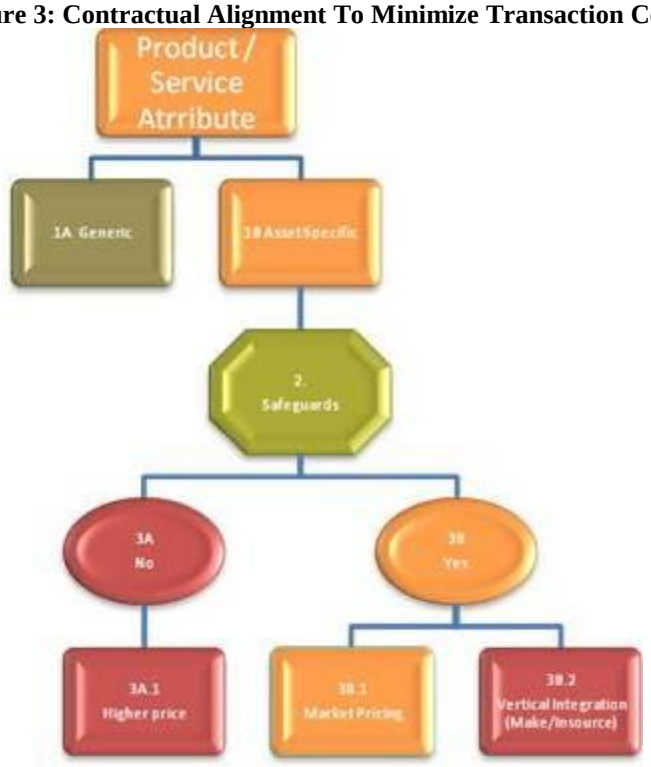
acquired, which were organized into a new physician group practice corporation (the health system having a 50-50 ownership structure).

As a result of the quick response, the health system kept its primary care physicians intact, the two larger healthcare organizations lost interest in the primary market, and we had an exit plan agreeable to all physician practices. A real win/win situation had just occurred for all parties associated with our organization.

Lesson 7: "Predicted Alignments" can Minimize Transaction Costs.

As mentioned in Lesson 3, Williamson (writes that transactions have various attributes that operate in different governance structures. One of the goals of TCE is to minimize transaction costs. To do this Williamson (2008, p. 9) points to a concept called "predicted alignment." Here the goal is to create an alignment that results in the economizing or minimizing of transaction costs, to the extent possible, given the uncertainties inherent in market dynamics and forecasts. In simple terms – this means the business and the contracting approach need to be in synch. This is described in detail below in Figure 3.

Figure 3: Contractual Alignment To Minimize Transaction Costs



Source: Adapted from Williamson, 2008

The first decision a company must make when aligning the business with the right type of contracting approach is to determine if what is being sourced is generic or asset specific. If there are no specific assets involved and the parties are "essentially faceless," then the product/service is generic (depicted as 1A). A company can buy the product from one supplier that is no different than buying it from another. In the case of a generic product/service, there are low virtually no transaction costs because switching suppliers is very easy.

In cases where some specific assets are required (depicted as 1B), transaction costs will increase because of the inherent risks associated with investments in the assets that are needed to perform the service. This creates a "bilateral dependency" between the buyer and the seller, and both parties are inherently incented

to promote continuity of supply to avoid transaction costs associated with switching suppliers. It is at this stage of the decision process that organizations begin to discuss safeguards that reduce their risk. This is depicted as 3. For example, in the case of the supplier, the supplier will want to rely on contractual safeguards such as minimum order quantities or a long term contract to help protect against their investments in the specific assets.

Companies that enter into contracts requiring specific assets and do not use safeguards should expect higher prices from their suppliers because the supplier will use pricing as a way to hedge against their risk in order to protect their investments in their assets (depicted in 3A1). To mitigate from higher prices (or to protect their risk), companies should include safeguards into their contract (depicted as 3B).

The conventional approach a company uses to negotiate asset specific contracts is a market pricing approach under a competitively bid environment (depicted in 3B1). The rationale is that frequent competitive bidding will regulate cost and risk by pitting suppliers against each other to drive down the price with suppliers absorbing risk in hopes of winning the work. Once market prices are known, a company can then decide if they want to buy (outsource) as depicted in 3B1 or make (vertical integration) as depicted in 3B.2.

To demonstrate Williamson (2008)'s model, let's suppose a supplier is asked to make a part requiring them to make a special die. The cost of the tooling has to be added to the price charged by the supplier. If no safeguards are put in place, such as a year long contract or a guarantee on a minimum of parts ordered, the company can expect to pay more for the part. The supplier can only cover their risk (making a special die) by increasing the price of the part. If, however, safeguards are put in place, such as a minimum quantity, or a multi-year contract, the risks borne by the supplier are minimized and the cost of the die can be spread out over all of the parts to be produced.

However, what if the part is of strategic importance to the company? Or the costs being charged by the potential supplier are far too great? In these cases the company may decide to keep the work internal and integrated with the rest of the firm, assuming that the firm has the ability to perform the work. Or, to refocus on Lesson 1, where outsourcing is a continuum, it may be beneficial for the firm to own the die and allow the supplier to use it.

Williamson (2008)'s insights point companies to work through the options to help them select the most logical path to solve their product/supply requirements. Using Williamson (2008)'s framework, a complex outsourcing agreements should absolutely rely on safeguards for protecting both the service provider and the customer because the complexity drives unknowns. Organizations should *transparently* discuss the risks and how to deal with the risk through properly defined safeguards. Our field research shows that the most successful outsource arrangements openly discuss risk and work collaboratively to determine how to mitigate the risk (see Lesson 2). Failure to have transparent discussions about risks and safeguards will result in higher prices from the supplier as well as higher transactions costs.

Insight

Our market area began to experience many changes as the result of the federal government's Medicare/Medicaid Prospective Payment System using the Diagnosis Related Grouping (DRG) as the reimbursement structure for all Medicare patients. The initiation of this new payment plan began to be duplicated by both the for-profit and non-profit health insurance payers. Therefore, our health system began discussion with our medical staff leadership to develop a corporate entity where both the health system and its medical staff could enter into contracts with insurance carriers and large employers. The new corporate structure was called a Physician/Hospital Organization (PHO) with joint corporate ownership between the health system and the physician group. It was the intent of the health system to only ask the physicians, both primary care and specialty, who had demonstrated in the past the highest quality and most cost effective practice to be partners. This resulted in 310 physicians out of a total medical staff of 450 that became partners in the new corporation.

Needless to say, there were many physicians not pleased with this decision, but in order to successfully manage insurance health contracts, it was critical to only enter into partnership with physicians who practiced evidence-based medicine and controlled their costs by reducing length of stay for inpatients and appropriate utilization of clinical services.

A 12-member governing board was appointed with the health system and the physician group each holding six seats. There were two people (one from the health system and one from the physician group) as co-chairmen. The payment system had incentives designed to financially reward physicians who demonstrated efficient and quality practice. This was determined by standards developed by the PHO members and by acquiring nationally recognized performance standards established for each physician specialty. For medical services not provided in the health system (organ transplants, pediatric trauma, burn cases, etc.), an outsourcing agreement with a tertiary medical center 40 miles from our primary market was signed.

The success of the PHO was to allow the health system and the medical staff to develop a "shared vision" that not only reduced transaction cost of providing medical care more effectively and at less cost to payer groups, but also gave us the structure and confidence to develop other new strategic ventures. The PHO successfully negotiated and executed 10 major contracts with payer groups for medical care in our primary market.

Lesson 8: Your Style of Contracting Matters; Be Credible.

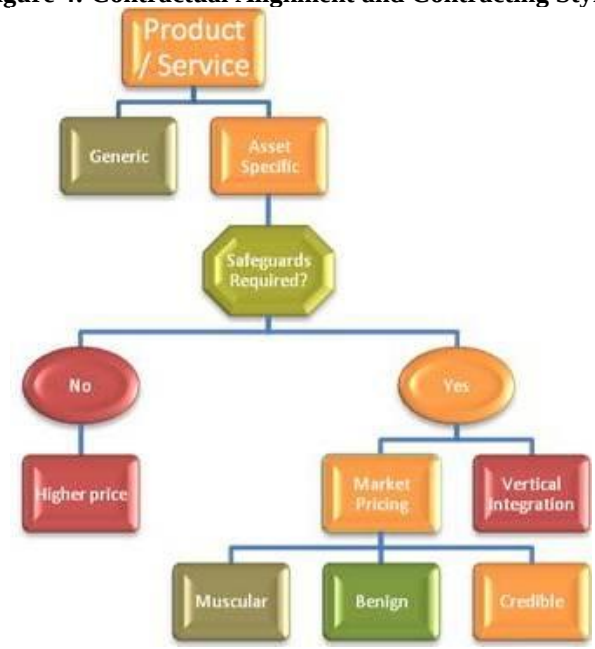
Williamson (2008) describes in some detail the three styles of contracting, which he refers to as muscular, benign and credible. This can be found in Figure 4 below.

Muscular

The muscular contracting approach has one of the parties holding the balance of power, and does not hesitate to exercise it. While both buyers and suppliers in theory can hold power positions, more often than not it is the buying organization that demonstrates its power, and tells a service provider what it wants and expects.

Williamson (2008, p. 10) calls the muscular approach to outsourcing of goods and services "myopic and inefficient." Our research found examples of companies we termed "800 pound gorillas" that would use a heavy-handed approach in dealing with their supplier simply because they could. Companies using this approach typically have war stories of bankrupt suppliers, or worse, a dwindling number of suppliers willing to work with them.

Figure 4: Contractual Alignment and Contracting Styles



Source: Adapted from Williamson, 2008

A classic example was an organization known for poor relationships with their transportation carriers. The customer's reputation was so bad that soon none of the major carriers bid on any of their business, even though it was worth several million dollars. In one instance, the firm partnered with a carrier on a special project; this required an investment of both time and assets on the part of the carrier. As an incentive, the carrier was told that this part of the business would not be bid out to competitors. Yet after a three month trial run – with great results – the customer reneged and bid the business. A lower cost carrier won the business.
Williamson (2008, p. 10) writes that "muscular buyers not only use their suppliers, but they often 'use up' their suppliers and discard them" is apt. When this happens the company will need to bear the cost of switching suppliers – or worse, have the risk that their supplier leaves them high and dry when they go out of business.

Yet, this risk is not borne just by the muscular party. Increasingly it is recognized that competition is no longer between individual companies but rather between their respective supply chains. Forcing a supplier into bankruptcy can not only destroy the company, it can also create the seeds of destruction for the customer by potentially making the entire supply chain noncompetitive in relation to the supply chains of its competitors. Companies also risk paying more when a market consolidates, when suppliers merge with one another or if they leave the market entirely. We contend that a weak global economy has given companies far too much of an excuse to adopt muscular behaviors that will result in higher costs for all.

Williamson adds that when organizations adopt this muscular approach – the supplier really has two choices for defense in the contract negotiation. They can charge higher prices and try to recoup their costs that way, or they can ask for safeguards in a contract. Safeguards could include longer contracts or guaranteed volume, just to name a few.

Williamson's point is that bullied suppliers will come up with overt and covert options to protect themselves – and this approach is bad for the company because no matter what countermeasures the suppliers take to protect themselves – it will ultimately result in higher overall total costs.

Benign

The benign approach assumes that both parties will cooperate; both parties will give-and-take in the relationship. This works well until the stakes are raised. In other words, the temptation becomes too great and one party will take advantage of the other. The impact that such behavior will have on the offending party may help to deter this behavior. However, that is part of the transaction cost thus taken into account. This cooperation "eventually gives way to conflict and mutual gains are sacrificed unless countervailing measures have been put into place."

The benign approach doesn't work well for long-term agreements, as the risks (transaction costs) are too high. Being too nice can lead to being taken advantage of. The benign approach blindly assumes too much trust on the part of all or some parties. It also assumes that cooperation to deal with unforeseen contingencies to achieve mutual gains will always be there.

Our field research found evidence of organizations that were too trusting in the initial stages of the relationship and were taken to the cleaners as a result. One example (which we saw repeatedly) was when service providers would extend too much trust by developing a "gain-share" with their customer. If the service provider found savings they would receive a share of the benefit. The agreement was clear in most cases – a 50/50 split. The problem was defining the rules of how to split the savings. In several cases a service provider identified and implemented ideas that drove savings for a client and the client would come up with excuses as to why they did not have to pay.

Clearly a company should not be gullible. To avoid this Williamson recommends companies use a third approach, which he calls a credible contracting approach. The fundamental philosophies outlined in a Vested Outsourcing approach follow Williamson's credible contracting style.

Credible Style

Williamson (2008, p. 13) describes credible contracting as "hardheaded and wise." It is hardheaded because it strives for clear results and accountability, but it is not mean-spirited, as in the muscular type. It is also wise because it arises out of an awareness that complex contracts are "incomplete and thus pose cooperative adaptation needs" and require the exercise of feasible foresight, meaning that "they look ahead, uncover potential hazards, work out the mechanism and factor these back into contractual design." To address these potential risks, Williamson (2008) argues that credible commitments should be introduced to effect hazard mitigation.

Credible contracting is not new. Contract safeguards can take unconventional forms, as discussed by Williamson (2008) with respect to ancient Mesopotamia, where self-inflicted curses were used to deter breaches of treaties. The key point is that a good hybrid contract for a complex outsourced service will be above all fair and equitable to both parties in the agreement and it will challenge the organizations to focus energy on unlocking inefficiencies rather than negotiate for the win at the other party's expense.

Insight

Our health system experienced a very unusual situation with a large employer who was 40% of our corporation's net profit. The employer was, at the time, the largest corporation in the world. This corporation had a history of flexing their "muscle" with not only suppliers of the automobile industry but also with healthcare providers to their 800,000 employees. The health system typically increased its medical charge rates (12,000 different charges) on January 1 of each calendar year. The process of changing rates for a health system

is quite difficult and involves intensive negotiation with the state major health insurance payer. All charges then are changed in the health system's information system which has computer-to-computer billing structures.

The customer requested that the CEO of the health system travel to its corporate headquarters in Detroit for a meeting in the late part of November. Accompanying the CEO were several financial and contract executives, all who would meet with several of the automobile's health plan executives. The meeting was quite short and the health system was politely asked not to raise their medical charges to employees of their corporation for the next year. They were bluntly advised if they did not the customer would sign an "exclusive contract" with a rival healthcare provider. The CEO and his team were not only in a state of shock but also had a serious problem with only 30 days to resolve it.

The CEO advised them that their demands were unfair and maybe unrealistic. In addition, the CEO offered to provide information that their customer's would face higher market costs in switching contracts to an exclusive healthcare provider in our market because their charge rates were higher than ours. The automobile corporation's health plan executives were not in any negotiating mood and maintained their position of no rate changes to their employees for the next calendar year or else. Needless to say, the health system got the message.

Upon returning to the office, they immediately began to develop a new fiscal budget, strategic plan, and the renegotiation of agreements with their suppliers. The team based their planning philosophy on the belief that they would have to "bite the bullet" for the coming fiscal year. However, the year after that was the period when the large automobile corporation's contract with their employee's union expired. We believed this situation would occupy their complete attention and priority. It was a risky plan, but it worked to their prediction and to their best interest.

While the health system was forced to freeze a pay raise for its 3,000 employees, decrease the size of both the operating and capital budget, and recruit help from several of our larger supplier companies, the health system survived the fiscal year without a negative net income. The following year, as predicted, the automobile corporation was focused on potential shut-down of their plants. As a supplier to this large employer customer, the health system was forced to use conventional negotiation with its own employees and supplier groups; however, such contractual provisions and behavior in future years eventually drove up higher costs to our largest customer because of delayed operating and capital purchases.

Lesson 9: Build Trust: Leave Money on the Table.

Williamson (2008) also says that TCE does not necessarily embrace "user-friendly" concepts such as the "illusive concept of trust." He wonders what benefits might come from the more widespread use of trust among outsourcing buyers, and at what cost. Trust should not necessarily supplant power entirely and indefinitely, he argues, and that is where the credible part of contracting comes in.

We would propose that the most effective and collaborative contracts, the ones that are truly credible, must include trust. The idea of vesting, or committing, one's self or a company in a contract arrangement implies a large degree of initial trust in the value of the enterprise, a large degree of give-and-take to achieve mutual goals and a large degree of good faith during the course of the relationship.

Trust is implicit in Williamson (2008)'s suggestion that it's often better to leave money on the table, or not insist on winning every negotiating point. It's an idea that goes against the usual low-cost, transaction-based grain in a traditional contract.

In a new and potentially long-term arrangement constructive and strategic contractual intentions are sometimes hard to differentiate. What exactly are the parties' intentions going into the negotiation?

If there is a strategic rather than constructive purpose that skews the contract in one party's favor "and if real or suspected strategic ploys invite replies in kind, then what could have been a successful give-and-take exchange could be compromised," Williamson (2008, p. 13) explains.

If each party, or even one party has a strategic agenda and wants to gain an upper hand – or go muscular – asymmetry will result. This "could plainly jeopardize the joint gains from a simpler and more assuredly constructive contractual relationship," he says.

"Always leaving money on the table can thus be interpreted as a signal of constructive intent to work cooperatively, thereby to assuage concerns over relentlessly calculative strategic behavior (Williamson, 2008, p. 13)." What can result is a pragmatic and ultimately wise outsourcing contract with credibility from start to finish.

Insight

As the CEO of a 300-bed hospital, our medical facility had undertaken a $35 million construction project to develop a new Women's Center, new Emergency Room Department, new Radiology Department, and renovation of other support areas. The general contractors had a three-year term to complete the project and a "liquidation damage" clause if they did not meet the completion date. The damage clause would assess a penalty of $10,000 per day for each day after the contract completion date. The general contractor was a very respectable corporation and had successfully completed other projects for the hospital.

The general contractor had chosen to use subcontractors who hired only union employees. During the construction period, the hospital had experienced a very cold and snow-related winter and, unfortunately for the contractor and the hospital, the construction project had 8 labor union strikes. Both situations were pushing the contractor into a serious situation with the contract completion date and possible enforcement of the liquidation damage clause in the contract. If this was not enough of a concern for all of us, the hospital architectural firm tested one side of the wall for a 5-story new tower, which did not meet contract specifications and would have to be torn down and rebuilt. Now the construction contractor was in serious trouble in meeting the contract completion terms.

In a meeting with the president of the construction company, it was estimated that the bad weather, union strikes, and rebuilding a 5-story tower wall would place the completion of the project approximately 300 days beyond the construction terms and would initiate a $3 million liquidation damages penalty to be paid to the hospital by the general contractor. Such a financial impact to the construction company stability plus over-run cost of the project, would potentially bankrupt them and end employment for all of the company employees.

It was important to the management philosophy of the hospital to build strong and long relationships with suppliers and develop intent to work cooperatively with them so there is a credible understanding among all parties from start to finish. We finally negotiated with the construction company that they would have up to 200 extra days after the original contract to complete the entire project, and we would only execute liquidation damages for days after the first 200 days. The general contractor accepted these new terms under the condition that they were also willing to hire additional construction workers to complete the project.

The construction company completed the project under the new terms and protected its financial viability. The hospital was able to have access to the new and renovated areas; therefore, generating new revenue to pay the debt service of the construction project. Both parties continued their long-term relationship for future projects even though the hospital left money on the table for this specific project.

Lesson 10: Keep it Simple.

Williamson points out the importance of trying to keep things as simple as possible.
"Keeping it simple is accomplished by stripping away inessentials, thereby to focus on first order effects – the main case as it were – after which qualifications, refinements and extensions can be introduced (Williamson, 2008, p.6)."

Getting it right entails working out the logic, and making it plausible. Plausibility means to preserve contact with what is actually occurring in the market and in the contract while avoiding what he calls "fanciful constructions (Williamson, 2008, p.7)." Getting it right and keeping it simple also entails translating economic concepts into accurate mathematics or diagrams or words.

Conventional thinking is that the "best practice" for outsourcing is to create more detailed statement of works and tightly defined service level agreements to monitor the business in great detail. This trend is often coupled with complex pricing models and associated penalties for service providers that do not meet the metrics. Unfortunately, too many organizations are focusing on measuring for measurement's sake and they are often perplexed to find out that their scorecard is "green" but the business is not as profitable and customers are not as happy as they would like.

Our field research found that some of the most successful outsourcing arrangements bucked conventional best practice thinking and instead chose to focus on few (five or less) clearly defined and measurable desired outcomes. While the parties agreed that measuring the business was essential – the contract itself focused on creating a shared vision and how to measure success against desired outcomes – not on defining and micro-managing day-to-day operational metrics. The outsourcing agreement then focused leveraging a governance structure that used data to drive business improvements jointly rather than point over whose fault it was when an Service Level Agreement was missed.

The complexity of life, systems and business interactions make simple models in each case attractive and necessary. Simplicity is simple to say but can be quite complicated to achieve. It requires knowledge, the ability to prioritize and a high degree of flexibility and pragmatism.

Insight

We developed as one of the key components of our strategic plan to be the healthcare provider of emergency medical care. Therefore, it was quite important to contract with an Emergency Room Physician group that would strive to keep such a relationship pragmatic, plausible and in the best interest of all parties. We kept this relationship simple, functional in terms of the contract provisions, and highly professional. Of all the physician contracts the health system had executed, the ER Physician contract was the shortest in number of terms, contract pages and requirements. We had the best working relationship between the health system and them as compared to any of the other physician contracts. The health system's emergency department had the largest patient volume in the primary market, which was important to us because 40% of all inpatient admissions to our medical center came from this area.

In similar hospitals, it is typical for emergency services to be major problems to the health system because of patient complaints, wait time, poor working relationships between the medical staff and the emergency staff in addition to other departments of the medical center. All of this was absent from our contract relationship with this specific ER Physician Group. We had a very good business relationship and supported each other when necessary because we kept it simple and focused on the needs of both parties.

FUTURE IMPLICATIONS

The bottom line on Williamson's work is that the bottom line is not always apparent at first look; you have to look at the hidden costs of doing business as well as the price of what you are buying. This includes understand the costs of poorly structured contracts and bad behavior such as using a muscular approach for negotiating with your service providers.

Williamson's work shows how businesses can address conflict resolution. He takes the concepts of game theory and focuses them around the contracting process itself – looking through the "lens of the contract" and how organizations behave when it comes to the contract and how people behave during contract negotiations.

Williamson (2008)'s thoughts on outsourcing go beyond the numbers and substantiate the value of a collaborative, win-win approach to outsourcing and 3PL contracts. It is some of the best academic work to show how the contract and governance structures need to be addressed in developing outsourced relationships.

The main reason Williamson (2008)'s work is so useful to us is that his work with mathematical and economic models aligns nicely with what we have learned in our applied case base research on Vested Outsourcing, Performance-Based Outsourcing and Collaborative supplier relationships:

- Win/win relationships are a must when there are complex requirements. Not only is win-win a common sense thing to do – but applying "muscular" win-lose thinking actually increases the cost of outsourcing. We call this establishing a WIIFWe (What is in it for We) versus WIIFMe (What is in it for Me) foundation.
- An effective outsourcing arrangements should include a shared vision and a "predicted alignment" with clearly defined and measurable desired outcomes that guide the decisions of how the companies work together.
- Focusing on price alone only provides a partial picture of the true TCE of an outsourcing relationship. Companies need to establish transparent pricing models with incentives that optimize for cost/service tradeoffs. These pricing models should include a well thought out exit management plan with the desire to drive continuity of service.
- Putting in place a good governance structures is essential. The contract should be seen as a flexible framework, augmented with well thought out governance structure designed to manage the business with the understanding that the business environment will likely change.

Williamson (2008)'s lessons are simple and profound when you reduce them to their core essence. We hope more people will understand the contribution of his work after reading this article.

Healthcare as an industry and the supply chain with specific consideration of strategic sourcing can benefit much from the principles set forth by Williamson. Known for years, there are many opportunities for improving efficiency and effectiveness in the healthcare supply chain. Williamson provides insight on a culture of knowledge and application to support better decisions, implementation and performance oversight on a core business of healthcare.

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VALUATION MODEL FOR A SECOND-HAND VESSEL: ECONOMETRIC ANALYSIS OF THE DRY BULK SECTOR

Eleftherios I. Thalassinos and Evangelos D. Politis

ABSTRACT

This research provides a valuation model for the pricing of second-hand bulk carriers. The valuation process relies on a cash flow analysis and on the manner by which it can be combined with co-integration methodologies. Previous research on ship valuation and, generally, on the shipping industry suggest that the second-hand market of vessels can be interpreted in terms of supply and demand. This research introduces the term operating profit and margin of the loan in the valuation process of vessels. In addition, it applies multi-factor co-integration methodologies in low frequency data by implementing Vector Error Correction Model (VECM), which identifies more co-integration relationships between variables. Findings suggest that small-sized vessels are more market-driven compared to the medium to large-sized vessels. In addition, Capesize and Handysize vessels are more capital intensive assets and their operating profit does not affect the medium to large-sized vessels, which is in contrast with existing research.

Keywords: Co-integration, VECM, Stationarity, Bulk Carrier, Maritime Economics

INTRODUCTION

The valuation of an asset is a multidimensional problem. It involves several stages of investigation before it can be used to determine the optimal investing plan. The risk attached to this decision can boost the returns of investment or lead to the insolvency and loss of the invested capital. Shipping companies are capital intensive, working in an environment of strong competition and volatility. For this reason, the investor or ship owner has to evaluate different fixed assets and consider the most profitable and liable in an effort to decrease the risk attached to this investment. There are several valuation models that calculate the different parameters

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involved. Expected or forecasted cash flows on a straight line basis, discounted cash flows or real option (Evans, 1984, Dikos and Marcus, 2003, Dikos, 2008, Venus Lun and Quaddus, 2009) are the traditional methodologies.

In the shipping industry, the vessels have the characteristic of fixed assets. They are easy to liquidate with the resale of the asset, disposal of the vessel and sale the steel used in the construction of the hull, as scrap. In cash flow terms, there is one major outflow in the beginning—initial capital—and one at the end of the investment—residual value. During the operational period of the vessel, it has only one inflow, the freight. From the freight if we deduct the operating cost, voyage cost, special surveys cost, loan installments, and interests, we find the earnings of the vessel. The cash flows estimated can be used for the calculation of the Net Present Value (NPV) of the asset. However, NPV valuation cannot diminish the risk from the investment in a volatile global industry, which is strongly related with the variance of the world economic environment. In addition, the value of the vessel has instant and tremendous fluctuations, described as a volatile market (Glen, Owen and Van der Meer, 1981, Kavussanos, 1997, Chen and Wang, 2004, Alizadeh and Nomikos, 2006, 2007, E. I. Thalassinos, Hanias, Curtis and Thalassinos, 2009, E. I. Thalassinos, Hanias, Curtis and Thalassinos, 2013), in the short term and long term period. Meanwhile, the sale and purchase of the fixed assets can sometimes be more profitable than the simple operation of the vessel.

To describe the seaborne trade, the shipping market can be divided into four integrated and interconnected markets, namely the new building market, the second-hand market, the freight market, and the scrap market, as described by Beenstock (1985), Beenstock and Vergottis (1989a, 1989b, 1993), Stopford (1996), Tsolakis, Crindland and Haralambides (2003), Theotokas (2011), among others. The new building market determines the price of newly constructed vessels from different shipyards. In the same way, the second-hand market provides the price of the second-hand vessel. The freight market provides the chartering rate, and the scrap market determines the value of the steel used for the construction of the vessel or the scrap value. These variables are interconnected in terms of supply and demand for the seaborne trade. This equilibrium of supply and demand must be maintained in the long term period, as proposed by Jin (1993), Beenstock et al. (1985, 1989a, 1989b, 1993), Tsolakis et al. (2003), Dikos et al. (2003), Adland and Koekebakker (2007), Adland and Strandenes (2007).

The valuation of vessels is usually done by ship broking companies, which do not disclose any information about the methodology they apply when estimating the price of vessels. In fact, they do not proceed with the physical auditing of the condition of the vessel. If we consider that there exist several types of vessels, which differ in terms of tank capacity though they are of the same category, a wrong decision or estimation of the price of the asset can lead to unexpected losses. Furthermore, the age of the vessel might be completely different from the actual condition of the vessel. Physical auditing of the asset only takes place in the second stage of the valuation process and is done by the ship owner. Neglecting all these technical parameters and focusing only on the market terms, the valuation of an asset must follow certain criteria. Several cases have been reported where two or three ship broking companies provided extremely different prices for the same vessel. Evans (1994), in his work, concludes that the ship owners seem to work in close to perfect competition, while in the long term, overcapacity and the speculative nature of tramp shipping discourage the owners from adapting efficiently to the demand. Additionally, Raiswell (1978) indicates that the pricing strategy is due to a failure in management control systems, done to dynamically forecast situations, such as market pricing and delivery delays.

The main aim of this research is to investigate the price of second-hand vessels in relation to the discounted cash flow models. The co-integration theory provides a long term and dynamic relation of the parameters used in discounted cash flows. Tsolakis et al. (2003) used the co-integration theory to estimate the value of vessels. However, there were some key parameters not used in Tsolakis et al.'s (2003) valuation model, which could have enhanced the adoptability of the model in real terms. In more details, financial cost is expanded with the accumulation of the loan margin. Additionally, the gains from the operation of the vessel are not directly calculated by the gross revenues of the vessel, which in the case of the ships, is not from the time charter rate, but from the net revenue. Net revenue is the gross ratio after the deduction of any operating cost. Residual value of the asset is significant in the vessels, because the steel used for the construction has a market price. Finally, the demand and supply of the vessels is adjusted based on the global economic conditions; therefore, the introduction of a global proxy is a necessity. Incorporating all these variables in the model

proposed by Tsolakis et al. (2003), the final extended model highlights some key parameters that differentiate the acquisition policy of a vessel from a ship owner, minimizing any potential risk of misjudgement. The final valuation model constructed has certain similarities with the Whole Life Cycling cost proposed by Liapis, Christofakis and Papacharalampous (2011) and Liapis, Galanos and Kantianis (2014).

This is the first time that monthly average data or low frequency data have been applied in valuation models. Low frequency data can encapsulate the volatility of the market. Beenstock et al. (1985, 1989a, 1989b, 1993) applied linear solutions to describe the shipping market. Veenstra (1999) moved one step further and applied co-integration techniques. Tsolakis et al. (2003) followed the same co-integration procedure, estimating an error correction model (ECM). This study is based on the co-integration methodology, but moving one step further by searching for more co-integration relations between the variables, with Vector Error Correction Model (VECM). Error Correction Models (ECMs) work in a linear framework and they are efficient in one-dimensional models. Vector Error Correction Models, on the other hand, provide multi-dimensional co-integration relations in multi-factor models. Vector Error Correction Model has the advantage over ECMs in terms of leaving space for more than one co-integrating relationships in variables in the long term period. To define the best co-integration model, we use the work of Pantula (1989) in time series unit root testing model specification for the specification of the co-integration model, as proposed by Johansen (1992). With this, we examine the general model of co-integration more restrictively and determine the rank of the co-integration equations. Previous attempts to combine financial data and to search for any co-integration relation have been carried out by Thalassinos and Politis (2011, 2012), Ho and Huang (2011). Results of these studies suggest that the co-integration theory is qualified for financial time series and economic variables like the oil prices and exchange differences.

MODEL SPECIFICATION

Tsolakis et al. (2003) describe the second-hand market of vessels in terms of supply and demand using the following demand equation:

$$Q_{SH}^{D} = f(fr, secondhand, nb, libor) \quad (1)$$

where fr is the vessels' average time charter for the year, second-hand is the price of a second-hand vessel, nb is the price of a new building vessel, and libor is the interest rate.

According to our model, the gross revenues of the vessel are not adequate to capture income generation from the operations of the vessel. Operation of the vessel has some direct and indirect costs. The daily maintenance of the hull and the engine of the asset are the direct costs, defined in the shipping industry as operating costs or expenses. The vessel has operating expenses even when it is in idle state. Indirect costs are associated with the voyages and cover fuel, port charges, canal tolls, cargo handling operations, and brokerage commissions. The operating profit of the vessels is calculated as follows:

$$op_{sh,t} = \sum_t (tc_{sh} - opex_{sh} - voyex_{sh}) \quad (2)$$

where op_{sh} is the operating profit of the second-hand vessel for period t, tc_{sh} is the time charter rate of the second-hand vessel, $opex_{sh}$ is the operating expenses of the second-hand vessel, and $voyex_{sh}$ is the voyage cost of the second-hand vessel.

In case of time charter fixtures, the voyage costs are paid by the charterer; therefore, the value of the voyage costs is equal to zero. Definitely, there are some voyage expenses, like when the ship-owner has the vessel in idle days or when there is a cost that does not concern the cargo, but the operation of the vessel. We cannot calculate the frequency of the voyage costs paid by the owner. Nevertheless, they constitute a very small portion of the total cost and, for simplicity reasons, in all cases they are set to zero. The final form of the operating profit equation is as follows:

$$op_{sh,t} = \sum_t (tc_{sh} - opex_{sh}) \quad (3)$$

Financial cost refers to the combination of the spread or margin and the libor rate. If we delimit our calculations by using only the libor interest, a large portion of the interest expense will be neglected by our model. Consequently, a significant cost will not be taken into account in our valuation model. The interest rate is given in the following equation (4):

$$r_t = libor_t + margin_t \quad (4)$$

where libor is the three-month interbank interest and margin is the 10-year U.S. Treasury bond yield.

Margin rates are difficult to collect. Each financial institution has its own margin rates, which are not the same for each loan facility. Loan margin is disclosed information and if we consider the margin as the expected profits of the bank from the loan agreement, we can use an opportunity cost of the bank. The only solution in this case is the 10-year U.S. Treasury bond yield, which is a risk-free rate and the minimum gain expected by the bank.

Shipbuilding uses iron ore as main material. For the construction of the vessel, the quantities of iron used are significant and have a resale value when the vessel is finally dismantled at the end of its useful life. This residual value or scrap price (scrap) is the last inflow from the operation of the asset and is a part of the valuation process in the demand for vessels.

The shipping sector is an international service. All four markets are linked to exogenous forces that shape their course and volatility. In this case, a suitable exogenous parameter will enhance our valuation model to more macro dynamic relations and will determine this linkage of the shipping sector with the global economy. We argue that if the industrial production faces changes, this will have a strong impact on the demand for more materials, which implies changes in the volume of the transported cargo. Industrial Production Index (IP) is the qualitative macro variable used in the model to enforce any exogenous dynamic inherited in the valuation model.

Following the procedure by adding more variables, the final model for the demand of the second vessel is as follows:

$$Q_{SH}^{D} = f(sh, nb, libor, margin, op, scrap, ip) \quad (5)$$

$$op_{sh,t} = \sum_t (tc_{sh} - opex_{sh}) \quad (6)$$

$$r_t = libor_t + margin_t \quad (7)$$

The supply side is left intact because the model proposed by Tsolakis et al. (2003) depicted this part of the market well as presented in equation (8):

$$Q_{SH}^{S} = f(ob, sh) \quad (8)$$

where ob is the ratio of existing orders in shipyards to the existing fleet number.

To have equilibrium and to have demand equal to supply and to solve for second-hand prices, the final model used is as follows, with the expected sings above:

$$sh = f(\overbrace{op, nb, ip}^{+}, \overbrace{libor, margin}^{-}, \overbrace{ob, scrap}^{+/-}) \quad (9)$$

Second-hand vessel prices (sh) are a function of the operating cost (op), new building prices (nb), industrial production (ip), libor, margin, order book to fleet ratio (ob), and scrap values.

DATA

The dataset covers a period of ten years. More specifically, it covers the period from January 2000 to December 2010, counting 132 monthly observations for each variable. The time series are transformed into their logarithmic pattern so as to inherit all the prolific characteristics of the variable and to bypass the problem of the different units measurement.

Data include four categories of ships with different cargo capacity, measured in dead weight tons (dwt) (Handysize Bulkers: 10.000-39.999 dwt., Handymax Bulkers: 40.000-59.999 dwt., Panamax Bulkers: 60.000-99.999 dwt., Capesize Bulkers: 100.000+ dwt.) The main data sources include Drewry Shipping Consultants and Clarkson Research. For these four categories of vessels, we collect new building prices and second-hand prices, which are based on concluded contracts or on the estimations of the shipbrokers about a hypothetical price on a particular date if there is no deal during that time period. For second-hand vessel prices, we use the five-year old vessel prices, which are considered as more competitive to new building prices. The one-year time charter is considered more appropriate because it clearly inherits all the dynamics of the short term period time charter rates. Scrap value is the price of the used steel for each different capacity vessel. The operating daily rate includes crew cost, insurance, repairs and maintenance, stores and supplies, and administration fees. Repairs and maintenance include scheduled and not scheduled maintenance. Provided data reflect the daily operating expenses throughout the year. Due to the fact that we wanted to be more consistent with the variations throughout the year, we interpolated the data, so the sum of the average of all the monthly observations are the same as the daily operating costs reported by Drewry. The three-month libor was provided by the British Bankers' Association. Ten-year U.S. T-bond yields were provided by the Federal Reserve. Industrial production referred to OECD countries and was an index that measured the real output of all industrial productions. The reference datum concerned the period specified and they constituted a percentage change.

METHODOLOGY

If two or more series are not stationary in their levels, the ordinary least square methodology is not appropriate because if the series have spectral forms, the results of the ordinary least squares are spurious (Granger and Newbold 1974). A linear combination of a time series that has seasonality, with one not having any, will not have any logical explanation, since the first one has a spectral form with peaks while the other one does not. Stationarity test is based on three different tests, namely Dickey and Fuller (1981) (ADF), Phillips-Perron (1998) (PP), Kwiatkowski, Phillips, Schmidt and Shin test (1992) (KPSS). If the time series are non-stationary in their levels, there might be some form of linear combination of the variables that is stationary in the long run (Engle and Granger 1987).

Vector Error Correction Model estimation is based on Johansen's (1992) directions. The Vector Error Correction Model lag structure is based on Akaike (1974) (AIC), Schwarz Bayesian Criterion (1978) (SBC), and Hannan and Quinn (1979) (HQ). The lag structures start from the lag of order ten moving downwards and, at the same time, testing various stability tests. The significant problem relies on the best-fit model of the short term relationship and the long term relationship. There are five models that concern the VAR and VECM relationship. These include the no trend and/or intercept in VAR or VECM and vice versa. More specifically, the set of models is as follows: If we consider the general form of a VECM, we have various possibilities for the VAR and co-integration equation.

$$\Delta C_t = \Gamma_1 \Delta C_{t-1} + a \begin{bmatrix} b \\ g_1 \\ d_1 \end{bmatrix} [C_{t-1} \quad 1 \quad t] C_{t-1} + g_2 + d_2 t + e_t \tag{10}$$

where g_2 is the constant and $d_i t$ is the trend (linear or quadratic).

To test the hypothesis of the co-integration we use the trace statistic, we the following formula.

$$\lambda_{trace}(r) = -T\sum_{r+1}^{n} \ln(1-\hat{\lambda}_{r+1}) \quad (11)$$

where λ is the characteristics roots of the matrix of VECM. The hypothesis of the tests is r co-integrating relations against k co-integrating relations, where r is the number of co-integrating relations (r=0, 1, 2.., k-1) and k are the endogenous variables. The first time we fail to reject the null hypothesis, the test stops.

The identification process starts from a general form to a more restrictive one. The possibilities include not having a constant or a trend in VAR, to have a constant or a trend, and to have both. The long term process has the same possibilities. We omit the cases that have no trend or constant in both the VAR and co-integration equation, since in the financial series the constant term and/or trend usually exists. Furthermore, we can also reject a hypothesis when the trend is not linear, especially in cases where we use the log formation of the time series. In addition, no linear trend in data is very difficult to interpret with this methodology and it cannot be granted by economic theory. Therefore, we delimit our model estimation process in three models: 1) The data VAR has no trend or constant, but the co-integration equation has a constant term ($d_1 = g_2 = d_2 = 0$); 2) If both the co-integration equation and VAR have a constant but no trend ($d_1 = d_2 = 0$); and 3) If both the VAR and co-integration equation intercept, but only the co-integration equation has a linear trend ($d_2 = 0$). The trend in the co-integration suggests exogenous impact factors.

Johansen (1992) used the work of Pantula (1989) for unit root examination and proposed a similar guideline to examine all the possible models of VECM jointly with rank estimation. The estimation process starts from rank $r = 0$ until $r = k - 1$, where k is the number of endogenous variables. Starting from the most restrictive model (1), where the data VAR has no trend or constant, but the co-integration equation has a constant term ($d_1 = g_2 = d_2 = 0$) and continuing with the least restrictive model (3), where both the VAR and co-integration equation intercept, but only the co-integration equation has a linear trend ($d_2 = 0$). In each step, we test the estimated values against the critical values and if we reject H_o (as discussed above in the hypothesis testing for trace statistic), we move on to the next model or to the next rank of co-integration. The identification process stops for the first time when we cannot reject H_o, and we conclude that this is the model we are going to estimate and the number of co-integration ranks.

Since we have identified the co-integration model and the rank, we will continue with the guideline that we are going to use in our model. The first step is to identify the time series for non stationarity with the ADF, PP and KPSS test. The second step is the identification process of the VAR length, which we are going to test for co-integration. The purpose of this process is to limit the values of the AIC information criterion, SBC information criterion, and HQ criterion. The process starts from a large number of lags and downwards, until we reach lag zero. At the same time, each VAR lag length we choose shall be tested for Gaussian errors estimation (normal, no autocorrelation, no heteroskedasticity). In case we fail to find Gaussian errors, we will have to change the lags included in the test. The third step is to examine the co-integration model specification using the Johansen methodology (1992). The fourth step is to check again the residuals for non-normality, autocorrelation, and heteroskedasticity. In this research, we insist that some sort of relation must exist between the variables and that the argument of multicollinearity is not sound because the Vector Error Correction Models have always had small R-squared outputs. Blanchard (1987) suggests that it is reasonable for multicollinearity to exist and that it is not a problem of data or statistic techniques. Normality of data is doubted in several cases and many economic models suffer from non-Gaussian residuals. Silvapulle and Podivinsky (2000) show that Johansen's (1995) procedure is robust for non-normal errors even in finite samples.

EMPIRICAL RESULTS

In Handysize vessels, the second co-integration equation results reveal the positive impact of industrial production by 1,57% on second hand prices. Similarly, new building prices and operating profit have a positive impact of 31,75% and 5,78%, respectively. On the other hand, the scrap values adjust the second hand prices by

-28,28% and the margin affects the dependent variable by -10,60%. Error Correction Term adjusts prices by -0,005 or -0,5% in order to maintain the long-term equilibrium.

Handysize vessels seem to be market-driven and the decision to acquire a second hand or a new building vessel is based upon the freight market conditions and the global economic status. Furthermore, the adjustments in the second hand prices in the long term can be considered as mild, suggesting decreased volatility in assets price. Therefore, Handysize vessel is the best option for a conservative ship-owner who wants to delimit the risk of the investment.

New building Handymax prices have a negative relation with the second hand prices and the coefficients are close to one. In other words, a rise by 1% in new building prices will cause a drop of -0,94% in second hand Handymax prices. The results for the scrap price suggest that it causes a negative impact on second hand prices by -1,95%. The operating profit is positive and a rise of 1% will have a positive impact on second hand prices by 0,52%. In the short-term period, the prices of second-hand Handymax vessels are adjusted by -20,7% monthly to sustain the equilibrium. The effect of order book to fleet variable on second-hand prices is 0,44% for a rise of 1% in the order book to fleet ratio.

In Panamax vessels, the coefficient of new building prices is negative and statistically significant. A rise by 1% in the new building prices of a Panamax vessel will cause the drop of the price of a second hand Panamax vessel by -0,86%. The scrap prices have a negative effect on second-hand prices and they are significant. A rise by 1% in scrap prices will lead to a drop in second-hand prices by -0,67%.

New building Panamax vessels are competitive to second-hand vessels. On the other hand, the operating profit is not considered as a significant in co-integration one. In this case, we can easily derive the outcome that second hand prices are directly connected with the conditions in the sale and purchase of Panamax vessels. We can also assume that the freight market does not have any substantial role in shaping the second-hand prices. The results of the short term equation suggest that only the Error Correction Term of co-integration one is significant. Furthermore, the negative sign shows the adjusting role of the Error Correction Term, so as to sustain the long term equilibrium. More specifically, second-hand prices are adjusted monthly by 23,26% to maintain the long-term equilibrium.

In Capesize vessels, only the Error Correction term of co-integration one is statistically significant. New building prices have a negative impact on second hand prices. Thus, the coefficient of new building prices is significant and it has a negative relation with second hand prices by -0,47% on a mild change of new building prices by 1%. Likewise, the second difference of the order book to fleet ratio is statistically significant, with a negative relation with second-hand prices by -2,66%. In other words, a change of 1% in the order book to fleet ratio causes the lowering of second hand prices by -2,66%. Similarly, scrap prices have a negative impact on second-hand prices, changing second-hand prices by -0,89% on a mild change of 1% on scrap prices. The operating profit is suggested to be non-significant, denoting that the second-hand prices have no long term relation with the freight market. Margin causes a negative effect on second-hand prices by -0,64%.

The results do not deviate enough from our expectations. Small-sized vessels have special characteristics that are different from that of the other size of vessels. New building and second-hand vessels in the Handysize segment are having a positive relation. Furthermore, if there is an upward trend in the demand for new building vessels, the prices of second-hands will move drastically higher. This is a signal that this segment is not concentrated on these levels and that there is enough space for more cargo capacity to enter the market. Tsolakis et al. (2003) finds that the new building prices have no effect in secondhand prices within a short term period. However, Tsolakis et al.'s (2003) empirical results suggest that freight rates have a positive impact of 8% if the freight rates increase by 10% for yearly observations. Our estimations suggest that for a similar increase in the Time Charter rates, there will be an increase of 57%, but this is for monthly observations and in the long term period.

New building vessels and second-hand vessels for the medium to larger-sized vessels are following opposite directions. Concentration in this market exists, but not in very high levels. There is a minor negative percentage change in the prices of medium to larger-sized vessels. There is room for more capacity, but there is a restraining point, which should not be neglected. Tsolakis et al. (2003) suggest that new building prices have a

negative relationship with second-hand prices only in the Handysize vessels, while Panamax and Capesize new buildings have a positive relationship.

Freight market is another major variable in determining the second-hand prices. Expectations are that second hand prices in all different sizes of vessels will be affected by the changes in freight markets, as Tsolakis et al.'s (2003) results suggest, for the short run period. However, the results highlight interesting differences between the small to middle-sized vessels and larger vessels.

Handysize and Handymax vessels have strong relations with conditions in the freight market. More specifically, these types of carriers are valuated close to the market conditions. Handysize vessels have the highest level of dependency with the freight market conditions. A change in freight rates or in the operating cost will have an important effect on second-hand prices, while Handymax prices change in a milder way. Small size carriers are market-driven. The same results are derived from the work of Tsolakis et al. (2003) for the small to medium-sized vessels.

A basic outcome is that large size vessels have no relation with the operating profit. If we consider that the valuation process includes the future earnings and capitalize them in the value of the vessel, then we might argue that these results are spurious. However, if we consider that these types of vessels handle certain types of cargoes and that they are not flexible to be hired for different or random bulk cargoes, then the results are reasonable. The independency of second-hand prices from operating profit may be a result of the active sale and purchase market and the profit earned from this transactions, which may overwhelm the linkage of second-hand prices with the freight market. Nevertheless, the profits from the sales and purchase are significantly higher compared to the operation of the vessels in the long run. The optimal strategy for ship owner is to acquire large cargo carriers in the bottom of the shipping market and to sell them when the market reaches the upper limits. Therefore, the long term non-significant relation of the operating profit and second-hand prices actually exists in the long term period, since the ship owner is expecting the profit from the difference gained from the buy price to the sell price.

Results in financial cost expenditures are rather ambiguous. Except for the Capesize vessels, where only the margin has a negative effect on second-hand prices, in all other vessel sizes, both libor and margin are restricted to zero or they are not significant. Capesize vessels are the most expensive vessels to acquire. The leverage for this vessel is highest in all categories. Only the large shipping companies have the financial resources to acquire these types of vessels and manage the financial costs, which have a major impact on break even rates. Shipping cycles suggest that Capesize vessels are potentially providing good returns in good freight market conditions, but that when the shipping cycle reaches the lower limits of recession, these types of vessels are usually laid up or sold in the second-hand market or scrapped. The financial risk is inevitably elevated in contrast to the other sizes of vessels. These results are in constraint with the outputs of Tsolakis et al.'s (2003) work, whereby in all types of vessels libor is significant and has a negative impact on second-hand prices.

Small to medium-sized vessels have different financial profiles. The acquisition of these types of vessels is affordable for the wide range of shipping companies. The financial risk attached with these ship values is arguably smaller and a ship owner has the option to maintain the ownership of the vessel even during bad freight conditions.

For these reasons, the significant margin in the long term period in the Capesize vessels is absolutely realistic in the shipping market. We expect the same to happen for the Panamax vessels, but there is a significant difference in that this size of vessel is considered as the workhorse of the shipping industry. Both Capesize and Panamax vessels operate in the same cargo markets, but Panamax vessels are more adaptable to different freight conditions. Therefore, in the acquisition decision process, financial cost has relative higher weight in Capesize vessels.

From the outcomes of the model, we can derive that it might not be the optimum choice to include as margin the 10-year U.S. T-bond yield. However, it is closer to the cost of the bank to maintain a loan facility, instead of investing its money in an alternative free-risk rate. As aforementioned, the results from the introduction of the margin in the valuation process are rather poor. If the same results do not happen for the libor interest, there will be notions that this variable is not significant in the model. However, both libor and the

10-year U.S. T-bonds have, in most cases, no significant relation with second-hand prices. It may be an important aspect of this outcome that the vessel price is not related in any case with the finance needs of the ship owner when the valuation includes market terms. During this period of investigation, the financial sector faces strong liquidity. There is a continuous reduction of United States Government interest rates, which is dragging the interbank rates down. Following the government interest rates, interbank interest rates are reaching the lowest prices for years. More specifically, the three-month libor reaches the low of 0,2491% during this period. In the same way, margin yields are moving downward for all periods, reaching 2,42%. Considering the above, this might be a good explanation why the finance cost in this research is rather insignificant in most cases, whereas in similar works like Tsolakis et al.'s (2003), libor interest is important in valuation and is negative.

Finally, scrap prices results do not provide any meaningful result in all size of cargoes, although in all cases they are significant. The problem springs from the negative effect of scrap prices on second-hand values, which denote the reduction of second-hand prices when a rise of scrap prices occurs. In the asset valuation, scrap value is the last outflow that provides a significant return. Even if we consider that the scrap price plays the role of an alternative option to scrap the vessel rather than to buy it, the sample that we have used for the second hand vessels refers to five-year old second-hand ships, which has another twenty years of operation and where scrap option is considered not realistic. The period investigated in this research maintains high freight rates and ship owners try to extend the operational life of the vessels in order to profit at this peak of the market.

Error correction term provides significant insights on the adjusting process of second-hand vessels in the short term in order to maintain long term equilibrium. A high rate of error correction term reflects a risky market with significant changes in the conditions. Medium to larger-sized vessels have error correction terms ranging from -20% to -30%, with capsize having the highest right of adjustment. On the other hand, the Handysize vessel error correction term is lower than -0,5%. The results clearly state the market conditions, where the small vessels concentrate on the lowest risk and their ship values do not suffer from tremendous changes in the short and long term period. Provided with this stability in vessel prices, they are a safe investment with moderate risk but with moderate returns as well.

In the opposite direction, the change in ship size from medium to large inherits additional risks, which are reflected in the ship values. However, higher risks contribute to higher operating profits in the good markets. In addition, if we apply the results in the shipping cycle theory, an investment on the medium to large size vessels in the bottom of the market will undoubtedly provide higher returns, particularly if the vessel is sold during the peaks of the market. Tsolakis et al. (2003) suggest that Handysize vessels, followed by Capesize Vessels and Panamax vessels, are less volatile.

CONCLUSIONS

The intention of this research is to construct a valuation model based on various endogenous and exogenous variables from the shipping market, the economy, and the finance market. Another characteristic of this research is the econometric methodology used, which is ultimately a turnover in the valuation models of vessels. Although multiparametric models can easily lead to spurious results, the outcomes of this valuation model managed to reestablish the co-integration of the various shipping factors.

For the first time, a multiparametric model with these different characteristics has been constructed. It includes the operating profit margin of loans and the scrap for the valuation of the vessel. The addition of these two variables provides a characteristic linkage between finance and the valuation process. The operating profit is calculated after deducting the operating cost of the vessel from the time charter rate. On the other hand, margin data are difficult to maintain, since they constitute disclosed information of the financial institutes. For this reason, we prefer the inclusion of a free-risk rate, which is the yield of the 10-year T-bond bills, as the bank margin.

The results are different in many cases from the work of Tsolakis et al. (2003). Financial cost is only significant in the Handysize and Capesize vessels, while Tsolakis et al. (2003) findings suggest that libor is significant in the long run for all the three types of vessels analyzed. New building prices in Tsolakis et al. (2003) work are significant in the short term period with a positive relation to the new building prices. This research suggests a positive relationship only for the Handysize vessels in the long term, while in all the ship types the new building prices are competitive to second hand vessels. Handysize vessels are market-driven because they are affected by both the operating profit and industrial production and there exists more space for new orders. Tsolakis et al. (2003) derive the same outcome from the non-significant new building prices and the high ratio of time charter rates in the short run.

This research describes a period of high abnormalities in the shipping and global economy. This is probably a reason for the differences in outcomes between the two research performed. Stationarity of variables is different in these two time periods—the investigation by Tsolakis et al. (2003) and this research. However, we argue that this research provides a fruitful guidance for future investigation on ships valuation and that the restructuring of the model is informative. Furthermore, the multiparametric models, which have been abandoned for a significant amount of time in conjunction with Vector Error Correction methodology, are an empty space in literature for further research, as suggested by Pruyn, Van de Voorde and Meersman (2011).

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APPENDIX

Table 1: Stationarity test

			Handysize Vessels				Handymax Vessels				
			Level		First Difference			Level		First Difference	
Variables	Test	Ho	Test Statistic	Critical Values (5%)	Test Statistic	Critical Values (5%)	Ho	Test Statistic	Critical Values (5%)	Test Statistic	Critical Values (5%)
nb	ADF	I(1)	-0.995	-3.445	-5.051	-3.445	I(1)	-0.978	-3.445	-7.088	-3.445
	PP	I(1)	-0.815	-3.444	-8.289	-3.445	I(1)	-1.114	-3.444	-7.394	-3.445
	KPSS	I(*)	0.216	0.146	0.162	0.146	I(1)	0.181	0.146	0.132	0.146
sh	ADF	I(1)	-1.767	-3.445	-8.104	-3.445	I(1)	-1.978	-3.445	-6.559	-3.445
	PP	I(1)	-1.631	-3.444	-8.134	-3.445	I(1)	-1.597	-3.444	-6.178	-3.445
	KPSS	I(1)	0.186	0.146	0.082	0.146	I(1)	0.173	0.146	0.099	0.146
op	ADF	I(1)	-2.438	-3.445	-7.063	-3.445	I(1)	-2.719	-2.884	-6.808	-2.884
	PP	I(1)	-1.550	-3.444	-4.728	-3.445	I(1)	-1.437	-3.444	-5.316	-3.445
	KPSS	I(1)	0.169	0.146	0.046	0.146	I(1)	0.170	0.146	0.051	0.146
scrap	ADF	I(1)	-2.343	-3.444	-12.207	-3.445	I(1)	-2.343	-3.444	-12.207	-3.445
	PP	I(1)	-2.284	-3.444	-12.207	-3.445	I(1)	-2.284	-3.444	-12.207	-3.445
	KPSS	I(1)	0.201	0.146	0.045	0.146	I(1)	0.201	0.146	0.045	0.146
ob	ADF	I(1)	-1.527	-3.445	-8.407	-3.445	I(1)	-2.117	-3.445	-3.729	-3.445
	PP	I(1)	-1.370	-3.444	-9.197	-3.445	I(1)	-1.532	-3.444	-8.093	-3.445
	KPSS	I(*)	0.198	0.146	0.216	0.146	I(1)	0.181	0.146	0.135	0.146

Integration rank in brackets
*After first or second difference still non stationary for 5% statistic significance

Table 1: Stationarity Test (continued)

			Panamax Vessels				Capesize Vessels							
			Level		First Difference		Level			First Difference		Second Difference		
Variables	Test	Ho	Test Statistic	Critical Values (5%)	Test Statistic	Critical Values (5%)	Ho	Test Statistic	Critical Values (5%)	Test Statistic	Critical Values (5%)	Ho	Test Statistic	Critical Values (5%)
nb	ADF	I(1)	-1.041	-3.445	-6.735	-3.445	I(1)	-0.951	-3.445	-4.820	-3.445			
	PP	I(1)	-1.116	-3.444	-6.929	-3.445	I(1)	-0.891	-3.444	-8.420	-3.445			
	KPSS	I(1)	0.193	0.146	0.122	0.146	I(1)	0.183	0.146	0.124	0.146			
sh	ADF	I(1)	-2.156	-3.445	-7.267	-3.445	I(1)	-1.908	-3.445	-6.556	-3.445			
	PP	I(1)	-1.796	-3.444	-7.166	-3.445	I(1)	-1.509	-3.444	-6.487	-3.445			
	KPSS	I(1)	0.180	0.146	0.069	0.146	I(1)	0.184	0.146	0.076	0.146			
op	ADF	I(1)	2.628	-3.445	-7.019	-3.445	I(1)	-2.359	-3.445	-7.802	-3.445			
	PP	I(1)	-2.001	-3.444	-6.288	-3.445	I(1)	-1.828	-3.444	-6.963	-3.445			
	KPSS	I(1)	0.181	0.146	0.044	0.146	I(1)	0.204	0.146	0.051	0.146			
scrap	ADF	I(1)	-2.361	-3.444	-12.197	-3.445	I(1)	-2.359	-3.444	-12.177	-3.445			
	PP	I(1)	-2.315	-3.444	-12.197	-3.445	I(1)	-2.314	-3.444	-12.177	-3.445			
	KPSS	I(1)	0.196	0.146	0.046	0.146	I(1)	0.195	0.146	0.046	0.146			
ob	ADF	I(0)	-4.858	-3.445	*	-3.445	I(*)	-2.426	-3.445	-2.259	-3.445	I(2)	-13.139	-3.445
	PP	I(1)	-2.417	-3.444	-8.026	-3.445	I(1)	-1.810	-3.444	-11.050	-3.445			
	KPSS	I(0)	0.110	0.146	*	0.146	I(*)	0.122	0.146	0.177	0.146	I(2)	0.048	0.146

Integration rank in brackets
*After first or second difference still non stationary for 5% statistic significance

Table 1: Stationarity Test (Continued)

			Economic Variables			
			Level		First Difference	
Variables	Test	Ho	Test Statistic	Critical Values (5%)	Test Statistic	Critical Values (5%)
margin	ADF	I(0)	-3.615	-3.445	*	-3.445
	PP	I(1)	-2.946	-3.444	-8.843	-3.445
	KPSS	I(1)	0.151	0.146	0.042	0.146
ip	ADF	I(1)	-3.238	-3.445	-16.870	-3.445
	PP	I(0)	-4.436	-3.444	*	-3.445
	KPSS	I(1)	0.177	0.146	0.038	0.146
libor	ADF	I(1)	-1.002	-3.445	-7.634	-3.445
	PP	I(1)	-0.910	-3.444	-7.634	-3.445
	KPSS	I(*)	0.197	0.146	0.173	0.146

Integration rank in brackets
*After first or second difference still non stationary for 5% statistic significance

Table 2: Lag Length Order Criteria

	Handysize			Handymax			Panamax			Capesize		
Lag No.	AIC	SBC	HQ	AIC	SBC	HQ	AIC	SBC	HQ	AIC	SBC	HQ
0	1.19	1.37	1.26	1.26	1.45	1.34	0.24	0.56	0.37	-0.52	-0.33	-0.44
1	*-16.72	*-15.06	*-16.05	-16.21	*-14.56	-15.54	*-11.76	*-10.32	-11.18	-14.62	*-12.95	-13.94
2	***-17.36**	-14.24	*-16.09	*-16.90	-13.78	*-15.63	*-12.38	-9.81	*-11.34	*-15.23	-12.09	*-13.96
3	*-17.44	-12.85	-15.58	*-17.09	-12.49	-15.22	-12.37	-8.67	-10.86	-15.03	-10.41	-13.16
4	*-17.45	-11.38	-14.98	***-17.15**	-11.08	-14.68	***-12.38**	-7.55	-10.42	***-15.18**	-9.08	-12.70
5	-17.44	-9.90	-14.38	-16.89	-9.36	-13.83	-11.98	-6.03	-9.56	-14.97	-7.39	-11.89

*Suggested lag length and Bold letters are the selected lag

Table 3: Model Selection Criteria

Hypothesized No. of CE(s)	Model 1 Eigenvalue	Model 1 Trace Statistic	Model 1 Critical Values (5%)	Model 1 Prob.**	Model 2 Eigenvalue	Model 2 Trace Statistic	Model 2 Critical Values (5%)	Model 2 Prob.**	Model 3 Eigenvalue	Model 3 Trace Statistic	Model 3 Critical Values (5%)	Model 3 Prob.**
Handysize												
r=0	0.406	240.986	169.599	0.000	0.390	229.067	159.530	0.000	0.460	262.891	187.470	0.000
r=1	0.343	173.737	134.678	0.000	0.335	165.201	125.615	0.000	0.356	183.411	150.559	0.000
r=2	0.257	119.612	103.847	0.003	0.246	112.554	95.754	0.002	0.261	126.565	117.708	0.012
r=3	0.202	81.304	76.973	0.023	0.199	76.069	69.819	0.015	**0.237**	**87.520**	**88.804**	**0.062**
Handymax												
r=0	0.347	201.976	169.599	0.000	0.342	193.216	159.530	0.000	0.400	238.803	187.470	0.000
r=1	0.281	147.914	134.678	0.007	0.275	139.977	125.615	0.005	0.334	173.842	150.559	0.001
r=2	0.262	106.076	103.847	0.035	0.256	99.075	95.754	0.029	0.263	122.258	117.708	0.025
r=3	**0.192**	**67.526**	**76.973**	**0.211**	0.188	61.470	69.819	0.193	0.191	83.566	88.804	0.113
Panamax												
r=0	0.34	164.77	12.34	-	0.34	159.15	11.42	-	0.39	197.74	15.46	-
r=1	0.28	112.35	25.64	-	0.28	106.79	23.62	-	0.33	134.39	31.05	-
r=2	0.22	70.48	42.70	-	0.22	65.08	39.56	-	0.22	84.42	50.25	-
r=3	**0.17**	**38.74**	**63.66**	-	0.17	33.68	59.42	-	0.18	52.23	73.31	-
Capesize												
r=0	0.356	213.849	169.599	0.000	0.356	205.991	159.530	0.000	0.385	237.691	187.470	0.000
r=1	0.315	158.369	134.678	0.001	0.313	150.548	125.615	0.001	0.332	176.401	150.559	0.001
r=2	0.262	110.777	103.847	0.016	0.257	103.155	95.754	0.014	0.292	125.515	117.708	0.015
r=3	**0.223**	**72.541**	**76.973**	**0.104**	0.209	65.808	69.819	0.100	0.218	82.040	88.804	0.139

Bold letters are the optimal model

Table 4: Co integration results

Handysize

	Co-integration 1 Coef.	S.E.	t-stat.	Co-integration2 Coef.	S.E.	t-stat.	Co-integration 3 Coef.	S.E.	t-stat.			
ECM(-1)	0.046	(0.019)	[2.447]	-0.005	(0.002)	[-2.154]	-0.262	(0.101)	[-2.581]			
sh(-1)	1	-	-	1	-	-	1	-	-			
ip(-1)	0	-	-	1.573	(0.576)	[2.731]	0	-	-			
libor(-1)	0	-	-	0	-	-	-0.191	(0.030)	[-6.414]			
nb(-1)	*-1.596	(0.837)	[-1.906]	31.756	(5.170)	[6.143]	*-0.281	(0.221)	[-1.273]			
ob(1)	-1.201	(0.367)	[-3.275]	0	-	-	-0.305	(0.079)	[-3.876]			Prob.
scrap(-1)	-3.025	(0.494)	[-6.119]	-28.287	(5.475)	[-5.167]	0	-	-	**R-sq.(adj)**	0.219	
op(-1)	2.604	(0.306)	[8.507]	5.789	(2.313)	[2.503]	*-0.011	(0.057)	[-0.185]	**S.E. of Regr.**	0.065	
margin(-1)	*0.466	(0.736)	[0.633]	-10.602	(4.39319)	[-2.413]	0.534	(0.169)	[3.157]	**J.B.(norm.)**	2047.354	
trend	0.025	(0.010)	[2.549]	-0.073	(0.03701)	[-1.973]	*-0.001	(0.002)	[-0.660]	**LM(S.C.)(2)**	72.336	0.332
c	-24.174			-111.148			-3.283			**X^2(hetero)**	1454.631	0.051

Handymax

	Co-integration 1 Coef.	S.E.	t-stat.	Co-integration2 Coef.	S.E.	t-stat.	Co-integration 3 Coef.	S.E.	t-stat.			
ECM(-1)	0.129	(0.060)	[2.147]	-0.208	(0.073)	[-2.854]	*0.028	(0.130)	[0.218]			
sh(-1)	1	-	-	1	-	-	1	-	-			
ip(-1)	0	-	-	0	-	-	0.090	(0.014)	[6.241]			
libor(-1)	-0.416	(0.059)	[-7.018]	0	-	-	-0.061	(0.030)	[-2.048]			
nb(-1)	*-0.830	(0.597)	[-1.389]	-0.947	(0.460)	[-2.061]	-1.082	(0.349)	[-3.104]			Prob.
ob(1)	0	-	-	0.449	(0.082)	[5.492]	0	-	-	**R-sq.(adj)**	0.551	
scrap(-1)	-1.249	(0.540)	[-2.315]	-1.955	(0.428)	[-4.570]	-1.216	(0.298)	[-4.081]	**S.E. of Regr.**	0.065	
op(-1)	0.615	(0.227)	[2.709]	0.524	(0.178)	[2.949]	0.479	(0.130)	[3.700]	**J.B.(norm.)**	1158.640	
margin(-1)	1.985	(0.282)	[7.030]	*-0.222	(0.218)	[-1.020]	0	-	-	**LM(S.C.)(2)**	57.306	0.710
c	-7.66	(2.291)	[-3.344]	*-2.336	(1.689)	[-1.383]	-3.068	(1.310)	[-2.341]	**X^2(hetero)**	2591.678	0.156

Table 4: Co integration results (continued)

Panamax

	Co-integration 1			Co-integration 2			Co-integration 3					
	Coef.	S.E.	t-stat.	Coef.	S.E.	t-stat.	Coef.	S.E.	t-stat.			
ECM(-1)	-0.232	-0.112	[-2.071]	* 0.012	-0.156	[0.082]	*0.025	-0.152	[0.166]			
sh(-1)	1	-	-	1	-	-	1	-	-			
ip(-1)	0	-	-	0.104	-0.016	[6.493]	0	-	-			
libor(-1)	0	-	-	0	-	-	-0.145	-0.025	[-5.806]			
nb(-1)	-0.859	-0.196	[-4.367]	-2.345	-0.216	[-10.838]	-1.889	-0.231	[-8.167]			Prob.
ob(1)	0	-	-	0	-	-	0	-	-	**R-sq.(adj)**	0.333	
scrap(-1)	-0.678	-0.133	[-5.068]	0	-	-	0	-	-	**S.E. of Regr.**	0.081	
op(-1)	*-0.061	-0.069	[-0.884]	0.375	-0.091	[4.101]	0.246	-0.092	[2.671]	**J.B.(norm.)**	1660.202	0
margin(-1)	*-0.061	*-0.061	[-0.884]	0.482	-0.162	[2.964]	1.242	-0.207	[5.991]	**LM(S.C.)(4)**	55.891	0.231
C	1.206	-0.524	[2.299]	*0.208	-0.569	[0.366]	*-0.934	-0.688	[-1.356]	**X²(hetero)**	1844.912	0.188

Capesize

	Co-integration 1			Co-integration 2			Co-integration 3					
	Coef.	S.E.	t-stat.	Coef.	S.E.	t-stat.	Coef.	S.E.	t-stat.			
ECM(-1)	-0.288	(0.078)	[-3.676]	*-0.032	(0.054)	[-0.608]	0.083	(0.060)	[*1.388]			
sh(-1)	1	-	-	1	-	-	1	-	-			
ip(-1)	0	-	-	0.200	(0.033)	[5.911]	0	-	-			
libor(-1)	0	-	-	0	-	-	-0.3	(0.045)	[-6.598]			
nb(-1)	-0.472	(0.194)	[-2.427]	-3.905	(0.445)	[-8.774]	-1.971	(0.358)	[-5.501]			Prob.
ob(1)	-2.661	(0.569)	[-4.675]	0	-	-	*-1.386	(0.850)	[-1.629]	**R-sq.(adj)**	0.462	
scrap(-1)	-0.895	(0.148)	[-6.038]	* 0.364	(0.219)	[1.659]	0	-	-	**S.E. of Regr.**	0.065	
op(-1)	* 0.001	(0.065)	[0.030]	0.789	(0.152)	[5.183]	0.387	(0.146)	[2.643]	**J.B.(norm.)**	2007.244	0
margin(-1)	-0.645	(0.122)	[-5.281]	* 0.289	(0.266)	[1.088]	1.706	(0.343)	[4.970]	**LM(S.C.)(4)**	70.758	0.262
c	* 0.440	(0.482)	[0.911]	2.437	(0.854)	[2.851]	-2.199	(0.960)	[-2.289]	**X²(hetero)**	2641.708	0.044

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Accounting; Advertising & Promotion Management; Business Education; Business Information Systems (MIS); Business Law, Social Responsibility & Ethics; Communication; E-Commerce; E-Government; Economics; Finance & Investments; Global Business; Managing Information for Innovation, Health Care Administration; Insurance; Labor Relations & Human Resource Mgt.; Information Technology; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; Public Administration; Purchasing/Materials Management; Risk; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Taxation; Technology & Innovation Management; Total Quality Management; Tourism, Hospitality and Leisure; Transportation/Physical Distribution.

MANUSCRIPT GUIDELINES/COMMENTS

Purpose of the Journal

As an interdisciplinary journal, the purpose of the *Journal of Global Business and Technology* is to contribute to the advancement of knowledge related to the theory and practice of international business and technology. Its primary goal is to present scholarly and managerially relevant articles on a wide variety of topics in international business and technology to a broad audience in academia (educators, administrators, students), industry (business executives, consultants), as well as those involved in formulating and implementing public policy. Articles should be timely, providing guidelines, techniques, and suggestions for problem solving in international business and technology management. Case studies relating to specific organizations, products/services, and industries are also welcome. It is a prime objective of *JGBAT* to bridge the gap between theory and practice. To this end, articles should offer strong managerial insights to help in the development of action-oriented business programs and strategies.

Style and Submission Guidelines to Authors

1. Submissions must be made electronically with a cover letter indicating that the manuscript is not currently being considered at another publication in addition to one-page managerially oriented executive summary. Send submissions to:

Dr. Nejdet Delener
Editor-in-Chief
Journal of Global Business and Technology
E-mail: info@gbata.org; delener@gbata.org

Submission of a paper will be held to imply that it contains original unpublished work and is not being submitted for publication elsewhere. The Editor-in-Chief does not accept responsibility for loss of papers submitted. Upon acceptance of an article author(s) will be asked to transfer copyright of the article to the publisher. This transfer will ensure the widest possible dissemination of information.

2. A cover letter must accompany each submission indicating the name, address, telephone number, fax number and e-mail of the corresponding author.

3. Manuscripts should be double-spaced with wide margins. All pages should be numbered sequentially.

4. Manuscripts should have a cover page with the author's name(s), contain affiliation, and the area of concentration (i.e., accounting, marketing, etc.). No other pages should contain information about the author(s). An abstract of 150 words or less, including five key words, should appear on the second page. The paper itself should begin on the third page. Manuscripts should not exceed 25 double-spaced, typewritten pages, including tables, figures, and references. Manuscripts that exceed these limits are routinely returned to the author(s) for shortening before consideration.

5. Tabular material and figure legend should be in box-form and incorporated in the proper part of the text. They should also be contained in the word processor file in MS Word, and cannot be hand drawn. Tables should be numbered in Arabic numbers (i.e., Table 1). Columns should be set using tab stops, not spaces, so they align. Figures are numbered similarly to tables (i.e., Figure 1).

6. References should be made by the in-text form of citation. The reference list should include information for all sources cited in the manuscript. The author should make sure that there is a strict one-to-one correspondence between the references in the text and those on the list. It should be double spaced and listed in alphabetical order according to APA style by author's last name, but including first name initial, on a separate sheet at the end of the manuscript.

The following are examples of proper form:

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Hurmelinna-Laukkanen, P., Ritala, P., & Sainio, L. (2013). Protection of Radical Innovations-Differences in Domestic and International Markets. *Journal of Global Business and Technology*, 9 (1): 1-16.

Authored Book

Delener, N. (1999). *Strategic Planning and Multinational Trading Blocs.* Connecticut, USA: Quorum Books.

Edited Book

Delener, N. (Ed.) (2012). *Service Science Research, Strategy, and Innovation: Dynamic Knowledge Management Methods*, U.S.A. IGI Global.

Chapters in Edited Book

Delener, N. & Lees, F. (2001). Global Planning of Business Activity. In Milner, M. & Lees, F. (Eds.), *Management of the Modern Company*, Moscow, Russia: 366 – 378.

Paper Presented at ...

Sturma, P. (2009). Global Challeneges and International Law. Paper presented at Global Business and Technology Association's Eleventh Annual Conference, Prague, Czech Republic, July.

Published Proceedings

Florinda, M., Rodrigues, S., Lopes, A., & Matos, N. (2011). Intellectual Capital Tool. In Delener, N., Fuxman, L., Lu, V. & Rivera-Solis, L.E. (Eds). Fulfilling the Worldwide Sustainability Challenge: Strategies, Innovaitons, and Perspectives for Forward Momentum in Turbulent Times (pp. 615-621). USA: GBATA Press.

Instance of Publication in press

Afriyie, K., Torres-Baumgarten, G. & Yucetepe, V. (in press). Internationalization and Value-Creation Perfromance of Latin American Multinationals: The Case of Outbound Foreign Direct Investment. *Journal of Global Business and Technology.*

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Fredrickson, B. L. (2000, March 7). Cultivating positive emotions to optimize health and well-being. *Prevention & Treatment, 3*, Article 0001a. Retrieved November 20, 2000, from http://journals.apa.org/prevention/volume3/pre0030001a.html

7. Sections of the paper such as INTRODUCTION should be flush in all capital letters with one extra line space between section head and text. Subheads should be in upper and lower case letters, flush with one extra line spacing above and no extra line spacing below subhead. For subheads below the first level subhead, indent one tab for second subhead.

8. The text should appeal to a wide audience by avoiding the use of methodological/technical jargon wherever possible. It may be more appropriate to include technical details in an appendix rather than in the body of the article.

9. Every effort should be made to avoid the use of specific national names of organizations and/or individuals which might be unfamiliar to the international audience of *JGBAT*. Authors may need to provide brief explanations in a footnote or an appendix.

10. Acknowledgements and information on grants received can be given before the References.

11. Explanatory footnotes should be kept to a minimum and be numbered sequentially throughout the text with superscript Arabic numerals. They should be double-spaced and not include displayed formulae or tables.

12. All spelling, grammar, and punctuation are the responsibility of the author(s). No corrections will be made by the Journal Editors. Therefore, all articles must be edited prior to submission.

Refereeing Procedure

Each manuscript is reviewed by at least three referees, as well as an Editor-in-Chief.

The Editor-in-Chief reserves the right to refuse any manuscripts, whether an invitation or otherwise, and to make suggestions and/or modifications before publication. The refereeing process takes up to three months from date of receipt of the article to communication to the author. The revised manuscript will be reviewed by one of the original referees.

The Editor-in-Chief is always happy to discuss contributions before submission.

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