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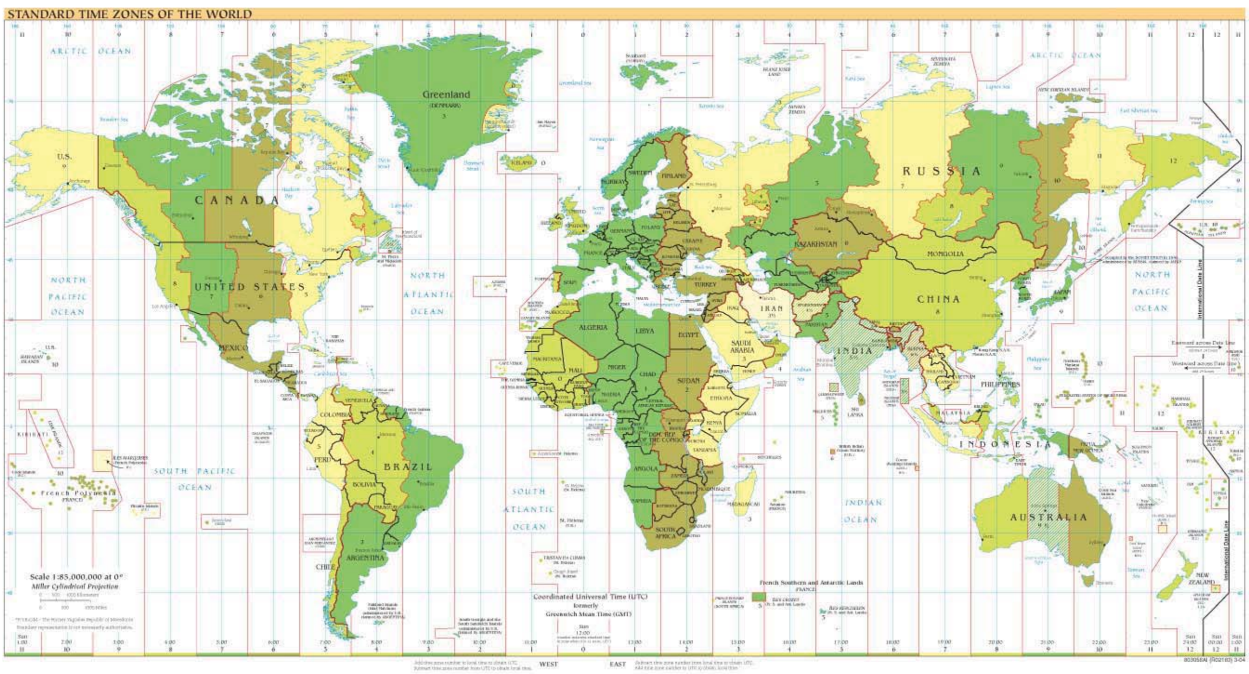

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We hope you will join us again next year at the **IABE-2012 Key West (Florida), IABE-2012 Venice, Italy and IABE-2012 Las Vegas**.

Warmest regards,

Tahi J. Gnepa, Ph.D.   Bhavesh Patel, Ph.D.   Scott Metlen, Ph.D.

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CREATING A SUCCESSFUL BRAND ON MOBILE CASE ANGRY BIRDS: GAME

Ulla Hakala, Turku School of Economics, University of Turku, Finland
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ABSTRACT

Among the most important technologies that have emerged in recent years are those that enable mobility in space and time, i.e. the mobile phone. Besides social communication, the new applications expand the potential of mobile phones to areas such as entertainment and mobile games. The purpose of this paper is to analyze the factors behind the success of a mobile game, Angry Birds. The existing literature covers the success factors in general but does not cover the mobile environment and its special characteristics. The methodological choices are guided by the aim of enhancing knowledge on a new application area where brands are being born: mobile business. Due to the novel nature of the phenomenon, a case-study method proved to be the most suitable. The findings indicate that there are some special success factors related to branding in the mobile business that need to be taken into account. The paper is likely to contribute to the theoretical academic discourse. Mobile brands have certain characteristics that mark them out as being different from 'stabile' brands. As the mobile and game industries are fast growing areas of business, the discussion is likely to raise interest also among practitioners. The paper analyzes the first product that has succeeded in becoming a global brand in a mobile environment.

Keywords: *Mobile brand; Game industry; Success factors*

1. INTRODUCTION

This article analyzes the factors behind the success of a brand born on mobile, focusing on Angry Birds mobile game, developed by a Finnish game company Rovio, as a case study. To our knowledge, Angry Birds is the first product that has succeeded in becoming a brand in a mobile environment. Accordingly, the broader context of this study is the mobile environment, mobile business, and entertainment software industry – more specifically game industry. Mobile business is a young industry created by the emergence of wireless data networks. As is typical to other emerging industries, mobile business is characterized by a continuously changing environment, technological uncertainties, short product life cycles, and tense competition. Learning how to exploit the new possibilities brought by technology to create valuable services that the customers are willing to pay for is an ambitious task. In order to do so, companies need to take the specific characteristics of mobile business industry into consideration: mobility, networks, and proprietary assets. (Camponovo, 2003)

2. MOBILE BUSINESS

Among the most important technologies that have emerged in recent years are those that enable mobility in space and time, i.e. the mobile phone. Thanks to mobile phones, people are able to link to each other and get access to services irrespective of place and time constraints. The mobile phone enables constant communication between people and reachability at any moment. Besides social communication, the new applications expand the potential of mobile phones to areas such as entertainment and mobile games. (Kimmel, 2010; Kriem, 2009) According to Soh and Tan (2008; see also Takahashi, 2011), the demand for mobile games is fueled by, first, the increasing mobile device generation – in particular smart phones; many users of mobile devices are potential players on mobile. Secondly, the ability of mobile devices to deliver quality and audio material has improved significantly. Thirdly, the ability of wireless networks to handle broadband transmission allows users of mobile devices to download larger and more compelling mobile games.

Camponovo (2003; see also Kriem, 2009) lists a number of benefits related to the mobility feature: freedom of movement (services can be used while on the move), ubiquity and liberation of place (the use of services independent of the user's location), and convenience (mobile devices 'always' at hand), among others. However, mobility involves certain constraints, for instance portability requires small size and light weight which let limited space to be used for screen, an important feature in games.

3. METHODOLOGY

The methodological choices of this study were guided by the aim of enhancing knowledge on a new application area where brands are being born: mobile business. Due to the novel nature of the phenomenon, a case-study method proved to be the most suitable. The case-study strategy can provide new insights into the phenomenon. Herein, the empirical strategy is a single-case study, i.e. one company forms the case. The selection was based on the fact that the company is obviously the first brand to be born on mobile and gain global success.

The empirical data consists of various kinds of data. First, there is rich primary data on the phenomenon under study, gathered by a semi-structured interview with the Marketing Manager of the company (Wilson, 2011). The choice of the informant was based on the principle that information is best gained through the people involved in the phenomenon under investigation. With the aid of the interview with the marketing manager, the authors were able to get an in-depth view of the marketing-related issues. In addition to the face-to-face interview data, multiple press articles and video material on the web as well as a company visit were used to add to the results.

4. GAME INDUSTRY AND GAMING

The game industry has become big business worldwide. The industry has evolved from computer and console games to handheld ones. Mobile – mobile games for mobile phones – is the newest platform. (Alpert, 2007) End-users around the world spent around $5.6 billion on mobile gaming in 2010, up 19% over 2009 spending. By 2014 the market is forecast to increase to $11.4 billion in spending.(Louca, 2010)There is big potential in the business as the number of mobile phone owners keeps growing (Kimmel, 2010). In some countries, the penetration of mobile phones exceeds 100% per capita, with significant numbers of consumers using multiple phones.

The popularity of smartphones and application stores, growing accessibility in emerging markets and improved device interfaces have been said to be the contributors to the double-digit growth of the worldwide mobile gaming market; at the same time, however, competition in the industry has expanded. The number of competitors is millions but only the first one hundred games make money (Hietanen, 2010). The games downloaded from application stores are usually free. (Louca, 2010) This applies also to Angry Birds: one can download a basic version free from the internet and later, according to one's wish, buy the whole game on 99 cents. The current mobile smart phone games originate from the first cellphone game, Snake, pre-installed onto selected Nokia models and released in 1997.

In his article on online gaming, Smith (2007) lists many psychological effects of playing games for the gamer of which diversion also conforms to mobile gaming; most people enjoy taking a break from their daily routines to play a quick game. Mobile gaming also offers an option to fill in extra time while waiting.

Gaming, and mobile gaming, are drawing consumer attention away from traditional media, providing new opportunities for marketers. *Advergaming* (a composite of "advertising" and "gaming") is a new channel for reaching consumer targets who are not accessible via traditional media channels. With advergaming, potential customers play the game within a commercial (Smith, 2007). Moreover, according to Fattah and Paul (2002), advergames are 'interactive advertisements that merge online games with product placement'. However, in the case of Angry Birds and other mobile games, it is rather a question of *gamercials:* commercials in the form of product placements within games. . *"[…] 40 % of our revenue is not from the game. It's from advertising in our game or merchandising."* (Wilson, 2011)

5. BRAND CHARACTERISTICS (WHAT MAKES A PRODUCT INTO A BRAND?)

According to Barson (2008; see also e.g. Dibb *et al,.*1997), successful brands share similar important traits: a unique, original product (with a position in the market); research (careful examination of customer needs and wants as well as looking at other industries for developing trends); personality (a set of human characteristics associated with the brand); target audience; integration and consistency (IMC); connection (emotional bond with customers); and distribution.

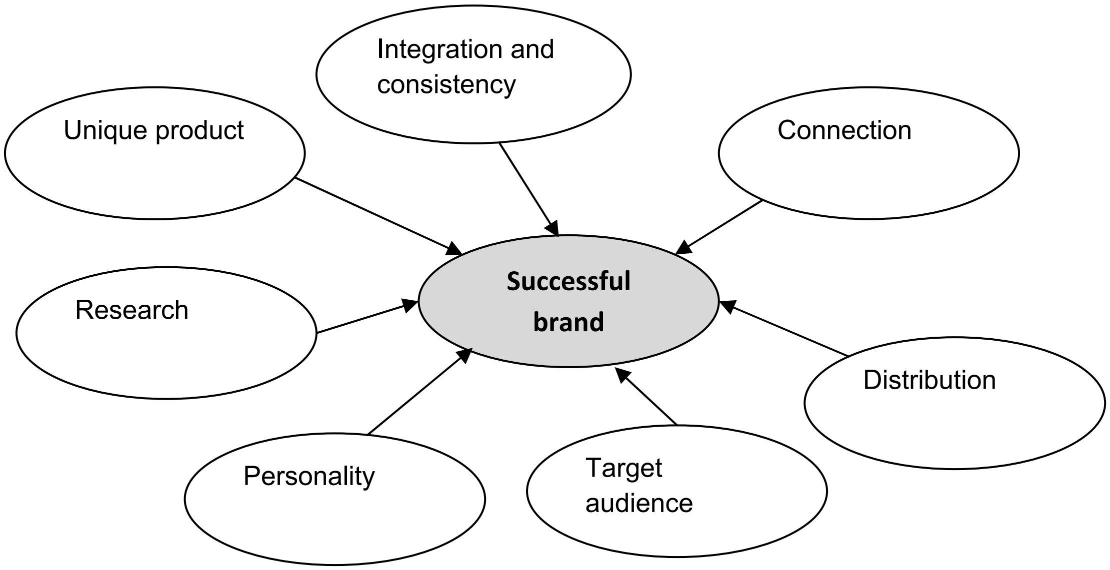

FIGURE 1. TRAITS OF SUCCESSFUL BRANDS

How do these traits come true in the case of Angry Birds?

5.1 A unique (and addictive) product

Before Angry Birds, Rovio had developed 51 titles. But at the beginning of 2009, the company was close to bankruptcy, and they needed to create a 'perfect game' where all pieces would click. One afternoon in March 2009, after hundreds of various suggestions, a game designer showed a screenshot of round angry-looking round birds, trudging along the ground. The basic idea of the game is to shoot a slingshot to propel the birds at houses populated by egg snatchers, i.e. green pigs, and to bring about the demise of the pigs as quickly and expertly as possible. The scheme sounds simple but according to psychologists, there is a catch. Angry Birds has succeeded in creating both user engagement and cognitive distraction. The engagement is created by a system that makes users want to continue the game. In a way, the same applies to cognitive distraction: players usually feel cognitively frustrated after a near loss/win, and the only way to get rid of the frustration is to go back and start playing again. (Mauro, 2011; Cheshire, 2011)

During its short existence hitherto, Angry Birds has become 'the touch-screen game'. Besides a game, it is a 'teacher' for many: playing the game can teach e.g. iPhone users how to use their tool overall. Angry Birds trains the deep part of the brain and rewards the player every time (s)he succeeds. (Cheshire, 2011)

5.2 Research (careful examination of customer needs and wants as well as scouting other industries)

"It's actually very simple: you have to build great products and that has to be the starting point. There has to be a real need."(Vesterbacka, Head of business development in North America, 2011) In today's mobile and digital economy, customer knowledge is considered as an asset. Product innovation must link technological competence with knowledge about the customer, so that the product will meet the customers' needs, in order to secure market acceptance.(Su, Chen & Sha, 2006)This is underlined also by Marketing manager Wilson (2011): "*I think a big problem in the game industry is people make games that they like. Whereas we made a game we liked, but we also really thought about will our customers like it. And before Angry Birds, we made a lot of horror games or action/adventure games and they had*

limited appeal. Like we had lots of fans that love these games, but then it cut out 80 % of the market right away. And we were finally smart enough to actually think alright, let's make a game, not only for us but for everybody. And I think a lot of people in the game industry still make games that they love, when they should really consider the whole market."

5.3 Personality (added with compelling visual design)

Through consumer experience or marketing activities, brands may take on personality traits and have human-like features (Keller, 2008). Angry Birds seems to follow one of the forms of personification, i.e. through the use of brand characters. Actually, the animated figures are characters as such. One feature ('angry') is already embedded in the name of the game and the starring birds. Besides, Angry Birds as a game has been characterized by being simple which is how the game at first looks like, but procedurally it is not; the user interface solution can be perceived as simple by users but it is actually very addictive. The addictiveness is based on a users' desire to continue interaction over time, and get engaged. (Mauro, 2011) According to Mauro (2011), the little birds are packed with clever behaviours that expand the user's mental model.

Personification starts with what is visible (cf. Aaker & Joachimsthaler, 2000).A feature that may add to the personality trait is that Angry Birds has *a look*. According to Mauro (2011), its visual style may be characterized as a combination of 'high-camp cartoon' and greeting-card graphics; it is simple and compelling. Visual design has been regarded as one of the critical factors of the success of Angry Birds (Mauro, 2011).

5.4Integration and consistency

According to Barson (2008), brands are more likely to succeed when all messages are integrated in one strong communication tool. This relates to the aspects of consistency and continuity which have to do with the company's core values and its marketing communications. Brown *et al.* (2003), referring to core values, mention the brand essence or the 'aura': the core values are the consistent and essential guiding principles for which the brand stands. Moreover, they do not change with current trends, or even with changing conditions in the market, and they are not to be confused with financial or short-term aims (Collins and Porras, 1996). In addition, they should be part of a realistic future identity. The support of the whole organisation is needed in linking core values and the brand tightly together in a way that is hard to copy. In the context of marketing communications, consistency implies a 'one voice' (IMC) approach, integrating the company's strategy and creative actions over the long term.

5.5Connection (emotional touch points)

Connection between the audience and a brand can be built via positive emotional appeals and touch points. Gamers' high affective involvement in the game and emotions associated with the use experience are likely to impact their user behavior and build brand loyalty in a longer term. (Aaker & Joachimsthaler, 2000) From the first beginning, there were obviously some special and emotionally appealing values attached to the Angry Birds characters. "*The birds have no feet and they can't fly. And they're really angry. We all started thinking why they are so angry. […] The birds made us think. There was some magic to it."* The emotion-laden nature is discernible also from the following extract: At Christmas 2009, Niklas Hed, one of the founders of the company, watched his mother burn a Christmas turkey, as she was so focused on playing the new game. *"She doesn't* [normally]*play games. I realised: this is it."* (Cheshire, 2011)

5.6Target audience

According to Soh and Tan (2008), the focus of the gaming industry has traditionally been male players, women having been a neglected segment. However, mobile games are being developed to both genders. Wilson (2011) defines the typical user as follows: "O*ur user base is from three years old to eighty. Both genders, it's a little bit more male, but I think that's more just because, I think, males are a little bit more interested in technology, so more likely to have smart phones first. But it's a very broad audience, everybody plays it".*Also Smith (2007) underlines the importanceof knowing the target customers and tailoring the contest structure of the game to the target market: the way users play and win the game must match their personality. If winning is important, the structure must be simple.

5.7Distribution(and new ways of revenue generation)
Mobility changes the traditional distribution channels, simultaneously creating new possibilities for distributing the service (the game) into the hands of targeted consumers. This also changes the mode of revenue generation. Angry Birds has succeeded in using social media in promoting the games as well as selling it, as can be learned from the following citation by Wilson (2011): "*Twitter is a very strong marketing tool. At least in our business. Because, okay, we have safe, I think 50 000 followers on Twitter and when you send a message to those 50 000 followers, all their friends see it. So you probably multiply that by a hundred. And you can get a lot of buys on your game on Twitter. Very valuable."*[…] *And Facebook, but Facebook… it's hard to interact with everybody on Facebook. Compared to Twitter."*According to Takahashi (2011), game developers have found out how to monetize the games. The rise of in-app purchases — which allows developers to give away games and charge for virtual goods — has spurred the business and allowed developers to reinvest in better mobile games. Furthermore, network operators are trying to derive more revenue from nonvoice services, looking to sell services for downloading and upgrading mobile games.

6. CHARACTERISTICS OF A SUCCESSFUL MOBILE BRAND

To a certain extent, Angry Birds seems to follow the traits of successful brands in general. Based on the analysis of this study, there seems to be, however, specific issues related to mobile brands.

6.1 Networking (Value-adding partners)
With the rise of a network economy, companies join forces in order to add value to their branding efforts. According to Lusch and Vargo (2011), networking offers opportunities to enhance their marketing programs, improve their financial performance, and more efficiently but also effectively serve customers, suppliers and other stakeholders. In the case of Rovio, networking has saved the company's marketing and marcom costs, as stated by Wilson (2011): "*We haven't paid for any advertising ever. We've got TV campaigns going on pretty much everywhere in the world. […] Samsung or Nokia wanna be partners with us and we get involved in their ad campaigns."*

Furthermore, Rovio has created an active, continuous relationship with the customers, offering them regular updates for free – to keep people playing and talking about the product. In some instances, the company has used crowdsourcing, i.e. incorporated levels designed by fans and discussed their ideas for new birds. (Cheshire, 2011) Crowdsourcing, or inbound marketing as Lusch and Vargo (2011) refer to it, i.e. using the customers as co-creators of value, is projected to rise over the next decade. As an example, Lego has created a digital design factory where customers can design new products.(Lusch & Vargo, 2011)

6.2 Ways of prolonging the product life cycle (brand extensions)
New games come and go, branding opportunities change, and consequently, the companies have to find new ways of prolonging the games' life cycle. The merchandising business can be such a way: "*Our CEO met an agent last summer in the US and the agent said that well you guys have something, let's get together and make this a global brand. And they went from there. I mean now 40 % of our revenue is not from the game. It's from advertising in our game or merchandising."* (Wilson, 2011) Rovio has extended the game brand to its own line of toys and sweatshirts, and is aiming to expand into television shows, board games and comic books. (Lacy, 2011)Angry Birds is a combination of features that can enable it to be successful in other fields of businesses as well.

6.3 Company culture
According to e.g. de Chernatony (2007), a brand can achieve a competitive advantage through a particular type of staff behavior, related to the values characterizing the organization's culture. The company culture can act as a 'glue', uniting and motivating staff. It has been argued that visionary companies share generic cultural characteristics.
"The company does a lot of fun events for us. We have nice parties every now and then, try to keep the atmosphere good. Whenever we hit a milestone, we all have champagne and, you know, have a good afternoon on a Friday and just have some laughs at the office."(Wilson, 2011) At the time of the interview, the company was building a new office next door. *"It's gonna have like a cinema in it and it's gonna have*

poker room.Just for Rovio. And it's gonna be… Well this is like a… could be a bank. Everything is white and grey. […] We're gonna have growth very quickly. So we got a nice big place next door and it's gonna be fully --- with Angry birds and there's gonna be like… the marketing room is gonna be the pigs' room. And there's gonna be all sorts of very cool design. And, well, I mean, if the cinema thing is true, which I hear it is, then, you know, we might spend a lot of time there as well."

An emerging and creative industry like game business is more likely to recruit young, motivated people who know the business and are familiar with the new media. This is underlined by Wilson (2011): *"We try to get young people, lots of motivation, you know, we've got this cool brand, it's getting big, do you wanna be part of it. Juhana, our marketing artist, came from Sulake who make Habbo Hotel. Well we had 15 people we met with and they all came in like this is what I can do, showed previous work. Juhana came in with a big portfolio of things he had done of Angry Birds on his free time and we were like okay you've got the job, it's awesome."*And further: *"We have good, motivated people, and that helps. Our oldest staff member, well we have one guy, who's over 40, but beyond that it's like 35 is the oldest. Probably average age is about 27, so we're all young and motivated. I think that really helps as well."*

6.4Continuous relationships and fandom

It is said that a key to success in business is to build relationships between brands and customers that will last a lifetime (see e.g. Kapferer, 2004). Interacting with customers on a regular basis and giving them reasons to maintain a bond with the company are fundamental elements of relationship marketing. (Solomon, 2009) Rovio has created an active, continuous relationship with the customers, offering regular updates for free, and thereby keeping people playing and talking about the product. Every Tweet and fan letter are answered, and levels designed by fans incorporated in the game. (Cheshire, 2011)

"We kind of see Angry Birds as a non-disposable product. So every month we bring out a new update and that gets the fans re-involved with the game and they show other friends okay I got this new update to Angry Birds, it's really cool, and that brings us in more fans. And yeah, we just try to really… we think that our game is… it's one-dollar game, but we see the value as ten dollars, because we just keep adding new content all the time. And we kind of wanna keep our fan base talking about Angry birds, playing the game." (Wilson, 2011)

Loyal fans are, indeed, valuable for a company or an organization of which, for instance, FC Barçais a good example; the team has used the idea of being "more than a club" to cultivate a two-way relationship with its fans (The Catalan kings, 2011).In the case of Angry Birds, the features of the fans follow the ones of fandom (Taalas, 2010): the fans not only play themselves but they share, contribute and collaborate. Many of the players operate as evangelists for the game. *"Well we have almost 1.2 million fans on Facebook, we have 50000 on Twitter, and those fans are very active talking with us. I mean we get hundreds of emails every day in the contact box, just from fans asking when the next levels are gonna be out, new birds ---, just general questions about the game. Actually our head of PR last night was on the Washington Post doing a live blog session. So people just sent him emails to Washington Post and he answered them live on this stream. And there was a lot of interest there as well."*

6.5Timing

According to Wong (1992), launching a new product depends upon the company's ability to match organizational and functional capabilities with the particular requirements of the new product, its market environment and timing of market entry. Introducing a product at a 'right' time is an invaluable asset in particular in new, e.g. mobile, businesses, where situations change at an inconceivable speed. Peter Vesterbacka, the head of business development of Rovio in North America, emphasized the role of the right timing in a radio interview (Vesterbacka, 2011). Part of the success in regard to timing is a result of skillful business thinking, part of it a result of serendipity. In the case of Angry Birds, it is a question of both: Rovio had already gained experience in the business by its 51 previous games and seen the potential of the game business. On the other hand, the birth of the Birds was a fortunate coincidence; the market was 'open' to such a game.

7. SYNTHESIS AND DISCUSSION

The specific issues related to the success of mobile brands – derived from this study – are illustrated in Figure 2. First, besides being unique, the product, i.e. the game, has to be addictive. Secondly, the company culture has to follow the demands of the young and emerging industry. Thirdly, good partners will add value to the product. Fourthly, right timing matters. Among essentials are, fifthly, continuous relationships and fandom. Finally, ideas of ways of prolonging the product lifecycle need to be created.

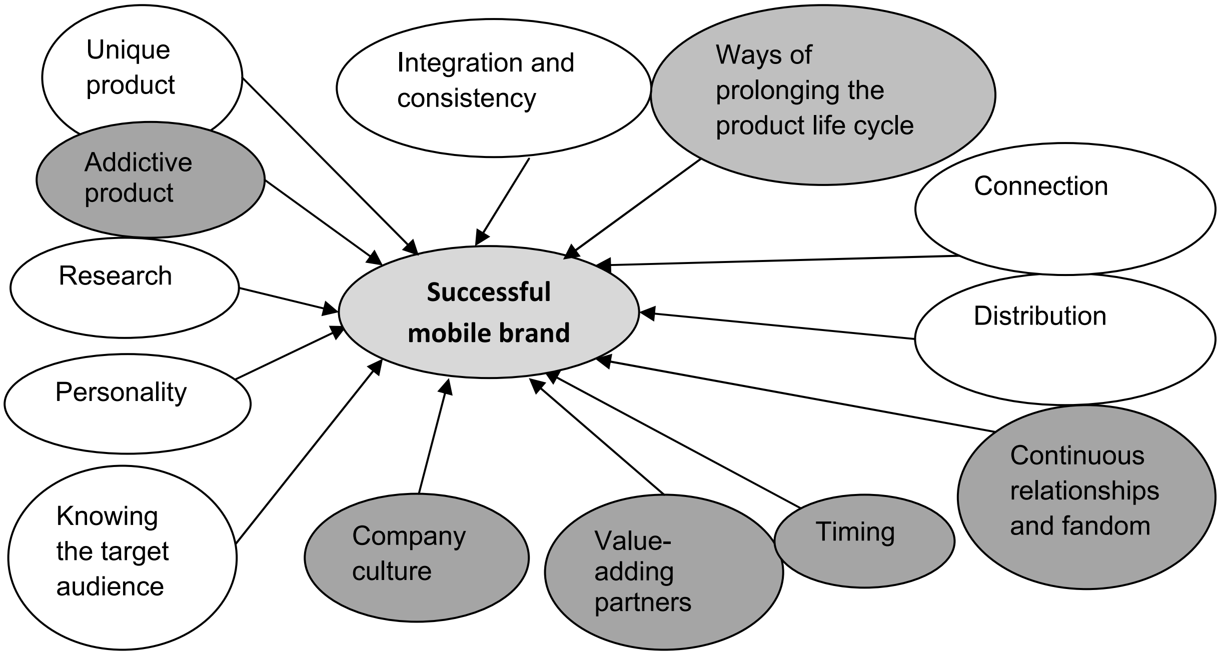

FIGURE 2. TRAITS OF SUCCESSFUL MOBILE BRANDS

What makes the mobile environment different for these issues to rise apart? The young and emerging industry calls for a creative and supporting company culture. Global competition emphasizes the value of value-adding partners and right timing. For the business to succeed in the long run, the game has to be addictive and ways of prolonging its life cycle, e.g. new levels and merchandising items, need to be found. Continuous relationships and active fan base aim at the same direction. They help in creating brand loyalty which in the long term is more cost-effective for the businesses.

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CORPORATE TAX AVOIDANCE AND PUBLIC DISCLOSURE OF TAXABLE INCOME

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ABSTRACT

This study examines whether Japan's abolition of taxable income announcement system (TIAS) in 2006 influenced corporate tax avoidance activities. In addition, we discuss and evaluate firm-specific characteristics that might encourage or dissuade managers from engaging in aggressive tax avoidance. We predict and find that corporate tax avoidance by Japanese firms increased after abolition. In addition, we find that firms with greater managerial ownership exhibit less tax avoidance and that this effect strengthened following abolition. These findings reinforce the agency theory of tax avoidance. Furthermore, we find that firms owned by long-term investors engage in less tax avoidance and that abolition attenuated this behavior. Our results suggest that manager-shareholder agency conflicts were mitigated through increased managerial ownership following abolition rather than through monitoring by third parties.

Keywords: *Tax Avoidance, Abolition of Taxable Income Announcement System, Effective Tax Rate, Book-Tax Difference, Managerial Shareholding Ratio, Bank Shareholding Ratio*

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1. INTRODUCTION

Public disclosure of corporate tax return information is an important issue in the U.S. Lenter et al. (2003) argue that public disclosure can improve tax compliance by reducing outright evasion and aggressive tax avoidance among managers who fear adverse public reaction if their firm's declared taxable income is suspiciously low. That is, third-party monitoring could discourage outright evasion and aggressive tax avoidance. However, little empirical evidence has endorsed this possibility. This study provides empirical evidence by investigating tax avoidance among Japanese corporations following the abolition of Japan's Taxable Income Announcement System (TIAS).

Japan instituted TIAS in 1950. Among other provisions, it required that corporate tax return information, including the amount of declared taxable income, had to be publicly disclosed if the taxable income of a fiscal year exceeded ¥40 million. For reasons explained in the following sections, required disclosure of corporation and other taxes ended in 2006. Abolition of TIAS provides an opportunity to test whether public disclosure of tax return information affects corporate tax avoidance, which we define as downward management of taxable income or tax liability through all legal, illegal, and gray tax planning activities (Frank et al., 2009; Khurana and Moser, 2009; and Chen et al., 2010).

Since abolishing TIAS reduced third-party scrutiny, it is conceivable that corporate managers could more easily seek personal gain through aggressive tax avoidance. In addition, abolishing TIAS conceivably neutralized disincentives for aggressive tax avoidance—e.g., the possibility of tax penalties, adverse public reaction, and loss of personal or corporate reputation.

We investigate these incentives and disincentives using models employing three measures of tax avoidance—GAAP effective tax rate, current effective tax rate, and total book-tax difference—while controlling for other relevant factors. We find that Japanese firms engage in more tax avoidance following abolition of TIAS. In addition, firms with greater managerial ownership pursue less tax avoidance and that this tendency strengthened following abolition. Our findings support the agency theory of tax avoidance

(Desai and Dharmapala, 2006). Furthermore, we find that firms owned by long-term investors engage in less tax avoidance (Khurana and Moser, 2009), and that the abolition weakened this behavior. These results suggest that the manager-shareholder agency conflicts are mitigated through increased managerial ownership following abolition rather than through monitoring by third parties.

This study's major contribution is in providing empirical evidence that public disclosure of taxable income reduces corporate tax avoidance. Although proponents of public disclosure have insisted that it promotes tax compliance, little evidence has supported this benefit. In fact, Hasegawa et al. (2010) infer that public disclosure decreases tax compliance: they examine firms' responses to TIAS and show that a non-trivial number of corporations avoid disclosure requirements by underreporting taxable income as it approaches the ¥40 million threshold. Our study finds that corporate tax avoidance increased after TIAS was abolished, providing proponents of disclosure with previously lacking evidence. This finding has important implications for policy debates over public disclosure of corporate tax return information.

This study's second contribution is to provide additional evidence of how stock ownership structure affects corporate tax avoidance. Shackelford and Shevlin (2001) indicate that organizational factors such as stock ownership structure are important potential determinants of tax avoidance, and supporting evidence has accumulated in recent years. Chen et al. (2010) find that firms engage in less tax avoidance when founding family members continue to manage the firm. Badertscher et al. (2010a) show that majority-owned, private equity-backed private firms engage in more tax avoidance than other privately-held firms. Badertscher et al. (2010b) find that private firms engage in more book-tax conforming tax avoidance than public firms. Khurana and Moser (2009) show that firms primarily owned by long-term investors engage in less tax avoidance, unlike those primarily owned by short-term investors. Although numerous other studies, including Gramlich (1991), Guenther (1994), and Klassen (1997), demonstrate a relationship between tax avoidance and managerial ownership, the evidence is mixed (Shackelford and Shevlin, 2001). Our study reveals empirically that ownership by managers and long-term investors inhibits corporate tax avoidance. More important, we show that greater managerial ownership mitigated agency conflicts when information asymmetry caused by abolishing TIAS reduced monitoring by banks.

The remainder of this paper is organized as follows. Section 2 outlines Japan's former TIAS and the history of its abolition. Section 3 discusses the impact of abolition on corporate tax avoidance and develops the hypothesis of this study. Section 4 discusses tax avoidance measures and control variables, and presents the sample selection procedure and descriptive statistics for each key variable. Section 5 presents our results. Section 6 summarizes and concludes.

2. TIAS AND ITS ABOLITION

TIAS was initiated in Japan in 1950 to promote effective third-party monitoring. Corporate tax return information had to be publicly disclosed if fiscal year taxable or consolidated taxable income exceeded ¥40 million (Article 152 of the former Corporation Tax Act). Specifically, the following information had to be presented to relevant tax offices for at least three months, within three months from the submission date of a tax return or amended return: (1) corporate name and place where tax was paid, (2) name of the representative, (3) taxable income declared in tax returns, and (4) defining dates for the fiscal year (Article 68 of the former Corporation Tax Act).

Although this system arguably enhanced third-party monitoring, authorities were concerned that the disclosed information was used for purposes not intended by the law (minutes of the 45th subcommittee on the basic issues of the Tax Commission, November 11, 2005). The Ministry of Finance stated, "Corporate tax return information has been increasingly used for purposes beyond original intent. There are more adverse effects, for example, that small- and medium-sized firms are pressured to reduce prices by contractors who obtained the information" (Asahi.com on April 7, 2006). This is primarily why the system was abolished in 2006 following 2005 enactment of the Private Information Protection Law. However, it is important to note that individual income, inheritance, and gift taxes were also subject to Japan's system of disclosure. The discussion of publicly disclosing private information commingled with the discussion of abolishing TIAS for corporations.

Some opposed abolishing the corporate reporting requirement alongside reporting requirements for personal taxes (Tax Commission minutes of the 34th and 35th general meetings, respectively, on November 15 and 22, 2005). Opponents argued that it is unclear whether corporate tax returns are private information—unlike individual income, inheritances, and gifts—and even today, reasons provided for abolishing TIAS seem unrelated to corporation tax. Others argued against abolition precisely because tax information had been used in transactions and was useful for other purposes. Asano states the following:

> A certain person who works in the tax authority is deeply concerned that the abolition may encourage corporate tax avoidance. In tax inspection, there are quite a lot of tax evasion cases detected with information from employees and others who saw the disclosed amount of tax payment. The abolition also runs counter to the recent trends to seek the disclosure of corporate information. It is also anticipated that it becomes more and more difficult to obtain corporate information such as the amount of taxable income, which is major clue to measure corporate soundness in preparation of company reports by credit research firms. (FPS-NET Insurance/Financial News on March 20, 2006, "Questions about the abolition of taxable income announcement system for corporation tax without discussion")

It has been said that TIAS for corporations was abolished without sufficient discussion. As an illustration of this possibility, the article mentioned above also presents an observer who comments, "I was surprised at hearing about the abolition of the announcement system for corporation tax, despite the fact that the controversy on the abolition of announcement systems was triggered by protection of private information" (Asahi.com on April 7, 2006). Nonetheless, corporate reporting requirements were abolished alongside reporting of individual income, inheritance, and gift taxes. As a result, corporate tax return information containing the four items mentioned above has not been disclosed since fiscal year-end, March 2006.
As a result, we seldom can discern the financial conditions of small- and medium-sized Japanese firms that are not required to disclose corporate data, and following abolition it has become impossible to acquire information on large firms' actual taxable income.

3. THE ABOLITION OF TIAS AND ITS EFFECT ON CORPORATE TAX AVOIDANCE

To determine the level of tax avoidance, managers would consider the benefits and costs of manipulating taxes. Hanlon and Slemrod (2009) and Chen et al. (2010) explain the main benefits and costs of manipulating taxes to managers. The primary benefit is that managers obtain direct or indirect compensation from tax savings which increase net income and corporate value. Desai and Dharmapala (2009) and Wilson (2009) point out that tax avoidance increases the value of well-governed firms. The second and potential managerial benefit is that managers could pursue their personal gain through complex tax avoidance activities. The abolition of TIAS would affect this second benefit. Since the abolition reduces monitoring by third parties, it is conceivable that corporate managers could adopt more aggressive tax avoidance measures to pursue their personal gain following abolition.

The primary managerial cost is related to a potential penalty imposed by tax authorities and an adverse public reaction. As the tax avoidance level increases, the possibility of being inspected by tax authorities increases. Mills (1998) finds that IRS audit adjustments increase as book-tax differences, often used as a tax avoidance measure, increase. Mills and Sansing (2000) demonstrate that authorities are more likely to audit a transaction when it generates a positive book-tax difference. Additional tax and nontax costs (e.g., deterioration in corporate reputation) might arise because of the inspection. In addition, aggressive tax avoidance could yield an adverse public reaction (Lenter et al., 2003). These have negative impacts on direct and indirect compensation of corporate managers. The second cost is potential stock price discount. If shareholders perceive that corporate managers are pursuing personal gain but they cannot detect it, they will price the company shares downward to protect themselves from the potential damage, and the company stock prices will decline. Hanlon and Slemrod (2009) show that a company's stock price declines following disclosure of its involvement in tax shelters. A declining in the stock price also has a negative impact on managers' reputation and compensation. The abolition of ITAS would affect the first cost. A lower level of public disclosure of corporate tax information makes it harder for tax authorities and investors to discover management actions.

In sum, abolishing TIAS may have simultaneously increased managers' benefit from aggressive tax avoidance and reduced the likelihood of incurring tax penalties, public disapproval, and loss of reputation or compensation from doing so. This situation leads to our main hypothesis, which is as follows:

Hypothesis: Corporate tax avoidance increased after the abolition of TIAS

4. RESEARCH DESIGN

4.1 Tax Avoidance Measures

Japan imposes three types of direct or indirect taxes on corporate taxable income. *Corporation tax* is a national income tax imposed on corporate taxable income. *Corporation inhabitants' tax*, which includes a prefecture tax and a municipality tax on corporations, is a local tax based on corporation tax. *Corporation enterprise tax*, also a local tax, is imposed on corporate taxable income. In the simplest case, current tax expense = (corporation tax rate + corporation inhabitants' tax rate × corporation tax rate + corporation enterprise tax rate} × corporate taxable income.

Our design employs three tax avoidance measures: effective tax rate (ETR), current effective tax rate, (Current_ETR), and Manzon-Plesko book-tax difference (MPBT).

ETR is defined as the total tax expense divided by pretax income. Subscripts *i* and *t* represent a firm and a year, respectively.

$$\text{ETR}_{i,t} = \frac{\text{Total Tax Expense}_{i,t}}{\text{Pretax Income}_{i,t}}. \qquad (1)$$

Current_ETR is defined as the current tax expense divided by pretax income.

$$\text{Current\_ETR}_{i,t} = \frac{\text{Current Tax Expense}_{i,t}}{\text{Pretax Income}_{i,t}}. \qquad (2)$$

ETR and Current_ETR are omitted when the denominator is 0 or negative. Values are truncated to 0 when the calculation result is 0 or negative, or 1 when it is 1 or more.

MPBT is defined as the difference between pretax book and taxable income divided by total assets at the beginning of the year.

$$\text{MPBT}_{i,t} = \frac{\text{Pretax Income}_{i,t} - \text{Taxable Income}_{i,t}}{\text{Total Assets}_{i,t-1}}. \qquad (3)$$

For periods before the abolition of TIAS, we use the actual amount of the firm's taxable income above ¥40 million. For periods following abolition, we cannot determine actual taxable income; therefore, we estimate it by dividing the firm's current tax expense by its statutory tax rate for all periods.

In the U.S. literature, the cash effective tax rate (CETR)—the ratio of cash taxes paid to pretax income—is often used as a measure of tax avoidance. In Japan, however, interim tax returns are submitted and tax is paid within two months after the elapse of six months from the first day of the relevant fiscal year. The final tax return is submitted and tax is paid within two months of the day following the final day of each fiscal year (Articles 71, 74, 76, and 77 of the Corporation Tax Act). Consequently, the current cash taxes paid consists of a final tax return for the previous year and interim tax returns for the current year. Because periods governing the denominator and numerator differ, CETR would not be a useful measure in our study. Therefore, we use Current_ETR instead of CETR, although the numerator of Current_ETR may be overstated relative to taxes paid because of stock option deductions and tax cushions (Hanlon and Shevlin, 2002; Hanlon, 2003; Dyreng et al., 2008; and Chen et al., 2010).

4.2 Analysis Model

We test our hypothesis by estimating the following model:

$$
\begin{aligned}
\text{AVOIDANCE}_{i,t} = {} & \alpha_0 + \beta_1\text{ABOLITION}_{i,t} + \beta_2\text{MGT}_{i,t} + \beta_3\text{BANK}_{i,t} + \beta_4\text{ROA}_{i,t} + \beta_5\text{LEV}_{i,t} \\
& + \beta_6\text{NOL}_{i,t} + \beta_7\Delta\text{NOL}_{i,t} + \beta_8\text{PPE}_{i,t} + \beta_9\text{INTANG}_{i,t} + \beta_{10}\text{SIZE}_{i,t} + \beta_{11}\text{BM}_{i,t} \\
& + \beta_{12}\text{Lag\_MPBT}_{i,t} + \text{Industry\_Dummies} + \varepsilon_{i,t}. \qquad (4)
\end{aligned}
$$

Definition of variables:

AVOIDANCE = One of three tax avoidance measures (ETR, Current_ETR, and MPBT);

ABOLITION = Dummy variable: 1 if taxable income is not publicly disclosed; 0 otherwise;

MGT = Managerial shareholding ratio;

BANK = Bank shareholding ratio;

$\text{ROA} = \dfrac{\text{Ordinary income}}{\text{Lagged total assets}}$;

$\text{LEV} = \dfrac{\text{Fixed liabilities}}{\text{Lagged total assets}}$;

NOL = Dummy variable: 1 if loss carry forward at the beginning of the year is positive; 0 otherwise;

$\Delta\text{NOL} = \dfrac{\text{Change in loss carry forward}}{\text{Lagged total assets}}$;

$\text{PPE} = \dfrac{\text{Depreciable tangible fixed assets}}{\text{Lagged total assets}}$;

$\text{INTANG} = \dfrac{\text{Intangible fixed assets}}{\text{Lagged total assets}}$;

SIZE = Natural logarithm of the market value of equity at the beginning of the year;

BM = Book value of equity at the beginning of the year divided by market value of equity at the beginning of the year;

Lag_MPBT = MPBT for the previous year.

AVOIDANCE encompasses the three tax avoidance measures discussed in Subsection **4.1**. ABOLITION is a dummy variable indicating that taxable income was not publicly disclosed following the abolition of TIAS. If corporate tax avoidance increased after abolition, we expect that $\beta_1 < 0$ in the analyses using ETR and Current_ETR as tax avoidance measures, and we expect that $\beta_1 > 0$ in the analysis using MPBT. In the analysis using MPBT as a tax avoidance measure, expected signs for all variables are opposite of those in the analyses using ETR and Current_ETR. Therefore, we hereafter omit descriptions of expected signs for MPBT.

We add two ownership structure variables: a managerial shareholding ratio (MGT) and a bank shareholding ratio (BANK).

Typically, higher levels of managerial ownership help in aligning the interests of corporate managers and external shareholders. This could tempt managers toward more tax avoidance to increase the corporate value for all shareholders, including themselves. If this were the case, we expect a negative coefficient for the MGT variable (β_2). However, Desai and Dharmapala (2006) indicate that higher-powered incentives are typically associated with lower levels of tax sheltering. They argue that positive feedback effects or complementarities exist between the pursuit of corporate managers' personal gain and the use of tax shelters. Moreover, managers would engage in less tax avoidance, because higher levels of managerial ownership align the interests of managers and external shareholders. If this were the case, we would expect that $\beta_2 > 0$.

Khurana and Moser (2009) find that firms held by long-term investors pursue less tax avoidance, whereas those held by short-term investors undertake more. We include the bank shareholding ratio to control for its effects on managers' tax avoidance behavior. Hoshi et al. (1991) show that firms with strong banking relationships can access external financing more easily than firms lacking them and that such relationships reduce information asymmetry between firms and banks, thus reducing the cost of capital. If we posit that Japan's main bank system is an effective governance system, Japanese banks as institutional investors usually would invest for the long term. Therefore, we expect a positive coefficient for the BANK variable (β_3).

We also control for industry-fixed effects and several firm characteristics that influence corporate tax avoidance as shown in the prior literature. Besides the abovementioned variables, others such as foreign income and equity income in earnings appear as control variables in previous studies (Manzon and Plesko, 2002; Graham and Tucker, 2006; Dyreng et al., 2008; Frank et al., 2009; Khurana and Moser, 2009; Wilson, 2009; Badertscher et al., 2010a, 2010b; Chen et al., 2010; Lisowsky, 2010; and Armstrong et al., 2011). However, variables for which data are unavailable in Japan or variables which are not necessary to analyze using data from separate financial statements are omitted.

ROA and LEV are used to control for corporate profitability and leverage, respectively. ROA is defined as ordinary income scaled by lagged total assets. Previous research suggests that more profitable firms tend to have higher effective tax rates. In this case, $\beta_4 > 0$ is expected. If more profitable firms have greater incentives and opportunities for tax planning, $\beta_4 < 0$ is expected. LEV is defined as fixed liabilities scaled by lagged total assets. If higher-leveraged firms do not engage in tax avoidance, perhaps because extensive debt financing shields more income from tax, $\beta_5 > 0$ is expected.

Firms with loss carry forwards can reduce tax burdens; nevertheless, this benefit is not necessarily associated with tax avoidance. To control this factor, we include the variables NOL and ΔNOL. NOL is a dummy variable of 1 if the loss carried forward at the beginning of the year is positive and 0 otherwise. ΔNOL is defined as the change in loss carry forward scaled by lagged total assets. We expect $\beta_6 < 0$ and $\beta_7 > 0$, respectively.

We include variables PPE and INTANG to control for differential treatments between book and tax reporting. PPE is depreciable tangible fixed assets scaled by lagged total assets. INTANG is intangible fixed assets scaled by lagged total assets. We have no prediction for the coefficients β_8 and β_9.

Finally, we include the variables SIZE and BM to control for firm size and growth. SIZE is the natural logarithm of the market value of equity at the beginning of the year. If larger firms have greater tax planning capability and benefit from economies of scale, we would expect $\beta_{10} < 0$. Alternatively, if political pressure dissuades large companies from tax planning, $\beta_{10} > 0$ is expected. BM is book value of equity at the beginning of the year divided by market value of equity at the beginning of the year. If firms in their growth stages can make more tax-favored investments, we expect $\beta_{11} > 0$.

We also include Lag_MPBT in the analysis using MPBT as a tax avoidance measure because research based on U.S. data suggests that MPBT persists over time (Manzon and Plesko, 2002; Chen et al., 2010). However, Yamashita and Okuda (2006) show that MPBT is negatively associated with lagged MPBT in Japan. Therefore, we have no prediction for the coefficient β_{12}.

4.3 Sample Selection and Descriptive Statistics

Our sample covers the period 2003–2008, the three years before and after abolition of TIAS. The period 2003 spans the fiscal year that ended March 31, 2003. Among all listed companies except banks, securities firms, insurance firms, other financial firms, and investment companies covered by Nikkei NEEDS–Financial Quest during that period, we exclude firm-years for which all data necessary for analyses are not available. We also eliminate firm-years in which the denominator of ETR and Current_ETR (i.e., pretax income) is 0 or negative. Moreover, to eliminate the effect of outliers in the regression analysis, we exclude the highest and lowest 1% of observations for MPBT, MGT, BANK, ROA, LEV, PPE, INTANG, BM, and Lag_MPBT. Imposing these criteria leaves the number of observations at 14,709 firm-years in the analysis using ETR and 15,380 firm-years in the analysis using Current_ETR and MPBT.

Table 1 reports descriptive statistics for all variables. The maximum (minimum) values of ETR and Current_ETR are 1 (0) because these variables are truncated to 1 or 0 as described earlier. Mean and median ETR are larger than those in the U.S. literature. Mean and median MPBT are positive but smaller than those in the U.S. The main reason why ETR is larger and MPBT is smaller than in the U.S. is that it is statutorily more difficult for Japanese firms to manage taxable income downward without changing book income. Except for particular provisions, taxable income in Japan should be based on revenues and expenses, which shall be computed in accordance with the GAAP (Article 22 of the Corporation Tax Act). In addition, domestic firms are supposed to prepare tax returns based on financial statements with approval by a general meeting of stockholders or board of directors (Article 74 of the Corporation Tax Act). Thus, book income and taxable income correspond more highly in Japan than in the U.S.

TABLE 1 DESCRIPTIVE STATISTICS

	Observations	Mean	Median	Std. Dev.	Min	Max
AVOIDANCE						
ETR	15,171	0.426	0.428	0.167	0.000	1.000
Current_ETR	15,855	0.390	0.411	0.231	0.000	1.000
MPBT	15,855	0.004	0.002	0.023	−0.084	0.174
Other variables						
ABOLITION	15,855	0.499	0.000	0.500	0.000	1.000
MGT	15,855	0.093	0.024	0.132	0.000	0.632
BANK	15,855	0.196	0.169	0.133	0.000	0.683
ROA	15,855	0.065	0.049	0.057	−0.003	0.486
LEV	15,855	0.157	0.122	0.132	0.000	0.737
NOL	15,855	0.203	0.000	0.402	0.000	1.000
ΔNOL	15,855	−0.002	0.000	0.008	−0.083	0.030
PPE	15,855	0.157	0.132	0.120	0.000	0.650
INTANG	15,855	0.011	0.005	0.017	0.000	0.199
SIZE	15,855	23.639	23.430	1.646	19.140	30.077
BM	15,380	1.065	0.865	0.814	0.000	10.887
Lag_MPBT	15,855	−0.003	−0.001	0.032	−0.228	0.159

Table 2 reports Spearman’s correlation matrix. ABOLITION is negatively (positively) associated with ETR and Current_ETR (MTBT). This endorses our hypothesis that corporate tax avoidance increased following the abolition of TIAS. Table 2 suggests that multicollinearity is not serious.

TABLE 2 SPEARMAN'S CORRELATION MATRIX

	ETR	Current _ETR	MPBT	ABOLIT ION	MGT	BANK	ROA	LEV
ETR	1.00							
CETR	0.40	1.00						
MPBT	−0.42	−0.91	1.00					
ABOLITION	−0.13	−0.10	0.09	1.00				
MGT	0.21	0.25	−0.25	−0.04	1.00			
BANK	−0.17	−0.15	0.17	−0.05	−0.40	1.00		
ROA	−0.17	0.14	−0.06	0.10	0.20	−0.07	1.00	
LEV	0.01	−0.05	0.00	−0.04	−0.14	0.15	−0.30	1.00
NOL	−0.11	−0.47	0.37	−0.08	−0.15	0.02	−0.31	0.17
ΔNOL	0.07	0.24	−0.22	0.07	0.06	0.01	0.12	−0.10
PPE	−0.02	0.04	−0.02	−0.07	−0.12	0.14	−0.04	0.35
INTANG	0.00	0.02	−0.01	0.02	−0.03	0.02	0.12	0.01
SIZE	−0.30	−0.19	0.22	0.07	−0.46	0.61	0.18	0.01
BM	0.25	0.08	−0.10	−0.33	0.06	−0.10	−0.45	−0.05
Lag_MPBT	−0.27	−0.23	0.27	0.17	−0.18	0.15	0.04	−0.05

	NOL	ΔNOL	PPE	INTANG	SIZE	BM	Lag_ MPBT
NOL	1.00						
ΔNOL	−0.69	1.00					
PPE	−0.05	0.02	1.00				
INTANG	−0.05	0.03	0.06	1.00			
SIZE	−0.05	0.03	0.06	0.16	1.00		
BM	0.11	−0.08	0.06	−0.19	−0.43	1.00	
Lag_MPBT	0.12	−0.14	−0.01	−0.01	0.22	−0.14	1.00

5. EMPIRICAL RESULTS

5.1 Main Result

Results of regression analyses using ETR, Current_ETR, and MPBT as tax avoidance measures are presented in Tables 3, 4, and 5, respectively. In each table, Model 1 is the result of regression analysis using control variables excluding stock ownership structure variables (i.e., MGT and BANK). In Model 2, we add a dummy variable in Model 1 to indicate that taxable income is not publicly disclosed following the abolition of TIAS (ABOLITION). In Model 3, we add stock ownership structure variables to Model 2 (Equation 4).

TABLE 3 RESULTS OF REGRESSION ANALYSIS USING ETR AS A TAX AVOIDANCE MEASURE [a]

ETR	Model 1			Model 2			Model 3		
	Coef.	t-value		Coef.	t-value		Coef.	t-value	
ABOLITION(−)				−0.013	−4.67	***	−0.011	−3.95	***
MGT(±)							0.063	5.59	***
BANK(+)							0.053	3.91	***
ROA(±)	−0.262	−10.51	***	−0.271	−10.85	***	−0.290	−11.30	***
LEV(+)	−0.020	−1.50		−0.024	−1.80	*	−0.033	−2.40	**
NOL(−)	−0.076	−11.36	***	−0.076	−11.45	***	−0.075	−11.26	***
ΔNOL(+)	1.677	4.00	***	1.701	4.06	***	1.672	4.00	***
PPE(?)	0.077	6.00	***	0.075	5.86	***	0.079	6.16	***
INTANG(?)	0.078	0.96		0.073	0.91		0.090	1.12	
SIZE(±)	−0.014	−14.58	***	−0.015	−14.90	***	−0.015	−12.71	***
BM(+)	0.017	6.74	***	0.013	5.04	***	0.014	5.24	***
Industry dummy	yes			yes			yes		
Intercept	0.796	32.59	***	0.815	33.04	***	0.820	27.85	***
Adj. R^2	0.123			0.125			0.127		
Obs	14,709			14,709			14,709		

a The expected sign appears in parenthesis. The t-values are based on robust standard errors. ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively.

TABLE 4 RESULTS OF REGRESSION ANALYSIS USING Current_ETR AS A TAX AVOIDANCE MEASURE [a]

Current_ETR	Model 1			Model 2			Model 3		
	Coef.	t−value		Coef.	t-value		Coef.	t-value	
ABOLITION(−)				−0.039	−11.32	***	−0.037	−10.85	***
MGT(±)							0.071	5.07	***
BANK(+)							0.029	1.73	*
ROA(±)	−0.011	−0.39		−0.035	−1.17		−0.064	−2.11	**
LEV(+)	0.045	2.80	***	0.033	2.09	**	0.027	1.70	*
NOL(−)	−0.284	−50.27	***	−0.286	−50.50	***	−0.284	−50.05	***
ΔNOL(+)	0.947	3.96	***	1.031	4.29	***	1.011	4.23	***
PPE(?)	0.066	4.05	***	0.060	3.68	***	0.064	3.94	***
INTANG(?)	0.095	1.02		0.082	0.89		0.094	1.01	
SIZE(±)	−0.021	−18.61	***	−0.022	−19.45	***	−0.021	−15.07	***
BM(+)	0.020	7.11	***	0.010	3.46	***	0.011	3.62	***
Industry dummy	yes			yes			yes		
Intercept	0.938	33.58	***	0.991	35.23	***	0.967	28.52	***
Adj. R^2	0.291			0.297			0.298		
Obs	15,380			15,380			15,380		

a The expected sign appears in parenthesis. The t-values are based on robust standard errors. ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively.

TABLE 5 RESULTS OF REGRESSION ANALYSIS USING MPBT AS A TAX AVOIDANCE MEASURE [a]

MPBT	Model 1			Model 2			Model 3		
	Coef.	t-value		Coef.	t-value		Coef.	t-value	
ABOLITION(+)				0.003	7.88	***	0.003	7.34	***
MGT(±)							−0.010	−5.88	***
BANK(−)							−0.003	−2.17	**
ROA(±)	0.004	0.92		0.006	1.27		0.010	2.12	**
LEV(−)	−0.009	−5.39	***	−0.008	−4.93	***	−0.007	−4.42	***
NOL(+)	0.015	26.41	***	0.015	26.63	***	0.015	26.08	***
ΔNOL(−)	−0.685	−14.15	***	−0.692	−14.33	***	−0.690	−14.31	***
PPE(?)	−0.002	−1.36		−0.002	−1.10		−0.002	−1.44	
INTANG(?)	0.002	0.19		0.003	0.26		0.002	0.14	
SIZE(±)	0.002	19.71	***	0.002	20.28	***	0.002	15.25	***
BM(−)	−0.002	−7.23	***	−0.001	−4.01	***	−0.001	−4.31	***
Lag_MPBT(?)	0.053	6.74	***	0.049	6.26	***	0.048	6.05	***
Industry dummy	yes			yes			yes		
Intercept	−0.055	−19.33	***	−0.059	−20.41	***	−0.055	15.61	***
Adj. R^2	0.255			0.258			0.260		
Obs	15,380			15,380			15,380		

a The expected sign appears in parenthesis. The t-values are based on robust standard errors. ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively.

Each coefficient of ABOLITION is negative and statistically significant in Tables 3 and 4, and each is positive and statistically significant in Table 5, as expected. These results support our hypothesis that corporate tax avoidance increased following the abolition of TIAS because abolition reduced monitoring by third parties. Our result suggests that public disclosure could enhance tax compliance.

Each coefficient of MGT is positive and statistically significant in the analysis using ETR and Currrent_ETR (Tables 3 and 4), and each is negative and statistically significant in the analysis using MPBT (Table 5). These results suggest that managers refrain from pursuing personal gain through complex tax avoidance, because higher levels of managerial ownership align the interests of managers and external shareholders. This is also consistent with the agency theory of tax avoidance advocated by Desai and Dharmapala (2006).

The coefficient of BANK is statistically significant with the expected signs in all tables. This result shows that firms held by banks as long-term investors engage in less tax avoidance and is consistent with Khurana and Moser (2009).

Each coefficient of ROA is negative in Tables 3 and 4 and positive in Table 5. These coefficients are statistically significant in Model 3 in all tables. These results suggest that more profitable firms have greater incentives and opportunities for tax planning. Coefficients of LEV are statistically significant with the expected signs in Tables 4 and 5. Except for Model 1, however, they are statistically significant with the opposite sign in Table 3. The results of LEV are unstable. Coefficients of NOL and ΔNOL are statistically significant with the expected signs in all analyses.

The coefficient of PPE is positive and statistically significant in the analyses using ETR and Current_ETR (Tables 3 and 4). It is negative but not statistically significant in the analysis using MPBT (Table 5). The coefficient of INTANG is positive and not statistically significant in all analyses.

Each coefficient of SIZE is negative and statistically significant in Tables 3 and 4, and it is positive and statistically significant in Table 5. These results indicate that larger firms have greater tax planning capability and enjoy more benefits from economies of scale. The coefficient of BM is statistically significant with the expected signs in all analyses. In Table 5, the coefficient of Lag_MPBT, which is included in the analysis using MPBT as a tax avoidance measure, is positive and significant in all models. This is inconsistent with previous research concerning Japan but consistent with the U.S. literature.

As mentioned earlier, Japan's corporation enterprise tax is a component of total income tax expense. The standard rate for corporation enterprise tax was reduced by 2.4% (from 9.6% to 7.2%) in 2005. However, the impact on our result is limited for two reasons. First, the coefficient of ABOLITION in Table 4, which is directly comparable with the size of tax rate reductions, greatly exceeds 0.024. Second, the coefficient of ABOLITION in the analysis using MPBT in Table 5, which is not influenced by the change in tax rate, is statistically significant with the expected sign. For further confirmation, we included TAXRATE as an independent variable and repeated the analysis using Current_ETR (not tabulated). TAXRATE is a dummy variable of 1 if the standard corporation enterprise tax rate is 9.6% and 0 otherwise. The coefficient of TAXRATE is positive and statistically significant, and the coefficient of ABOLITION is negative and statistically significant, as expected.

5.2 Additional Analysis

To examine the relationship between the abolition of TIAS and ownership structure, we estimate the following regression model:

$$\begin{aligned}\text{AVOIDANCE}_{i,t} = {} & \alpha_0 + \beta_1\text{ABOLITION}_{i,t} + \beta_2\text{MGT}_{i,t} + \beta_3\text{BANK}_{i,t} + \beta_4\text{ABOLITION}_{i,t} \times \text{MGT}_{i,t} \\ & + \beta_5\text{ABOLITION}_{i,t} \times \text{BANK}_{i,t} + \beta_6\text{ROA}_{i,t} + \beta_7\text{LEV}_{i,t} + \beta_8\text{NOL}_{i,t} + \beta_9\Delta\text{NOL}_{i,t} \\ & + \beta_{10}\text{PPE}_{i,t} + \beta_{11}\text{INTANG}_{i,t} + \beta_{12}\text{SIZE}_{i,t} + \beta_{13}\text{BM}_{i,t} + \beta_{14}\text{Lag\_MPBT}_{i,t} \\ & + \text{Industry\_D ummies} + \varepsilon_{i,t}.\end{aligned} \tag{5}$$

Two interaction terms are included in the model: the interactions between the abolition dummy variable and managerial shareholding ratio ($\text{ABOLITION}\times\text{MGT}$), and the abolition dummy variable and bank shareholding ratio ($\text{ABOLITION}\times\text{BANK}$). We include Lag_MPBT in the analysis using MPBT as a tax avoidance measure, as in the previous model.

Table 6 reports results of the regression analysis. Each coefficient of MGT is positive and statistically significant in the analysis using ETR and Currrent_ETR, and each is negative and not statistically significant in the analysis using MPBT. This is almost consistent with our main results.

Coefficients of the interaction between ABOLITION and MGT (β_4) are statistically significant with the same signs as MGT. These results indicate that firms with increased managerial ownership exhibit less tax avoidance and that this effect strengthened following abolition.

Each coefficient of BANK is statistically significant with the expected signs, which is consistent with our main results. Each coefficient of the interaction between ABOLITION and BANK (β_5) is negative in the analysis using ETR and Currrent_ETR, while each is positive in the analysis using MPBT, and is statistically significant except for ETR analysis. These results indicate that firms held by banks as long-term investors engage in less tax avoidance, but this effect is weakened following abolition, indicating that abolition reduced monitoring.

In summary, our results suggest that manager-shareholder agency conflicts were mitigated through increased managerial ownership following abolition rather than through monitoring by third parties. Other results are qualitatively the same as in Tables 3, 4, and 5.

TABLE 6 THE RELATIONSHIP BETWEEN THE ABOLITION OF TAXABLE INCOME ANNOUNCEMENT SYSTEM AND OWNERSHIP STRUCTURE [a]

	ETR			Current_ETR			MPBT		
	Coef.	t-value		Coef.	t-value		Coef.	t-value	
ABOLITION(−)[b]	−0.012	−1.87	*	−0.032	−4.15	***	0.003	3.54	***
MGT(±)	0.042	2.98	***	0.043	2.24	**	−0.003	−1.51	
BANK(+)	0.058	3.59	***	0.050	2.29	**	−0.005	2.66	***
ABOLITION *MGT(?)	0.044	2.14	**	0.056	2.24	**	−0.013	−4.32	***
ABOLITION *BANK(?)	−0.016	−0.75		−0.053	−1.99	**	0.005	1.96	**
ROA(±)	−0.289	−11.26	***	−0.062	−2.05	**	0.010	2.08	**
LEV(+)	−0.032	−2.33	**	0.029	1.80	*	−0.007	−4.59	***
NOL(−)	−0.075	−11.32	***	−0.285	−50.06	***	0.015	26.26	***
ΔNOL(+)	1.670	3.99	***	1.001	4.19	***	−0.690	−14.30	***
PPE(?)	0.078	6.08	***	0.062	3.83	***	−0.002	−1.28	
INTANG(?)	0.087	1.08		0.088	0.95		0.002	0.19	
SIZE(±)	−0.015	−12.52	***	−0.021	−14.79	***	0.002	14.93	***
BM(+)	0.014	5.29	***	0.011	3.78	***	−0.001	−4.53	***
Lag_MPBT(?)							0.046	5.81	***
Industry dummy	yes			yes			yes		
Intercept	0.816	27.48	***	0.956	27.82	***	−0.054	−15.25	***
Adj. R^2	0.127			0.299			0.262		
Obs	14,709			15,380			15,380		

a The expected sign appears in parenthesis. The t-values are based on robust standard errors. ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively.
b The expected signs on all variables in the analyses using ETR and Current_ETR. The opposite signs are expected in the analysis using MPBT.

6. SUMMARY AND CONCLUSION

This study examined whether abolishing TIAS in Japan increased corporate tax avoidance and also examined which firm-specific characteristics promote or discourage tax avoidance. Using ETR, Current ETR, and MPBT as measures of tax avoidance while controlling for other factors, we found that Japanese firms engaged in more tax avoidance following the abolition of TIAS. This finding suggests that public disclosure of taxable income could increase tax compliance.

In addition, we found that firms with higher managerial ownership exhibited less tax avoidance and that this effect strengthened following abolition. Our findings reinforce the agency theory of tax avoidance (Desai and Dharmapala, 2006). Furthermore, we found that firms held by long-term investors engage in less tax avoidance, supporting the findings of Khurana and Moser (2009), and that this behavior weakened following abolition. This finding suggests that manager-shareholder agency conflicts were mitigated through increased managerial ownership following abolition rather than through monitoring by third parties.

This study has made two important contributions. First, it has presented empirical evidence that public disclosure of taxable income reduces corporate tax avoidance. In doing so, it provided empirical evidence that advocates of public disclosure previously lacked. Thus, our result bears important implications for the debate over public disclosure of corporate tax return information. Second, we provided further evidence promoting understanding of how stock ownership structure affects corporate tax avoidance. Although earlier studies demonstrate a relationship between tax avoidance and managerial ownership, confirming evidence has been mixed. This study has extended previous research by examining the impact of managerial ownership on tax avoidance before and after abolition of Japan's TIAS.

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SCHEDULING VOLUNTEERS WITH HETEROGENEOUS TASKS

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ABSTRACT

Volunteers are an important component of labor resource in many not-for-profits, public and even some government organizations. Effective use of volunteers requires a practical schedule that matches volunteers' preferences to the organization's requirements. While the traditional assignment problem has been well studied and implemented in manufacturing and service industries, most organizations that use a volunteer workforce rely on trial-and-error processes to come up with a practical solution. This approach quickly becomes insufficient when the number of volunteers and the program requirements increase. The nature of volunteerism also poses some different modeling objectives and constraints. While the tasks are heterogeneous, it provides opportunity to design a schedule that best fits a volunteer's interest and time. In this project, we study some unique propensities in volunteer scheduling. We worked with the experiential learning program at the University of Idaho to design, develop and implement an Excel based decision support system to assist their scheduling process. The successful implementation saves the volunteer coordinator significant labor hours while providing a satisfying matching schedule for about 200 volunteers each semester.

Keywords: *Volunteerism; Scheduling; Assignment Problem*

1. INTROCUDTION

Volunteers enable the success of not-for-profits, and some public and governmental organizations. Volunteerism has been defined as unpaid help provided in an organized manner to parties to whom the worker has no obligations (Musick and Wilson, 1997). According to a 2010 report released by the Corporation for National and Community Service, 63.4 million Americans volunteered to help their communities in 2009, an increase of 1.6 million from the year before. Together, they contributed 8.1 billion hours of service, for an estimated dollar value of nearly $169 billion. Some of the areas that extensively use volunteers are health care, education, and the political arena. In American history, politicians have long embraced volunteers, both as a great force for change and for moral inspiration, while continuing to respect their autonomy. Herbert Hoover was convinced volunteer efforts could ward off the worst pain of the Great Depression. George H.W. Bush launched the “Thousand Points of Light” foundation to encourage giving and volunteering. Bill Clinton unleashed AmeriCorps, which offers government grants to organizations that recruit and train volunteers for critical needs in education, health, or public safety. George W. Bush offered government assistance to faith-based groups providing needed community services. Barack Obama has endorsed several nonprofit organizations, including Teach for America, which trains volunteer students to teach in inner cities. In the arenas, such as hospitals, volunteers play a critical role to help daily operations in the areas such as emergency help and consulting.

Effective use of volunteers requires a practical schedule that matches volunteers' preference of tasks and time to the organization's requirements. Because of the voluntary nature, most volunteers can only work at certain time periods. With their particular skill sets, very often, volunteers would show strong interests in certain tasks that can better use their skills. Researches from the social science area indicate that a good match could increase volunteer’s satisfaction toward their volunteerism behavior. Such satisfaction reduces turnover rates and increases hours of volunteerism per volunteer. Skoglund (2006) found that high turnover/low retention is a serious impediment in executing a given mission statement. Finkelstein (2008) suggests that to best ensure satisfied volunteers that keep volunteering, their motivations, skill sets, and availability for helping should be determined early in the orientation and training process. Individuals can then be matched with tasks they are likely to find the most rewarding at a time that is convenient to their schedule (Finkelstein, 2008). Job design is one useful tool to match skill sets and motivation, which in turn, enhances volunteer autonomous motivation, satisfaction and engagement (Millette and Gagne, 2008). Volunteer help is not zero cost to an organization, e.g. volunteer training is separated from staff training and is often provided by paid agency staff, and for example, the training costs were approximately fourteen thousand dollars for a health care institution (Elaine et.al, 2010). Many volunteers were without immediately applicable skills, training or connection to the recognized emergency management apparatus was necessary for them to become effective (Barsky et al, 2007). Retention of committed volunteers is enhanced by training, the freedom to take on specific responsibilities of their choosing, and recognition for their work (Calman, 2010). Designing a schedule that reflects each volunteer's chosen task and personal schedule could reduce the training cost associated with volunteers due to matching skill sets to jobs and reduced turnover.

2. SCHEDULING CHANLLENGE

Volunteer programs vary in size and task characteristics. Programs could easily involve large number of volunteers, for instance, the 2008 Democratic national convention in Denver, Co, took 10,000 volunteers. With diverse backgrounds and interests in volunteers as well as various task requirements, scheduling could become a daunting job. To further complicate the situation, some of the programs require multi-period planning with continuous planning periods. Different authors have identified a series of specific challenges faced by the field of humanitarian and volunteerism works (Thomas and Kopczak, 2005, Kovacs and Spens, 2007, Falasca et al. 2009). Ratliff also pointed out that there are limited information and decision technologies that clearly fit the needs of humanitarian relief organizations (Ratliff, 2007). He claimed that one of the challenges is that there are significant coordination difficulties with large numbers of volunteers all trying to help. Most of the volunteer coordinators who work on coordinating and scheduling don't have formal training in scheduling and optimization techniques. Due to the diverse and uniqueness of each volunteer program, there is no off-the-shelf, ready to use software package available. For these reasons, we strongly believe that the development of an easy to use decision support system could help address some of the challenges that continually facing volunteer programs.

2.1 Literature review on volunteer scheduling

Several articles have been published on labor scheduling in the field of operations management. However, scheduling volunteers has been much less studied. Labor scheduling research can be categorized by type of model, by solution methodology, and by application area. Alfares (2004) and Bechtold et al. (1991) provide a very detailed review on the related work in labor scheduling. Existing literature is heavily clustered on mathematical programming approaches with respect to the solution methods and techniques (Ernst et al., 2004). In addition, because of the size of some tour scheduling problems, different heuristics methods have been developed. Scheduling has some well known application areas in operations management field. For example, scheduling has been applied in airline crew staffing and equipment allocation, nurse scheduling, and personnel staffing in the United States Postal Service.

In contrast to the plethora of research on labor scheduling, there are very few papers researched on volunteer task assignment or scheduling from the operation management field. Sampson (2006) compared volunteer labor assignment problems with traditional labor assignment. He identifies that the core difference pertains to the cost structure of labor. Table 1 listed below highlights some of the differences between these two types of scheduling. The distinction of the volunteer labor assignment problem has been incorporated into a goal integer program in the context of scheduling volunteer reviewers in an international conference. In that paper, volunteers' jobs are homogeneous and the major concern in the scheduling is reducing the excess working hours for the volunteers. Gordon and Erkut

Table 1: VOLUNTEER SCHEDULING V.S. TRADITIONAL TASK FORCE SCHEDULING

	Traditional Task Force Scheduling	**Volunteer Scheduling**
Objective Function	Minimizing cost or minimizing employee number	Meet requirements; minimize the penalty cost
Constraints	Meet the minimum task force requirement	Meet the service time requirement and job preference requirement

(Adapted from Sampson (2006))

(2004) developed an automated scheduling process for a crew of 35 volunteers for Edmonton Folk Festival. The spreadsheet-based decision support tool generates shift times and schedules volunteers according to various constraints and preferences. The result is a master schedule along with individual schedules. Janiak and Kovalov studied scheduling problems where tasks need to be executed by human resources in areas contaminated with radio-active materials (Janiak and Kovalyov, 2006). They studied single worker problems with the objectives of minimizing maximum lateness or total weighted completion time. Each individual volunteer's preference was not addressed in the model. Another related publication in terms of decision support system is done by Metters and Vargas (1999). They discuss issues related to nonprofit organizations from a quantitative decision model perspective (Metters and Vargas, 1999). They extended yield management concepts to the nonprofit sector by developing a heuristic to assist in pricing decisions. Their technique was demonstrated at a nonprofit child care center. One of the key attributions of their model is the idea that profit maximization is not the most important goal.

2.2 Background on AmeriCorps Local Division Scheduling

In this project, we develop an optimization model for an AmeriCorps local organization. Each year, AmeriCorps engages 50,000 Americans age 17 and older in intensive service to meet community needs in education, the environment, public safety, homeland security, and other areas. In exchange for a year of service, AmeriCorps members earn an education award that can be used to pay for college or to pay back qualified student loans. AmeriCorps provides trained, dedicated people to help nonprofit groups. Members tutor and mentor youth, build affordable housing, teach computer skills, clean parks and streams, operate after-school programs, help communities respond to disasters, and recruit and manage traditional volunteers.

Scheduling in this particular local AmeriCorps branch relies heavily on a manual process, i.e. the volunteer coordinator assigns all the participants to particular jobs through a trial-and-error process. Each semester about 200 volunteers participate in the local program. Each volunteer fills out a survey form to indicate his/her unique request/preference about the job assignment. Dozens of local sub-programs request volunteers with specific skill sets. At the end of each semester, volunteers express their intention of being assigned to a different program, staying with the same program, or not doing volunteer work at all in the next semester. Data collection and scheduling are both done manually. When the number of volunteers increased, it become an extremely time consuming process. Under the current system it is not a trivial task to adjust the existing plan to incorporate changes from the program side, the volunteer side, or both at once.

3. THE MODELING APPROACH

Our volunteer scheduling model is presented as an integer goal programming model with multiple goals. The first goal is to minimize the number of tasks with no volunteer assigned. This is addressed in the model by minimizing the total shortage cost. Shortage costs represent a penalty and occur when a certain time block remains unassigned. In this model, we also address each volunteer's preference and time availability. Hence, the second goal in the model is to minimize the overtime hours that each volunteer would be assigned. Overtime is considered to be any time a volunteer works over their preferred time limit and is necessary to create a schedule that will cover most of the required tasks. Thus, our model allows assignment of some volunteers to work more than their stated preference. But as the volunteer program manager, he or she would like to minimize these kinds of overtime hours. These two goals contribute to volunteer satisfaction and retention, and task accomplishment.

Decision Variables:

$X_{i,p,s,t}$ =1, if volunteer *i* is assigned to the task lead by instructor *p* covering subject *s* at time *t*.

=0, otherwise.

$G_{p,s,t}$: the shortage of assigned volunteers for the task lead by instructor *p* with subject *s* at time *t*.

Q_i : the assigned overtime for volunteer *i* beyond the possible maximum hours that *i* prefers to work.

Parameters:

$V_{i,s,t}$: volunteer *i* is interested in subject *s* and is available at time *t*.

V_i^{max}: the maximum hours that volunteer *i* is willing to work.

$A_{p,s,t}$: each task lead by instructor *p* with subject focus of *s* at time *t*.

$C_{p,s,t}$: the penalty cost for the assignment shortage for each task.

C_i : the penalty cost for assigning volunteer *i* over his indicated maximum number of hours worked

Model Formulation:

Minimize

$$\sum_p \sum_s \sum_t C_{p,s,t} G_{p,s,t} + \sum_i C_i Q_i \quad (1)$$

Subject to

$$\sum_i X_{i,p,s,t} V_{i,s,t} - A_{p,s,t} + G_{p,s,t} = 0 \quad (2)$$

$$\sum_t \sum_s \sum_p \sum_i X_{i,p,s,t} - Q_i - V_i^{max} = 0 \quad (3)$$

$$X_{i,p,s,t} \in \{0,1\} \quad (4)$$

$$G_{p,s,t} \geq 0\text{, and integer} \quad (5)$$

$$Q_i \geq 0\text{, and integer} \quad (6)$$

In the above model, the objective function (1) minimizes the assignment gap between the required volunteers for each task and the actual assigned volunteers for the task; in addition, it minimizes the overtime assignment for each volunteer. By minimizing the shortage of assigned volunteers and overtime hours for each individual volunteer, we can achieve a balance between serving a program's needs and keeping the volunteers satisfied. Constraint (2) makes sure that, given the possible shortage in assigned volunteers for each task ($G_{p,s,t}$), there will be assigned volunteers for each task who are interested in a given subject. Constraint (3) makes sure that each volunteer is not scheduled over their individual maximum hours allowed constraint, given the possible overtime in Q_i. Constraint (4)-(6) ensure that all the decision variables are positive and integer, and $X_{i,p,s,t}$ is binary which takes the value of either 0 or 1.

Implementation of this model is straight forward in Microsoft Excel based solver. Data tables with the associated volunteer and task needs can also easily be incorporated live into Excel by the volunteers and program managers so that the parameter coefficients and constraints are up to date.

4. CONCLUSION AND FUTURE WORK

In this paper, we addressed some of the challenges facing volunteer scheduling. We also developed an integer goal programming optimization model and applied it to the local AmeriCorps branch for scheduling volunteers. In addition, we reviewed a series of related work about volunteerism and volunteer scheduling from the field of social sciences as well as operations management to inform needed model parameters and constraints.

Given the diverse background of volunteers and various requirements of different volunteer programs, developing an optimization based decision support system is extremely relevant and necessary. Volunteer organizations need to better manage their resources while satisfying the program needs and volunteer preference relative to time and task preference. It is clear that a successful volunteer schedule should balance conflicting objectives from multiple sources. An important feature for the optimization based decision support system is that it provides not only a solution, but also a what-if analysis tool that can easily incorporate different changes which may occur in the future.

Future research may also look at formulating a multi-period model incorporating scheduling and planning processes. Work force scheduling deals with decisions which are strategic and operational in nature. A volunteer work force planning model would determine how many volunteers should be recruited and then schedule accordingly based on the volunteer information.

The volunteer scheduling model formulation is quite general and can be applied or extended to different volunteer organizations. It can be adapted to incorporate different scheduling needs, whether it is time and/or skill based scheduling.

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THE IMPACT OF A FIRM'S PRIOR REPUTATION AND ITS RESPONSE TO A WHISTLE-BLOWING INCIDENT UPON THE FIRM'S IMAGE

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ABSTRACT

The corporate reputation literature asserts that a firm possessing a good reputation will suffer less harm to its image from negative publicity than will a firm not having a good reputation. Empirical tests using the scenario method supported this notion with respect to both the firm's perceived trustworthiness and level of expertise. Admitting wrongdoing in response to allegations generally yielded a more positive firm image than did either denial or declining comment. Reputations are valuable resources that firms should strive to nurture and protect.

Keywords: *Corporate Reputation, Whistle-blowing, Crisis Responses*

1. INTRODUCTION

1.1 Corporate Reputation: Components, Sources, and Effects

Corporate reputation is a growing area of research and practitioner interest (Hillenbrand and Money, 2007; Mahon and Wartick, 2003). According to Tucker and Melewar (2005), "Corporate reputation is the perception of an organization based on its stakeholders' interpretation of that organization's past, present and future activities and the way in which these are communicated" (p. 378). Rhee and Valdez (2009) noted that these stakeholders include job seekers, investors, and financial analysts, as well as others.

Fombrun and Shanley (1990) offered insight into the sources of corporate reputation by stating that, "Firms' risk-return profiles, resource allocations, social responsiveness, institutional ownership, media exposure, and corporate diversification postures signal constituents about firms' prospects and generate reputations" (p. 252). Tucker and Melewar (2005) argued that corporate reputation has the capacity to yield a competitive advantage in the marketplace. In addition, Fombrun and Shanley (1990) suggested that firms are in competition for reputation just as they are for customers.

Three components that have been suggested as comprising corporate reputation are trustworthiness, expertise, and attractiveness (Hoeken and Renkema, 1998; O'Keefe, 1990). Hoeken and Renkema (1998) measured each of these components using five Likert scales. However, a factor analytic investigation is needed to confirm the independence of these components. If these components are distinct factors, they may be affected differently by events in the life of the firm. For example, Kim, Ferrin, Cooper, and Dirks (2004) and Gillespie and Dietz (2009) have maintained that perceptions of competence (expertise) are easier to change than are impressions of integrity (trustworthiness). It would seem then that transgressions involving integrity would likely impact both measures of perceived trustworthiness and expertise, while a demonstration of a lack of competence would affect only impressions of expertise.

As a result of investigating the relationship between social (corporate) responsibility and reputation, Hillenbrand and Money (2007) concluded that the two were inherently related. Therefore, "…a business can simultaneously enhance its reputation and demonstrate its responsibility by meeting stakeholder expectations" (p. 274). The desire to protect a reputation has been described as an incentive for ethical behavior (Fombrun and Shanley, 1990).

1.2 Threats to Corporate Reputations

Reputations, on occasion, experience damage requiring repair (Rhee and Valdez, 2009). Damage can result from crises such as whistleblowers' allegations and customers' claims of harmful products. Tucker and Melewar (2005) stated that "corporate reputation is both a factor and a consequence of crisis management" (p. 382) since a good reputation aids in effective crisis management and effective crisis management enhances a reputation. For example, Fombrun and Foss (2004) contended that whistle-blowing incidents often result in more ethical cultures which, in turn, are likely to improve reputations. Threats to corporate reputations, therefore, can be regarded as both problems and opportunities.

Although it is generally difficult to change negative impressions (Sims, 2009; Sjovall and Talk, 2004), bad publicity has been presumed to have less impact if the firm possesses what has been called "reputational capital" (Fombrun, Gardberg, and Barnett, 2000) or a "reservoir of goodwill" (Mahon and Wartick, 2003; Tucker and Melewar, 2005). As noted by Tucker and Melewar (2005), John Garnett, a former industrial manager, argued that a company accused of wrongdoing will be more successful in gaining public approval of its response to the situation if it has up until then been held in high esteem. Similarly, Mahon and Wartick (2003) described reputation as "…an asset that can be used in a defensive manner that allows an organization to preserve its market position and/or its relationships with customers when attacked" (p. 19). Since discussions of reputational capital have, heretofore, been highly speculative, the present study provided an empirical test of the impact of a firm's prior reputation upon its image following allegations of wrongdoing. It was expected that a good reputation would blunt the effects of bad publicity.

> *Hypothesis 1*: The more positive the prior reputation of a firm accused of wrongdoing, the more favorably the firm will be judged.

Observers' impressions of a firm accused of wrongdoing and a whistleblower making the allegation are likely to be affected by the severity of the misdeed. Of six components of "moral intensity" proposed by Jones (1991), the magnitude of consequences has generally been found to be the most potent or at least one of the most potent (e.g., Barnett and Valentine, 2004; Chia and Mee, 2000; Frey, 2000; McMahon and Harvey, 2007; Morris and McDonald, 1995; Tsalikis, Seaton, and Shepherd, 2007; Watley and May, 2004). There is evidence that severe negative consequences (e.g., harm to victims) are more likely to prompt ethical behavior (or at least recognition of moral issues, ethical behavioral intentions, or moral judgments as to what actions should be taken) than are more moderate consequences (e.g., Barnett and Valentine, 2004; Chia and Mee, 2000; Decker, 1994; Decker and Calo, 2007b; Frey, 2000; Fritzsche, 1988; Fritzsche and Becker, 1982; May and Pauli, 2002; Morris and McDonald, 1995; Singhapakdi, Vitell, and Kraft, 1996). Several studies have found, at least in some situations, the more serious the issue the greater the likelihood of whistle-blowing behavior (Miceli and Near, 1985) and expressed intent to blow the whistle (Henik, 2005; King, 1997; Singer, Mitchell, and Turner, 1998).

Prior studies have found evidence that variables such as managers' attitudes, considerations of financial costs, and whether a potential gain or loss was involved influenced decisions less when the magnitude of consequences was high than when it was low (Decker, 1994; Decker and Calo, 2007b; Flannery and May, 2000). As Flannery and May (2000) suggested, appropriate ethical decisions may be clearer under high-consequence conditions than under low ones. Therefore, it is expected that the greater the magnitude of the harm the less the firm's prior reputation and response will impact the judgments.

> *Hypothesis 2:* The magnitude of alleged harm will moderate the association of the firm's prior reputation with judgments of the firm such that a good reputation will be more helpful to the firm's ratings when the harm is small than when it is large.

1.3 Responses to Reputational Threats

It seems that a reputation can also affect how responses to crises such as apologies, admissions, denials, and silence or no comment are perceived. Since expressing regret for wrongdoing tends to elicit more lenient reactions than not doing so (Gundlach, Douglas, and Martinko, 2003), a firm confirming a whistleblower's charges may often be viewed more favorably than one making denials. An admission of guilt or apology may be a sign of redemption (Ferrin, Kim, Cooper, and Dirks, 2007). Decker and Calo (2007a) found that a firm accused of wrongdoing was viewed more favorably when admitting guilt than when denying guilt, if the whistleblower was retained by the firm. However, when the whistleblower was fired admitting guilt did not help the firm's image relative to a firm denying the allegation. The firing apparently negated the impression that the admission reflected a desire by the firm to mend its ways.

Denials of wrongdoing are not always ineffective. While an apology declares guilt, denial may leave guilt (i.e., the validity of the negative information) in doubt. Indeed, a denial was not effective when guilt was clear (Hodgins and Liebeskind, 2003; Kim, et al., 2004). A denial, unlike an apology, does not carry with it signs of redemption (Ferrin, et al., 2007). A denial does, however, make a case that it is inappropriate for the observer to downgrade the perception of the accused person's trustworthiness (Tomlinson and Mayer, 2009). In the absence of irrefutable evidence of guilt, a good reputation should render a denial more believable.

Another response to a crisis that is frequently used by firms is the lack of a public statement or "no comment." Perhaps, the intent is to minimize news coverage concerning the firm's difficulties based on the assumption that making a statement would increase negative publicity regardless of whether the statement was one of admission or denial. Garcia and Ewing (2008), however, argued that much of the public interprets "no comment" as evidence of guilt and that this raises the risk of long-term damage to the firm's reputation. In a study of individual behaviors, Ferrin, et al. (2007) found reticence or silence to be an ineffective response to an allegation. The effectiveness of a "no comment" response was inferior to that of denial in the case of an integrity violation and inferior to that of an apology in the case of a competence violation. In general, it is expected that a firm will be perceived most favorably when responding to an allegation with an admission of guilt.

> *Hypothesis 3:* When the firm admits wrongdoing, judgments of the firm's favorability will be more positive than when guilt is denied or no comment is made.

The study reported here afforded the opportunity to compare the effects of the "no comment" response to an allegation with other responses as corporate reputation varied. It was expected that when possessing a positive reputation, denying guilt would serve firms better than "no comment" since they have "reputational capital" that could lead some observers to believe the denial. However, it was expected that a firm with a bad reputation would be evaluated equally negatively following the denial and "no comment" responses, as guilt is likely to be assumed in either circumstance (i.e., response and reputation would interact).

> *Hypothesis 4:* The firm's reputation will moderate the effect of its response to the allegation such that only when the firm has a good reputation will denial have a more positive effect upon the firm's favorability ratings than will making no comment.

In sum, the study reported here investigated how observers' (readers of scenarios) impressions of companies accused of committing unethical acts are affected by the companies' prior reputations, the magnitude of the alleged harm, and the firms' responses to the allegations.

2. METHOD

2.1 Respondents

Questionnaires were distributed in a block-randomized manner to 395 students in upper-division, undergraduate Business classes at Salisbury University. Fifty-three students' (13.4%) responses were excluded from the data analyses due to incorrect answers to one or more manipulation-check items. Six others (1.5%) were eliminated due to non-completion of the questionnaire. This left 336 respondents, 14 per each scenario version. Among the respondents whose data was included in the analyses there were 202 males (60.1%) and 134 females (39.9%). The mean age was 21.8 years and 307 respondents (91.4%) were under 25 years of age.

2.2 Design

The design was a 2 x 2 x 2 x 3 factorial. The independent variables were between-subjects variables manipulated in the scenarios. These included (1) whether the company's product was tires or food (in order to detect any industry-specific results), (2) whether the firm had a positive or negative reputation, (3) whether the company was accused of a small or large amount of harm, and (4) whether the firm admitted or denied wrongdoing or declined to comment.

2.3 Procedure

Respondents completed the questionnaire during class sessions. They were given information as to the general purpose of the study, that it was a study intended to help in the understanding of factors influencing impressions of persons and organizations involved in ethical dilemmas. Further, it was stated that the information provided would remain confidential, as respondents would not write their names on the questionnaires and data would only be reported in aggregate form. Respondents also were informed that participation was strictly voluntary.

2.4 Materials

Personal information items concerned age, gender, class, and major. Following the personal items was a vignette describing a scenario in which a firm's employee informed the news media of the possible production of defective products. Twenty-four versions of the scenario were necessary in order to provide each possible combination of independent variable levels. The scenarios were as follows:

> **Tire Scenario**
> John is an employee of a company that manufactures automobile tires. In the past, John's company has received (positive publicity for contributing to the community in various ways and being voted an excellent company to work for) / (negative publicity for violation of several employment and environmental laws).
>
> There have been statistics published in the news media indicating (vehicles having the company's tires are involved in more accidents resulting in serious injuries and deaths than are similar tires of competing brands) / (the company's tires do not last as long as similar tires of competing brands. On the other hand, the tires do not seem to be involved in any more serious accidents than are competitors' tires).
>
> John informed the news media that the company's manufacturing process is poorly controlled. He claimed that tires were often built using dried-out rubber and that foreign objects such as screws, wood chips, and cigarette butts often got into the tires.
>
> When questioned about the tires, the company's spokespersons (denied that it has any quality problems) / (admitted it may have quality problems) / (declined comment).
>
> **Food Scenario**
> John is an employee of a company that produces frozen foods. In the past, John's company has received (positive publicity for contributing to the community in various ways and being voted an excellent company to work for) / (negative publicity for violation of several employment and environmental laws).
>
> There have been recent reports published in the news media indicating (several persons consuming the company's products have experienced severe food poisoning. There have been no such reports involving competing brands.) / (the company's products do not score as highly in taste tests as do competing brands. On the other hand, there is no evidence that the company's products are any less nutritious than other brands.)
>
> John informed the news media that employees making the products routinely violate cleanliness standards and include lower quality meat components that should be sent elsewhere to be made into pet foods.
>
> When questioned about the products, the company's spokespersons (denied that it has any quality problems) / (admitted it may have quality problems) / (declined comment).

Four multiple-choice manipulation-check items were intended to determine if respondents remembered relevant information concerning each independent variable, i.e., the firm's product, the firm's reputation, the seriousness of the alleged harm, and the company's response. Also, there were 15 items that concerned the respondents' image of the firm. These items contained seven-point, rating scales with bipolar anchors. They were adapted from Hoeken and Renkema (1998) and are described in Table 1.

3. RESULTS

3.1 Factor Analysis of the Corporate Reputation Items

We conducted an Exploratory Factor Analysis (EFA) of the 15 items using principal components analysis with a Varimax rotation. We identified the initial factor structure using eigenvalues greater than 1 (Dillon and Goldstein, 1984). The factor loadings, are shown in Table 1. It can be seen that all factor loadings are higher than .50 and, for the most part, well above the standard of .40 (Nunnally and Bernstein, 1994). Two factors emerged, representing 61.3% of the variance. Although it was expected that factors reflecting trustworthiness, expertise, and attractiveness would emerge as described by Hoeken and Renkema (1998), two of the five items expected to comprise attractiveness (friendly and nice) loaded on the same factor as did the five trustworthiness items and three (appealing, pleasant, and attractive) loaded with the five expertise items. The reliabilities (Cronbach's alphas) were relatively high for both trustworthiness ($\alpha = .90$) and expertise ($\alpha = .89$).

3.2 The Firm's Trustworthiness

A four-way Analysis of Variance (ANOVA) with trustworthiness as the dependent variable provided support for prediction that the more positive the prior reputation of a firm accused of wrongdoing, the more favorably the firm would be judged (Hypothesis 1). The firm described as having a good reputation was rated more trustworthy than a firm having a poor reputation ($M = 3.13$, $SD = 1.14$ vs. $M = 2.77$, $SD = 1.04$; $F_{1,312} = 31.14$, $p < .001$). Also, the firm was rated less trustworthy when the allegation was that a large amount of harm had been caused than when the allegation concerned a small amount of harm ($M = 2.88$, $SD = 1.12$ vs. $M = 3.20$, $SD = 1.07$; $F_{1,312} = 11.07$, $p = .001$). Post-hoc analyses using the LSD technique showed the significant effect of the firm's response to the allegation ($F_{2,312} = 67.99$, $p < .001$) to be due to the admission condition ($M = 3.84$, $SD = 1.06$) yielding higher ratings of the firm than did either the denial ($M = 2.66$, $SD = .94$; $p < .001$) or no comment conditions ($M = 2.63$, $SD = .85$; $p < .001$). This finding supports Hypothesis 3. The denial and no comment conditions did not produce a significant mean difference ($p = .755$). There was not a significant main effect of the industry upon the firm's trustworthiness ratings.

TABLE 1
CORPORATE REPUTATION ITEMS AND FACTOR LOADINGS

Factor/Item	Factor Loading 1	Factor Loading 2
Trustworthiness		
Honest vs. Dishonest	.861	.037
Incorruptible vs. Corruptible	.739	.176
Trustworthy vs. Untrustworthy	.846	.210
Friendly vs. Unfriendly	.516	.474
Honorable vs. Dishonorable	.826	.203
Nice vs. Nasty	.565	.445
Behaved vs. Improperly Behaved	.755	.334
Expertise		
Capable vs. Incapable	.365	.634
Appealing vs. Unappealing	.443	.606
Proficient vs. Lacking in Proficiency	.209	.700
Pleasant vs. Unpleasant	.510	.553
Skilled vs. Unskilled	-.039	.837
Expert vs. Lacking in Expertise	.092	.804
Competent vs. Incompetent	.262	.724
Attractive vs. Unattractive	.367	.650

Contrary to Hypothesis 2, the magnitude of harm and the firm's reputation did not interact. An interaction occurred, however, between the industry and harm variables (see Table 2). Post-hoc analyses revealed that with the food scenario high and low amounts of harm did not differentially affect firms' trustworthiness ratings (p = .552), but with the tire scenario firms accused of a high amount of harm were rated less trustworthy than those accused of a low amount (p = .001).

TABLE 2
FIRM TRUSTWORTHINESS: INTERACTION OF INDUSTRY AND MAGNITUDE OF HARM

	Industry					
	Food		Tires			
Harm	*M*	*SD*	*M*	*SD*	$F_{2,312}$	*p*
High	3.00	1.18	2.77	1.05	5.24	.02
Low	3.10	1.01	3.31	1.13		

Also, a 3-way interaction involving the industry, reputation, and response variables occurred (see Table 3). Post-hoc analyses revealed that the interaction was primarily due to the fact that with the tire scenario the mean trustworthiness rating for the good reputation-denial response condition exceeded that of the corresponding condition with the food scenario (p = .010), as this was the only significant difference between industries among the reputation-response conditions. Contrary to Hypothesis 4, trustworthiness ratings for the firm in the denial scenario did not significantly exceed those of the firm in the no comment scenario for any industry-reputation combination.

TABLE 3
FIRM TRUSTWORTHINESS: INTERACTION OF INDUSTRY, RESPONSE, AND REPUTATION

		Industry					
		Food		Tires			
Response	Reputation	*M*	*SD*	*M*	*SD*	$F_{2,312}$	*p*
Denial	Good	2.59	.99	3.21	.88	4.25	.02
	Poor	2.64	.92	2.22	.69		
Admission	Good	4.26	.72	4.12	1.05		
	Poor	3.44	1.13	3.55	1.10		
No Comment	Good	2.92	.89	2.79	.92		
	Poor	2.45	.74	2.35	.76		

3.3 The Firm's Expertise

A four-way ANOVA with expertise as the dependent variable yielded further support for Hypothesis 1 since the firm described as having a good reputation was rated as having more expertise than a firm having a poor reputation (M = 3.15, SD = .99 vs. M = 2.65, SD = .83; $F_{1,312}$ = 52.18, p < .001). In addition, the firm was rated lower when the allegation was that a large amount of harm had been caused than when the allegation concerned a small amount of harm (M = 2.88, SD = .98 vs. M = 3.11, SD = .92; $F_{1,312}$ = 6.42, p = .012). Post-hoc analyses using the LSD technique showed the significant effect of the firm's response to the allegation ($F_{2,312}$ = 5.77, p = .003) to be due to the admission condition (M = 3.20, SD = .95) yielding higher ratings of the firm than did either the denial (M = 2.97, SD =.99; p = .047) or no comment conditions (M = 2.81, SD = .90; p = .001) – adding support to Hypothesis 3. The denial and no comment conditions did not produce a significant mean difference (p = .169). There was not a significant main effect of the industry upon the firm's expertise ratings.

An interaction involving the industry, reputation, and response variables occurred (see Table 4). Post-hoc analyses revealed that the interaction is primarily due to the fact that with the tire scenario the mean expertise rating for the good reputation-denial response condition exceeded that of the corresponding condition with the food scenario (p = .003) and with the food scenario the mean expertise rating for the bad reputation-denial response condition exceeded that of the corresponding tire scenario condition (p = .041). Contrary to the results for trustworthiness, with expertise as the dependent variable partial support was obtained for Hypothesis 4, as when the tire scenario involved a good reputation the denial response yielded a higher mean rating than did the no comment response (p = .032). However, this did not occur with the food scenario which yielded a difference in the opposite direction as the prediction (p = .104).

TABLE 4
FIRM EXPERTISE: INTERACTION OF INDUSTRY, RESPONSE, AND REPUTATION

		Industry					
		Food		Tires			
Response	Reputation	*M*	*SD*	*M*	*SD*	$F_{2,312}$	*p*
Denial	Good	2.86	.95	3.55	1.00	4.97	.01
	Poor	2.98	.86	2.50	.87		
Admission	Good	3.72	.70	3.57	.89		
	Poor	2.85	.82	2.65	.94		
No Comment	Good	3.24	.96	3.05	.99		
	Poor	2.50	.67	2.47	.69		

4. DISCUSSION

For the most part, the variables manipulated affected impressions of the firm's trustworthiness and expertise similarly. This is likely due to the fact that the scenarios did not state unequivocally whether the wrongdoing was due to a lack of integrity (expected to impact perceived trustworthiness) or competence (expected to impact perceived expertise). A firm with a good reputation accused of wrongdoing was judged more favorably as to both trustworthiness and expertise than a firm with a poor reputation. According to Dirks, Lewicki, and Zaheer (2009), "...in order to repair trust, the wronged party must perceive that the transgression does not reflect the violator's true nature, or the party must perceive that the violator has experienced redemption…" (p. 71). A good reputation provides observers with notions of a firm's positive nature and seems to reduce the weight of a transgression as evidence of the firm's nature. This suggests firms should invest in managing stakeholders' impressions.

The expectation that the magnitude of harm would moderate the impact of reputation was not verified. Possibly the harm described in the scenarios was not sufficient. The interaction of harm with the type of industry (affecting trustworthiness) suggests this may have been the case at least for the food scenarios. Although prior studies have shown some variables to impact impressions or ethical judgments primarily at low levels of harm (Decker, 1994; Decker and Calo, 2007b; Flannery and May, 2000), the firm's reputation was shown have a strong impact across the range of harm magnitudes investigated.

A firm's response to allegations was also shown to have a significant impact upon respondents' impressions of the firm's trustworthiness and expertise. Admitting wrongdoing was more effective than either denial or declining comment. In addition, there was support for the hypothesis that when the firm had a good reputation denial would lead to a better outcome than would declining comment (for the tire firm's expertise ratings only). Perhaps, the claim of contamination in the tire-manufacturing process is harder to believe than a food processor using low quality ingredients under unsanitary conditions.

The firm's declining comment in the face of an allegation never yielded better outcomes than the other responses, a result consistent with those of Ferrin, et al. (2007). Additionally, this finding supports the notion that audiences often assume a silence signifies guilt (Garcia and Ewing, 2008). Admitting guilt produced results at least as good as the other responses under all conditions. While admitting guilt is desirable when the accused is guilty, we are not recommending that innocent parties plead guilty. Certainly, if one can prove one's innocence, it would be prudent to do so. If not, apologies can repair trustworthiness by asserting that the transgression is unlikely to recur (Tomlinson and Mayer, 2009).

Possible limitations of the present study include the scenario method, the between-subjects design, and the use of student respondents. While scenarios lack realism, they are widely used and are effective for controlling variables in order to examine specific relationships (Gundlach, Martinko, and Douglas, 2008; Kim, Rosen, and Lee, 2009; Sweeney and Costello, 2009). Within-subject designs would appear to provide greater control for sampling error than would between-subjects designs. However, in a study of the effect of moral intensity on ethical judgment, McMahon and Harvey (2007) found the latter to yield results with greater variance accounted for by predictors. Therefore, between-subjects designs and scenarios have had wide acceptance and apparent utility.

The sample of college students contained little diversity of age, education, and work experience. Investigations of potential relationships between age and ethical decision-making have yielded mixed results (O'Fallon and Butterfield, 2005), as have comparisons of the ethical reasoning and decisions of students and practitioners (Carlson, Kacmar, and Wadsworth, 2002; Chia and Mee, 2000; Glenn and Van Loo, 1993; Windsor and Cappel, 1999). Although studies using other populations are needed to investigate the generality of our results, it seems the study of college students' ethical decisions is worthwhile since students are adult members of society and are employed in many organizations.

Opportunities for future research include the creation of scenarios in which the degree of harm varies more widely and reputation could be described in more detail so that it is more salient. Also, given that some studies have found differing results as a function of whether a firm's integrity or competence was at issue (Dirks, et al., 2009; Ferrin, et al., 2007; Kim, Dirks, and Cooper, 2009; Kim, Dirks, Cooper, and Ferrin, 2006; Kim, et al., 2004), reputations and allegations could be varied along those dimensions.

In conclusion, the present study yielded evidence that possessing a good reputation reduces the effects of negative publicity. Admitting wrongdoing in response to allegations generally yielded a more positive firm image than did either denial or declining comment. Also, there was some evidence that denial is more effective than declining comment when a good reputation is possessed. A firm that has a good reputation and is innocent of an allegation may find denial to be an effective response. On the other hand, a firm with a poor reputation is less likely to be believed when denying guilt. Reputations are valuable resources that firms should make great efforts to nurture and protect. These efforts should include publicizing the firm's positive attributes and admitting to wrongdoing when it occurs.

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OPERATIONALIZING JACK WELCH'S VITALITY CURVE

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ABSTRACT

Jack Welch, arguably one of the most successful CEOs ever, suggested that one of the reasons for his success was his rigorous approach for identifying and rewarding exceptional people and for identifying and weeding out people who did not match with his company's expectations. Mr. Welch's vitality model has been described as a "20-70-10" system. The "top 20" percent of the workforce is most productive, and 70% (the "vital 70") are the heart of the company and critical to its operational success. The remaining 10% ("bottom 10") are procrastinators and ineffective and should be fired. Advocates of this system credit Welch's vitality curve system with a 28-fold increase in earnings (and a 5-fold increase in revenue) at GE between 1981 and 2001. This study seeks to operationalize Jack's vitality curve concept and quantify its benefits to an organization. In a classroom setting, this will make it easier for students to grasp the benefits of this approach.

Keywords: *Vitality Curve, Rank and Yank, Quantify*

1. INTRODUCTION

Graduate students are frequently assigned case studies as part of their normal classroom learning experience. The case study approach has been widely used and is very effective in illustrating key concepts while providing students with a more hands-on approach to learning. Article critiques are similarly used at the graduate level to hone and sharpen analytical reasoning skills of graduate students. Jack Welch's book excerpt "Jack and the People Factory" as published in the Fortune magazine on September 17, 2001 is one such article assigned regularly to graduate MBA students at a large public university in the Mid-Atlantic region. The instructors noticed that classes assigned this article always had vigorous conversations regarding vitality curve. The discussions were triggered by the instructor asking students some pertinent questions, such as how they felt about the approach, whether they thought it was fair, and whether they would use a similar approach, etc.

Classroom discussions of the vitality curve concept revealed that the students understood it but were unable to visualize how its use really benefitted the organizations that used it. The instructors then realized that a better approach would be to provide students with a quantification of the benefits of this approach. This was achieved by operationalizing the vitality curve concept and showing students the benefits to the organization from regular termination of the bottom 10% (poorly performing) of employees. A key benefit of using this approach is that students gain a thorough understanding of the benefits of using the vitality curve. A related benefit would be improved employability of students due to their enhanced critical analysis skills.

2. BACKGROUND AND LITERATURE REVIEW

Older and traditional knowledge transfer systems present concepts and information abstractly rather than in a context of meaningful applications (Resnick, 1989). A direct consequence of students simply memorizing and regurgitating information as opposed to learning through applications that have meaning to them is a reduction in the students' capacity to retain and apply the content. In such instances, the main objective of learning becomes merely that of passing a test or getting by in the classroom (Duit, 1991).

Hands-on application based teaching of core accounting concepts is consistent with the Constructivsm Theory that is much in vogue these days. Constuctivism being more of a philosophy than anything else which points to knowledge being constructed by the learner as opposed to the learner being simply a passive recipient of knowledge transfer (Null, 2004).

According to Bagley and Hunter (1992), students become empowered and spend more time in active construction of knowledge when using technology. Therefore, the use of a spreadsheet exercise in conjunction with an article critique in the classroom would allow students to take control of the learning process and consequently subscribe to the Constructivsm theory.

Even students with good analytical skills sometimes find it difficult to visualize how a popular management concept could be operationalized. This is particularly true in courses where abstract concepts are not reinforced with pertinent applications. This paper presents seeks to operationalize Jack Welch's Vitality Curve with the help of a simple exercise using Excel. The paper was motivated by the authors' classroom experiences in a graduate accounting course that incorporated this article critique for a number of semesters. Positive feedback from former students was another motivation for writing this article.

3. VITALITY CURVE OPERATIONALIZED

The vitality curve uses the 20-70-10 model of differentiating among employees. The top 20% are employees filled with passion, committed to making things happen, open to ideas from anywhere. They have the ability to energize not only themselves but anyone that comes in contact with them and make business productive and fun at the same time. The middle 70% of employees are the heart of the company and critical to its success. The main difference between this class of employees and the top 20% is the passion the top employees have for their job. The bottom 10% are non-producers and slackers. They are procrastinators and do not deliver and thus in Jack's opinion deserve to be fired. (Welch, 2001)

The question is how do we operationalize the benefits of Welch's vitality curve approach for terminating poorly performing employees? The authors have developed an exercise in Excel outlining one approach for doing this which they believe is useful in that it shows how complex scenarios might be quantified, and also provides some useful practice in using Excel.

Approach for Operationalization

1. Start with 100 employees and with the assumption that you are able to measure the relative capability for all of them. So you array the starting 100 employees with relative capabilities from 1 to 100.
2. At the end of each year, identify the 10 lowest performing employees for that year and terminate them.
3. Hire back 10 new employees, assuming that we hire at the middle of the original deciles, i.e. with capabilities of 5.5, 15.5, 25.5, etc., all the way to 95.5. This is a critical assumption for this particular approach to operationalizing the vitality curve.
4. Repeat steps 1 through three with the relative capabilities resulting at the end of each year after terminations and hiring back through year five.

Table 1															
Operationalizing Jack Welch's Vitality Curve															
			End of			End of			End of			End of			End of
Initial	First year			Seccond year			Third year			Fourth year			Fifth year		
Rank	Fire	Hire	Rank	Fire	Hire	Rank	Fire	Hire	Rank	Fire	Hire	Rank	Fire	Hire	Rank
100			100			100			100			100			100
99			99			99			99			99			99
98			98			98			98			98			98
97			97			97			97			97			97
96			96			96			96			96			96
95		95.5	95.5		95.5	95.5		95.5	95.5		95.5	95.5		95.5	95.5
94			95			95.5			95.5			95.5			95.5
93			94			95			95.5			95.5			95.5
92			93			94			95			95.5			95.5
91			92			93			94			95			95.5
90			91			92			93			94			95
89			90			91			92			93			94
88			89			90			91			92			93
87			88			89			90			91			92
86			87			88			89			90			91
85		85.5	86		85.5	87		85.5	88		85.5	89		85.5	90
84			85.5			86			87			88			89
83			85			85.5			86			87			88
82			84			85.5			85.5			86			87
81			83			85			85.5			85.5			86
80			82			84			85.5			85.5			85.5
79			81			83			85			85.5			85.5

78			80			82			84			85.5			85.5
77			79			81			83			85			85.5
76			78			80			82			84			85.5
75		75.5	77		75.5	79		75.5	81		75.5	83		75.5	85
74			76			78			80			82			84
73			75.5			77			79			81			83
72			75			76			78			80			82
71			74			75.5			77			79			81
70			73			75.5			76			78			80
69			72			75			75.5			77			79
68			71			74			75.5			76			78
67			70			73			75.5			75.5			77
66			69			72			75			75.5			76
65		65.5	68		65.5	71		65.5	74		65.5	75.5		65.5	75.5
64			67			70			73			75.5			75.5
63			66			69			72			75			75.5
62			65.5			68			71			74			75.5
61			65			67			70			73			75.5
60			64			66			69			72			75
59			63			65.5			68			71			74
58			62			65.5			67			70			73
57			61			65			66			69			72
56			60			64			65.5			68			71
55		55.5	59		55.5	63		55.5	65.5		55.5	67		55.5	70
54			58			62			65.5			66			69
53			57			61			65			65.5			68
52			56			60			64			65.5			67
51			55.5			59			63			65.5			66
50			55			58			62			65.5			65.5
49			54			57			61			65			65.5

48			53			56			60			64			65.5
47			52			55.5			59			63			65.5
46			51			55.5			58			62			65.5
45		45.5	50		45.5	55		45.5	57		45.5	61		45.5	65
44			49			54			56			60			64
43			48			53			55.5			59			63
42			47			52			55.5			58			62
41			46			51			55.5			57			61
40			45.5			50			55			56			60
39			45			49			54			55.5			59
38			44			48			53			55.5			58
37			43			47			52			55.5			57
36			42			46			51			55.5			56
35		35.5	41		35.5	45.5		35.5	50		35.5	55		35.5	55.5
34			40			45.5			49			54			55.5
33			39			45			48			53			55.5
32			38			44			47			52			55.5
31			37			43			46			51			55.5
30			36			42			45.5			50			55
29			35.5			41			45.5			49			54
28			35			40			45.5			48			53
27			34			39			45			47			52
26			33			38			44			46			51
25		25.5	32		25.5	37		25.5	43		25.5	45.5		25.5	50
24			31			36			42			45.5			49
23			30			35.5			41			45.5			48
22			29			35.5			40			45.5			47
21			28			35			39			45			46
20			27			34			38			44			45.5
19			26			33			37			43			45.5

18			25.5			32			36			42			45.5
17			25			31			35.5			41			45.5
16			24			30			35.5			40			45.5
15		15.5	23		15.5	29		15.5	35.5		15.5	39		15.5	45
14			22			28			35			38			44
13			21			27			34			37			43
12			20			26			33			36			42
11			19			25.5			32			35.5			41
10	10		18	18		25.5	25.5		31	31		35.5	35.5		40
9	9		17	17		25	25		30	30		35.5	35.5		39
8	8		16	16		24	24		29	29		35.5	35.5		38
7	7		15.5	15.5		23	23		28	28		35	35		37
6	6		15	15		22	22		27	27		34	34		36
5	5	5.5	14	14	5.5	21	21	5.5	26	26	5.5	33	33	5.5	35.5
4	4		13	13		20	20		25.5	25.5		32	32		35.5
3	3		12	12		19	19		25.5	25.5		25.5	25.5		25.5
2	2		11	11		15.5	15.5		15.5	15.5		15.5	15.5		15.5
1	1		5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5		5.5

3.1 CLASSROOM APPLICATIONS

A quick look at the excel spreadsheet exercise (Table 1) shows some interesting dynamics, such as the mean of the top quartile not changing appreciably, but the mean of the bottom quartile increasing by a quantum leap (Table 2). This is a clear indicator that the vitality curve does validate Welch's assertions that year after year, differentiation raises the bar higher and higher and increases the caliber of the organization. (Welch, 2001) In fact, no one is assured of a top ten percent ranking. Each employee will have to constantly demonstrate that they deserve to be at the higher ranks. The exercise could then be used as a starting point for classroom discussion about the meaning of the changes.

. Table 2

							% Increase
							From
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Beginning
Mean of top quartile	88	89	90.1	90.88	91.5	92	4.5%
Mean of 3rd quartile	63	66	69.2	71.64	73.6	75.5	19.8%
Mean of 100	50.5	55	58.7	61.73	64.3	66.5	31.7%
Mean of 2nd quartile	36	42	46.1	49.92	53.3	56.4	56.6%
Mean of bottom quartile	13.0	20.8	27.0	32.0	36.4	39.6	204.6%
Number of employees below beginning mean		45	40	35	30	25	

Additional information for discussion is afforded by analyzing the means of the changing quartiles of relative capabilities of the employees at the end of each year after terminations and new hirings have occurred over a five-year period

The spreadsheet exercise also serves to show critics of the vitality curve approach that it does work. Criticisms of the vitality curve include 1) the curve approach does not reflect human behavior, 2) Over time everyone will increase their ranking till eventually the non performers would comprise of less than 10% of the workforce, 3) office politics and non performer selection methods, 4) lowered employee morale, 5) may increase cut throat and unethical behavior, etc. There is no doubt that in spite of its several criticisms the vitality curve approach works and this is readily demonstrated by the Excel exercise.

4. CONCLUSIONS

The main purpose of this study is to operationalize Jack Welch's vitality curve in an effort to illustrate its effectiveness to students. The authors have used this exercise for several semesters in the classroom and have received positive feedback from students.

The exercise allows students to see the benefits of the vitality curve quantified in an easy to understand manner. Several students changed their minds about using a similar approach at their companies (they went from a "no, I will not use this model" to "yes, I can see the benefits and will surely use the vitality curve in my company") after they saw the Excel exercise.

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THE EFFECTS OF THE U.S. PRICE CONTROL POLICIES ON OPEC: LESSONS FROM THE PAST

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ABSTRACT

In 1973-1974, the U.S. faced the so-called "Energy Crisis" due to the Arab oil embargo and a quadrupling of world crude oil prices by OPEC. This led the U.S. to use a" Price Control" policy in the domestic energy market. The effects of such policy are explored and well documented. However, the responses of OPEC producers to such a policy need further attention. This paper examines the effects of these price controls on OPEC's extraction path. It also examines the relation between the harm function and the change in OPEC production. The results show some evidence that OPEC did respond differently to price controls applied by the U.S. For some periods it cut production, while in other periods production levels increased. The results also show some evidence regarding Wirl (2008) that OPEC includes political support as part of its objective function when it comes to oil extraction.

***Keywords**: OPEC, Price Controls, Energy Economics*

1. INTRODUCTION

Gasoline is one of the major fuels consumed in the U.S. and the main product refined from crude oil. Over the last 20 years, changes in crude oil prices have explained 85 percent of the changes in the price of gasoline in the U.S. This indicates that the world price of crude oil is the primary explanatory factor of the price of gasoline.

In 1973-1974, the U.S. faced the so-called "Energy Crisis" due to the Arab oil embargo and a quadrupling of world crude oil prices by OPEC. This crisis caused dramatic social, political, and economic changes, and led the U.S. to use a "Price Control" policy in the domestic energy market. Under these price control policies, the U.S. set different oil prices to insulate the U.S. economy and market participants from the dramatic increase in foreign oil prices.

A large literature has looked at the welfare losses of price controls in energy markets. Agarwal and Deacon (1985) looked at the petroleum industry price and allocation controls in the U.S. during the I970's, and they found that regulations consistently kept price below marginal cost, causing the overall volume of refined product output to be excessive and this led to inefficient distribution of the product to consumers. Camm (1983) discussed the impacts of the price control policy on gasoline customers. He shows that customers were paying higher prices than the regulated prices due to the long time wait and cost of wasted time. Frech and Lee (1987) showed how to ration a good across markets (rationing-by-queuing.), while doing the least harm to consumer welfare. They provide empirical estimates from U. S. gasoline crises of 1973-1974 and 1979 of the extra welfare losses caused by misallocation of gasoline between urban and rural markets. Smith and Phelps (1978) looked at the impact of price controls on U.S. domestic oil production. They showed that price controls during 1974-76 have generated a perverse supply curve such that future increases in real world oil prices will transfer proportionately more U. S. income to OPEC than past price increases. Kalt (1981) showed that price controls have an ambiguous effect on total domestic output. This is due to the fact that price controls can either raise or lower the value of current rents relative to the value of future rents, causing the time path of extraction from existing reserves to be ambiguous. Also price controls reduce the absolute present value of the streams of rents going to producers, resulting in reduction in exploration and development of new reserves. Kalt found that price controls caused a deadweight loss to the U.S. economy ranging from $1-5 billion yearly.

On the whole, the effects of price controls on crude oil producers and refiners in the U.S. have been explored and well documented (Kalt, 1981). However, the responses of OPEC producers to such a policy need further attention. This paper tests empirically the effect of the U.S. price control policies on OPEC's decisions, and explores if OPEC's behavior was affected by these policies, particularly the oil extraction decisions of OPEC. This paper is organized as follows: Section II gives a brief description of the history of oil price control policies in the U.S. Section III examines the effects of these price controls on OPEC. Section IV reports the findings of the relation between the harm function and the change in OPEC's production, and finally, Section V concludes.

2. THE HISTORY OF OIL PRICE CONTROL POLICIES IN THE U.S.

Kalt (1981) explored and well documented the U.S. price controls and regulations imposed on refined products and crude oil, and their significant negative effects on oil producers and consumers alike. He shows that the period for these controls extends from 1970 – 1991. These policies started with the Economic Stabilization Act of 1970. Phase I of this Act lasted from August to November 1971; Phase II lasted from November 1971 to January 1973; and Phase III lasted from January 1973 to August 1973. By the end of 1973, the Economic Stabilization Act of 1970 created pressures on the petroleum industry, and these pressures lead to the Emergency Petroleum Allocation Act (EPAA). The EPAA was used till February 1976 where the Energy Policy and Conservation Act (EPCA) was an amendment to the EPAA which took effect in February 1976. The EPCA formally expired in September 1981, as the Congress did not make an effort to reauthorize the program.

To replace the EPAA/EPCA, the Crude Oil Windfall Profit Tax (WPT) was enacted in April 1980. The name of this tax was a bit misleading, as this was not a tax on profits, but rather an excise tax on domestic oil production, effective March 1, 1980. The Windfall Profit Tax was scheduled to expire over 33 months, after January 1988, no later than January 1991.

3. THE EFFECTS OF THE U.S. PRICE CONTROLS ON OPEC

The major issue in this section is to examine how OPEC responded to the price controls adopted by the U.S. In other words, did OPEC cut production during the time periods in which the U.S. adopted the price control policies, or these policies had no effect at all on OPEC's oil extraction decisions?

OPEC's oil production and reserves are the levels reported by OPEC in its Annual Statistical Bulletin for different years (1989-2007). OPEC's Annual Statistical Bulletin provides data about world energy markets. It contains statistical data regarding the oil and gas activities of OPEC's member countries (Algeria, Angola, Ecuador, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates and Venezuela), as well as the global petroleum industry in general. It also provides comprehensive and detailed data on upstream and downstream activities, and the global flows of oil and gas, in addition to basic financial data about some of the world's largest oil and gas companies. Crude oil production and exports for OPEC Members from 1970 – 2007 are in 1,000 b/day.

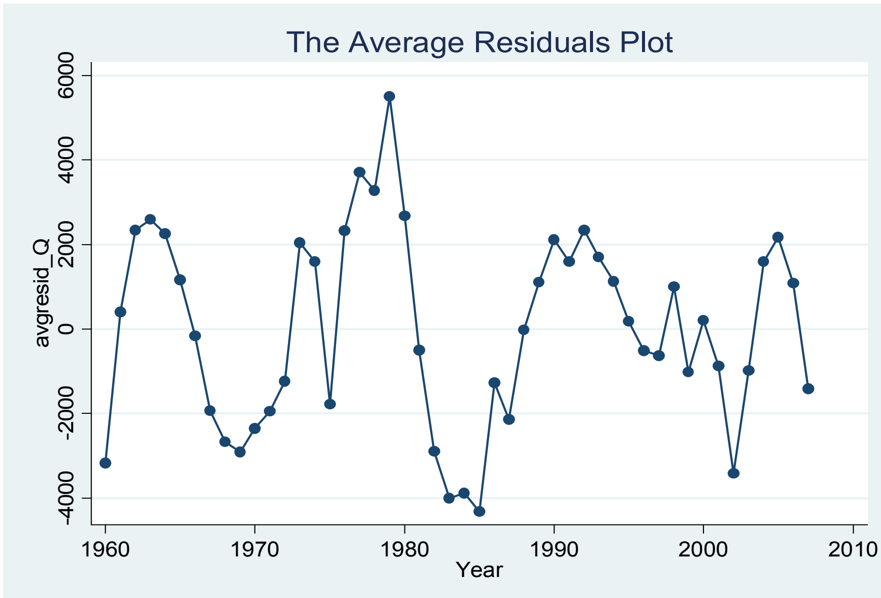
To explore the response of OPEC to the U.S. price controls, we start by detrending the secular production levels of OPEC. This is done by regressing OPEC's production levels from 1960 to 2007 on a time index, ranging from linear up to a sixth order polynomial. Then, by calculating the Schwarz Information Criteria (SIC), the best detrending model will be identified as the one with the minimum SIC.[1] Using this criterion, the secular production trend was best captured by a sixth order polynomial trend.

The residuals from this trend capture the effects of the unobservable factors on production levels such as cost, expectations and more, including the response of OPEC to the price control policies. Now, one can argue that these residuals may be used to show and test the impact of the price control policies on OPEC's production. The residuals from this trend are displayed in Figure 1. The plotted residuals show some evidence that the production levels were lower in years 1975, 1976, 1979, 1981-1986, and 1988, when compared to years before and after. This is how one can attribute the negative deviations from the secular trend for these years. Now, do these reductions in OPEC production reflect responses to the

[1] The Schwarz Information Criterion (SIC) has been widely used for model identification in time series and linear regression. SIC is an index used as an aid in choosing between competing models. It was proposed as a method for choosing between different models with different numbers of parameters, in order to determine which is the "best fit" to the observed data.

price controls or not? To test what we observe from the plotted residuals, a relationship between these residuals and the price control periods should be estimated. This means we need to regress these residuals on the price control periods. To be able to do so, one needs to include five dummy variables for these periods, where each equals one if it is the year or years in which the specific price control was applied, and zero otherwise (e.g. for the period 1970, D1 = 1 for this year, and zero otherwise. For the period 1971-1972, D2 = 1 for this period, and zero otherwise).

Figure 1: Average Residuals Plot



Following these notions, our model regresses the residuals, plotted in Figure 1, on five dummies matching the periods when price controls were applied, and OPEC's reserves in year (t), with a constant.

$$Resid_t = \alpha_0 + \alpha_1 R_t + \alpha_2 D_2 + \alpha_3 D_3 + \alpha_4 D_4 + \alpha_5 D_5 + \alpha_6 D_6 \qquad (1)$$

where, $Resid_t$ is the residuals from the regression of the production levels from 1960 to 2007 on a time index, R_t is OPEC's reserves in year (t), D_1 is a dummy variable for the period 1970 (the base and is dropped), D_2 is a dummy variable for the period 1971-1972, D_3 is a dummy variable for the period 1973, D_4 is a dummy variable for the period 1974-1975, D_5 is a dummy variable for the period 1976-1979, and D_6 is a dummy variable for the period 1980-1988. The results are reported in Table 1.

In Table 1 on next page, the difference between the coefficients of any two consecutive dummies can be interpreted as the difference between the levels of production, on average. The reported coefficients show some evidence that the production levels of OPEC were affected by the price controls policies for some periods.

For the period 1971-1972, the average loss in production amounts to approximately 1196 (1000 barrel/day) with respect to the previous period in which price controls were used, and 3637 (1000 barrel/day) with respect to the following period, and both differences are statistically significant (different from zero).

For 1973, OPEC increased production, according to the estimated coefficients. The average increase in production amounts to approximately 3637 (1000 barrel/day) with respect to the previous period, and to 2183 (1000 barrel/day) with respect to the following period, and both differences are statistically significant (different from zero). This result seems odd, given that 1973 is the year in which Arab members of OPEC banned exports to western countries and the U.S. due to the 1973 war. One explanation for this could be that the war did not occur until October of that year. So perhaps these countries, in earlier parts of 1973, were planning for the war and increasing oil output to support such activities. This might have led them to expand extraction at the beginning of 1973, and perhaps that's what the coefficient is capturing.

TABLE 1: Regression of Residuals on OPEC Reserves and Price Control Dummies

Variable	**Coefficient**	**Robust Std. Err.**	**t - values**
OPEC's reserves	0.0007	0.001	0.49
Dummy for 1971-1972	-1539.34***	600.76	-2.56
Dummy for 1973	2097.37***	582.46	3.97
Dummy for 1974-1975	-85.21	1371.69	-0.06
Dummy for 1976-1979	3736.75***	804.84	4.64
Dummy for 1980-1988	-1856.53**	865.51	-2.15
Constant	-343.42	1066.62	-0.32
R-squared	0.39		
Number of observations	48		

-The dependent variable is the residuals of regressing the production levels from 1960 to 2007 on a time index. The table reports the coefficients of the regression of these residuals on the five dummies and OPEC's reserves, with a constant.
- Year 1970 is the base.
-Robust standard errors and t-values are reported in the table.
*** Significant at the 1% level.
** Significant at the 5% level.

This argument can be supported by the estimates on the 1974-1975 periods, when production is lower than in the previous or following time periods. The Arab members of OPEC were perhaps still using the ban, and were also responding to the U.S. price control policies. The average loss in production amounts to approximately 2183 (1000 barrel/day) with respect to the previous period, and to 3822 (1000 barrel/day) with respect to the following period. Both differences are statistically significant (different from zero). OPEC's production levels increased for 1976-1979, and were not affected by the U.S. price control policies. This indicates that OPEC members were trying to recover their foregone revenues to address growth needs inside their countries. Finally, the estimated coefficients show some evidence that OPEC responded by cutting production when the U.S. implemented the "Windfall Profit Tax", from 1980-1988. OPEC cut production by 5593 (1000 barrel/day) on average, and this difference is statistically significant. This result is supported by the work of Karp and Newbery (1991), where they found that OPEC will initially have a lower share of current production than of current reserves when the U.S. and other large importers all impose optimal import tariffs. However, through this period (1980-1988), oil prices were decreasing (see Figure 2 in the appendix) and these cuts could have been made by OPEC to help prices increase, rather than the decline is a response to the Windfall Profit Tax.

This section shows some evidence that OPEC did respond differently to price controls applied by the U.S. For some periods it cut production, while in other periods production levels increased. Although, these increases or decreases are not related only to the price control policies, it still explains some of the variation in production levels.

4. RELATION BETWEEN HARM FUNCTION AND RESIDUALS

OPEC includes Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela. Following the approach suggested by Wirl (2008), these countries can be divided into allies and adversaries, in terms of their relations with the West. Countries like Indonesia, Kuwait, Nigeria, Qatar, Saudi Arabia, and United Arab Emirates are seen as allies to the European countries and the U.S. Countries like Iran, Algeria and Venezuela are considered to be anti-West (until 2003, Iraq and Libya considered to be in this group). Following Wirl (2008), the hypothesis in this paper is that OPEC countries do not pursue strict profit maximization. Indeed, they also seek political support among their people. These countries realize that the Wes depends on OPEC's oil; this gives them some power of influence. The people of these countries frequently express anti-Western sentiments.[2] For this reason, OPEC countries in need of popular domestic support may take production decisions to gain such support. The statements and interviews that we read and watch for Ahmadi Nejad of Iran and Chavez of Venezuela are good examples of these policies. Even countries considered to be allies must still secure the support of their people, some of whom also have anti-Western sentiments. Such countries (allies) may adopt a moderate anti-Western policy. With the political consideration in mind, OPEC countries will be assumed to maximize the net present value of benefits, where benefits are derived from oil profits as well as political support, based on the degree to which the west is harmed.

Following Wirl (2008), let the political support among citizens of the country be S_t. Political support is a function of the adverse effect on the West of higher oil prices, so S_t is the harm function.[3] This harm function depends on the quantity of oil extracted and supplied to the market, and on an indicator, α_t, that measures the desire of OPEC to harm the West.

The harm function can be written as: $S_t = f(q_t, \alpha_t)$ (2)

OPEC is able to harm the western countries and the U.S. by cutting production and raising the price. Recall that OPEC has direct control over quantity not price, as the latter is determined in the market.

The political support (S_t) will increase as (q_t) is cut or if the desire to harm (α_t) is stronger. This means:

$\partial S_t / \partial q_t < 0$ (3)

$\partial S_t / \partial \alpha_t > 0$ (4)

Using these notions, a simple form of the harm function with appropriate properties is:

$S_t = \alpha_t / (1 + q_t)$ (5)

Equation (5) implies that the harm decreases when OPEC increases quantities (one in the denominator avoids the case of infinity when quantity is zero). Also the harm increases with a higher desire to harm, α_t. If OPEC has no desire to harm anyone, then α_t = zero and the harm function vanishes, meaning that OPEC just maximizes profits like any other producer in any market with no other considerations in mind.

Since one of the factors that might affect the secular trend for OPEC's production levels is this desire to harm the west, we can obtain an estimate of α_t by estimating the relationship:

$Resid_t = \alpha_0 + \alpha_1 \{1/(1 + q_t)\}$ (6)

and taking the estimate of α_1 as a measure of α_t. This relationship also explores the relation between the residuals and the harm function. The idea is that the harm function might have affected OPEC's decisions regarding oil extraction. If this is the case, then one should expect to find a relation between these residuals and the harm function. The estimates of the regression are reported in Table 2.

[2] They disagree primarily with the American and European policy toward the Arab-Israeli conflict.

[3] Citizens of the Middle East and some Latin Americans believe that the US policy is targeting them, and that it ignores the good aspects of their countries. This is why most of them consider themselves to be "Anti West".

TABLE 2: Regression of Residuals on Harm Function

Variable	Coefficient	Robust Std. Err.	t - values
$1/(1 + q_t)$	- 2.37 e+07	1.78e+07	-1.33
Constant	1146.75	863.31	1.33
R-squared	0.04		
Number of observations	48		

-The dependent variable is the residuals of regressing the production levels from 1960 to 2007 on a time index. The table reports the coefficients of the regression of these residuals on the harm function, with a constant.
-Robust standard errors and t-values are reported in the table.

The results show that the coefficient for the harm function is negative and a large number, although it is not significant. This is consistent with the results found in Kisswani (2009), where the net present value of profits increases with a large value of the harm indicator, α_t. The regression outcome here also provides some evidence that OPEC considers the harm function when it comes to oil extraction. This part provides some evidence that OPEC members did consider the support of their citizens in deciding on production levels, and this support, which is represented by the harm function, needed OPEC to cut production as a response to the U.S. price controls.

5. CONCLUSIONS

The arguents in this paper provide some evidence that OPEC did respond to the price controls applied by the U.S., but not in a uniform way. For some periods it cut production, while in other periods production levels increased. Since this is the case, the U.S. may consider different policies to address high oil prices, especially since price control policies also have adverse effects on welfare. Also the analysis gives some support to the idea that OPEC members consider the support of their citizens when deciding on production levels. However, most of those citizens are to be Anti-Western. Therefore, the U.S. and the West should review their policy in the region to improve relations with OPEC's governments.

Beside they need to communicate better with the people of OPEC countries, since they are the main drivers of the harm function that results in restrictions on oil output and higher market prices.

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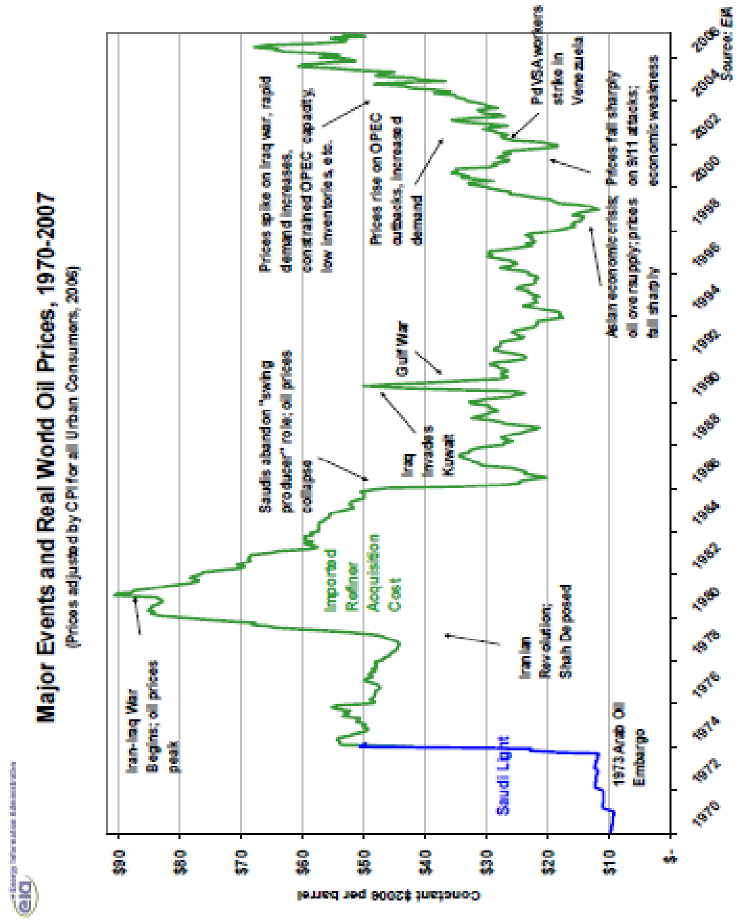
APPENDIX


Major Events and Real World Oil Prices, 1970-2007
(Prices adjusted by CPI for all Urban Consumers, 2006)
Constant $2006 per barrel
$90
$80
$70
$60
$50
$40
$30
$20
$10
$-
Iran-Iraq War Begins; oil prices peak
Saudis abandon "swing producer" role; oil prices collapse
Prices spike on Iraq war, rapid demand increases, constrained OPEC capacity, low inventories, etc.
Imported Refiner Acquisition Cost
Iraq invades Kuwait
Gulf War
Prices rise on OPEC cutbacks, increased demand
Saudi Light
Iranian Revolution; Shah Deposed
1973 Arab Oil Embargo
PdVSA workers strike in Venezuela
Asian economic crisis; oil oversupply; prices fall sharply
Prices fall sharply on 9/11 attacks; economic weakness
Source: EIA

DESIGNING A ‘STRATEGIC PARTNER’ SCHOOL

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ABSTRACT

It is the fourth time that we create a new management school. Every time it was different and every time we have learned a lot from the process of curriculum design in harmony with the voice of the times. In this paper we outline the process of curriculum design through our latest experience in creating the Strategic Partner School in Hungary. Although there are important characteristics of the Middle-East European market for post-experiential business education taken into consideration, the meta-level of the process, i.e. how to identify the relevant characteristics, can be applicable well beyond the area in which this study originated. Naturally, our way is not the only right way of curriculum design but our aim with this study is to stimulate thinking and discussion rather than selling a recipe.

Keywords: *management education, curriculum design, strategic partner, post-experiential education*

1. INTRODUCTION

In this paper we are outlining a process for designing postgraduate curriculum for business. Our departure point is the dissatisfaction with the common practice of curriculum design for postgraduates who are interested in achieving knowledge increase in the field of study where they obtained their original degree and they are aspiring to acquire knowledge above and beyond what they learned in their previous studies. So we are aiming at designing a refresher course in the sense of updating the existing knowledge with new achievements in the field thus becoming up-to-date in the knowledge domain. Unfortunately we observed, together with a number of academics in the business area, that the postgraduate courses in Middle-East Europe (MEE), particularly those labeled ‘refresher’, are often not more than the abbreviated versions of the undergraduate courses – the available time of studies is shorter thus the delivered teaching material is smaller and it typically does not go substantially beyond the undergraduate curriculum.

Even in the best cases the only difference is that the teaching is somewhat more focused on business examples as the students are expected to have some business practitioner experience. We have developed an approach which aims at designing a curriculum for business practitioners who are willing to go back to the school in order to increase their knowledge and at the same time making it sure that the developed program has a unique selling point. We introduce our novel conception of curriculum development for such educational program through our example of developing the ‘Strategic Partner’ post-experiential and post-MBA school in Hungary – it was through the development of this school that we discovered that it entails a research process. Our argument is organized around five cornerstone concepts:

- The process is *quasi-algorithmic*, meaning that is sort of algorithmic but not exactly
- The steps are *quasi-heuristic*, meaning that they are sort of heuristic but not exactly
- The conception of education is *quasi-incremental*, meaning that is sort of incremental but not exactly
- The vision of the ‘big picture’ of the curriculum is *quasi-abductive*, meaning that is sort of abductive but not exactly
- The abductive ‘big picture’ is *quasi-validated* by the conditions of a particular recipient; meaning that it is sort of validated but not exactly.

In the next section we describe how we use the above concepts in terms of ‘working definitions’ – similar to the previous points these will not exactly be definitions but almost. This introduction of the basic concepts we want to operate with is followed by the main argument of the paper describing the process of curriculum design.

2. THE CORNERSTONE CONCEPTS

In this section we introduce a couple of concepts which are essential for understanding the curriculum development for a business school in MEE as we describe it here. As indicated in the previous list, we use somewhat altered, usually softened, versions of the concepts – therefore we introduce our working definitions the use of which is limited to this paper. It would perhaps be more accurate to say that these concepts are depicted then described as we are not providing proper definitions but rather somewhat metaphoric explanations which will have somewhat fuzzy boundaries but their meaning will be sufficiently clear to enable the mental operations we are engaging with in the subsequent section.

The problem we are engaging with we describe using a metaphor. The cuckoo is a strange bird not making its own nest but rather placing its eggs in other birds' nests. So we start from a couple of people (the cuckoos) who are developing a new curriculum (egg) and then trying the find a recipient (nest) to run the school to success (get the baby-cuckoos out of the eggs, nurture them to get strong and fly). Why we are using this metaphor? Because we cannot describe the problem precisely. We do not understand it clearly. (Cf Simon, 1973) We can only say about it, at the moment, that we do not know how to get the cuckoo's egg into a nurturing nest.

Such problems need to be handled as a whole as they cannot be broken down into small-enough components which would be easy to handle. However, sometimes we can identify (at least some) components of the problem even though their boundaries are not sharp, they often overlap and the relationships between them are less then clear. This is called near decomposability (Simon & Iwasaki, 1988; Simon, 2002). We need to introduce the cornerstone concepts to tackle such problem and to have the chance of arriving at a meaningful solution – although such solution is usually not demonstrably correct, let alone the only correct one. Of course, this notion also applies to our work presented here – this is certainly not the only right way of designing a curriculum but we have found it useful and we hope that others may benefit from it as well.

2.1. Quasi-Algorithmic Process

In a complex system there are great many independent agents interacting with each other in great many ways. (Waldrop, 1993) If we were able to isolate these agents, understand each of them on its own and map all their interactions we would have a chance to create processes that can be described by algorithms. However, in complex systems this is impossible. As noted above, however, near-decomposable systems can more or less be taken apart; in such systems it is possible to describe processes in more or less algorithmic ways. We call such processes quasi-algorithmic.

Example: In our curriculum design are able to identify many involved parties – we know who could teach such topics as we are interested in, we know the potential universities (Middle-East Europe) that can receive our course, we know the companies who need a strategic partner and we know quite a lot about who can become our students. However, there may be other agents we do not count with (or may not even know about them) and we are far from being able to describe all the ways the agents interact. Therefore the curriculum design we describe here is quasi-algorithmic.

2.2. Quasi-Heuristic Steps

If we zoom closer into the steps of the quasi-algorithmic process we find a resemblance with the complexity that led us to the quasi-algorithmic process; not unlike in Mandelbrot's (2004) fractals. This means that the steps in themselves are still too complex for complete explanation of what and why we exactly do then and there. When we cannot explain why we do what we do in a particular situation, we often use heuristics. These are 'rules of thumb' for the use of which we do not have proper explanation apart from a vague idea that they often work in similar situations – while we cannot specify what the similar situations are, how often the heuristics works or what kind of solution they lead to. "Heuristic, as an adjective, means «serving to discover»". (Pólya, 1957: 113) Heuristics should be rooted in "experience in solving problems and experience in watching other people solving problems" (ibid: 130) and they lose their appropriateness when inherited without the experience and are applied in mechanistic ways. If developed and used appropriately, heuristics can be very useful (ibid: 181): “If you take a heuristic conclusion as certain, you may be fooled and disappointed; but if you neglect heuristic conclusions altogether you will make progress at all. The most important signs of progress are heuristic.” What we call quasi-heuristic steps here, is more or less heuristic – we can provide some explanation for most of them but such explanation is certainly the only possible one, often not complete and may contain heuristic elements themselves.

Example: Many steps, as it will be shown later, in our search for the nest for our cuckoo-egg are based on heuristics, particularly concerning the judgment how long should we try searching and when to give up.

2.3. Quasi-Incremental Education

Before Kuhn (1996) introduced the paradigms in (scientific) disciplines, the growth of knowledge was regarded to be incremental; i.e. following the pyramid conception of Comte (1868) and Mill (1861). The pyramid conception implies that any new knowledge always builds on previous knowledge, all of which is regarded as valid. Kuhn’s paradigmatic approach assumes that apart from building sometimes the growth of knowledge also entails destruction or even leaving the location of building. When applying these approaches to knowledge increase of individuals, the pyramid conception can be called incremental as it builds on the learner’s existing knowledge. Radically new knowledge, however, which would contradict everything one knows, could not be acquired as the learner would have nothing to connect it to (Dörfler, 2010). Therefore we argue for quasi-incremental knowledge increase and thus quasi-incremental education, meaning, that the new knowledge builds on the existing knowledge of the learners but it will also contradict and dismiss some of it.

Example: Our course is post-experiential and post-MBA. Those, who obtained a business degree earlier than a year or two ago, certainly could not have learned about the strategic partner conception as a new organizational role. Very few could have met the concept through their work and/or readings and even they could not have developed a fully contextualized view of this role. In our school we will build on the students existing knowledge, however, we also expect them to give up some of their obsolete knowledge – therefore we offer quasi-incremental education.

2.4. Quasi-Abductive Big Picture

The notion of abduction as a form of reasoning was introduced by Charles S. Peirce as an alternative to deduction and induction as both of these are prone to the fallacy known as the ‘problem of induction’ (e.g. Russell, 1912, 1948; Popper, 1968, 1989). Peirce (1940) suggests that if we observe something we find surprising, we should ‘guess’ an explanation which, if true, could account for the observed facts or, at least, some of them. So the form of the inference is the following (ibid: 151):

The surprising fact, C, is observed; But if A were true, C would be a matter of course, Hence, there is reason to suspect that A is true.

Of course, there may multiple explanations appropriate for explaining the same set of facts; which one we choose is also part of the abductive reasoning. Usually Occam’s razor (see e.g. Russell, 1946) is used, which in this case means that everything else being the same, the simpler explanation is better. Bateson (1980) adds that abductive reasoning also includes, once having found an explanation we are happy with, trying to find additional observations that are consequences of the same explanation. The idea of a quasi-abductive big picture in this paper means a big picture that is arrived at by means of abductive reasoning but also discussed between peers and therefore interpersonally reasoned – so it is more or less abductive but not completely.

Example: As it will be discussed in detail in Section 3, the starting point of the curriculum design is finding interesting components and integrating them into a single whole. This integrative process is tacit (Polanyi, 1966; Polanyi & Prosch, 1977) and as such it provides

an abductive ‘big picture’. Then we run a series of workshops and go through various steps through which this ‘big picture’ is amended and, to some extent, interpersonally reasoned.

2.5. Quasi-Validation
The idea of validity is inheritance from experimental sciences and is concern with the question of where a particular knowledge applies – i.e. what is the domain of validity. It is closely linked with the notion of generalizability, which refer to extending some knowledge beyond the domain in which it has been obtained from. Some of the underlying concepts of validity only apply in a positivistic approach, although some requirements also make sense in the non-positivistic world. One of these is internal consistency which we consider also a necessary condition in our view of quasi-validation. Where the quasi-validation departs from all other approaches of validity is that it is only concerned with one single instance of application at a time and the validation process is evaluation of the quasi-abductive big picture in terms of the conditions of that single instance.

Example: The quasi-abductive big picture in our case is the conception of the Strategic Partner school. Not all organizations need the role of strategic partner and this need is determined by the unique set of circumstances of the organization – these provide the conditions for quasi-validating our new school. The internal consistency is examined and re-examined using a concept mapping technique.

3. MENTAL OPERATIONS

In line with the previously depicted concepts we introduce the quasi-algorithm for developing the curriculum (note: post-experiential business education in Middle-East Europe) in eleven steps. Over the course of talking about our new school and how we developed it we had variants of 5-11 steps in the process, not as we added new steps but certain steps can be handled together or separately. Here we use the version with the largest number of steps as the stages of the process are most readily recognizable in that way – but the process does not depend on the number of steps we use to describe it.

3.1. Look at what the greatest thinkers management are busy with
We currently distinguish four classes of great management thinkers: The Classics, such as Bertrand Russell, Umberto Eco and Michael Polanyi, perhaps belong more obviously to the domain of philosophy than to management but for instance Michael Polanyi is the single most quoted author in knowledge management. The New-Top-Thinkers, such as Malcolm Gladwell, Nassim Taleb, Roger Martin and Chris Anderson, are newcomers to lists, such as the Top Thinkers 50 (http://www.thinkers50.com/results) and often rejected by reviewers of academic journals. The Stabile-Top-Thinkers, such as Henry Mintzberg, Charles Handy, C. K. Prahalad, Gary Hamel and John Kotter, are the often quoted management gurus – the most significant problem here is that they are significantly more quoted than read and more read than understood. It is important to always read the original works of these gurus. Finally the TED-Stars, such as Dan Pink and Dan Ariely, seem to have something very important to say but they are not on the guru-lists yet.

Examples: We have started with Prahalad's Social Responsibility, Gladwell's Outliers, Pink's Motivation 3.0, etc. starting from the top of the Top Thinkers 50 and TED and continued iteratively coming back and re-searching.

3.2. Find out whether the new conceptions you like are already offered in the red ocean (mainstream business schools in your market) – if yes, throw away that conception and find new ones

For instance you may find that there is already a course offered on Outliers by the Extraordinary Ltd Educational Consortium or a 3-day online training on the social responsibility of managers delivered by the YourChildrensWorld.org Internet Company (made up names). It does not matter whether the quality of these courses is great or poor – and it matters even less whether you could do it better or not. If you are aiming for a unique program, you need to bring something that cannot be found on the market yet. There is also a quitting point here (like the conditions for avoiding endless cycles in algorithms): the intellectual honesty dictates that you should quit if you cannot find a sensible set of non-offered conceptions as it becomes impossible to start a school the next academic year.

Examples: We continued down the list until we arrived at #16 Howard Gardner, #31 David Ulrich, #32 Roger Martin, #35 Chris Anderson and #40 Nassim Taleb.

3.3. Describe the new knowledge items with key concepts (around 60 of them), decide about a taxonomy and draw up the concept map of it

The first important thing here is to distinguish between the key concepts and the keywords. The key concepts are content items around which you organize your curriculum (or any content for that matter) while the keywords are terms that are used for searching. The key concepts can, and in the case of such original curriculum should, be new concepts that no one knows – you want students to come to your school to learn them.

However, nobody will find you using such terms as, as it was said, nobody knows these – you certainly want to find established terms for keywords which people actually use when searching. Once you have your key concepts, organize them into a taxonomy. Naturally, there no one single right way of choosing and/or creating the key concepts, so there cannot be a single right taxonomy for these. But the taxonomy should make sense – therefore it is very helpful if you can draw a concept map of them and the picture should be beautiful.

Example: A subset of our key concepts for the Strategic Partner course is: strategic partner, narrative intelligence, abductive thinking, social media, black swan.

3.4. Sign up appropriate teachers

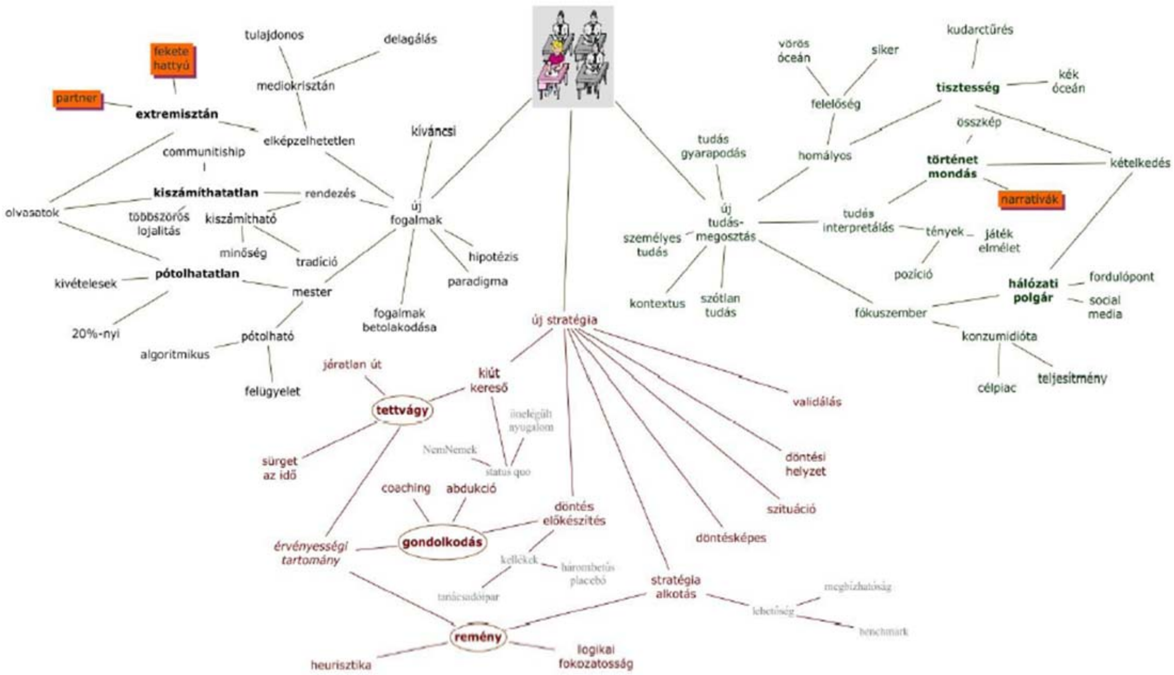
Most of us cannot afford to run our schools with the gurus whose conceptions we adopted; therefore you need to find people who are able to teach the classes. The most important thing about the candidate-teachers is that they are already aware of several of the key concepts from the concept map. It would be good if some of them are stars (of your market) but pay attention not to hire celebrities. We distinguish between stars and celebrities in the way that stars have done something significant and are well-known for their achievements while celebrities are picked up by the media which made them well-known without any particular merits. While the knowledge of your candidate teachers will rarely coincide fully with your key concepts there also must not be huge discrepancy. The choice of teachers will alter your map of key concepts. As in the previous step, you have an exit condition based on intellectual honesty – i.e. if you do not find appropriate teachers for a few months, you need to quit.

Example: With reference to the subset of key concepts from the previous step, we have found teachers who are able to deliver the following: master strategist, storytelling, abductive management, net citizen, strategic thinking

3.5. Design a system of key concepts for your course based on the knowledge of your teachers – for distinction we call this the curriculum map

The previous concept map in step 3.3 was designed around the knowledge items you have found as not yet marketed. However, the choice of teachers will alter your map of key concepts. This time it is also not sufficient if the key concepts describe the knowledge items (even if these are the knowledge items based on your teachers' knowledge) – this time you work focusing on a deliverable course content taking the structure of the course into account. In the case of a 1-year program, with 5 classes in both semesters, 4 sessions for each class and 2 key concepts for each session, you have 10×4×2 key concepts. This will certainly be different from your previous concept map and particularly it may have a different structure – and this structure is more rigid as the flexibility is greatly reduced by the formalized class 'sizes'. However, the difference between the two concept maps cannot be huge as then you will fail to even remotely delivery what you originally intended. As a rule of thumb the difference between the two concept maps should not be more than 20%.
Example: Figure 1 below shows our map of key concepts in its original form.

FIGURE 1: THE INITIAL MAP OF KEY CONCEPTS FOR THE STRATEGIC PARTNER SCHOOL



3.6. Check the internal consistency of the curriculum map from step #3.5

The curriculum map is not simply a list of key concepts; there are also multiple complex interrelations between these key concepts. Some key concepts will pre-suppose others (i.e. there must be an order of delivery). Sometimes you will find two key concepts apparently contradicting each other and you will need to introduce new key concepts (this will mean replacing or modifying existing ones as it is important to keep the right number of concepts to maintain the structure) in order to resolve the contradiction. The curriculum map will also need to form a single whole – both parts of this notion are essential it must be a whole with no holes (knowledge gaps) in it and it must be a single one.

Everyone uses tools they are most familiar with but we recommend the Doctus knowledge-based expert system shell. Doctus uses ‘if… then’ rules for knowledge representation and this type of knowledge base is particularly appropriate for handling such consistency checks. As there are many reasons for which the curriculum map should be altered again, this step is in itself highly iterative. However, one must not proceed without arriving at a fully consistent curriculum which forms a whole entity.

Example: For instance the abductive management pre-supposes some topics of knowledge philosophy; strategic business thinking and storytelling can be thought in both orders (i.e. any of the two can come first) but they will be delivered differently in the two cases, and so forth.

3.7. Find a nest for your cuckoo-egg; i.e. find a recipient for your school

When starting the search for the recipient, it must be re-iterated that our experience is in Middle-East Europe (MEE) business education and it may make sense to do it differently in a market with different characteristics. After a lengthy process of thinking and discussion we argue that in MEE the recipient

should be a university. There is no really right solution as a university is a bit too much but a non-university is certainly not enough. The heuristic that prevailed is that the students are not really coming to obtain a diploma but at the end it will be a good thing if they get one – and they will also be happy about it. It is also important that the potential audience is only looking for this kind of courses in universities. For a course in carpentry or an interpersonal communications training the choice would be entirely different.

We considered a fair number of heuristics here and your market and your experience being different you may come up with somewhat different heuristics. But we believe that at least some of these would be useful for many. For instance it cannot be an unstable university (e.g. many new ones in MEE) as they are busy with their internal struggles. It also must be a university that can imagine getting serious income from students not only government financing or (EU) gran applications. You will want a strong university-identity and established university culture. What is the most important here is that you consciously think about the heuristics that limit your search space and explicitly formulate them.

Example: Although there appear to be many candidate-recipients in Hungary, we quickly reduced these to only five. We managed to settle with the University of West Hungary and we stopped searching. It could have been possible find a few more candidates through identifying additional personal contacts that could get us at the table with few more candidates but the number could not be significantly larger.

3.8. Embed your key concepts into your own context, write a book about it, and present it to the wide audience

As most steps outlined here, this one serves multiple purposes. First of all, as you are working on the book (which is also the process of embedding the key concepts into your context), you will once again re-work the curriculum map. It is particularly useful to involve the teachers you have signed up in their respective parts by organizing a workshop. In an interaction of minds the key concepts will be further clarified and sometimes shifted or, rarely in this stage, changed. It is also great to see how everything is coming together – this will re-energize you and your collaborators as well. Through the workshops you also achieve that your teachers acquire awareness of the full context and therefore the teaching in your school will not be fragmented but form a single whole. Such book is not a manual, it is not a reader and it is not a textbook. It is also not a monograph as you are targeting curious potential students and their bosses not your fellow academics. The book may be written by a team of (a few) authors but it has to be an authored book, not an edited one. It has to be readable by your target audience and what is does is to frame the emergent discipline taught in your school, so you have to pay attention to the order and consistency of key concepts. Once the book is written, you need a fancy large-scale book launching party. This party is very important in itself as this is the first time that you, your teachers and the recipient publicly commit to each other and to the new school.

Example: We have organized a series of workshops with the signed up teachers in which we discussed the quasi-abductive big picture; and this provided the interpersonally reasoned part of it (cf Section 2.4). We organized the book launch event as a mini conference with contributions from the involved teachers and created the largest media-exposure we could.

3.9. Spread the word: explain your new school-concept wherever you can

The book launching event is part of the spreading the word. The news about the school need to be spread and announcing your event e.g. on the internet and in radio is already part of it, and after the event you should give interviews. There are two distinct types of interviews: On radio you need to speak fast and repeat your message many times – thus in the radio you speak about the new profession you are introducing. In newspaper interviews you can elaborate the idea further as the reader can also spend more time on it, unlike the radio listener. Therefore in newspaper interviews you talk about the book.

The choice of media is also very important – if you only use leaflets and newspaper advertising you will fail. What you need today is blogging, YouTube, Facebook, LinkedIn and so forth. This is not only important as these channels are more likely to reach your target audience but you also demonstrate your awareness of 'our times' – you want to sell the latest knowledge, you cannot sell it using obsolete communication. For instance, viral videos today are a must: no longer than 1 minute videos in which your teachers introduce themselves and commit to the idea of your school. Of course, tomorrow this may be something different.

Another important way/channel of spreading the word is getting into organizations that are likely sources of your students – but you will not talk to your potential students but to their bosses. Delivering workshops to these organizations is also testing the viability of your curriculum – and your curriculum map will change for one last time before starting the school.

Example: We gave several interviews on radio and in newspapers, set up a website, blogged and tweeted about it, posted on Facebook and LinkedIn and created groups, made our viral videos available on YouTube and linked to the school website, prepared presentations on SlideShare, etc. We also have an agent organizing workshops for organizations.

3.10. Recruit students

First you need to identify what kind of students you want so that it is easy to manage the expectations. As you are starting from the conceptions of gurus, you are in many ways different from the 'usual' schools. Most business schools promise instant knowledge, i.e. knowledge that they can use tomorrow in their workplace. You do not want your students to have such expectations. The conceptions of the gurus help developing a better understanding of the big picture of business in general and of the emergent discipline you are introducing in particular. This does not mean that you do not want students who do have real problems in their organizations and they obviously want to solve them. So you are not offering a philosophy course the outcome of which is simply a better understanding of the world. But you need students with the right haste/patience ratio: their primary focus should be the better understanding of their business and of their role in the strategic thinking process; but they need to be professionals facing real business problems keen to find their way out of the woods. And possibly there will be a few things they will be able to do more or less immediately, although this is likely to be due to a newly developed insight than to a new tool they learned about.

There are basically three ways to recruit such students: The best is if their boss sends them as the right person to acquire this new knowledge. A somewhat less good version is if they tell their bosses that they would like to attend your school and they convince their bosses that it is the right school and they are the right persons to attend. And finally, the worst version is if they are sent by the career office of their organizations according to some checklists. You might get a few students from the first two groups from the internet and other channels you are advertising yourself but most will doubtless come on the basis of personal contacts, i.e. your former MBA students, their colleagues, bosses of your former students and so forth. However, in these cases your media presence is important as that is where the potential students will check you out and take their final decisions.

Example: The vast majority of our students applying to the Strategic Partner school are colleagues of our former students from various previous schools and some are also former students themselves (occasionally obtaining their third diploma in our schools). Our company workshops are just about to start and we hope that they will yield additional students.

This is the step at which we finish our quasi-algorithmic description of the process, they outlined steps feature a number of quasi-heuristic branching points and cycles, we introduced the quasi-abductive 'big picture' of the school and now we are just about to start the quasi-validation in the particular organizations. There is one more step remaining which we have not included here as it will only start in Fall when the school starts – you need to nurture the baby-cuckoo.

4. DISCUSSION

Having gone through the process of curriculum design in detail, the question perhaps naturally arises: whose job it is to design a curriculum (a school)? The simple answer is that there is no such profession. This answer is so obviously unsatisfactory – the curriculum has to be designed. As Bateson (1980) put it:

"Break the patterns that connect the elements of learning and you can be sure that you will destroy all quality." Then, perhaps, we should ask the question differently: Who can master curriculum design? This is a question that we can give a satisfactory answer to, based on this paper: the person who has trans-disciplinary knowledge. It is important that we clarify what trans-disciplinary knowledge means by delineating it from related concepts, such as interdisciplinary and multidisciplinary. Interdisciplinary means that it is in-between disciplines, i.e. it is in a hole and does not belong to any discipline. This is not very helpful, no substantial knowledge can reside in such places – the holes are not very large. What often is inter-disciplinary is research problems – but these are actually the opposite of knowledge, these are knowledge gaps and the task of the research is to create the new knowledge. The multidisciplinary is even less likely since Leonardo died – he was the last polymath. Disciplines are too large for more than one of them to fit into a single mind. Trans-disciplinary knowledge is based on knowledge of a single discipline to which the person was able to add particular bits from other discipline – these bits can range from facts and tools to large-scale conceptions or beliefs.

The trans-disciplinary curriculum designer primarily needs deep knowledge of the discipline of cybernetics in the sense of Ludwig von Bertalanffy (1969, 1981) and Gregory Bateson (1972, 1980). S(H)e needs to be able to see the whole, the elements and the patterns that form the elements into a single whole. By making sense of the whole this person is able to change some elements of the system and by modifying the patterns to construct a new whole from it which may be more or less similar to the earlier version of the whole but it will again make perfect sense. It is indispensible that the curriculum designer also has superficial but wide knowledge of the constructivist learning in the sense of Ulric Neisser (1963, 1967) Jean Piaget (1959, 1972) and Lev Vygotsky (Vygotsky, 1978; Liu & Matthews, 2005). Finally you want a curriculum designer who has deep knowledge of facts about the state-of-the-art conceptions of the management gurus, such as what can be found on Top Thinkers 50. The attribute 'deep' in this reference to facts means that the curriculum designer is able to make sense of the gurus' conceptions and pull them together forming a whole.

The final characteristic you require from your curriculum designer is intellectual honesty. Intellectual honesty is not apparent in the precise description of the quasi-algorithmic process but in giving account of the quasi-heuristics of quitting – i.e. articulating the conditions in which one is willing to give it up.

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CAN THE SCHOOLS IN THE STATE OF GEORGIA MEET 100% EDUCATIONAL PROFICIENCY REQUIREMENTS BY 2014?

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ABSTRACT

This study looks at the various factors which determine what percentage of schools met the Adequate Yearly progress standards for the 2006-2007 school year, using all 159 counties in the state of Georgia. By employing Ordinary Least Square (OLS) analysis, the results suggest that the percentage of students enrolled with learning disabilities (DISAB), the percentage of students scoring proficient or better on state math proficiency (MTPS), and the graduation rate (GRAD) are statistically significant in explaining the educational achievement of county high schools. As a second stage, the parameter estimates from the reduced model are used to simulate the feasibility of achieving 100% educational proficiency by 2014, assuming that realistic education policy changes are implemented.

1. INTRODUCTION

Over the last decade, the United States education system has experienced significant transformations. Until recent reforms, teaching, assessment and curriculum were primarily under the control of local schools and districts. Implemented by the Federal No Child Left Behind Act (NCLB) of 2001, education decision-making has shifted to the state and federal levels. As mandated by NCLB, *all* states are required to develop standards, standardized tests in reading and math in grades three through eight, and science (added in 2008 for grades nine through twelve) and accountability systems as means to hold teachers and students responsible. Reform advocates provide three principal rationales for the reforms, (1) they are necessary to increase U.S. education efficiency, thus increasing the nation's international economic competitiveness, (2) they are necessary to close the educational achievement inequality between advantaged and disadvantaged students; and finally, (3) they are necessary to increase assessment objectivity, which provides a valid and reliable means of assessing students' learning (Hursh, 2005).

NCLB is a benchmark that schools have to meet every year. Adequate yearly progress (AYP) is a measurement of the percentage of schools in a state or county that satisfies the requirements set by NCLB. The requirements, which calculate AYP, are determined by the scores of students on standardized tests set by the federal and state Department of Education. John Winn, of the Florida Department of Education, states "NCLB requires that every public school and every school district makes adequate yearly progress toward state proficiency goals" (Winn, 2006). The calculation of AYP is based on the creation of subgroups, such as students with learning disabilities, students who are economically disadvantaged and students who are English language learners. Scores must be calculated and reported separately for each subgroup. Scores on tests showing reading proficiency and math proficiency as well as participation and attendance are also critical in determining AYP. The AYP objectives must be performed at the school level and schools that receive federal funding but have not fulfilled the AYP requirements in 2 years are placed on a needs improvement list.

Like other states, the state of Georgia uses standardized tests to measure reading and math proficiency. The Georgia Department of Education (2008) uses "the Criterion-Referenced Competency Tests (CRCT) as the AYP assessment tool for elementary and middle school grades, the Enhanced Georgia High School Graduation Test (EGHSGT) for high school, and the Georgia Alternative Assessment (GAA) for the most severely cognitively impaired students". Georgia has set the following CRCT requirements per school: 58.3% of the students must pass the math portion and 66.7% must pass the reading portion. The requirements for math and reading for the EGHSGT are 81% and 88%, respectively. The goal of NCLB is to have 100% proficiency by 2014 regardless of the background of students.

One issue yet to be resolved is whether relying primarily on standardized test scores can accurately assess the achievements of schools whose students come largely from the ranks of the under-privileged such as the homeless, poor, those who are learning the English language, or those who have a disability. Schools with large populations of students with these disadvantages illustrate why the academic achievement gap can appear so skewed for some schools and be practically nonexistent for others, a result which is troubling to many who believe that standardized test scores should be the only measure of academic success or failure. This calls into question whether 100% proficiency is reasonably attainable by 2014.

The objective of the paper is twofold. First, this paper is to determine the various factors that affect the percentage of county high schools in Georgia that met the standards (AYP) for the 2006-2007 school year. Understanding the determining factors of the adequate yearly progress (AYP) is crucial for a correct evaluation of 100% proficiency attainability by 2014. This paper does not discuss in great detail the theory and problems of NCLB, but instead focuses on the development of an empirical model to determine the factors that affect the percentage of schools that provide adequate education in Georgia. Second, the parameter estimates from the reduced model are used to simulate the feasibility of achieving 100% educational proficiency by 2014, assuming that realistic education policy changes are implemented.

The paper proceeds with a literature review. Section 3 presents the theoretical model and provides the data used for the study. We then present the estimation methodology and the results. Simultaneous net effects of various education policies are calculated and presented in section 5. The paper concludes with a discussion of the main findings and their implications.

2. LITERATURE REVIEW

There was minimal education reform prior to the No Child Left Behind Act (NCLB), 2001. Before NCLB, Lyndon B. Johnson signed the Elementary and Secondary Education Act (ESEA) of 1965. Thomas and Brady (2005) explained that this legislation was enacted to offer equitable educational opportunities to the nation's disadvantaged, providing financial resources to schools to enhance the learning experiences of underprivileged children. ESEA has gone through many revisions but was the largest source of federal support for education before NCLB. By the time the Federal No Child Left Behind Act of 2001 was signed into law in January, 2002, every state except Iowa had adopted academic achievement standards and assessments for some form of school accountability. As stated by Mueller and Schmitt (2006), many educators feel that the law is unfair and magnifies the educational achievement gap among racial/ethnic groups and between advantaged and disadvantaged students. The main concern educators have about NCLB is that, by 2014, all states are expected to reach proficiency as measured by state assessments.

NCLB has many problems. First, one of the main goals of the Act is to have 100% proficiency in reading and math by 2014, which may be an unrealistic goal that forces schools to focus too much attention on the state assessments and preparation for them, and not enough attention given to other subjects or the particular needs of individual students for mastering those subjects. Another shortcoming of NCLB is the intense focus of attention on students who are not meeting AYP requirements. The study by W.L. Sanders (2003) argues that schools with high populations of at-risk students often overlook high achievers since they tend to not be in jeopardy of missing the proficiency goal. Others are concerned that high achieving students will be forgotten because teachers must focus so much attention on the under achieving students. This is one of the prime criticisms of NCLB.

The Effects of AYP Requirements on Student Achievement, a study conducted by Mueller and Schmitt (2006), analyzes how well students in the state of Kansas are achieving since the wake of AYP regulations. Mueller and Schmitt (2006) found that the number of students reaching the level of proficiency in the state of Kansas did indeed increase over the six years. However, those changes were much smaller than they anticipated. They argued that these results were not based solely on the creation of NCLB, but it did have a positive impact. They contend that curriculum, teaching strategies, and teacher education could also provide a reason for the increase of students in high achieving categories. Mueller and Schmitt suggested that future research should include factors such as changes in student learning and teaching styles in relation to student achievement.

In his paper, Test-based Educational Accountability in the Era of No Child Left Behind Robert Linn (2005) of the National Center for Research on Evaluation, Standards, and Student Testing (CRESST), reveals that both state and federal governments have moved away from resource and process measures as a means of judging the quality of schools to an ever-increasing reliance on student test scores to hold schools accountable. Linn (2005) argues that differences between state and federal requirements and inconsistencies between states make comparing student achievement from one state to another almost impossible. Because of the substantial differences in state and NCLB requirements, mixed messages that are confusing to the public are being given about school performance. Linn (2005) goes on to state that every state has their own standards as well as their own assessments to measure achievement; so, it is difficult to measure results from different states and hold the states accountable. He does suggest changes to NCLB, including setting a more realistic and obtainable goal, which would coincide with states' individual measures of success.

The study by Greenwald, Hedges, and Laine (1996) looked at the effect of school resources on student achievement. The findings of their research provide a clear direction for policymakers that money is positively related to student achievement. The magnitude of the effect is large enough to suggest that moderate increases in spending are associated with increases in achievement. Based on prior research, this study verifies that increasing government spending on education will also increase student achievement. Greenwald et. al (1996) determined that school resources are systematically related to student achievement and that the relations are large enough to be educationally important. They state further that although this may seem like an obvious result, they still looked at data from over a thirty year period which show that past studies have yielded the same result.

3. THEORETICAL MODEL

This study uses an education production function to show the relationship between inputs to the education process and educational achievement. The production function can be expressed as follows:

Educational Achievement= f (H, S, F)

Where educational achievement is measured by the percentage of schools that met the standards (AYP). The inputs are parsed into three categories: the student's home/community environment (*H*), the school environment of the students (S), and the financial makeup of the school (F).

The variables used to capture the home/community environment of the student include the percentage of students enrolled who are economically disadvantaged (DISAD)[1], the percentage of students enrolled with learning disabilities (DISAB)[2], the percentage of students who are absent greater than 15 days (ABSENT) per academic year, the percentage of students who are English language learners (ENGLL), the percentage of students who recognize their ethnicity or heritage as "White" (WHRACE), the unemployment rate (UNEMP) for each county, and income per capita by county (INCPER). Schools with a percentage of children who are economically disadvantaged, who have disabilities, who are English language learners and/or who are absent more than 15 days per academic year are expected to have lower scores on standardized exams. It is hypothesized that black students tend to score lower than white students on standardized tests since more black students live in poverty, a condition linked to other problems such as low birth weight, less reading at home and less involvement by parents. Therefore, schools that have a higher percentage of white students (WHRACE) compared to non-white students are expected to have higher scores on standardized exams. The unemployment rate (UNEMP) by county is the percentage of the labor force that is not employed in a county. UNEMP provides important information in assessing the economic environment of the county in which the school is located and needs to be taken into account when an education achievement gap is in question. Income per capita by county (INCPER) is also included for capturing the income variation among counties. It is expected that counties with lower income per capita have lower levels of school proficiency. Schools located in poorer counties suffer by not having sufficient tax revenues to hire qualified teachers and purchase materials that are crucial to students' academic achievement.

The following variables are chosen to reflect school environment: student to teacher ratio (STTR), average years of experience of teachers (AYTE), percentage of students scoring proficient or better on state math proficiency (MTPS), graduation rate (GRAD), and the percent of high school graduates that are HOPE scholarship eligible. Helping Outstanding Pupils Educationally (HOPE) is Georgia's scholarship and grant program that is funded entirely by the Georgia Lottery for Education. It is hypothesized that a lower student-teacher ratio leads to higher educational achievement. Intuitively, it makes sense that the higher the student-teacher ratio, the less individualized attention each student gets. However, there is a great deal of debate among educational researchers regarding whether or not a high student-teacher ratio affects student achievement. The Center for Public Education reveals that a lower student-teacher ratio and lower class size improves achievement in grades K-3. However, the National Center for Education Statistics (NCES) discloses that other factors such as teacher quality and the number of classes a teacher teaches can have a similar affect. The NCES points out that student-teacher ratio is a better measure of school quality than student achievement. Others point out that in higher grades students depend more on their peers than their teachers for help. Therefore, a high student-teacher ratio may not be a factor. Research has shown that the optimal student-teacher ratio is 18:1. Our data show that no counties in Georgia have a student teacher-ratio greater than the optimal ratio, so a positive effect is hypothesized. Teacher quality is captured by the average years of teaching experience (AYTE) variable, which is determined by the sum of all the years of the faculty's professional teaching experience (in years) divided by the number of faculty members. Finally, the percentages of students scoring proficient or better on state math proficiency (MTPS), the graduation rate (GRAD), and HOPE are included to capture the school academic achievement.

Federal, state and local expenditures per pupil (EXPP) for each school district is included to reflect the financial makeup of the school. High levels of expenditures per pupil are more likely associated with better school programs, low student teacher ratios, more qualified teachers, and modern supplies and equipment. Therefore, schools that have higher federal, state and local expenditures per pupil are expected to yield higher proficiency.

4. DATA AND EMPIRICAL ESTIMATION

The theoretical model was estimated with county level data from the state of Georgia for the 2006-2007 school year. The educational information variables were obtained for public schools only. There were 159 county public high schools in the state. Much of the data were taken from the Georgia Department of Education, Georgia Statistics webpage, and Bureau of Labor Statistics. The detailed definitions of each variable are listed in Table 1.

This paper postulates a linear approximation for the relation between educational achievement and inputs to the educational process, as follows

$$\begin{aligned} AYP_i = {} & \pi_0 + \pi_1 DISAD_i + \pi_2 DISAB_i + \pi_3 ABSENT_i + \pi_4 ENGLL_i + \pi_5 WHRACE_i + \pi_6 UNEMPL_i \\ & + \pi_7 INCPER_i + \pi_8 STTR_i + \pi_9 AYTE_i + \pi_{10} MTPS_i + \pi_{11} GRAD_i + \pi_{12} HOPE_i + \pi_{13} EXPP_i + \varepsilon_i \end{aligned}$$

where *i* represents each county public high school.

TABLE 1: DESCRIPTIVE STATISTICS OF VARIABLES

Variable	Variable Definition	Mean	Standard Deviation	Min.	Max.
Dependent Variable					
AYP	% of schools that met Educational Achievement	76.4	23.1	0.0	100.0
Home/ Community Environment					
DISAD	% of students enrolled who are economically disadvantaged	59.17	16.97	14.30	94.10
DISAB	% of students with learning disabilities	12.96	2.86	6.70	23.40
ABSENT	% of students who are absent more than 15 days per academic year	10.80	4.52	0.00	48.10
ENGLL	% of students who are English Language Learners	2.35	3.01	0.00	19.20
WHRACE	% of students who recognize their ethnicity/heritage as white	55.05	24.17	1.60	96.80
UNEMP	county unemployment rate, %	4.91	1.08	3.10	9.50
INCPER	county income per capita, $	40,169	10,659	26,051	85,318
School Environment					
STTR	student to teacher ratio	14.26	1.10	9.90	17.00
AYTE	Average Years Teaching Experience	13.61	1.81	9.32	18.67
MTPS	% of students scoring proficient or better on state math proficiency	76.93	7.50	52.10	93.40
GRAD	graduation rate, %	69.72	8.50	37.50	91.50
HOPE	% of high school graduates that are HOPE scholarship eligible	35.30	8.92	7.40	65.60
Financial Make-up					
EXPP	Federal, State and Local expenditures per pupil, $	7,655	906.40	5,439	11,956

Table 2 presents the estimation results of factors affecting educational achievement of county public high schools in all county school districts in Georgia. An Ordinary Least Square (OLS) procedure was used to estimate the parameters using 159 observations. The adjusted R square for the model is .4, suggesting that the independent variables in this model can explain 45% of the variation in educational achievement (AYP) of county public high schools in the state of Georgia. The following independent variables were found to be statistically significant in explaining the educational achievement of county high schools in Georgia: the percentage of students enrolled with learning disabilities (DISAB), the percentages of students scoring proficient or better on state math proficiency (MTPS), and the graduation rate (GRAD).

TABLE 2: ESTIMATION RESULTS OF THE OLS MODELS
DEPENDENT VARIABLE: THE PERCENTAGE OF SCHOOLS THAT MET AYP

Variable	**Estimation Coefficients**
INTERCEPT	-99.82 (.11)
Home/Community Environment	
DISAD	0.11 (0.56)
DISAB	-2.09*** (0.0003)
ABSENT	-0.22 (0.53)
ENGLL	0.68 (0.18)
WHRACE	0.03 (0.75)
UNEMPL	-0.96 (0.59)
INCPER	0.0001 (0.59)
School Environment	
STTR	0.21 (0.29)
AYTE	1.09 (0.24)
MTPS	1.58*** (0.0001)
GRAD	0.62*** (0.004)
HOPE	0.06 (0.76)
Financial Characteristics	
EXPP	0.003 (0.23)
Adjusted-R^2 : 0.45	
Number of Observations (N):159	
F-Value :10.85 (0.001)	

Note: *, **, *** represent significance at 10%, 5%, and 1% level, respectively; *P-values* are in parenthesis.

The regression coefficient DISAB (percentage of students enrolled with learning disabilities) is -2.09 and statistically significant at the 1% level. Therefore, for every percentage increase in students enrolled with learning disabilities, the AYP percentage at the county level in Georgia decreases by 2.09 %. The variable MTPS (percentage of students scoring proficient or better on the state math assessment) has a coefficient of 1.58 suggesting that every one percent increase in MTPS increases AYP percentage at the county level in Georgia by 1.58%. Finally, every 1 percent increase in graduation rate (GRAD) increases the AYP percentage at the county level by 0.62 percent. Both MTPS and GRAD variables are statistically significant at the 1% level.

Finally, heteroskedasticity and multicollinearity among the variables are tested in this study. White's test (White 1980) is used for the presence of heteroscedasticity. The result shows that the null hypothesis of no heteroskedasticity against heteroskedasticity is accepted at the 5% significance level. In order to investigate presence of multicollinearity, we look at the correlation coefficient among variables. The results are given in Table 3. They show that the three variables which are used in our estimation – DISAB, MTPS, and GRAD- are independent among each other. That is, there is no multicollinearity problem.

5. NET IMPACT OF CHANGING EDUCATIONAL POLICY ON AYP BY 2014:

This section focuses on the issue of feasibility and investigates several "what if" questions through simulation analyses of the data collected from 159 county high schools during the 2006-2007 school year. Two steps were followed to estimate the goal of having 100 percent of students proficient by 2014. First, Equation 1 was re-estimated by only including DISAB, MTPS and GRAD that were statistically significant in explaining the educational achievement of county high schools (AYP), as reported in Table 2. The estimation coefficients are reported in Table 4.

TABLE 3: CORRELATION COEFFICIENT

	DISAD	DISAB	ABSENT	ENGLL	WHRACE	UNEMP	INCPER	STTR	AYTE	MTPS	GRAD	HOPE	EXPP
DISAD	1.00												
DISAB	0.28	1.00											
ABSENT	0.04	0.07	1.00										
ENGLL	-0.14	-0.13	-0.13	1.00									
WHRACE	-0.66	0.04	0.01	0.00	1.00								
UNEMP	0.58	0.13	0.03	-0.24	-0.55	1.00							
INCPER	-0.77	-0.32	-0.17	0.24	0.35	-0.48	1.00						
STTR	-0.25	-0.36	-0.30	0.06	0.15	-0.15	0.22	1.00					
AYTE	0.28	0.15	0.21	-0.26	-0.07	0.15	-0.44	-0.16	1.00				
MTPS	-0.77	-0.21	-0.19	0.17	0.68	-0.57	0.58	0.22	-0.18	1.00			
GRAD	-0.48	-0.16	-0.22	0.04	0.37	-0.33	0.45	0.09	-0.01	0.53	1.00		
HOPE	-0.40	-0.08	-0.17	0.18	0.43	-0.31	0.37	0.09	-0.02	0.39	0.50	1.00	
EXPP	0.46	0.31	0.14	-0.13	-0.36	0.15	-0.32	-0.60	0.26	-0.49	-0.24	-0.17	1.00

Second, using the parameter estimates from Table 4, several "what if" questions were investigated. For example, if DISAB decreases by 1% and both MTPS and GRAD increase by 1% each year until 2014, the percentage of schools that met AYP would be 88.56%. If, on the other hand, DISAB decreases by 1% but both MTPS and GRAD increase by 2%, the net effect by 2014 would be 99.92% proficiency. There are multiple combinations that can be tried. The combinations and their empirical results are given in Table 5.

TABLE 4: ESTIMATION RESULTS OF THE OLS MODELS
DEPENDENT VARIABLE: THE PERCENTAGE OF SCHOOLS THAT MET AYP

Variable	Coefficients Estimation
INTERCEPT	
DISAB	-1.69*** (0.001)
MTPS	1.35*** (0.001)
GRAD	0.64*** (0.001)
Adjusted-R^2	0.45
Number of Observations (N)	159
F-Value	10.85 (0.001)

Note: *, **, *** represent significance at 10%, 5%, and 1% level, respectively; *P-values* are in parenthesis.

To see how the net effect is found, the following steps are followed. On top of the baseline, equal increments are made every year until 2014. As an example, one percentage unit (0.01) decrease multiplied by the average DISAB base over the study period (2008 - 2014) yields the decrease in % of students with learning disabilities. By increasing the averages of each of the other two variables (MTPS and GRAD) by 1% each year until 2014, the results show an increase in % of students scoring proficient or better on state math proficiency, and a % increase in the graduation rate. Adding the contributions of all three variables, gives the net effect of different educational policies on expected average percentage of county high schools that will meet AYP by 2014.

TABLE 5: NET EFFECT OF DIFFERENT EDUCATIONAL POLICIES ON EXPECTED AVERAGE PERCENTAGE OF HIGH SCHOOLS MET AYP BY 2014

Experiments	Expected Percentage of High Schools meeting AYP by 2014
1. Decrease DISAB by 1%, and increase both MTPS and GRAD by 1%	88.56%
2. Decrease DISAB by 2%, and increase both MTPS and GRAD by 2%	**101.32%**
3. Increase both MTPS and GRAD by 2%, with no change in DISAB	98.43%
4. Decrease DISAB by 1%, and increase both MTPS and GRAD by 2%	**99.92%**
5. Decrease DISAB by 1%, and increase both MTPS and GRAD by 1% and 2%, respectively	91.97%
6. Decrease DISAB by 1%, and increase both MTPS and GRAD by 2% and 1%, respectively	95.96%

6. CONCLUSION:

This study examined the various factors which determine what percentage of schools in Georgia that are expected to met the standards (AYP) for the 2006-2007 school year. By employing Ordinary Least Square (OLS) analysis, the regression results using all 159 counties in Georgia indicate that: the percentage of students enrolled with learning disabilities (DISAB), the percentages of students scoring proficient or better on state math proficiency (MTPS), and the graduation rate (GRAD) are statistically significant in explaining the educational achievement of county high schools (AYP). The empirical results are used to estimate the combined effect of various education policy changes on the feasibility of achieving 100% proficiency by 2014. The estimated empirical results are expected and provide several important policy implications. This study shows that: 1) schools with students from lower socioeconomic backgrounds tend to score lower on standardized exams. Consequently, the students' educational achievement depends directly on their parents' economic condition. Therefore, if policy makers expect education success to depend on ability and effort alone, funding allocation by local and state government must help diminish economic hardship as a stumbling block to educational achievement; 2) students with learning disabilities have lower educational achievement than those. In order to overcome this problem, some high schools have adopted a co-teaching model. In previous years, children with learning disabilities were isolated in separate classrooms with teachers who specialized in teaching and dealing with children with learning disabilities and associated challenges/problems. As the statistics of children with learning disabilities increased, especially with the recent increase in autism diagnoses, lobbyists began pushing to mainstream children with learning disabilities into regular classrooms. A co-teaching model was established which integrates learning disabled children with those without learning disabilities. The special education teacher is a co-teacher with the regular teacher which is believed to enable the learning disabled student to receive their content from a qualified content teacher while still receiving additional assistance as needed from the in-class special education teacher. Preliminary results have suggested that implementing this model has resulted in an increase in achievement levels. Another consideration regarding the DISAB variable is the broad definitions of "learning disabled" that have been given in recent years. The lack of a concise definition has enabled "learning disabled" to be defined in a variety of ways, to the benefit and/or detriment of individual schools and school systems. Another interesting finding of this study is that the combined Federal, State, and Local government spending per pupil on each school district is not a contributing factor to educational achievement of high schools. Because of unavailability of data on the combined Federal, State, and Local government expenditure per pupil on each *high school*, this study uses aggregated levels of per pupil expenditures on each *school district*. If it were possible in the future, using more disaggregated data at each high school level would fully explore the educational achievement of public high schools in the state of Georgia.

ENDNOTES:

1- An "economically disadvantaged" student is a student who comes from a household that meets the income eligibility guidelines for free or reduced-price meals (less than or equal to 185% of Federal Poverty Guidelines) under the National School Lunch Program (NSLP) (http://dpi.wi.gov/lbstat/dataecon.html)

2- According to Georgia Department of Education, a student or child aged 3 through 21 is considered to have a disability under Disabilities Education Act (IDEA 2004), if the student or youth meets one or more of the categories of eligibility, consistent with Georgia Board Rule 160-4-7-.05, which are autism, deaf/blind, deaf/hard of hearing, emotional and behavioral disorder, intellectual disability, orthopedic impairment, other health impairment, significant developmental delay, specific learning disability, speech-language impairment, traumatic brain injury, and visual impairment (http://www.gadoe.org/ci_exceptional.aspx?PageReq=ABOUTREP).

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INCREASING PROPENSITY TO PAY: EVIDENCE FROM US BANKING SECTOR

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ABSTRACT

The question raised in this paper is: if there is a significant decrease in the propensity of U.S. firms to pay cash dividends, then who serves dividend seeker/lover investor!?. Using Fama French (2001) methodology, this paper attempts to shed light on the dividends policy and propensity to pay cash dividends implemented by US commercial banks as a possible alternative choice for dividends seeking investors. The results show that most banks pay dividends in increasing rates where more banks started paying dividends while less has stopped paying dividends .The findings also indicate that the main explanatory variables in predicting dividends are: the total assets, return on equity, and equity to liability ratio.

Keywords: *Dividends Policy, Propensity to Pay, Banking Corporations*

1. INTRODUCTION

The dividend policy of firms has been one of the most important research topics in the finance literature for most of the last four decades since the publication of the seminal paper on the irrelevance of dividend policy by Modigliani and Miller (1961). Fama and French (2001) provides empirical evidence that the relative number of dividend paying firms has been decreasing over the last decades. This is in part due to the changing characteristics of publicly traded firms. Start-up firms with low profitability and strong growth opportunities have developed a tendency to avoid initiating dividend payments. Regardless of this changing characteristic, it is found also that there is a tendency that firms become less likely to pay dividends. DeAngelo et al (2004), document that the decline in the number of dividend payers is confined to industrial firms and is not realized by financial/utility firms their finding. They also show that the number of payers for financial/utility (industrial) firms increases (declines) by 9.5% (58.9%) and that the banking industry accounts for 11.20% of the total market capitalization of all the dividend-paying firms and the dividends paid account for 14.64% of the total dividends paid by all the public firms . Acharya et al. (2009) have pointed out that banks continued to pay large dividends to their stock holders even after the 2008 economic crisis: “despite expecting large credit losses, breaching the principle of priority of debt over equity. This type of behavior can lead to default, and should therefore be avoided by banks”.

Empirical evidence indicates that the dividend policy for banks is quite important in that it signals quality in a banking environment that is best characterized by significant information asymmetry [Miller and Rock (1985), Bessler and Nohel (1996), Bessler and Nohel (2000), Boldin et al., (1995), Slovin, Sushka and Polonchek (1999), Cornett (2008)]. The multidimensional aspect of the asymmetric information problems faced by banks and bank customers, shareholders, and examiners is an important aspect in arguing that banks are different. Banks’ shareholders may expect regular dividend from those highly “liquid” financial institutions. In addition, banks have to consider the assurance needs and confidence aspects of their customers (Onali (2010)). Frequent announcements of stable or growing dividends may therefore be utilized by banks as a means for providing positive information about the bank’s solvency to investors, customers, and regulators alike. Hence, dividends provide some positive information about the bank’s current success and about the future viability of the bank and vice versa.

Despite the extended literature on the overall issue of dividend policy, most studies exclude regulated firms from their analyses. The higher financial leverage and the tight financial sector regulation, have made financial institutions excluded of the sample in the greater part of dividend policy studies (Lintner, 1956; Rozeff, 1982; Brennam and Thakor, 1990; Alli et al., 1993; Heineberg and Procianoy,Fama and French 2001; 2000; Fenn and Liang, 2001; Grullon and Michaely, 2002). However there is a very limited number of studies representing the dividends policy in banking industry ((Casey and Dickens, 2000; Baker, Veit and Powell, 2001; Raghavan, 2005, Nnadi and Akpomi, 2005; Bodla et al., 2007, Caprio et al., 2007,).

The main objective of this paper is investigate the tendency of US banks to pay dividends and variables upon which they build up their decision to pay or not to pay by using the same methodology used by Fama and French (2001). To compare the results of this paper with Fama and French results, the time period of this paper is (1993-2000) to coincide with the latest period of Fama French (2001).

2. LITERATURE REVIEW

The literature that is relevant to this research question comes from various research areas of corporate finance and regulated firms in general because of the real scarcity of the close literature . Moyer, Rao, and Tripathy [1992] suggested that regulated firms use dividends as a means of subjecting the utility and the regulatory rate commission to market discipline, in keeping with the Smith [1986] hypothesis. Smith [1986] argues that by subjecting the regulatory commission to capital market discipline as the utility raises new capital, the utility can ensure more favorable rate adjustments. Moyer et al. also found that the dividend policies for these firms respond to changes in policies adopted by regulatory commissions. In a related article, Moyer, Chatfield, and Sisneros [1989] found that security analysts' monitoring activities of firms are lower either when the firm is a public utility or when the level of insider holdings is relatively high. This study also shows that the analysts' activities are higher for financial firms, ceteris paribus, than for nonfinancial firms, indicating that the influences of fixed-rate deposit insurance overwhelm the influences of other regulatory restrictions.

Akhigbe, Borde, and Madura [1993] measure the common share price response to dividend increases for both insurance firms and financial institutions relative to unregulated firms. They find that insurance firms stock prices react positively to increases in dividends over a four-day interval surrounding the announcement, but that these reactions differ depending on the insurer's primary line of business. They divide the sample into these three segments: life, property and casualty, and other. Their results show that the market reaction for each segment is greater than the market reaction for financial institutions. By contrast, the market reaction for life insurers is lower than that for industrial firms, while the reactions for property and casualty firms and other insurers are both higher. However, they note that the reaction is not related to firm-specific variables like profitability, leverage, or firm size. Boldin (1995) found that there is a positive relationship between banks dividends per share and bank quality rating, and a negative relationship between dividends payout ratio and banks quality concluding that banks’ dividends policy yields information about the bank quality.

Collins, Saxena, and Wansley [1996] compared the dividend payout patterns of a sample of regulated firms (from banking, insurance, electric utility, and natural gas industries) with unregulated firms (from a variety of different industries). They did not find that the financial regulators' role is one of agency cost reduction for equity holders. Utilities, on the other hand, are different. They alter their dividend payout in response to changes in insider holdings. Moreover, for a given change in insider holdings. this policy change is more pronounced than the change for unregulated firms. Fama and French (2001), argues that firms with high profitability, good investment opportunities, and larger size tend to pay more that other firms. The three characteristics considered by Fama and French do match banks’ characteristics who are mostly large in size, highly profitable ,have investment opportunity sets,and highly liquid. Cornett et al., (2010), document a positive relationship between banks performance (in terms profitability, capital adequacy, asset quality, operating efficiency, liquidity and growth) and dividends initiation and between dividends initiation and both takeover likelihood and merger premium a conclusion that support the signaling role of dividends. Onali (2010) found that banks that are close to depleting their capital (with low capital to total assets ratio) pay more dividends to their shareholders, arguing that dividends are used to shift risk from banks owner to taxpayers. The finding of Onali (2010) consists fully with Acharya et al., (2009).

3. DATA AND METHODOLOGY

The data of this study consists of 759 commercial banks drawn from Bank Scope for the period 1993-2000. We begin with 1993 which is the earliest data possible to have from bank scope and we ended up with 2000 to prevent any regulation/deregulation acts. Another reason to study that period of time is to make the comparison with Fama and French more solid. However, it worth to mention that the initial sample consisted of 1425 banks where several observations were dropped due to incomplete information of all the variables chosen in this study . The banks studied in this paper did not go into merger activities or any act that may causes structural changes .Table (1) shows represents the descriptive statistics of the sample. .The table shows the increasing pay-out ratio and the increasing percentage of the payers. In 1993 the pay –out ratio was 39 percent and became 54 percent by 2000.The percentage of payers also increased from 66 percent in 1993 to about 80 percent in 2000.

Table (1) : Total assets ,net income, dividends paid ,and the percentage dividends paid for each year

year	Num of Observations	Total Assets *	Net Income	Dividends Paid	Pay-out Ratio	Div/Assets	Num of Banks	Paid Div	%
1993	778	6.6558	4.6912	4.2731	0.3819	0.0041	757	501	0.6618
1994	871	6.7303	4.7394	4.3698	0.4269	0.0044	846	608	0.7187
1995	941	6.7975	4.8161	4.4981	0.4809	0.0050	913	664	0.7273
1996	1064	6.9222	4.9938	4.7376	0.5545	0.0065	1036	789	0.7616
1997	1106	7.0246	5.0784	4.8135	0.5433	0.0061	1069	827	0.7736
1998	1142	7.1066	5.1438	4.8667	0.5283	0.0058	1099	853	0.7762
1999	1175	7.1690	5.2446	5.0194	0.5954	0.0071	1139	910	0.7989
2000	1181	7.2216	5.2749	5.0134	0.5476	0.0062	1137	907	0.7977

Corr (Total Assets ,Net income)	0.9961
Corr (Total Assets ,Paid Dividends)	0.981
Corr((Net Income ,Dividends Paid)	0.972

* Amount are in tens of billion US dollars.

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4. MODEL AND VARIABLES DEFINITION

Using Fama and French (2001) logit model frame work, and by adopting the same procedures they adopted to quantify the propensity for paying dividends, we build the following multivariate logit model as shown in equation (1).

$$Dum(Div) = \alpha_0 + \alpha_1(LOGTA) + \alpha_2(ROA) + \alpha_3(ROE) + \alpha_4(LOANTA) + \alpha_5(EQUITYTA) + \alpha_6(EQUITYLI) + \varepsilon_I \qquad (1)$$

As mentioned above ,we tried to keep our variable as close as possible to the variables used by Fama and French (2001).To count for the size effect we chose the log of total assets(LOGAT) .We expect that the larger the bank size, the more likely it will pay dividends. The profitability is represented by two variables: return on assets (ROA) ,and return on equity (ROE). Again we expect the higher the profitability the higher the pay-out ratio. The investment opportunity in here is represented by the loan to total assets ratio (LOAN_TA),we hypothesize that the higher loan assets utilization through loans ,the higher the pay-out . We further added the safety variable to count for the effect of safety considerations in banking sector ,where two ratios are chosen: equity to total assets (RQUITYTA), and equity to total liabilities (EQUITYLI).Our expectations about these variables are mixed .From one side we believe that manager want to compensate the share holders if they participate more in financing the banks' activities but, if manager want to keep the coverage ratio high, then we expect that they will retain high portion of net income and be very reluctant to pay cash dividends . We used logit regression to examine the characteristics of dividends payers . logit regression is performed first for the whole period (1993-2000),and then we employed it in annual bases to test how the coefficients are changing over time . Furthermore, we sub sampled our overall sample according to their cash dividends paying trends where we have four different dividends paying groups: banks who kept paying dividends for the whole period, banks who stopped paying, banks who pays more than the net income of the spot year, banks have already started paying .

5. EMPIRICAL RESULTS

Table (2), panels a and b presents the logit regression results for whole sample banks for the period 1993-2000. The results show significant intercept when either using the whole sample, or when using other time subsample which indicates the stickness of the dividends policy adopted by US banks. The findings also show positive relationship with total assets, return on equity, and equity to total assets and negative relationship with equity to total assets. Accordingly it can be concluded that large banks with high equity tend t to pay more dividends .

For the safety ratios we have two results ;For (EQUITYTA) we have a significant negative slope ,which means the higher the equity the less the pay – out .This is a very interesting results because it tells us that managers don't care about who finance there operations . The other result is related to (EQUITYLI) ratio ,which indicates a positive significant relationship between the dividends paid and the coverage ratio; the more the bank is covered ,the more it will pay dividends .The other results reported in table (2) shows how the coefficients change over time .In general ,the size (LOGTA)looks the most persistent variable in determining the pay-out policy . (ROE) is still significant for some periods .To make sure that we did not miss the effect of our selected variables on the future pay –out policy we used Logit again but with the lagged dummy variable this time (namely year t-1).The results are shown in table (2).

Panel B of table (2) confirms our results .(LOGTA) is still the most significant and persistent explanatory variable ,followed by (ROA) who still have some explanatory power .In panel (B) of table (2),we utilize the logit estimates to make expectations about next period pay-out ratio. Starting with 1994 we compare the actual pay-out ratio with the logit equation gained by using 1993 data .The results are represented in the last three columns of panel (B) which show that the actual dividends paid exceeds the expected dividends which reflects the increasing propensity to pay by banks .This results is very interesting because Fama and French did never report such a result for the whole stages of there analysis. In general ,when firms have growing propensity to pay dividends (including banks) , estimations tend to under estimate the future dividends, and vice versa.

Our next step is to repeat what we have already did using several subsets this time .The reason why we are doing this is that we have already noticed that there are four distinctive trends in dividends policy. Table (3) reports the results for the banks that had never cut paying dividends (which counts for about 70 percent of the total sample) .The results are not much different from what we have reported from table (2) where this sub sample counts for 70 percent or more of our entire sample).We still can see the significant positive effect of (LOGTA).

Table (4)) reports the results of the banks that had stopped paying dividends since two years at least .Astonishingly ,the size effect disappeared totally when using logit for the entire period .The only significant variable is (LOAN_TA) where its still negative .Nothing is changed in table (7) except loosing the significance of the (LOAN_TA) ,where panel (b) of table (4) has no significant value .The interesting part ,if we assume that some body will use these insignificant estimates ,is that the expectations starts exceeding the actual dividends ratio. The explanation is that share holders still think that the bank is still paying while it stopped doing so .

Tables (5) panels a and b report the results for banks make at least two payments during the study period exceeding there net income of that years .The results also fail to report any significant variables .We believe that the reason behind those results is the extra ordinary nature of these payments .Most of the banks did it for one time or two and not more .But what is unique in this case is the loss of the trend of the expectations .

The last sample of our analysis is represented in panels a and b of tables (6).The subsample in here is the banks that have already started paying dividends .This sample is the smallest in size (relative to others). The result is the significant coefficient of (LOGTA) for the whole period .and from table (6) we can see that most variables are significant except (LOAN_TA) but the significant parameters do not exist for any single period .The last column of table (6), panel (b), shows the growing propensity to pay through out the whole period where the expectations never exceed the actual dividends paid .

Table 2- Logit regression for whole cross sectional sample

Panel (A): Logit regression for the whole sample banks for each year (t) ,for the period 1993-2000.The dependent variable is 1in year t if the bank pays dividends ,0 otherwise .The explanatory variables are log of total Assets (LOGTA) , return on assets (ROA),Return on equity (ROE),loans to total assets (LOAN_TA) ,equity to total assets (EQUITYTA) ,and equity to total liabilities (EQUITYLI).The table shows the means (across years) of the regression intercept (C) and slopes, and the t- statistics for the means.

	Parameter	C1	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI
1993-2000	Estimate	-2.715	0.394	0.202	0.103	-0.1439	-0.0609	0.0105
	t-STA	(-11.39)***	(18.09)***	(1.85)*	(9.77)***	-0.798	(-3.79)***	(2.37)**
1994		-1.79	0.421	0.771	0.051	-1.513	-0.095	0.008
		(-2.34)**	(6.36)***	1.425	1.183	(-2.77)***	-1.315	0.370
1997		-1.953	0.364	0.093	0.096	-.009	-0.132	0.038
		(-2.78)***	(5.844)***	0.291	(92.98)***	-0.019	(-2.169)**	(2.144)**
2000		-2.073	0.288	0.959	0.039	0.699	-0.044	-0.031
		(-2.88)***	(4.81)***	(2.35)**	1.173	1.364	-0.491	-0.533

Panel (B): Comparing actual dividends payout ratio with the expected one where next period expected payout ratio is estimated from the regression equation of the previous year.

Period	Parameter	C1	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI	Actual	Expected	Ex-Ac
1994-200	Estimate	-1.615	0.374	-0.0425	0.053	-0.337	-0.075	0.022			
	t-statistics	(-7.52)***	(18.29)***	-0.714	(8.53)***	(-1.950)*	(-5.139)***	(3.782)***			
1994		-0.786	0.369	0.231	.00673	-0.919	-0.149	0.041	0.7072	0.66588	-0.041322
		-1.312	(6.35)***	1.220	0.555	(-1.89)*	(-2.72)***	1.578			
1997		-2.319	0.376	0.366	0.0724	0.124	-0.124	.0365	0.77081	0.7493	-0.021515
		(-3.32)***	(6.246)***	0.966	(2.065)**	0.259	(-1.929)*	(1.895)*			
2000		-2.040	0.404	0.070	0.047	0.104	-0.062	0.0012	0.77414	0.78477	0.010629
		(-3.09)***	(6.65)***	0.424	(2.71)***	0.208	-1.569	0.716			

Table 3- Logit regression of the sample the banks kept paying dividends for the whole period

Panel (A): Logit regression for the banks kept paying dividends for the whole period. The dependent variable is 1in year t if the bank pays dividends ,0 otherwise .The explanatory variables are log of total Assets (LOGTA) , return on assets (ROA),Return on equity (ROE),loans to total assets (LOAN_TA) ,equity to total assets (EQUITYTA) ,and equity to total liabilities (EQUITYLI).The table shows the means (across years) of the regression intercept (C) and slopes, and the t- statistics for the means.

	Parameter	C	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI1
1993-2000	estimate	-0.740	0.237	0.359	0.104	-0.190	-0.044	0.005
	T-statistics	(-2.01)**	(7.35)***	1.603	(5.39)***	-0.618	(-1.76)*	0.880
1994		-1.997	0.331	-0.686	0.207	-1.566	0.182	-0.043
		-1.446	(2.99)***	-0.635	(2.41)**	-1.507	1.318	-1.087
1997		0.202	0.144	-0.297	0.129	0.257	-0.041	0.009
		0.161	1.463	-0.354	(1.80)**	0.286	-0.335	0.291
2000		-0.064	0.220	2.365	-0.052	-0.721	0.215	-0.268
		-0.053	(2.52)**	(4.85)***	-1.626	-0.835	0.598	-1.039

Panel (B): Comparing actual dividends payout ratio of banks kept paying dividends with the expected one where next period expected payout ratio is estimated from the regression equation of the previous year.

Period	Parameter	C	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI	Actual	Expected	Ex-Ac
1994-200	Estimate	-0.155	0.264	-0.181	0.072	-0.274	-0.027	0.008			
	t-stat	-0.397	(7.68)***	-1.271	(5.15)***	-0.830	-0.990	0.779			
1994		2.555	0.191	4.489	-0.235	-0.706	-0.469	0.038	0.930	0.843	-0.086
		(2.23)**	(2.26)**	(4.29)***	(-3.22)***	-0.873	(-3.4)***	0.799			
1997		-1.173	0.203	0.424	0.071	1.400	-0.056	0.024	0.928	0.919	-0.009
		-0.941	(2.08)**	0.455	0.953	(1.66)*	-0.394	0.544			
2000		-1.452	0.328	-0.362	0.087	-0.044	0.329	-0.234	0.891	0.912	0.021
		-1.160	(3.49)***	-1.337	(3.08)***	-0.050	0.944	-0.946			

Table 4- Logit regression of the sample the banks stopped paying dividends

Panel (A): Logit regression for the banks stopped paying dividends for the whole period. The dependent variable is 1in year t if the bank pays dividends ,0 otherwise .The explanatory variables are log of total Assets (LOGTA) , return on assets (ROA),Return on equity (ROE),loans to total assets (LOAN_TA) ,equity to total assets (EQUITYTA) ,and equity to total liabilities (EQUITYLI).The table shows the means (across years) of the regression intercept (C) and slopes, and the t- statistics for the means.

	Parameter	C	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI
1993-2000	Estimate	0.554	-0.201	-0.316	0.130	-3.155	1.737	-1.366
	t-stat	0.284	-1.612	-0.968	(2.582)***	(-3.071)***	(1.74)*	(-1.78)*
1994		0.018	-0.019	-0.017	0.017	0.008	-0.016	0.016
		2119.490	14.224	591.473	-44.452	490.626	-3330.370	2762.870
1997		-36.840	-0.304	-59.301	5.125	-10.960	1.019	3.946
		-0.801	-0.468	-0.992	1.018	-1.356	0.096	0.517
2000		-4227.450	10.607	-464.401	36.248	-68.369	8196.480	-7070.450
		-0.711	0.372	-0.215	0.250	-0.540	0.693	-0.687

Panel (B): Comparing actual dividends payout ratio of banks who stopped paying dividends with the expected one where next period expected payout ratio is estimated from the regression equation of the previous year.

Period	Parameter	C	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI	Actual	Expected	Ex-Ac
1994-200	Estimate	1.717	-0.146	-0.685	0.145	-2.461	0.066	-0.018			
	T-stat	1.130	-1.120	-1.890	2.700	-2.349	0.754	-0.515			
1994		265.815	21.000	24.604	-7.631	241.396	-324.831	243.602	1.000	0.714	- 0.286
		0.000	0.001	0.001	-0.001	0.001	0.000	0.000			
1997		-27.645	15.300	135.000	-8.470	-151.000	62.400	-51.200	0.588	0.882	0.294
		0.000	0.000	0.000	0.000	0.000	0.000	0.000			
2000		-727.000	-25.000	287.000	-19.000	47.200	2160.000	-1895.860	0.083	0.042	- 0.042
		-0.001	-0.001	0.000	-0.001	0.000	0.012	-0.017			

Table 5- Logit regression of banks paid more than %100 of their net income

Panel (A): Logit regression for the banks paid more than 100% of their net income for the whole period. The dependent variable is 1in year t if the bank pays dividends ,0 otherwise .The explanatory variables are log of total Assets (LOGTA) , return on assets (ROA),Return on equity (ROE),loans to total assets (LOAN_TA) ,equity to total assets (EQUITYTA) ,and equity to total liabilities (EQUITYLI).The table shows the means (across years) of the regression intercept (C) and slopes, and the t- statistics for the means.

	Parameter	C	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI
1993-2000	Estimate	-0.499	0.001	0.011	0.067	2.350	.2.590	-0.250
	t-stat	-0.105	0.007	0.011	0.821	0.551	0.116	-0.142
1994		2119.490	14.224	591.473	-44.452	490.626	-3330.370	2762.870
		0.023	0.020	0.025	-0.025	0.016	-0.024	0.024
1997		-1914.970	-1.100	-234.796	22.880	852.439	1006.800	-788.587
		-0.010	0.000	-0.014	0.013	0.007	0.013	-0.012
2000		16.501	0.204	4.048	-0.111	-16.410	-4.955	3.836
		0.787	0.483	1.336	-0.512	-0.904	-0.746	0.735

Panel (B): Comparing actual dividends payout ratio of banks paid more than %100 of there net income with the expected one where next period expected payout ratio is estimated from the regression equation of the previous year.

Period	Parameter	C	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI	Actual	Expected	Ex-Ac
1994-200	Estimate	-0.699	0.004	-0.489	0.057	5.731	-1.120	0.840			
	T-stat	-0.131	0.024	-0.502	0.576	1.284	-0.436	0.415			
1994		3417.730	-21.042	-192.643	20.946	1137.360	-7956.200	6837.760	0.939	0.879	-0.061
		0.029	-0.010	-0.004	0.005	0.024	-0.030	0.030			
1997		31.266	-1.323	-2.991	0.525	8.233	-30.582	25.118	0.976	0.905	-0.071
		0.827	-0.962	-0.305	0.619	0.535	-0.992	0.988			
2000		-465.902	-32.567	-254.049	22.121	367.912	503.154	-386.446	0.860	0.977	0.116
		-0.001	-0.009	-0.005	0.004	0.001	0.002	-0.002			

Table 6- Logit regression of banks started paying dividends

Panel (A): Logit regression for the banks started paying dividends for the whole period. The dependent variable is 1in year t if the bank pays dividends ,0 otherwise .The explanatory variables are log of total Assets (LOGTA) , return on assets (ROA),Return on equity (ROE),loans to total assets (LOAN_TA) ,equity to total assets (EQUITYTA) ,and equity to total liabilities (EQUITYLI).The table shows the means (across years) of the regression intercept (C) and slopes, and the t- statistics for the means.

	Parameter	C	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI
1993-2000	Estimate	-3.112	0.313	0.091	0.041	0.821	-0.078	0.038
	t-stat	(-4.61)***	(4.81)***	0.432	(2.196)**	1.646	-1.233	0.913
1994		-75.034	0.650	0.746	-0.068	2.517	87.407	-72.803
		-1.284	0.909	0.663	-0.852	0.423	1.090	-1.084
1997		-0.754	0.082	1.587	-0.051	0.913	0.892	-0.943
		-0.236	0.452	1.203	-0.457	0.628	0.427	-0.569
2000		9.773	-0.534	14.356	-0.643	6.032	-8.020	6.096
		0.841	-1.098	(1.749)*	-1.402	1.418	-0.818	0.776

Panel (B): Comparing actual dividends payout ratio of banks started paying dividends with the expected one where next period expected payout ratio is estimated using the regression equation of the previous year.

Period	Parameter	C	LOGTA	ROA	ROE	LOAN_TA	EQUITYTA	EQUITYLI	Actual	Expected	Ex-Ac
1994-2000	Estimate	-3.480	3.950	-2.680	3.420	1.140	-3.600	3.289			
	T-stat	(-2.485)***	(.271)***	(-6.333)***	(.073)***	0.625	(-.209)***	(.141)***			
1994		213.873	12.616	38.434	2.543	-165.762	-266.740	198.033	0.026	0.013	-0.013
		0.010	0.017	0.003	0.002	-0.014	-0.016	0.016			
1997		-2.437	-0.031	-0.318	0.078	0.773	2.021	-1.729	0.529	0.353	-0.176
		-0.698	-0.168	-0.234	0.682	0.491	0.841	-0.901			
2000		-1.364	0.446	-3.299	0.281	0.284	-1.043	0.918	0.907	0.832	-0.075
		-0.500	(1.698)**	(-2.62)***	(2.703)***	0.144	(-2.214)***	(2.495)**			

6. CONCLUSIONS

This paper employed Fama French (2001) logit model to explore an idea about the dividend paying propensity adopted by US banks and to explain dividend payout ratios of the US banking sector. Our findings show that banks ,in general , kept paying dividends in increasing rates .The findings also show that the main factors effecting dividends paying in banks are the total assets , return on equity ,and equity to liability ratio where the earlier two variables effect the dividend pay out positively the latest effect it negatively. For comparative reasons we break down our sample into subsets according to their recent dividends paying characteristics to counter for the changes of the regression parameters for each group (never stop paying ,never pay ,stopped paying ,and started paying).The only group that shows real significant coefficients for all variable is the started paying group.

Though, there is still need for further research with longer time period .This will help to know whether banks pay dividends solely or are they motivated by the decreasing propensity to pay by other non-financial firms(i.e., are banks the channels through which dividends are paid!?

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THE NUMBER OF REGIMES IN AGGREGATE AND INDIVIDUAL TIME SERIES IN MARKOV SWITCHING MODEL

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ABSTRACT

This paper aims to explore the issue of whether the number of regimes in aggregate time series is similar to that in individual time series. For aggregation purpose, this paper considers two methods: equal and value weighted. The conjecture of this paper is that the number of regimes in aggregate time series is a function of individual time series, regardless of the aggregation methods, which is based on Rose (1977) and Zhang and Stine (2001). For example, if aggregate time series has two individual series (e.g., one series has two regimes and one lag, while another series has three regimes and one lag), the numbers of regimes and variables in aggregate time series would be two and one, respectively.

Keywords: *Aggregate time series, Individual time series, Markov switching model, Number of regimes*

1. INTRODUCTION

The Markov switching model (hereafter called the MS model), introduced by Hamilton (1989), has become popular in the modelling of economic and financial variables. This model is flexible enough to capture some well-known characteristics of economic or financial variables such as serial correlation, asymmetry, and fat tail behaviour (Timmermann, 2000). It also has fewer restrictions/assumptions on the statistical distribution of variables and enables a simultaneous estimation of changes in dependent and independent variables, with the regime in which an economy is located at each point in time being defined endogenously. Some prior studies, including Hamilton and Susmel (1994), Humala (2005), Sarno and Valente (2005), and Awirothananon and Cheung (2008), have shown that the MS model, which allows for shifts in intercept terms, autoregressive parameters, and variance-covariance matrices, outperforms several alternative models in forecasting performance.

There are two main problems when estimating the MS model. The first problem is joint determination of the numbers of regimes and variables. To estimate the MS model, a main problem is that the numbers of regimes and variables are unknown a priori. This problem is already been solved by Awirothananon and Cheung (2009). The second issue concerns determination of the numbers of regimes and variables in "aggregate" time series. There is also little literature on the relationship between determination of the numbers of regimes and variables in individual and cross-sectionally aggregated time series. This paper, therefore, investigates whether the numbers of regimes and variables in cross-sectional aggregate time series would be similar to those in individual time series.

This paper primary concerns determination of the number of regimes (hereafter called r) in aggregate time series in the MS model. Suppose that one individual time series ($y_{1,t}$) has two regimes and another series ($y_{2,t}$) has three regimes. When combining these two time series into one aggregate time series (z_t), an interesting issue is whether z_t would have a similar characteristic (in term of r) to that of individual time series ($y_{1,t}$ or $y_{2,t}$). This question is not only interesting in theory but also important in practical applications. Investment portfolios of most investors, for instance, generally have more than one investment asset (or asset class) for the purpose of diversification. Assuming that there are two assets (common stocks and real estates, for example) in a portfolio and both of them have a different characteristic (e.g., one asset has two regimes while another asset has three regimes), would a combination of these two assets in a portfolio produce two or three regimes?

There are two general methods for aggregating time series: temporal and cross-sectional (Granger, 1988). The cross-sectional aggregation is a method by which several time series are summed to form an aggregate time series at a given point in time. On the other hand, when a time series is generated by a daily or weekly basis and summed in a form of monthly series, it can be referred to as the temporal aggregation. Quarterly or annual time series, for instance, may be constructed from monthly series. Some previous studies, including Girardin and Liu (2007) and Chan and Chan (2008), have examined the latter case by using the MS model. Chan, Zhang and Cheung (2009), for example, investigate the effects of temporal aggregation on the MS model. They suggest that if a model is closed under temporal aggregation, parameters of higher frequency model (or individual time series) can directly imply those of lower frequency model (or aggregate time series). Little study, however, has examined the cross-sectional aggregation on the MS model. The contribution of this paper is, hence, to investigate whether aggregate time series from the cross-sectional method would have a similar characteristic to that of individual time series.

The remaining parts of this paper are organised as follows. Section 2 reviews some relevant literature on aggregating time series. Section 3 discusses the MS model and proposition. Section 4 concludes this paper.

2. LITERATURE REVIEW

Zhang and Stine (2001) show that the auto-covariance function of a second-order stationary MS model can be represented as that of the VARMA model. The results can be grouped into two categories: (i) in the case of mean-variance MS model, both p and q orders are shown to be a function of r; (ii) in the case of the MS model that allows autoregressive parameters to be varying; both orders will be a function of the dimension of the processes, r, and the maximum p order.

For the first category, they consider the h-dimensional mean-variance MS model as follows:

$$Y_t = v^{(s_t)} + \sigma^{(s_t)} e_t , \tag{1}$$

where $v^{(s_t)}$ and $\sigma^{(s_t)}$ are governed by a r-regime irreducible stationary ergodic Markov chain s_t, $s_t = \{1, 2, \dots, r\}$ and has transition matrix P with elements $p_{ij} = \text{Prob}(s_{t+1} = j | s_t = i)$ and stationary distribution $\Pi = (\pi_1, \pi_2, \dots, \pi_r)'$; for i and $j \in \{1, 2, \dots, r\}$, and e_t is white noise with $E(e_t e_t^T) = I_m$ and independent of s_t.

They demonstrate that the process $\{Y_t\}$ defined in Equation (1) has the VARMA(p, q) representation, where both p and $q \le r - 1$ (see Theorem 3, page 113 in Zhang and Stine (2001)). The implication is that a lower bound for r in the MS model can be estimated by first calculating the sample covariance of the observations, and then estimating the (p, q) orders of the ARMA model. Therefore, r of the Markov chain $\{s_t\}$ in Equation (1) can be calculated as $r \ge \max\{p + 1, q + 1\}$, where both p and q orders are the orders of the AMRA representation of $\{Y_t\}$.

In the second category, a h-dimensional MS-VAR(p) model is considered:

$$y_t = A_1^{(s_t)} y_{t-1} + A_2^{(s_t)} y_{t-2} + \dots + A_p^{(s_t)} y_{t-p} + \sigma^{(s_t)} e_t , \tag{2}$$

where $A^{(s_t)}$ is defined as estimated parameters conditional upon s_t.

Equation (2) can also be written in the matrix form as:

$$Y_t = A^{(s_t)} Y_{t-1} + B^{(s_t)} u_t , \tag{3}$$

where $Y_t = (y_t^T, y_{t-1}^T, \dots, y_{t-p+1}^T)^T$ and $u_t = (e_t^T, 0, \dots, 0)^T$,

$$A^{(s_t)} = \begin{pmatrix} A_1^{(s_t)} & A_2^{(s_t)} & \cdots & A_{p-1}^{(s_t)} & A_p^{(s_t)} \\ I_h & 0 & \cdots & 0 & 0 \\ 0 & I_h & \cdots & 0 & 0 \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ 0 & 0 & \cdots & I_h & 0 \end{pmatrix}, \text{ and } B^{(s_t)} = \begin{pmatrix} \sigma^{(s_t)} & 0 & \cdots & 0 \\ 0 & 0 & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & 0 \end{pmatrix}.$$

They show that the process $\{Y_t\}$ has the VARMA(p, q) representation, where $p \le r(hp)^2$ and $q \le r(hp)^2 - 1$ (see Theorem 4, page 116 in Zhang and Stine (2001)). They also provide an empirical application by using the same data as used in Engel and Hamilton (1990). The result of Zhang and Stine (2001) shows that the estimated auto-covariance function indicates an ARMA(1, 1) structure, implying that r for the MS model should be greater than or equal two (or $p \le r$ - 1 and $q \le r$ - 1: $r \ge (1 + 1) = 2$). This result is consistent with Engel and Hamilton (1990).

In the time-series aggregation problem, Rose (1977) studies the efficiency of forecasts from linear aggregate time series, which is formed directly from independent ARIMA models. Suppose that there are n independent time series $y_t = (y_1, y_2, \ldots, y_n)$ and each of them can be represented as the Box-Jenkins (1976) ARIMA model. Then aggregate time series, Y_t, can be defined as a linear weighted (w) sum of n independent time series, y_t, and can be written as:

$$Y_t = w * y_t, \tag{4}$$

where w is a vector of weight on y_t.

Rose (1977) shows that the weighted sum of n independent ARIMA(p_m, d_m, q_m) models, Y_t, is an ARIMA model of orders (p^*, d^*, q^*). These orders can be calculated as:

$$p^* \le \left(\sum_{m=1}^{n} p_m\right) - k \text{ , } d^* = \max(d_1, d_2, \ldots, d_n)\text{, and } q^* \le \max_m (p^* + q_m + d^* - d_m) \text{ , for } m = 1, 2, \ldots, n,$$

where k is the total number of root repetitions among the lag operator polynomials $\phi_m(B)$; $\phi_m(B) = I - \phi_{1m}B - \phi_{2m}B^2 - \ldots - \phi_{p_m m}B^{p_m}$ and

d represents the orders of regular and seasonal differencing required to make the series to be stationary (see Theorem 1, page 330 in Rose (1977)).

As an example, if both $y_{1,t}$ and $y_{2,t}$ are an AR(1) model and both $e_{1,t}$ and $e_{2,t}$ are white noise, then aggregate time series ($Y_t = y_{1,t} + y_{2,t}$) will generally be an ARMA(2, 1) model. The p order of aggregate time series, which is two, could be calculated by summing up all individual series' p order (e.g., 1 + 1 = 2) and the q order of aggregate time series would be less than or equal two (or $q \le 2$).

3. MODEL AND PROPOSITION

This paper considers the MS model of the following form (To get the equation for static model, just replace the set of lagged y_t variables by the same number of exogenous variables, x_t):

$$y_t = v^{(s_t)} + \sum_{l=1}^{p} A_l^{(s_t)} y_{t-l} + \sigma^{(s_t)} e_t \text{ ,} \tag{5}$$

where e_t is independent and identically distributed random variables such that $E(e_t) = 0$ and s_t are unobservable random variables that take values in the finite set {1, 2, …, r} and are independent of e_t.

The random variables s_t (hereafter referred to as regime variables) are assumed to be a temporally homogeneous first-order Markov chain on {1, 2, …, r} with transition matrix P = p_{ij}, i and $j \in$ {1, 2, …, r}, where $p_{ij} = \text{Prob}(s_{t+1} = j | s_t = i)$. The probability of regime i occurring next period given that the current regime is j is fixed. These probabilities could also be represented in the transition matrix for an irreducible ergodic r state Markov process s_t:

$$\mathrm{P} = \begin{bmatrix} p_{11} & p_{12} & \cdots & p_{1r} \\ p_{21} & p_{22} & \cdots & p_{2r} \\ \vdots & \vdots & \ddots & \vdots \\ p_{r1} & p_{r2} & \cdots & p_{rr} \end{bmatrix},$$

where $p_{ir} = 1 - p_{i1} - \ldots - p_{i,r-1}$; for $i = 1, 2, \ldots, r$.

It is also assumed that s_t are periodic and irreducible. Notice that s_t may or may not be stationary. If the stationarity assumption is imposed, the above conditions guarantee a unique row-stochastic vector $\pi = (\pi_1, \pi_2, \ldots, \pi_r)'$ such that $\pi\mathrm{P} = \pi$ and $\pi_i = \text{Prob}(s_t = i) > 0$ for all $i \in$ {1, 2, …, r} and all t. Under these assumptions, the model could be referred as a r-regime p-order MS autoregressive model (or MS(r)-AR(p) model) or a r-regime MS static model (or the MS(r) static model).

In general, there are two methods for assigning the weight (or w) on independent time series in Equation (4). One is the equal weighted method; for example, if there are three independent time series, then the value of weight for each series will be 1/3. The second method is the value-weighted. For this method, the weight of each individual time series will be different; however, the sum of value weighted should be equal to one. The weighted value for three series, for instance, could be 1/6, 2/6, and 3/6, respectively. Both methods will be considered since they are commonly used to construct aggregate time series.

The MS model could be estimated by using a maximum likelihood (hereafter called ML) procedure. The ML algorithm of this model is based on the Expectation Maximisation (hereafter called EM) algorithm discussed in Krolzig (1997). The EM algorithm is originally described by Dempster, Laird and Rubin (1977) as a general approach to iteratively compute the ML estimation technique. This technique is designed for general models where observed variables are dependent on some unobserved variables, such as regimes variables (s_t). The first *Expectations* step optimally infers the hidden Markov chain for a given set of parameters. The second *Maximisation* step then re-estimates for parameters for the inferred hidden Markov chain. These two steps also continue until the likelihood converges to a local maximum of the likelihood function.

From the MS model in Equation (5), if there are three independent time series without root repetitions and the p_i order for each of them is one, then when combining these three models into one aggregate time series, the order of the aggregate time series p would be less than or equal to three. Zhang and Stine (2001) first show that the auto-covariance function of a second-order stationary MS model without intercept can be represented as that of VARMA model and that the orders of VARMA model are directly linked with the number of regimes. Francq and Zakoian (2001, 2002) extend this result to *any* second-order stationary MS model (with or without intercept). The results can be summarised as follows: (i) in the case of static MS model where both p and q orders are zero, there exists an ARMA(r - 1, r - 1) representation; (ii) in the case of MS model that allows autoregressive parameters to be varying, both p and q orders will be a function of the p, r, and the dimension of the processes (hereafter called h), which may be calculated as $r + r(hp)^2 - 1$ and $r + r(hp)^2 - 2$, respectively. This paper can thus compute r from rearranging the equation for $r = (1 + p)/(1 + (hp)^2)$. For example, if $h = 1$ and $p = 1$, this implies that $r = 1$.

The ideas of these studies when combined together imply that any second-order stationary MS model can be represented as the VARMA model, where both p and q orders can be calculated from r. In particular, the (p, q) orders of the VARMA model are a function of that of individual ARMA models and r in the MS model is also a function of the orders of individual ARMA models. Suppose that both $y_{1,t}$ and $y_{2,t}$ follow the MS model with two regimes. According to Zhang and Stine (2001), both $y_{1,t}$ and $y_{2,t}$ could be written as the ARMA representation, where both p and q orders are less than r. Both could be, therefore, represented as the ARMA(1, 1) model (where both p and $q \leq r - 1$: p and $q \leq 2 - 1 = 1$). After that, summing these two ARMA models together into one aggregate time series ($Y_t = y_{1,t} + y_{2,t}$), the orders (p, q) of this aggregate time series will be a function of individual ARMA models, according to Rose (1977). Hence, aggregate time series, Y_t, could have the (p, q) orders that are less than or equal to 2 and 3, respectively (or the ARMA(p, q) model, where $p \leq 2$ and $q \leq 3$). This result is also similar to Francq and Zakoian's (2001, 2002) studies. For example, if the true model of individual time series is a two-regime MS autoregressive model of order one ($r_i = 2$; $p_i = 1$), they suggest that individual time series admits an ARMA(1,1) representation. As a result, the MS model could be written in the form of aggregate time series.

The above results could further provide investors with useful information about how to prepare their portfolio in either planning or analysing stage of investment. Generally, investors have more than one investment asset in their portfolio for the purpose of diversification. In these stages, investors may be required to make a decision on their investment based on either individual asset or portfolio characteristic. For example, assuming that investors have a portfolio that has a characteristic of two regimes and would like to add another investment asset that has a characteristic of three regimes in their portfolio, would this asset alter their portfolio's characteristic of two regimes? According to the conjecturer of this paper, a combination of these two investment assets in a portfolio would produce two regimes. This suggests that investors could focus only on portfolio rather than individual instruments.

4. CONCLUSIONS

This paper aims to explore the issue of whether the numbers of regimes and variables in aggregate time series are similar to those in individual time series. For the aggregating method, this paper considers two general weighted methods: equal and value weighted. Based on Rose (1977) and Zhang and Stine (2001), this paper conjectures that the number of regimes and variables in aggregate time series are a function of individual time series, regardless of equal and value weighted methods. For example, if aggregate time series has two individual series (e.g., the characteristics of the first time series is two regimes and one lag, while another series has three regimes and one lag), the numbers of regimes and variables in aggregate time series would be two and one, respectively.

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THE EFFECT OF STUDENT EMPLOYMENT ON GPA

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ABSTRACT

*The vast majority of the previous studies on the effect of student employment on GPA have treated student employment either as a homogeneous or heterogeneous experience. In this study, student employment is treated as both homogeneous and heterogeneous experience/category. When student employment is treated as a homogenous category, this study finds that non-working students were found to have 0.061 higher GPA than working students, and when it is treated as heterogeneous, it had a negative effect on GPA after controlling for the confounding effects. In both cases, we find a statistically significant negative effect of student employment on GPA. Moreover, the current study examines the effect of students' background (gender, family income, first generation status, campus residency status, ACT scores and college GPA) on the number of hours worked per week. The findings reveal that except for race, the other five variables show a statistically significant difference on the number of hours worked. Both theoretical and practical implications of these findings and future research directions are di*scussed.

Keywords: Student employment, working hours, academic performance, GPA, higher education

1. INTRODUCTION

Student employment is not a recent phenomenon, but it has risen sharply in recent years.Several studies reveal the increasing proportion of students working since the 1960s in most developed countries, including the U.S. (e.g., King, 2006; Pascarell a& Terenzini, 2005; Kalenkoski & Pabilonia, 2008) and Great Britain (e.g., Bradley, 2006; Broadbridge & Swanson, 2006; Callender, 2008). King's study (2006) shows that about 80 percent of American undergraduates worked while attending college in 2003-2004, and one-third of working students describe themselves as employees who are taking classes.

A number of studies have been conducted to answer questions such as "Why do some college students do better than others? These studies indicate that academic/cognitive and non-academic factors influence college success or academic achievement (GPA)(Noble, 2001;Callender, 2008; Chee, et al., 2005, Russell &Lehman, 2008).While considerable research has been conducted to assess factors affecting academic achievement as measured by GPA, previous research has given little attention to the effect of student employment (working hours) on students' academic performance as measured by cumulative GPA. Moreover, the majority of prior studies concerning the impact of college student employment and working hours on GPA either used first-year college GPA's as a success measure (Bleyaert, 2010; Paszczyk, 1994; Stumpf & Stanley, 2002) and were criticized for low validity [for many less outstanding students take many lower level courses during the first year which likely increases their GPA (Stumpf & Stanley, 2002) or used a small sample size. In addition, the most recent studies reveal that students' prior academic achievement (e.g., ACT scores), which could moderate the effect of student employment (working hours) on GPA was not controlled.

The objective of this study is to address the limitations of the past studies mentioned above. Senior students' cumulative GPA (as a measure of college success or academic performance) and a large sample size (N=5223) were used. In this research, past academic performance (as well as other students' background) is controlled when assessing the effect of student employment on GPA. Specifically, the effects of students' background (gender, race, parental income, first generation college student, past academic performance as measured by ACT scores, and campus residency) on the number of working hours are examined. The authors believe that, if the majority of college students are working, knowing the effect that student employment (and number of working hours) has on college success (cumulative GPA) is critical for stakeholders such as students, parents, academic advisors, counselors, faculty and administrative staff.

2. LITERATURE REVIEW

The number of college students employed in part-time jobs has been increasing. For example, Carroll and Chan-Kopka(1988), based on 1980-84 data, found that one in twelve full-time college students were employed more than fulltime while attending college, and 25 percent worked less than 20 hours per week. By 2003-04, about 80 percent of American undergraduates worked while attending college (King, 2006).As a result, Babcock and Marks (2010) report that between 1961 and 2003, the time spent on academics by full-time college students in the United States declined. In 1961, full-time students allocated 40 hours of study per week toward classes compared with about 27 hours per week in 2003.

As the financial burden for college-related costs continues to increase for students, some studies show *positive effects* of student employment on GPA; students who worked (part-time) were found to have (slightly) higher GPA's than those who didn't(Anderson, 1981; Astin, 1975b, 1982; Ehrenberg & Sherman, 1987; Kohen, Nestel, & Karmas, 1978; Peng & Fetters, 1978; Kalenkoski & Pabilonia, 2008; Hammes & Haller, 1983; Horn & Berkhold, 1998; King, 2002; Manthei& Gilmore, 2005). Other studies reveal the *negative effects* of student employment on GPA; unemployed students were found to have higher GPA's than working students (King, 2002; Humphery, 2006; Hunt, Lincoln, & Walker, 2004; Lindsay & Paton-Saltzberg, 1994; Pascarella & Terenzini, 1991; Tuttle, McKinney, &Rago, 2005; Curtis &Shani, 2002; Metcalf, 2003; Curtis, 2007; Callender, 2008; Singh, 1998). A few other studies found neither positive nor negative effects of work; in this case, part-time student employment had *no effect* on GPA (Cheng, 2004; Noni s& Hudson, 2006; Wang et al., 2010).

The majority of prior studies conclude that the more hours students work, the greater the likelihood of negative effects on GPA. That is,as working hours per week increases (beyond 20 hours a week), GPA decreases (e.g., King & Bannon, 2002; King, 2006; Furr & Elling, 2000; Pascarella & Terenzini, 2005). Pascarella and Terenzini (2005) state that analyses of prior U.S. Department of Education data have consistently found that working more than 15 to 20 hours per week has a negative impact on degree completion. However, few studies (e.g.,Kalenkoskis and Pabillionia, 2005) conclude that there is no evidence that an increase in hours worked negatively impacts student's GPA.

According to Coleman's (1961) zero-sum time-allocation model, time spent on working may lead to reduced time spent on studying, school activities and gathering with family members and friends. Thus, working student's GPA's may be lower than GPA's of students not working. Many researchers have provided explanations for these negative effects, such as students: spending less time on studying (Fjortoft, 1995; Oi I & Morrison, 2005; Moreau & Leathwood, 2006), missing classes (Curtis & Shani, 2002; Curtis, 2007), being late for classes (Lundberg, 2004; Metcalf, 2003; Curtis, 2007), having difficulty concentrating in classes (Curtis & William, 2002; Pickering & Watts, 2000), making less use of university facilities including libraries and computer labs (Metcalf, 2003; Lundberg, 2004), and feeling exhausted (Curtis, 2007; Callender, 2008). Not surprisingly, the likelihood that students experience these limitations increases with the number of hours that they work. Students who work off campus also are more likely to experience these limitations than those who work on campus (Post, 2008).

3. RESEARCH QUESTIONS

In this study, the authors propose the following ten hypotheses:

- ***H1a***: Students who work will more likely have lower GPA's than those who do not work.
- ***H1b***: The GPA among students will vary significantly depending on working hours (0, 1-10, 11-20, 21-30 and above 30).
- ***H1c***: The number of working hours will negatively impact GPA.

Student employment (lower than 15-20 hours a week) could have a positive impact provided that [i] jobs are relevant to their studies which could help them relate theory to practice and improve their employability after graduation (Callender, 2008; Cuccaro-Alamin& Choy, 1998; Wang et al., 2010), [ii] jobs offer opportunities for students to develop new skills and learn new knowledge (Curtis, 2007), [iii] jobs improve a student's network with supervisors, colleagues and customers (Cuccaro-Alamin& Choy, 1998), [iv] jobs do not affect their motivation to study (Curtis & William, 2002), [v] jobs provide opportunity to balance school and work- flexibility and don't require long travel (Callender, 2008), [vi] jobs help students develop industrious work habits and skills such as the ability to manage time (King, 2006) and [vii] jobs provide an additional dimension to student's social lives- enabling them to meet and interact with others (Curtis, 2007; Hodgson & Spours, 2000).

Most of the time, those employed in part-time jobs tend to come from lower income backgrounds (Callender, 2008). Economically disadvantaged students are most likely to work while attending college (Purcell, Elias, Davies, & Walten, 2005) and work longer hours (Callender, 2008). According to King (2006), dependent students with parental incomes of $60,000 or more are most likely to work less than twenty hours per week, while independent students from families with incomes of $25,000 or more are most likely to work 35 or more hours per week. More than half of the students work because their families cannot support them (Curtis, 2007; Callender, 2008). Based on the above studies, the following hypothesis is proposed:

H2a: Family income significantly affects the number of student working hours.

First generation college students [students who are the first in their families to attend a higher educational institution with neither parent possessing a Bachelor's degree] are more likely to come from non-white families with low incomes (Nunez &Cuccaro-Alamin, 1998; Schmidt, 2003; Ayala& Al, 2002).Callender's study (2008) indicates that those students already disadvantaged, both materially and educationally, are the most likely to engage in student employment. If students' propensity to work was linked to financial circumstance (Callender, 2008), then we speculate that first generation students are more likely to work for more hours than non-first generation college students. Thus, the following two hypotheses:

H2b: First generation college students will work more hours than non-first generation students.
H2c: Non-white college students will work significantly more hours than white college students.

In addition, students with strong past academic performance are likely to do better in school. This is because past performance is a good predictor of future performance (Heneman & Judge, 2009). Students with higher ACT scores are more likely to have higher college GPA's than students with lower ACT scores (Chee, et al., 2005; Tessema, Ready & Malone, 2011). Furthermore, students with higher GPA'sare more likely to engage in student employment and work for longer hours than those with lower GPA's (Callender, 2008). Thus, we hypothesize the following:

H2d: There is a significant difference in student working hours when categorized by ACT scores.
H2e: There is a significant difference in student working hours when categorized by college GPA.

College students who live on campus are more likely to spend more time on campus and have more access to university facilities and important resources such as the library, study rooms, or tutorial services, than those who live off campus (Watts, 2002; Hun et al., 2004). Therefore, we speculate that those who live off campus are more likely to work than those who live on campus. Thus, the following hypothesis is proposed:

H2f: Students living off campus will work significantly more hours than students living on campus.

Previous studies show that female students were found to have higher college GPAs than males (Chee, et al., 2005;Russell &Lehman, 2008) mainly due to more self-discipline and focus(Sax & Harper, 2005; Carter & McClellan, 2000). A recent study by the U.S. Dept. of Labor shows that the rate of labor force participation was higher for female college students (U.S. Dept. of Labor,2009). Based on the above study, one can argue that female students are more likely to work more hours than male students. Thus, the following hypothesis:

H2g: Female students will work significantly more hours than male students.

4. RESEARCH METHODOLOGY

The data used in this study were collected from the Institutional Planning, Assessment and Research (IPAR) Office at a midsized, Midwestern public university between 2001 and 2009. In collecting the data, the IPAR Office conducted an electronic survey once a year each spring from senior students with 90 or more credits hours.

Thed ataset used in this study has 5223 respondents. Approximately 30 percent of the respondents were male and 70 percent were female. (At the university, about 40 percent of the students are male and 60 percent are female). Response rates ranged between 25 percent and 59 percent for female respondents and between 18 percent and 45 percent for male respondents during the survey period (2001-2009). Almost 20 percent of the students completed the survey in 2009, which is considerably higher than in previous years. The data used in this study were collected from the five colleges at the university, namely Business (20.6%), Education (15.2%), Liberal Arts (28.7%), Nursing/Health Sciences (20.9%), and Science/Engineering (14.6%). The universe (U) profile somewhat mirrored the respondent population (R) for key demographics (gender and college) during the nine survey years (2001-2009).

For the purpose of the current study, the following items/variables were collected from the IPAR Office: students working hours per week and cumulative GPA, and other student demographics, such as gender, generation (first or not), family income (low – students whose parents earned less than $20,000 per year and who applied for student loans or not), campus resident (yes or not), university entrance exam scores (ACT scores), and race. Data regarding the students' ACT scores and college GPA were extracted from the student database at the university and matched to survey responses by the IPAR Office. Researchers were provided with anonymous data. O ur findings show that student's worked an average of 15.6 hours per week with an average ACT score of 22.84 (ACT score is a continuous variable that is measured on a 1-36 scale) and possessed a college GPA of 3.29 (GPA is a continuous variable that is measured on a 0.0-4.0 scale).About 30 percent were from low income families, about45 percent of them were first-generation college students, and about 51 percent of respondents lived on campus. With regard to race,92.5 percent of respondents were White, 1.8 percent were African American, 1.8 were Asian American, 1.0 percent were Hispanic, 0.2 percent were American Indian, 0.1 percent were Hawaiian/Pacific Islander and3.7 percent of respondents represented other International groups.

5. FINDINGS

Table 1 reveals the correlation between student employment (working hours) and GPA and the other six students' characteristics, namely gender, family income, race, first generation college student, campus residency status, and ACT scores. As shown in Table 2, the correlation between working hours and the above six variables ranges between r =.03 (gender) and r =-.15 (campus residency status), which is generally low for senior students. The following four factors were negatively associated with working hours: GPA, ACT scores, campus residency status and race. In addition, the correlation between GPA and the six variables ranges between r=-.02 (first generation college student) and r=.36 (ACT scores) as shown in Table2.

Table 1: Statistical Description and Correlation Matrix

N	Variables	1	2	3	4	5	6	7	8
1	Working hours								
2	GPA	-.13**							
3	ACT scores	-.05**	.36**						
4	Gender	.03*	-.24**	.04*					
5	Income	.07**	-.10**	-.07**	.05**				
6	First Generation	.07**	-.02	-.12**	-.07**	.15**			
7	Campus residency	-.15**	.03	.07**	-.06**	-.11**	.05**		
8	Race	-.07	.07**	.04*	-.08**	-.06**	-.01	.07**	

Notes: **Correlation is significant at the 0.01 level (2-tailed); N=5223.

Table 2shows the regression analysis results using undergraduate student cumulative GPA as the dependent variable and working hours (average number of hours worked) as the independent variable. Working hours shows a statistically significant negative impact on students' GPA. Working hours explains3%of variation in the student GPA, which suggests that 97 percent of GPA is influenced by other factors. The findings show that as hours worked increases, the GPA falls. Thus, hypothesis 1c is supported. In Model 2, in Table 2, when the six characteristics (ACT score, gender, parental income, campus residency status, first generation college student, and race) were added to the model, the R^2change was .19, which is statistically significant. The results show that working hours, ACT scores, gender, parental income and campus status were found to significantly influence GPA. As shown in Model 2, the combined variables explain 22 percent of the variation in student GPA.

Table 2: *Results of Regression Analyses on GPA* [a]

Variables	Model 1	Model 2
Working Hours	$-.17^{***}$	$-.14^{***}$
ACT Scores		$.35^{***}$
Gender		$.25^{***}$
Parent income		-0.04^{***}
Lived on Campus		$.04^{***}$
First generation		.01
Race		.02
R	.17	.47
R^2	$.03^{**}$	.22
R^2 change		$.19^{***}$

Standardized Regression Coefficients are reported; $^{***}p<.001$; N=5223

Table 2 (Model 2) also suggests that the ACT score is the most important predictor of college GPA. This finding supports the suggestion made by Heneman and Judge (2009: 255) in that past performance is a good indicator of future performance. Similarly, the GPA of female students will be higher than male students when all other variables are constant. The negative coefficient on low income suggests that students from low income backgrounds are more likely to have lower GPA's when all other variables are constant. Average number of work hours is found to adversely affect student GPA. Students living on campus are likely to have slightly higher GPA's than their off-campus counterparts. In addition to the regression analysis, we also conducted an independent samples t-test to determine the effect of work on GPA. In this case, we divided the students into two groups: working students and non-working students. First, we tested for the assumption of equal variances by using Levene's F-test. The results in the study are reported under the assumption of equal variances. Table 3 reports the average GPA of those who work (mean = 3.29) and those who do not work (mean=3.35). Results of the t-test indicates that there is a significant difference between the GPA of these two groups of students. It could be argued that although the difference is significant, practically it is minimal. Table 3 indicates that about 79 percent of the respondents were working while studying. The high percentage of students working also reflects the national trend of 80 percent of American undergraduates working while attending college (King, 2006).

Table 3: The mean GPA of working and non-working students and t-test result

Status	***%***	***Mean GPA***	***SD***	***t-test result***		
				t	***df***	***Sig.***
Working	79.1	3.286	.45	3.75	4846	.000
Non-working	20.9	3.347	.46			

Next, we examined the effect of student employment (average hours worked) on GPA by grouping college students into 5 categories: those who worked for 0 hours (unemployed), 1- 10 hours, 11-15 hours, 16-20, 21-30, and 31hours or more. An ANOVA test was conducted to determine if these groups have significantly different GPAs. ANOVA test results showed that students in different workgroups have statistically significant differences in GPA. Students working 1-10 hours were found to have the highest GPA's averaging 3.39, whereas students working 31 hours or more exhibited the lowest GPA's (3.24). As students worked more hours, average GPA's declined. However, non-working students had a mean GPA of 3.34, slightly lower than students working 1-10 hours. Thus, Hypothesis H1c is supported.

Table 4: The mean GPA of students with varying working hours and ANOVA test

Number of hours worked	***%***	***Mean GPA***	***SD***	***ANOVA test***		
				df	***F***	***Sig.***
0	20.9	3.34	.45	(4,4846)	27.167	.000
1-10	19.87	3.39	.42			
11-20	31.12	3.28	.45			
21-30	17.13	3.25	.46			
31 and above	10.98	3.24	.50			

Next, we conducted ANOVA tests as shown in Table 5, to determine if there is a significant difference between the numbers of hours worked per week by gender, family income background, campus residency status, first generation student, ACT score, and college GPA. The findings in Table 5 show statistically significant differences in the average hours worked per week by male and female students. Students from low income families were also found to work more hours per week than students from higher income families. Table 5 reports a significant difference in hours worked per week by first generation students from non-first generation students. Students who lived on campus were found to work fewer hours per week than those students who lived off campus. Students who had an ACT score of 23 or higher worked fewer hours than those students who scored less than 23 on their ACT. Students with GPA's of 3.00 and above were found to work fewer hours than those students with GPA's of less than 3.00. Thus, Hypotheses H2a, b and f are supported. Table 5shows that the vast majority of college students work regardless of gender, family income, first generation status, campus residency status, ACT scores, or college GPA.

Table 5: Effects of students' background on working hours &ANOVA test result

Variable		***%***	***Average hours worked***	***SD***	***ANOVA result***		
					Df	***F***	***Sig.***
Family income	Low	29	16.82	12.42	(1, 4873)	1.781	.000
	High	71	15.05	12.38			
Generation	First	45	16.50	12.60	(1, 4873)	1.464	.015
	Non-first	55	14.82	12.21			
Lived on campus	Yes	51	13.69	11.68	(1, 4873)	3.470	.000
	No	49	17.52	12.84			
ACT scores	23 & above	71	14.22	11.73	(1, 3558)	7.442	.006
	Below 23	29	15.31	12.13			
College GPA	3.00 & above	75	14.78	12.19	(1, 4846)	2.56	.000
	Below 3.00	25	18.00	12.77			
Race	Asian	1.7	16.17	12.30	(5, 4565)	1.081	NS
	Black	.53	20.13	14.85			
	Hawaii/Pac	.11	15.20	15.27			
	Hispanic	1.01	17.7	13.95			
	International	3.40	14.43	8.56			
	White	93.29	15.56	12.40			
Gender	Male	30	16.17	12.82	(1, 4861)	1.390	.032
	Female	70	15.33	12.23			

6. DISCUSSION

One of the goals of the current study was to examine the impact of student employment (the average number of hours worked per week)on GPA. To that end, we conducted number of analyses as shown in Tables1-5. The Correlation Matrix(Table 1) showed that working hours was negatively correlated with GPA. Table 2(regression analysis) revealed that working hours show a statistically significant negative impact in explaining the change in students' GPA). The size of the effect of student employment on GPA is very small and negative, although statistically significant. Table 3(t-test result) indicates that the average GPA of those students who do not work was found to be statistically higher than those who do work. That is, the difference in GPA between the two groups was 0.06.Table 4(ANOVA test result) also shows a statistically significant difference in GPA's among students with varying working hours per week (0, 1-10, 11-20, 21-30 and above 30).

The vast majority of the previous studies on the effect of student employment on GPA have treated student employment either as a homogeneous or heterogeneous experience. While in the first approach (homogeneous), the GPA of those who did not work(0 hours of employment) is compared with those who did work (1-40 hours of employment). In the second approach (heterogeneous), working hours was treated as a continuous variable (1-40 hours of employment a week). In this study, we have treated student employment as homogeneous with heterogeneous experiences or categories to evaluate the effect of student employment on GPA. When student employment is treated as a homogenous category, we find that non-working students were found to have a 0.061 higher GPA than working students, even after controlling for the confounding effects (Table 5). This finding is consistent with Kalenkoskic & Pabilonia's (2008) study that showed college students working less than 20 hours had higher GPA's than non-working students. In our study, when student employment is treated as heterogeneous (continuous variable), GPA declines. This finding is consistent with many previous studies concluding that student employment negatively affects GPA (King, 2002; Humphery, 2006; Hunt, Lincoln, & Walker, 2004; Curtis & Shani, 2002; Metcalf, 2003; Curtis, 2007). One could argue that in many previous studies, the effect of student employment on GPA could be attributed to whether student employment was treated as a homogeneous or heterogeneous experience.

We examined the impact of student employment (1-40 hours a week) on students' GPA in several ways. First, we compared the GPA's of those who worked (1-40 hours a week) and those who didn't work (0 hours a week) using an independent samples t-test (Table 3). We also compared GPAs of those who worked various hours on GPAs. In doing so, we grouped the respondents into five categories (0 hours or not working, 1-10 hours, 11-20 hours, 21- 30 hours and above 30 hours). We then conducted an ANOVA test, and the result showed a significant difference among the five groups (Table 4). For example, Table 5 portrays that students who worked between 1 and 10 hours were found to have the highest GPA, while students who worked for more than 30 hours a week were found to have the lowest GPA. Our results also show that those students who worked from 1-10 hours a week had higher GPA's than those who did not work. This further implies that examining the effect of student employment on GPA by grouping college students as working and non-working may lead to unrealistic conclusions. According to our results, student employment impacts GPA positively, when students do work fewer than 10 hours. Thus, student employment may not always be detrimental to academic performance, as measured by GPA. However, when students work for more than 11 hours a week, GPAs were found to decline for each additional category of work, although the change is very small.

With regard to the effect of students characteristics on the average hours worked per week, our findings show that first generation college students were found to work slightly more hours than non-first generation college students. This finding supports previous studies (e.g., Callender, 2008). One possible reason is that first-generation students are more likely to come from families with lower family incomes than non-first generation students (Post, 2008). Additionally, the current prevailing economic situation may have an impact. As predicted, students from low income families were found to work for more hours than students from higher income families (King, 2006; Curtis, 2007; Callender, 2008; Humphrey, 2006). College students may not be getting as much support from their parents because their parents have other financial obligations. Grants may not be sufficient and loan limits might not fully cover educational costs (Callender, 2008; Curtis, 2007; King, 2006; Pinto, et al., 2001; Purcell, Elias, Davies, & Walten, 2005).

Students who lived on campus were found to work fewer hours than those who did not. One possible explanation for this is that campus residents may focus more on academic studies due to their proximity to university facilities. In support of our hypotheses, students with higher ACT scores and college GPAs were found to work fewer hours than those students with lower ACT scores and college GPAs. One possible explanation is that non-working students or students working fewer hours have more time to devote to their studies. Finally, for the race variable, African American students were found to work the longest hours, followed by Hispanic students. However, the sample sizes for non-white groups were small, and the results from this analysis were not significant.

7. IMPLICATIONS OF THE STUDY

The results of our empirical study indicate that student employment had a significant negative effect on GPA, although practically was very minimal. Based on our empirical research and considering the cost-benefit analysis of working versus not working, we can reasonably argue that students should work. Our study reveals that student employment has a negative, but very small effect on GPA. Our results show that GPA's were actually higher for students working 1-10 hours than the GPA's of non-working students or students in the other categories of working students.

However, it could be argued that college students could work more hours each week given a small GPA difference between those who worked 1-10 hours a week and those who worked more hours. Although students could work more hours, there is a need to balance work and study, so that work does not impinge on a student's educational experiences (Tuttle et al., 2005). It should be pointed out that the above suggestions are general, and counselors, academic advisors, and students need to take into account the unique situation of the student (e.g., cumulative GPA, health issues, degree of discipline, time management, and maturity level) when deciding how many hours to work. Further, the GPA's used in the analysis are cumulative GPA's for seniors that may have been impacted by student's decisions in earlier years to work or not-work while attending college.

As previously indicated, student employment has both short-term (e.g., covering some college expenses)and long-term benefits (e.g., enhancing employability after graduation and acquiring transferable skills). Moreover, if graduates are to be competitive in today's labor market, work experience is critical. One way college student's can acquire work experience is by working while attending college.

8. CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

This study concludes that student employment has a significant negative effect on GPA when student employment is treated both as homogeneous and heterogeneous experiences. This study extends previous research on student employment and GPA relationships and examines the effect of students' background (gender, family income, first generation status, campus residency, ACT scores and college GPA's) on the number of hours worked per week.

Empirical testing of ten hypotheses related to student employment issues adds to the literature on "student employment" using a large sample (N=5223). While this study is an important step in understanding the extent to which college student employment affects GPA and the effects of students' background on number of hours worked per week, it also leaves some questions open for future research. First, this study was conducted in only one U.S. mid-sized, state university which may not reflect the experiences of a nationally representative sample of students. Hence, in order to generalize and validate the findings of this study, we suggest that a similar study be conducted in other universities both in the U.S. and in other parts of the world. Second, although the sample size is large and conducted over a nine year period, only senior students were surveyed. The results provide guidance for senior college students relative to work experiences, but may not be a realistic guide for students earlier in their college careers. Further studies need to examine the robustness of the findings and generalizations with different college population groups. Third, students responding to this survey were predominately Caucasian (92.3%) which may limit the generalizability of the findings. Further research should replicate similar research using races that reflect the national population.

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MODELING MOTOR CARRIER FREIGHT TARIFFS USING A POWER CURVE MODEL

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ABSTRACT

In this paper we investigate modeling the cost structure of a motor carrier transportation tariff using a power curve model. Linear regression analysis is used to explore the fit between a linearized form of the power curve model and a motor carrier transportation tariff. A spreadsheet based methodology is introduced to demonstrate the applicability of the power curve model in determining a transportation cost based economic production quantity.

Keywords*: Motor Carrier Transportation Cost Modeling, Log Linear Regression Analysis*

1. INTRODUCTION

Supply chain management has been widely recognized as the foundation upon which organizations build their competitive strategy. Under the supply chain management philosophy, the activities of raw materials acquisition, production processing and physical distribution are all coordinated to insure that customer demand is met with a correct order quantity that is delivered in a timely manner. The logistics component within a supply chain is responsible for the flow of products between the various stages of the supply chain and the final customer. Motor carrier transportation is the most commonly used mode of transportation for moving products within supply chains in the North America market.

Most academic textbooks in operations and supply chain management acknowledge the importance of the transportation component of supply chains however the treatment of this topic is predominately qualitative in nature. When transportation modeling is quantitatively addressed it is often in the context of the classic transportation model or as an extension to the economic order quantity model in which a fixed cost for transportation is introduced. In either case the cost structure used in the model, to represent the transportation cost for product movement within the supply chain, is simplistic and is defined as a fixed unit cost that does not vary with the quantity transported.

Langley (1981) investigated using non-linear cost functions in an attempt to more accurately model per unit transportation costs in joint transportation-inventory lot sizing models. Further work on the integration of transportation costs into inventory and distribution lot size determination may be found in Burns et al. (1985) and Benjamin (1989). Guiffrida and Christy (1992) were the first researchers to mathematically model an *actual* industry motor carrier transportation freight rate tariff for inclusion into a joint transportation-inventory lot sizing model that was designed for use in support of the JIT production philosophy. The model presented by Guiffrida and Christy (1992) is more realistic in terms of actual motor carrier transportation costs since the product class, place of origin and destination, and freight rate per hundredweight of the product being shipping are included in the model.

In this paper a spreadsheet methodology for modeling motor carrier transportation freight tariffs using a power curve model is presented. The model presented herein generalizes the discrete model formulation found in Guiffrida and Christy (1992). Section 2 will introduce the structure underlying a typical motor carrier transportation freight tariff and demonstrate a spreadsheet based methodology for fitting the parameters of the power curve model. Section 3 illustrates the applicability of the model when determining an optimal production quantity. Conclusions and future research are discussed in Section 4.

2. MOTOR CARRIER FREIGHT RATE TARIFFS

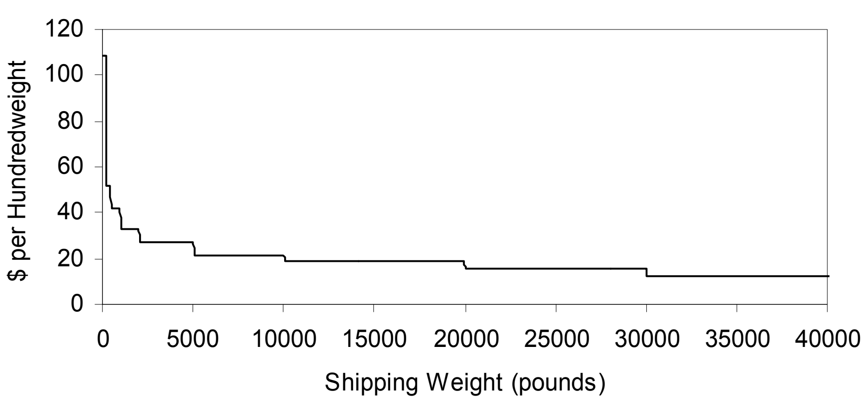
Under a motor carrier freight rate tariff, the shipping cost for a product is determined based on three attributes: (i) the product class to which the product is assigned, (ii) the point of origin and final shipping destination for the product, and (iii) the weight of the product. User friendly freight rate calculators have been designed that calculate the transportation cost (as measured in $ per hundredweight) based these three attributes. The product class is defined by a numerical code that is standard to the motor carrier industry. The origin and final destination of the product to be shipped are defined by zip codes. Table 1 and accompanying Figure 1 illustrate the structure of a typical motor carrier freight rate tariff.

Table 1 Example of a Motor Carrier Freight Rate Tariff.

Product Class: 85 (automobile radiator)
Zip code of origin: 14206 (Buffalo, New York)
Zip Code of destination: 48226 (Detroit, Michigan)

Shipping Weight	Freight Rate ($ per hundredweight)
$X < 206$ pounds	$108.20 (minimum charge)
$206 \leq X < 500$	52.51
$500 \leq X < 1000$	41.52
$1000 \leq X < 2000$	32.72
$2000 \leq X < 5000$	27.46
$5000 \leq X < 10000$	21.46
$10000 \leq X < 20000$	19.00
$20000 \leq X < 30000$	15.96
$30000 \leq X \leq 40000$	12.84

Figure 1 Plot of Table 1 Freight Rate Data.



Examining Figure 1, the freight rate tariff defines a discrete step function for relating shipping weight in pounds to the freight rate in dollars per hundredweight. The per unit shipping cost (T) can be obtained from the freight rate tariff using the following conversion calculation: (freight rate)(W/100). The number of units of product (Q) that can be shipped under a given transportation cost per unit can be found by dividing the shipping weight X by the item unit weight W, e.g., $Q = X/W$. Table 2 illustrates this conversion for the freight rate tariff introduced in Table 1.

Table 2 Freight Rate Tariff of Table 1 Converted to Units of Product. Product Class: 85 (automobile radiator) Zip code of origin: 14206 (Buffalo, New York) Zip Code of destination: 48226 (Detroit, Michigan) Per unit shipping weight: W = 15 pounds	
Units of Product	Transportation Cost per Unit
Q < 206/15 = 13.7 units	$108.20 (minimum charge)
13.7 ≤ Q < 33.3	(52.51)(15/100) = $7.88
33.3 ≤ Q < 66.7	(41.52)(15/100) = 6.23
66.7 ≤ Q < 133.3	(32.72)(15/100) = 4.91
133.3 ≤ Q < 333.3	(27.46)(15/100) = 4.12
333.3 ≤ Q < 666.7	(21.46)(15/100) = 3.22
666.7 ≤ Q < 1333.3	(19.00)(15/100) = 2.85
1333.3 ≤ Q < 2000.0	(15.96)(15/100) = 2.39
2000.0 ≤ Q ≤ 2666.7	(12.84)(15/100) = 1.93

As a result of the conversion process that maps the freight tariff of Table 1 into the shipping cost per unit schedule defined by Table 2, Figure 1 can be approximated by a power curve model of the form

$$T = a\left(Q^{b}\right) \tag{1}$$

where:

T transportation cost per unit ($/unit shipped)
Q shipping quantity (units)
a, *b* fit parameters of *T.*

Taking the natural log of both sides of (1) yields

$$LN(T) = LN(a) + b[LN(Q)] \tag{2}$$

Equation (2) is a straight line with slope equal to *b* and y-intercept equal to LN(*a*). Using data generated from Table 2, a linear regression of LN(*Q*) and LN(*T*) can be run to parameterize equation (1). The slope (*b*) resulting from the linear regression can be directly input into (1) for the fit parameter *b* while the fit parameter *a* can be determined by $a = \exp(LN(a))$.

The following algorithm can be employed to approximate *T*:

Step 1: Generate a set of data pairs (Q,T) based on Table 2.

In Excel format let column A contain values of *Q* and column B contain values of *T*. If Cells A1 and B1 contain the labels *Q* and *T* respectively, then the nested if statement

```
=IF(A2<13.73,108.2,IF(A2<33.33,7.88,IF(A2<66.67,6.23,
     IF(A2<133.33,4.91,IF(A2<333.33,4.12,IF(A2<666.67,3.22,
        IF(A2<1333.33,2.85,IF(A2<2000,2.39,1.93))))))))
```

can be used to generate (Q,T) data pairs for running the linear regression model defined by (2).

Step 2: Define columns C and D as the *LN*(Q) and *LN*(*T*) respectively.

Covert all (Q,T) data pairs to $(LN(Q), LN(T))$.

Step 3: Run a linear regression on the data pairs $(LN(Q), LN(T))$.

Per the resulting linear regression results determine the values of the slope *b* and intercept $LN(Q)$.

Step 4: Parameterize the power function model $T = a(Q^b)$ using the values $a = e^{\ln(a)}$ and slope *b*.

The algorithm outlined above can be easily implemented using an Excel Spreadsheet.

3. MODEL IMPLEMENTATION

In this section we demonstrate the integration of the power curve model for motor carrier transportation costs into the economic production quantity model (EPQ).

The following notation is used:

S	set up cost ($ per set up)
D	annual demand (units per year)
d	demand rate (units per unit time)
p	production rate (units per unit time, with $p > d$)
H	inventory holding cost per unit per year ($/unit/year)
Q	production lot size
W	item weight (pounds)
T	transportation cost per delivery of lot size *Q*
a,*b*	parameters of T to be fit from transportation freight rate tariff
TC	total annual cost

We adopt the modeling assumptions: (i) a single product, (ii) constant demand and lead time, (iii) no quantity discounts and (iv) the delivery lot size is equal to the production lot size *Q*.

3.1 Model Definition

The total annual cost for the transportation-based EPQ model is composed of the sum of annual set up costs, annual holding costs and annual transportation costs and is defined as

$$TC(Q) = S\left(\frac{D}{Q}\right) + H\left(\frac{Q}{2}\left(1-\frac{d}{p}\right)\right) + T\left(\frac{D}{Q}\right) \tag{3}$$

Under the power curve representation of the transportation cost per unit is $a(Q^b)$ and the transportation cost per delivery of lot size Q is $T = Q(a(Q^b)) = aQ^{b+1}$. The total annual cost is defined to be the sum of the annual set up, annual holding and annual transportation costs and is defined as

$$TC(Q) = S\left(\frac{D}{Q}\right) + H\left(\frac{Q}{2}\left(1-\frac{d}{p}\right)\right) + \left\{a\left(Q^{b+1}\right)\right\}\left(\frac{D}{Q}\right) \tag{4}$$

or,

$$TC(Q) = S\left(\frac{D}{Q}\right) + H\left(\frac{Q}{2}\left(1-\frac{d}{p}\right)\right) + aDQ^b. \tag{5}$$

The transportation based EPQ model defined in (5) takes the form on a nonlinear optimization problem which can be conveniently implemented using a spreadsheet methodology. The optimization problem is to determine the production quantity Q that minimizes the total cost function $TC(Q)$ defined by equation (5). The Excel Solver can be used to efficiently perform this nonlinear optimization.

3.2 Numerical Example

Consider an industrial application where the objective is to determine the optimal production quantity for a class 85 product (automobile radiators) that is to be shipped by motor carrier from Buffalo New York to Detroit Michigan under the freight rate tariff defined in Table 1. The product characteristics are: unit weight W = 15 pounds, set up cost *S* = $500, inventory holding cost *H* = $100 per unit per year, annual demand *D* = 1,200 units, demand rate d = 50 and production rate p = 200. Application of the algorithm defined in Section 2 to the freight rate data of Table 2 yields the parameters *a* = 19.229 and *b* = -0.286 for the power curve approximation of unit shipping costs. An R-squared = 0.931 was achieved in the regression. Figure 2 summarizes the application of the Excel Solver to determine the optimal production quantity Q that minimizes total annual costs as defined in equation (5) for the data used in this example.

Figure 2 Summary of Numerical Example.

	A	B	C	D	E	F
1	Optimization of EPQ Model with Power Curve Transportation Costs					
2						
3	Parameters					
4	Set up Cost (S)		500			
5	Annual Demand (D)		1200			
6	Demand Rate (d)		50			
7	Production Rate (p)		200			
8	Holding Cost (H)		50			
9	Unit Weight (W)		15			
10	Power curve constant (a)		19.229			
11	Power curve constant (b)		-0.286			
12						
13	Production Quantity (Q)		220			
14	Total Annual Cost (TC)		$11,786			
15						

Examining Figure 2, for the parameters used in the numerical example, total annual cost of the transportation based EPQ model is minimized at $11,786 when the production quantity (and delivery quantity) is 220 units. The total annual cost may be decomposed as follows: annual set up cost = $2,722, annual holding cost = $4,133 and annual transportation cost = $4,931. Annual transportation costs were approximated using the power curve model. For a production and delivery quantity of 220 units the exact transportation cost per delivery based on the freight tariff of table 2 would be T = (220)($4.12) = $906.40 which for D/Q = 1200/220 = 5.3 deliveries per year equates to an annual transportation cost of T(D/Q) = $4804. The power curve approximation over estimated this annual transportation cost by $127 or 2.6%.

4. SUMMARY AND DIRECTIONS FOR FUTURE RESEARCH

In this paper we have formulated a transportation based EPQ model and presented a spreadsheet based solution methodology for solving the resulting nonlinear optimization model. The model solution procedure was demonstrated using a numerical example. A distinctive feature of the model is the integration of an actual industry freight rate tariff into the formulation of the model's total cost equation. This attribute of the model greatly enhances the applicability of the model for industry use and also provides a pedagogical contribution for academic instruction.

The model presented in this paper can be expanded along several dimensions. First, the scope of the model could be extended across a representative sample of product classes. Second, analytical bounds on the accuracy of the power curve approximation used in the model could be established. Lastly, the model could be generalized to allow for breaking in bulk and related scenarios where the optimal production quantity does not equal the delivery quantity.

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STUDENTS' LEARNING ACHIEVEMENT BETWEEN ENGLISH LANGUAGE PROGRAM AND THAI LANGUAGE PROGRAM IN LEARNING WEB-BASED ERP-SIMULATED SOFTWARE

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ABTRACT

This study investigates an analysis of students' learning achievement of web-based ERP-simulated classroom environment between a class of a native Thai language program and English language program in business schools of a university in Thailand. The research further identifies potential enhancements in effectiveness of ERP-simulated learning environments. Interestingly, the finding showed that Thai program students were more proficient in learning web-based ERP-simulated software even if the screens were all in English. Therefore, the researchers recommended that in implementation of web-based ERP-simulated environment, instructors should take into an account social interactions among students. Permission for students to work with the simulation in groups may attract them to concentrate more in the contents of the software. Practitioners should pay attention to individual and social factors in designing a simulation more than language barrier factor.

Keywords: *ERP in Education, Simulation in Education, Web-based learning, TAM, Language Barriers*

1. INTRODUCTION

Educational administration related to Enterprise Resource Planning (ERP) has grown impressively over the last few decades (Andriole & Roberts, 2008). This claim clearly indicates that gaining knowledge in ERP is important for graduates of today's business schools. Numerous universities have not successfully implemented Open Source software or ERP University Alliances (UA) programs into their curriculums (Rooji, 2007). Lindoo and Wilson (2010) explained that the implementation of an ERP University Alliances (UA) program failed miserably due to a lack of participation and satisfaction from management teams, technical teams, and students. Several researchers suggest that a web-based ERP simulator may be the correct tool to include in business school's curricula, especially if the overall goal is to teach ERP processes and opposed to learning how to use ERP software (Lindoo & Wilson, 2010). Other researchers have also proposed the use of ERP simulation for students with hands on experience in various aspects of business processes, in order to bridge the gap between computing and business application (Mosca et al., 2005; Pittarese, 2009). Nevertheless, Kanthawongs et al. (2010) found that students who utilized web-based ERP-simulated classroom demonstrated significantly lower achievement than those who did not use the system because they lacked English language skills in interacting with the web-based ERP-simulated software. Moreover, Kwahk and Ahn (2010) revealed how the localization differences of ERP systems were likely to affect users' intention to use the ERP systems. Therefore, the current study attempts to identify the differences between the learning outcomes of the two groups of students who utilized the same web-based ERP-simulated software. The first group was students in Thai language program and the other group was students in English language program. Finally, appropriate guidelines are provided for potential enhancements on various aspects of the course design with particular emphasis on the ERP-simulated system.

2. LITERATURE REVIEW

High investment on purchasing hardware, supporting the system, and gaining the required expertise have been challenges for many universities attempting to integrated ERP in their business school curriculums (Becerra-Fernandez, 2000; Bradford et al., 2004; Hawking et al., 2007; Desai & Pitre, 2009). Furthermore, various higher institutions have not successfully implemented Open Source software or ERP University Alliances (UA) programs into their curriculums. Many institutions had made little progress in the development of policies and procedures for Open Source regulatory compliance and security (Rooji, 2007). Furthermore, Becerra-Fernandez et al. (2000) suggested that several ERP vendors selectively chose university partners to be application service providers (ASPs) who developed, supported, and provided system along with associated coursework to other university partners who bought web-base accesses. Lindoo and Wilson (2010) explained that the implementation of an ERP University Alliances (UA) program failed miserably due to a lack of participation and satisfaction from management teams, technical teams, and students. As a result, the school removed the software. Several researchers suggest that a web-based ERP simulator may be the correct tool to include in business school's curricula, especially if the overall goal is to teach ERP processes instead of managing how to configure ERP software (Lindoo & Wilson, 2010).

Previous studies based on the Technology Acceptance Model (TAM) (Davis, 1989; Venkatesh & Davis, 2000; Srite & Karahanna, 2006) have found that individuals' behavioral intention to use a new system is impacted by perceived usefulness and perceived ease of use for the system. TAM model had already been used in the ERP context. To illustrate, Gefen (2004) examined how trust and ERP usefulness were built during ERP implementation. TAM has been applied to ERP training/ learning by many researchers (Choi et al., 2007; Scott & Walczak, 2009). An integral part in enterprise applications is the embedded simulation providing powerful, simulation-based decision making capability, and has produced a "highly realistic manufacturing schedule," as well as "a real-life application" (Harrel & Hicks 1998; Musselman, 2002; Mosca & Revetria, 2005; Pittarese, 2009).

Several researches suggested that culture and language impact various ERP implementation practices in the US, Taiwan, China, and Europe (Sheu et al., 2004; Yusuf et al., 2006). Sheu et al. (2004) illustrated that impacts on implementation practices were technical problems in entering data, cultural resistance, and communication barriers between facilities due to different languages, localized implementations, and alteration of training programs in different sites. Furthermore, Lopes and Costa (2008) and Kwahk and Ahn (2010) revealed the ERP localization process specifically focusing on the language. For example, Lopes and Costa (2008) clearly showed the differences between European and Brazilian Portuguese according to organizational fields such as Financial, Production, Marketing/CRM and Information System. Moreover, Roldan et al. (2002) suggested that customization of the systems has been a problem by the Philippine companies; however, the researcher proposes designing ERP applications locally and customizing them for each particular industry. Wahid and Setyono (2010) reported that end-users were not ready to use the ERP system due to lack of English proficiency. Furthermore, a comparative study of students' learning outcome in non web-based and web-based ERP-simulated classroom environments reveals that language barrier is a reason behind low performance in students' learning outcome. Desai & Pitre (2009) proposed a two dimensional framework by combining core MBA courses (such as marketing and finance) with international factor (such as cultural differences and language issues) through the design of a curriculum based on basic system and ERP concepts.

3. METHODOLOGY AND RESULTS

Quantitative approach was implemented to compare the mean points of pre-test and post-test examination scores of two groups of students utilizing web-based ERP-simulated environment namely: (i) those who were in Thai language program and (ii) those who were in English language program. The dependent variable of this study is the instructional approach (Thai language instructions vs. English language instructions), and the independent variables are students' achievement as measured by their average pre-test and post-test examination scores and their perception. The same instructor instructed the two classes: the first one was "Computer Applications in Business" for Thai program's students and the other one was "Introduction to Information System" for English program's students. The examination instrument was developed on the same set of pre-test and post-test questionnaire related to business processes: procurement, production, and fulfillment. It was designed, adjusted, and validated by experts and instructors in MIS, statistical, communication fields. Furthermore, the back translation method was used by two certified translators. Final agreement was reached when no discrepancies between the two versions were detected by the researchers, the experts, and the instructors. Two groups of students in the courses at undergraduate level were chosen for the study with similar academic, but different cultural backgrounds with 44 students in the first group and 44 students in the second group. The total number of students was 88, whose data were collected during 2009 - 2010. The study was conducted over 4 weeks with three contact hours a week. Before the study commenced, the students' average pre-test examination scores were used to investigate whether there was any significant differences between the groups. Both groups were exposed to the same course outlines, course contents, and assignments, but in different languages. The first group was taught in Thai and the second group was instructed in English. Nevertheless, both groups used the same textbook written in English by the creators of the web-based ERP-simulated software. All students were placed in computer labs with Internet access to use the ERP-simulation system. Students had to purchase access cards for the web-based ERP-simulated system before they could use the system. The simulation comprised features such as animation, simulation, videos, assignments, read, study, practice, grade, FAQ, and Help desk in English.

4. FINDINGS AND DISCUSSION

The students' average pre-test examination scores were used to investigate whether there was any significant differences between the groups. As illustrated in Table 1, the result showed that the first group obtained 21.841 mean score compared to the second group which obtained 19.978 mean score. The mean difference was 1.864, the t = 1.368, and P = 0.175. The high P value indicated that the difference between the first group (Thai program) and the second group (English program) was not significant ($p < .05$). Therefore, there were no different in the mean scores between Thai program and English program at the beginning of the two courses.

TABLE 1: (PRE-TEST) INDEPENDENT SAMPLES TEST

Group	n	Mean	SD	MD	t	df	P
1st (Thai)	44	21.841	7.473	1.864	1.368	75.692	.175
2nd (English)	44	19.978	5.074				

*p < .05

Then, a post-test was investigated to compare the examination mean scores of both groups. The results were illustrated in Table 2. It showed that the first group obtained 41.977 mean score compared to the second group which obtained 30.159 mean score. The mean difference was 11.818. The t = 5.135, P = .000, and this low P value indicated that the difference between the first group and the second group was significant ($p < .05$). Then, the authors found that the Thai program had significantly higher mean scores than those of the English program.

TABLE 2: (POST-TEST) INDEPENDENT SAMPLES TEST

Group	n	Mean	SD	MD	t	df	P
1st (Thai)	44	41.977	14.347	11.818	5.135	54.172	.000**
2nd (English)	44	30.159	5.216				

*p < .05

The pre-test results showed that before the study started, there was no difference between the first and the second groups. After four weeks of learning the courses, the first group obtained significantly higher means score. The mean difference was not in the pre-test, but it increased in the post-test. Interestingly, the students' learning outcome in web-based ERP-simulated classroom environment for Thai language program had produced more positive results than that of English language program. A reason may include that language barrier might not be a problem for Thai language program's students in learning web-based ERP-simulated software with screens in English. The students in Thai program may not afraid to try and get errors in interacting with the system. Therefore, they understood the system thoroughly. Furthermore, it was possible that students in Thai program tended to work in groups or with his/her partner more than students in English program. Then, learning in groups or with the partner allows the students in Thai program to possibly get more correct answers in the post-test questionnaire.

5. CONCLUSIONS, RECOMMENDATIONS, AND FUTURE WORK

The new paradigm in enterprise systems development and integration aims for graduates who can understand and align business goals with a technical strategy supporting current and future needs. While important technological trends such as open source software or ERP university alliances programs may not be appropriate for many universities at the moment, the use of web-based ERP simulator is likely to be the best tool for students. TAM has been applied in web-based ERP-simulation context. Many studies revealed that English language proficiently may be needed in such a context. Nevertheless, the findings in this study showed that Thai program students were more proficient in learning web-based ERP-simulated software even if the screens were all in English. Therefore, the researchers recommended that in implementation of web-based ERP-simulated environment, instructors should take into an account social interactions among students. Permission for students to work with the simulation in groups may attract them to concentrate more in the contents of the software. They were likely to accept responsibility for their actions and their effects on others. Therefore, a successful simulation should include the feature to work in group or with partners. Practitioners should pay attention to individual and social factors in designing a simulation. Some other guidelines for the design of web-based ERP simulations are providing various types of contents, creating enjoyment, allowing immediate feedback, and attracting interaction (Lee et al., 2005). Therefore, this research is likely to assist university educators, business students, and other stakeholders to improve design of the course contents as well as the system user-interface of the ERP-simulated system. Other future studies include more quantitative and qualitative approaches in applying TAM, TAM's extension models, and DIT into web-based ERP-simulated context both in Thai program and English program. Researchers may utilize quantitative approaches to measures perceived usefulness, perceived ease of use, and other social factors in order to find deeper reasons for the presence of such a difference.

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ANALYSIS ON PROPAGATIONS IN ACTIVE AND PASSIVE NETWORK MODELS

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ABSTRACT

For the study of network effects on adoption and utilization of innovation, we introduce two network propagation rules. We then apply the rules to two different models of networks, a large-world network and a small-world network. For both models we show that the "active individuals" in the networks are important in the spread of ideas and in influencing the decision to adopt through the networks.

1. INTRODUCTION

As result of the great importance placed in the innovation of products and services to the world economy, considerable number of research has been conducted in the area of adoption and utilization of innovation.To date, research in the topic can be categorized into two broad streams. First, studies involving adopters' perception in the utility of the innovation and in the individual characteristics of the adopters. These studies found its support from the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), innovation diffusion (Rogers, 2003), and the technology acceptance model (TAM) (Davis et al., 1989). The perceived behavioral control, and the adopters perception regarding the innovation's attributes such as ease of use, usefulness, and complexity were the focus of those studies. Second, studies finding theoretical support from the social influence models and the network effects. The social influence models place less importance on the attributes of innovation but rather suggest it is through the normative influences and social processes of the environment in which the adopters learn and adopt innovation. In regards to the network effects, the phenomenon known as the positive consumption network externalities (Farrel and Saloner, 1985; Katz and Shapiro, 1985) suggest that the perceived value of some products or services become more valuable as more people adopt and use them. For example, the perceived value of a telephone depends on the number of users of the telephone in the network (Katz and Shapiro, 1985, Shankar and Bayus, 2004).

In this paper we introduce two rules governing propagation of ideas which would find its roots from the latter stream of studies. We then will apply the rules to two different models of networks, a large-world network and a small-world network. For both models we will see the "active individuals" in the networks are important in the spread of ideas and in influencing the decision to adopt through the networks.

2. ZERO FORCING NUMBER AND NEIGHBOR FORCING NUMBER

To describe how ideas and opinions spread we introduce a mathematical model, called a graph (also called a network). A graph consists of dots and lines connecting dots. For example the dots (called vertices) represent individuals in a social network and the lines (called edges) indicate friendship between two connected vertices (see Figure 1).

In a social network if a person has adopted an idea, we can say that the person is infected by the idea. Otherwise, we say that the person is not infected. Likewise, we can define an infected vertex and non-infected vertex in a graph.

In this paper we consider two different propagation rules of infection. One is called active and the other is called passive. We will apply these propagation rules to large-world networks and small-world networks to study how the propagation reaches the complete propagation state (the point where all the vertices are infected), and compare the performances of the two different models. We start with defining the passive and active propagation rules. First, the Active Propagation Rule is defined as follows.

Let u be a vertex that is not infected. The vertex u gets infected if and only if it is the only non-infected neighbor of an infected vertex.

We call this propagation rule active, since the infected vertex, the center of the local neighbor structure, actively force the non-infected neighbor to be infected. The minimum number of infected vertices that achieve the complete propagation state under the active propagation rule is called the zero forcing number of the network. The zero forcing number of a graph has been studied for families of graphs (for example, see AIM Minimum Rank-Special Graphs Work Group, 2008). It is also shown that the zero forcing number of a graph of spins in quantum mechanics provides an upper bound on the smallest number of spins we need to access in order to perform Hamiltonian tomography (Burgarth and Maruyama, 2009).

Second, the Passive Propagation Rule is as follows.
Let u be a vertex that is not infected. The vertex u gets infected if and only if all of its neighbors are infected.

We call this propagation rule passive, since the non-infected vertex, the center of the local neighbor structure, passively gets infected by its neighbors. The minimum number of infected vertices that achieve the complete propagation state under the passive propagation rule is called the neighbor forcing number of the network.

3. LARGE WORLD AND SMALL WORLD

The distance between two vertices in a graph is the number of edges in a shortest path connecting the two vertices. The characteristic path length of a graph is the average distance of vertices in the graph. The six degrees of separation says that one can reach the other in our social network after six handshakes on average (Watts, 2003). This implies that our social network has a small characteristic path length. This small average distance is one of the two characteristics that a small world network has. The other is a large clustering coefficient. For a vertex u in a graph, we can define its local clustering coefficient as the number of pairs of neighbors of u, which are connected, divided by the number of pairs of neighbors of u. We then define the Watts-Strogatz clustering coefficient of a graph to be the average of the local clustering coefficients. In a social network people who share a common friend are more likely to be friends themselves than randomly chosen individuals. A large-world network is a graph with a large clustering coefficient and a large characteristic path length. This means that the graph is locally well connected, but globally there are vertices far away from each other. Watts and Strogatz showed how to obtain a small world network from a large network by rewiring edges in a regular ring lattice (Watts and Strogatz, 1998). By changing the probability, p, of rewiring edge from p=0 to p=1, we can obtain a small world network (see Figure 1).

Regular ring lattice (n=40; p=0) (n=40; p=0.1) Small-world network (n=40; p=1) Random network

Figure 1 World Network

4. ANALYSIS

Our interest here is to investigate how the two different propagation rules govern the spread of infected vertices through large-world networks and small-world networks to reach the complete propagation state. It turns out that the active model of propagation is much more effective to turn every vertex to be infected than the passive one on a large-world network. Let G be a regular ring lattice on n vertices such that each vertex of G is connected by an edge to its four closest neighbors along the ring. Then it can be verified that the active model needs only four infected vertices to reach the complete propagation state through the entire network G. This means that the zero forcing number of the regular ring lattice G is four. However, if the spread of the idea is governed by the passive propagation rule, then there need to be the two-thirds of the entire population initially to reach the complete propagation state. More precisely, the neighbor forcing number of G is the smallest positive integer among integers bigger than or equal to 2n divided by 3.

For small-world networks, we performed several experiments (see Table 1).

Table- 1

Network Type	n	P	AD	WS C-C	CPL	ZFN	NFN
Large-world	40	0	4	0.5	5.3846	4	27
Small-world	40	0.05	4	0.43	3.88	6	26(*)
Small-world	40	0.1	4	0.412	3.8	7	26(*)
Small-world	40	0.15	4	0.368	3.26	8	26(*)
Random	40	1	4	0.11	2.71	10	22(*)

(n: number of vertice, p: rewiring probability, AD: Average Degree, WS C-C: Watts-Strogatz Clustering Coefficient, CPL: Characteristic Path Length, ZF: Zero Forcing Number, NFN: Neighbor Forcing Number, Numbers with *: Upper bounds for NFNs obtained by a greedy algorithm)

From Table 1 we can observe that the gap between the zero forcing number and the neighbor forcing number in small-world networks is smaller than the gap for the large-world network. However, for both of network models, the table shows that the zero forcing number is less than or equal to the neighbor forcing number.

5. CONCLUSION

The active propagation model requires a much smaller numbers of infected individuals to spread an idea regardless the types of networks. This implies that it is important to identify power users (who is infected and actively forcing other network members infected) and give them an incentive to spread words to other people.

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FEMALE CONSUMER BEHAVIOR:
AN EVALUATION OF THE PURCHASING DECISION IN THE FASHION SEGMENT

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ABSTRACT

This article aims to show the relevance of marketing in the consumer's purchase decision about the female fashion segment. To support the study, a literature review was done with the influencing factors of consumer behavior, the theory hierarchy of needs by Abraham Maslow and mix (or compost) marketing. To facilitate the achievement of the objective of this study was conducted a field survey to assess consumer behavior, focusing on what can influence them when buying clothes. In the survey, 158 questionnaires were applied, with the students and employees at Federal University of Pernambuco, in Caruaru, Brazil. Data were analyzed using SPSS, using frequency, mean, standard deviation, ANOVA, and also the correlation coefficient (r) Pearson product-moment correlation or. The results show that all theories discussed in the research affect the consumer's purchase decision and therefore it is of utter importance that marketers have this knowledge, since these theories through the marketing power can be exerted on the female consumer in the purchase product segment of fashion (clothing).

Keywords: *Female consumer, Influencers Factors, Theory of Maslow's hierarchy of needs, Marketing Mix, Fashion segment*

1. INTRODUCTION

Understanding the human being and his behavior is a search already present in first records of mankind. As quoted by De Toni and Schuler (2003), "Know Thyself" Socrates (400 BC), reveals a desire to understand who the man is. Currently, the understanding of human behavior is essential in the process of evolution of marketing thought. Understand the areas of decisions and factors influencing consumer behavior is an important issue as the markets evolve and transform themselves, dominating the scene of interest in studying consumption (Crockett and Walendorf, 2004; Serralvo and Ignacio, 2005).

The purpose of marketing is to satisfy the needs, goals and desires of the consumer. To do this you must have knowledge of consumer behavior that studies how individuals, groups and organizations select, buy, use and discard items, services, ideas and experiences to meet their needs and desires. Understanding consumer behavior and know the audience is not simple tasks. Customers may say one thing at any given time and do another. The task of the marketer is to understand what happens in the consciousness of buyers in relation to their needs and purchase decision (Kotler, 2000).

The marketing has strategies to understand and influence consumers. According to Shapiro (1985) it should take into account primarily choose the target market in the development of a marketing program. Defined the market, marketing can put into practice its activities more accurately, where the definition of the marketing mix, or specifically, decisions about the four Ps: product, price, place and promotion, are fundamental to marketing strategy (Kotler, 2000).

Initially, in this article is done a review on the concept of marketing and consumer behavior, then shown the factors that may influence the consumer at the time of purchase and based on the theory of hierarchy of needs and the marketing mix as Marketers use it to influence consumer desires women. To support the theoretical discussion, we analyze data from field research conducted by this article along to a female audience that evaluates the purchasing behavior in the fashion segment.

Marketers must be familiar with your audience, in order to develop effective strategies to achieve and maintain a customer base that can sustain the company where he works. In this article, is being studied consumer behavior in the female segment of fashion, because women are the vast majority of buyers in this segment, then it will be investigated what may influence a woman to buy their clothes.

There are already several theories that study the buying behavior of consumers, for example the so-called influencing factors, which are cultural, social, personal and psychological factors that can influence the choices of consumers. Another theory supporting our study id the theory of Maslow's hierarchy of needs, therefore we will explore whether the needs identified by Maslow in his theory can also influence the consumer in their purchase and finally the marketing mix, which points which components are considered fundamental to the consumer.

Then the research problem is: what are the influencing factors, components of the marketing mix (product, price, place and promotion) and the necessity of the theory of Maslow's hierarchy of needs that most affect women's when buying in the segment fashion (clothing)?

2.1 Hypotheses

According to Vergara (2009), hypotheses, or assumptions, are "the anticipation of the answer to the problem". One hypothesis is an unproven statement or proposition about a factor or phenomenon that is of interest to the researcher (Malhotra, 2006). The assumptions often describe events that can be systematically tested using data. These go beyond the research questions, as are statements of relationships with the proposed problem. Research is carried out so that we can confirm or reject the hypothesis (Malhotra, 2006; Vergara, 2009).

The hypotheses are vital elements in a scientific research, because all work will direct the researcher. But it is important to note that not all research necessarily present hypothesis (GIL, 1995). In some cases, there is sufficient information for the formulation of hypotheses. The hypotheses, if any, have a key role in research, because they suggest explanations for the facts. These suggestions could be the solution to the problem. Can be true or false, but when well prepared, leading to empirical verification, which is the purpose of scientific research (Gil, 1995).

In general, the term hypothesis is associated more with positivism, in this situation means testing, which are mostly by statistical procedures. There are two types of hypothesis: constructive and operational. One hypothesis constructive defines words using other words. The operation specifies operations necessary to measure or manipulate one construct (concept) (Vergara, 2009).

The statistical hypotheses are formulated in ways null (H_0) and alternative (H_1, H_2, etc.). According to Malhotra (2006), a null hypothesis is a statement that there is no difference or effect in this case, if that is not rejected or does not make any changes. An alternative hypothesis leads to change opinions or attitudes, so it is the opposite of the null hypothesis. Based on the formulation and testing of hypotheses the researcher is guided to the final answer to his research.

In this context, hypotheses were formulated based on the research problem, to serve as a guide for field research, data analysis and the pursuit of the objectives proposed in this article.

H_1: There is a relationship between the variables "with his family or group of friends influence a woman when buying her clothes" and "a woman can buy certain types of clothing that normally does not usually wear to suit a particular group of which to belong".

H_2: There is a relationship between the variables "on the self-image and personality, which makes a woman differentiate itself from others, are crucial in finding clothes that suit your characteristics" and "internal factors like self-respect, autonomy and achievement and external factors as desire for status, recognition, attention and self-actualization influence women in choosing a particular type of clothing".

H_3: There is a relationship between the "fashion tips published in printed media, television and radio serve as learning and determine what the woman buys in the clothing industry" and "disclosure of a product influences consumer choice for women".

H_4: There is a relationship between the variables "on the lifestyle of women influences the choice of clothes she buys" and "buying clothes is just something to fill a basic need (to protect from cold, to cover nakedness, etc.)".

H_5: There is a relationship between the variables "on the perception of women in relation to the environment they live influences their decision to purchase an outfit" and "it is necessary that the product has all the qualities of the marketing mix (good quality, point of sale close to the consumer, be well publicized and have a lower price) so that the consumer decides to choose it in your purchase".

2. LITERATURE REVIEW

2.1 Marketing and consumer behavior

Marketing is a practice whose importance for the life of organizations is widely recognized. Marketing involves understanding, identifying and meeting human needs and social needs of individuals (Sobral and Peci, 2008, Kotler and Keller, 2006). According to the American Marketing Association (2004) marketing is an organizational role and a set of processes that include creating, communicating and delivering value to customers, as well as the command's relationship with them in a way that benefits organization and its target audience (Kotler and Keller, 2006).

The central concept of marketing is to develop exchanges in which customers and organizations voluntarily participate in transactions that bring benefits to both (Kotler and Keller, 2006). According to Churchill and Peter (2000) this means that marketers must recognize that trade with customers are the life of organizations. The company must understand their customers, know what they think, feel and how they buy and use products and services. Typically, marketing is seen as the task of creating, promoting and delivering goods and services to consumers (Kotler, 2000).

The marketing concept consists in fulfilling and satisfying the needs and desires of consumers, understanding and influence their behavior are functions of a marketing organization (Sobral and Peci, 2008). The study of consumer behavior is in an extremely broad universe, because it's the individual's relationship with the surrounding environment, characterized, therefore, in a world without frontiers and endless possibilities of interactions for each buying situation experienced by the individual. Consumer behavior is a mental activity, emotional and physical where people engage when they select, buy, use and provide the product or service to satisfy a need or desire (Wilkie, 1994; De Toni; Schuler, 2003).

Understanding consumer behavior is not simple tasks. The consumer can say one thing at any given time and do another in the purchase. They may be unaware of their motivations. The task of the marketer is to understand what happens in the consciousness of buyers in relation to their needs and purchase decision (Kotler, 2000). This understanding is necessary to select the target market for the organization to focus its marketing efforts on the right customers and develop appropriate policies to the needs of their consumers.

2.2 Female market

The concept of market is necessary for the development of marketing as it is the set of all potential customers who share a particular need or desire, willing and able to make an exchange that meets such a need or desire (Kotler, 2000). Currently the markets are increasingly fragmented, and marketers are seeking the best market segments. One segment that has increased in importance is that of women consumers, and which are now responsible for a large part in making purchasing decisions, and also where women are still crowded in advertisements and various trade groups (Blecher, 1999; Chiusoli et al., 2004).

The modern woman is an agent of change that has taken on increasing responsibilities in the social environment. The female roles are changing relations of work and consumption, leaving marks on the structure of society (Kotler and Keller, 2006).) Traditionally, most shopping is done by women. It is the woman who buys for the family, including products for the husband and children. Peters (1998) advises companies to direct their strategies for women, because this market segment, an excellent business opportunity for any organizations.

According to Kotler and Keller (2006), to understand the female consumer may be a key success factor for organizations that want to follow trends and reveal the behavior of their consumers. To do this, marketers should be aware of what may come to influence the purchase decision of your target market.

2.3 Factors influencers of consumer behavior

Understanding the factors that influence the buying behavior of consumers is of utmost importance, since the consumer is influenced by several factors, such as cultural, social, personal and psychological (Kotler, 2000). Cultural factors are a major determinant of the behavior and desires of the consumer. It is through culture that a person acquires values, beliefs, habits and preferences that influence their consumption behavior (Sobral and Peci, 2008). In turn, the culture can be divided into subcultures that provide more specific identification and socialization for their members (Sobral and Peci, 2008, Kotler and Keler, 2006).

Apart from the social cultural factors also influence the purchase decision, as consumers take into account the environment in which they live and the people with whom they relate as reference groups, family, social roles and status (Sobral and Peci, 2008). Already with regard to personal factors people look to buy products or services according to their personal characteristics such as age and stage in the life cycle, occupation, economic circumstances, personality, self-image, lifestyle and values (Kotler, 2000).

Finally, there are also psychological factors, which when combined with some features of the processes leading consumer purchasing decisions (Kotler, 2000). Psychological factors such as motivation, perception, learning and memory, influence consumer responses to various stimuli of marketing (Kotler and Keller, 2006). According to Sobral and Peci (2008) identification and understanding of factors that influence consumer behavior will allow organizations to improve their ability to anticipate and influence of its marketers in relation to its consumers.

2.4 Hierarchy of needs

Among the psychological factors motivating the most common theory, according to Robbins (2005), is the theory of hierarchy of needs of Abraham Maslow. According to the author, within each human being there is a hierarchy of five categories of needs, ranging from physiological needs most basic to the highest self-actualization. In his order, they are: a) Physiological - are basic to survival, including food, water, shelter, sex and other bodily needs, b) Safety - includes safety and security has physical and emotional harm, c) Social - includes affection, acceptance, friendship and sense of belonging to a group, d) estimated - includes internal esteem factors like self-respect, achievement and autonomy, and estimates of external factors such as status, recognition and attention, e) self-actualization - intent to become everything that one is capable of being, including growth, reach their own potential and self-development.

According to Maslow, individuals will be motivated to meet the most important or strongest at any given time. The importance of a need depends on your situation at the time and their experiences. Beginning with the most basic needs, each need must be at least partially satisfied before the individual wishes to satisfy a need in the next step up (Stoner, 2000).

According Karsaklian (2009), the motivation process begins with the detection of a need that can be met in different ways. That's where desires and preferences arise. For the marketing point of view, needs can be classified into two types of benefits acquired through the purchase and consumption: the utilitarian needs are those acquired for the purpose of functional and hedonic needs or are seeking experienced subjective responses. Often, both types of needs are important in the purchase decision (Karsaklian, 2009).

From a consumer need, marketing stimulates desire and preference for certain goods or services. According Karsaklian (2009) is not the marketing that creates the needs, but social pressure and the strong need of the individuals belonging to groups. The responsibility of the marketer is to anticipate needs and offer products that can satisfy them.

The study of the needs we perceive that they are internal factors of human beings. When the search marketing worth buying a certain product, what it does is to direct the preference or the desire of consumers to a particular product and / or trademark. The theory of hierarchy of needs, Maslow, helps marketers understand how goods or services fit the goals and the lives of consumers (Kotler, 2000).)

To deal with this and other factors influencing marketers must devise marketing activities and build the proposed fully integrated marketing to create, communicate and deliver value to consumers (Kotler and Keller, 2006). Marketing activities can take many forms, so the organization should follow policies of product, promotion, distribution and pricing, appropriate to each market offering (Sobral and Peci, 2008).

2.5 Marketing mix

For organizations to understand the needs and consumer behavior is crucial for this, in general marketing activities are described in terms of the mix (or compost) marketing (KOTLER; KELLER, 2006; SOBRAL; PECI, 2008).

Kotler (2000) considers the marketing mix a modern marketing concept, defining it as a set of marketing tools the company uses to pursue its marketing objectives in the target market, so the marketing mix conveys the idea of a set of instruments or parameters of decision-making. To organize and simplify the decisions to be taken, the variables were aggregated into four groups, known as the "four Ps" of marketing: product, price, promotion and square (distribution) (MacCharthy, 1960; Toledo, Nakagawa and Yamshita, 2002).

According to Sobral and Peci (2008) the four Ps compose the set of variables on which professionals will take the decisions, i.e.:

- Develop a product (product) that satisfies the consumers. The product is anything that can be offered to a market that may meet your needs and desires. Product includes not only goods or services, but also trademarks, packaging, customer service and other features (Ricci, 2005).
- Choose the distribution system, or square (place) that allow products to be accessible to the consumer. It is through this that is embodied in an exchange between the organization and consumers (SOBRAL; PECI, 2008). The product or service is only useful if placed next to its consumer market. The choice point for the product or service relates to the choice of distribution channel as a wholesale distributor or retail, transport and storage (Ricci, 2005).
- Develop a promotional campaign (promotion). The product should be promoted, i.e. it must inform the consumer benefits. Any company assumes the role of communicator and promoter. The promotion consists of a combination of several factors: advertising, personal selling, sales promotion, public relations. All this to convey to consumers the value of the product (Ricci, 2005).
- Define a policy of price (prize) in order to encourage consumers to buy products and the company to sell (Sobral and Peci, 2008). According to Boone and Kurtz (2001) pricing decisions are important to the achievement of economic and financial results for the competitive and strategic positioning of the company to achieve goals related to sales volume and prestige. Price therefore is the amount of money, goods or services that must be given to acquire ownership or use of a product. According to Ricca (2005), the product must be right, must be in the right spot and should have its ownership transferred at the right price.

3. METHODOLOGY

3.1 Design of research

Research is classified as quantitative which uses data collection to meet the definition of the problem and test the hypotheses established previously, and relies on numerical measurement, counting, and often the use of statistics to establish accurately the behavior patterns of a population (Sampiero, Collado and Lucio, 2006). About the purposes, the research is descriptive, because it seeks to describe what influences consumers when buying women. According to Gil (2005) descriptive research aims to describe the characteristics of a given population or phenomenon. Has no commitment to explain the phenomena it describes, although as the basis for such an explanation (Vergara, 2009).

As for the means, the search is bibliographical and field. Theoretical literature as to the article was addressed the following issues: factors influencing consumer behavior, the theory of hierarchy of needs and the marketing mix. According to Vergara (2009) the literature is the systematic study developed based on materials published in books, scientific papers, meaning material accessible to the general public. The research is also in the field, because it will collect primary data from the females at Federal University of Pernambuco, in Caruaru, Brazil – in order to increase the area covered by our study since many women are from different cities that study or work in this institution. These data were collected through a questionnaire survey-type, since according to Malhotra (2001), is an interview survey with a large number of people using predetermined questionnaire.

3.2 Sample selection, data collection and pre-test

The population sample or a sample of the population (number of elements that have characteristics that are object of study) chosen according to a criterion of representativeness (Vergara, 2009). The sample is a small subset of the population and cannot be probabilistic or probabilistic. This article is based on the sample where no probabilistic "entrusted to the trial staff of the researcher who arbitrarily or consciously decide the elements to be sampled”. (Malhotra, 2006). Regarding the techniques of non-probability sample was used as a convenience sample, which according to Malhotra (2006), seeks to obtain a sample of convenient elements, where the selection is left to the interviewer. The process by convenience non-probability sampling involves selecting sample elements that are more willing to take part in the study and who can provide necessary information (Gil, 1995).

The sample populations of this survey were women studying or working at Federal University of Pernambuco, in Caruaru. The completion of data collection was by structured questionnaires surveys with closed questions where the respondent can choose between a certain number of responses (HAIR Jr. et al., 2005), applied through personal interviews, an interview occurs when the researcher directly addresses the respondent, asking questions and recording responses (Hair Jr. et al. 2005).

The questionnaire was developed based on the Likert scale, which is a measuring scale with five response categories ranging from “strongly disagree” (number 1) to “strongly agree” (number 5), which requires participants to indicate a degree of disagreement or agreement with each of several statements related to the stimulus objects (Malhotra, 2006). The questionnaires were administered on days 08 and 09 June 2010, with students who were in the hallways, in front of classrooms and also in their workplace, and with time they were available to answer our questionnaire. Then, 165 questionnaires were applied, but 7 were excluded from the study because they had some errors in completion, the remaining 158 valid for analysis. It was performed a pretest with 10 respondents, with the objective to identify and eliminate potential problems in the questionnaire (Malhotra, 2006), which the respondents were not part of the final sample in order to avoid biases and ensure that the responses obtained allow us to achieve the goal of research.

3.3 Analysis of the data collection

The collected data were analyzed based on field research conducted for this paper, using content analysis with the help of the construction of tables and the use of SPSS (Statistical Package for the Social Sciences), by frequency, that is a numeric value that represents the total number of observations for each variable (Collis and Hussey, 2005), which is the average result of the sum of a set of values divided by the number of values in the search (Appolinario, 2006), deviation standard that corresponds to the square root of the variance, the most important measure of dispersion because it uses each value in the same units of the original data and is presented along with the average (Collis and Hussey, 2005), was also used in the ANOVA analysis, to analyze the variance of a factor and investigate the differences between means of subgroups (family income) (Malhotra, 2006) and finally to test the hypotheses we applied the correlation coefficient r of Pearson product-moment correlation or that is the statistic that summarizes the strength of associations between two variables, which will indicate the degree to which variation in one variable relates to another variable (Malhotra, 2006).

4. PRESENTATION AND DATA ANALYSIS

4.1 Profile of respondents

Of the total 158 respondents surveyed about what influences the consumer when buying clothes, it was noticed the following profile of the same: 62 (39.24%) are between 16 to 20 years, 68 (43.04%) are between 21 to 25, 15 (9.49%) are between 26 to 30 years, six (3.80%) have between 31 to 35 years and seven (4.43%) are 36 years or more, about marital status 135 (85.45%) were single, 18 (11.39%) are married, one (0.63%) is divorced, one (0.63%) is a widow and three (1.90%) are separated; in relation to family income (which according to IBGE are divided into five classes: Class E for those earning up to two minimum wages, class D for those earning 2 to 6 minimum wages, Class C for those who earn 6 to 15 minimum wages, class B for those who earn 15 to 30 minimum wages and class A for those earning above 30 minimum wages) of the study participants 63 (39.87%) are in class E, 69 (43.67%) are Class D, 21 (13.29%) are Class C, 5 (3.16%) are in class B and 0 (0%) are in class A.

About the city where they live 80 (50 64%) are in Caruaru, 14 (8.86%) are Gravatá, 8 (5.06%) are Altinho, 6 (3.80%) are in Recife, 6 (3.80%) are Belo Jardim, 5 (3.17%) were from Santa Cruz de Capibaribe, 5 (3.17%) are from Surubim, 5 (3.17%) are from Bezerros, three (1.90%) from Arcoverde 3 (1.90%) from Pesqueira, 2 (1.27%) from Agrestina, 2 (1.27%) from Toritama, 2 (1.27%) from Catende, 2 (1.27%) from Brejo da Madre de Deus, 1 (0.63%) is from Palmares, one (0.63%) from Cupira, 1 (0.63%) from Tacaimbó, 1 (0.63%) from Saire, 1 (0.63%) from Bonito, 1 (0.63%) from Vertentes, 1 (0.63%) from Lagoa dos Gatos, 1 (0.63%) from Riacho das Almas 1 (0.63%) is from Olinda, 1 (0.63%) is from Jurema, 1 (0.63%) from Sanharó, 1 (0.63%) is from Belém de Maria, 1 (0 63%) from Sao Caetano, 1 (0.63%) from Paulista and 1 (0.63%) from Xexeu.

4.2 Analysis of variables as the influencing factors of consumer behavior

Table 1 shows the results obtained from the respondents regarding the variables referring to the factors influencing consumer behavior, and presents the data through mean and standard deviation. From the evaluation of the first influencing factor, namely the cultural factor, which is described by variables 1 and 2, there is the averages 2.65 and 3.72 and standard deviation of 1.282 and 1.173 respectively in women there is no the belief that religion influences the way women dress, but they believe that how a woman was brought influences the way she dresses, noting that not all cultural factors really have an influence on the consumer at the time of purchase. Evaluating the second factor, which is the social factor, presented by the variables 3 and 4, there is the averages 4.18 and 3.94 and standard deviation of 1.044 and 1.039 respectively represent the social factors that influences the consumer.

The third factor, which is the personal factor, is present in the variables 5 and 6 of Table 1 shows the mean and 4.51 and 4.22 standard deviations of 1.114 and 0.843 respectively, showing that the personal factor is the strongest Since their averages are higher and their standard deviations are low. The fourth factor, the psychological factor presented in the variables 7 and 8, with the average 3.99 and 3.52 and standard deviations of 1.006 and 1.166 respectively, showing a significant degree of agreement.

Table 1
Presentation of the Variables on the influencing factors of consumer behavior

Variable	Mean	(S.D*)
1. Women only wear religious clothing deemed appropriate by their religion.	2.65	1.282
2. The way a woman was brought from his childhood influences the purchase of a certain type of clothing.	3.72	1.173
3. The social role of a woman in her work influences in their mode of dress.	4.18	1.044
4. The family relationships or friendships influence the group of women when buying clothes.	3.94	1.039
5. The self-image and personality, which makes a woman differentiate itself from others, are crucial in finding clothes that fit its characteristics.	4.22	1.114
6. The lifestyle of women influences the choice of clothes she buys.)	4.51	0.843
7. The perception of women in relation to the environment they live influences their decision to purchase an outfit.	3.99	1.006
8. Fashion tips published in printed media, television and radiolistening serve as learning and determine what the woman buys in the clothing industry.	3.52	1.166

Note. Source: Field survey conducted in june, 2010.
* Standard Deviation

In summary, it is thought, by the context of the entire Table 1 that all factors are important in the consumer's purchase decision, but when it comes to cultural factors within the fashion segment, it is seen that not all of them represent a high degree of influence on the purchasing behavior of consumers.

4.3 Analysis of variables and the theory of hierarchy of needs

In Table 2, the variable 9 has an average of 1.56 and a standard deviation of 1.000 indicating that for women to buy clothes is not a basic need, not only for protection from the cold, to cover nakedness, among other things primaries. Buying clothes for a woman can be to meet a social need, as shown in variable 10 (mean 3.38, SD 1.305) and more to meet a need of esteem and self-actualization, as shown in variable 11, which has mean = 4.25 and standard deviation = 0.930, showing that for the consumer to buy clothes is considered something to meet the higher needs of a woman.

Table 2
Presentation of the Variables on the Theory of Hierarchy of Needs

Variable	Mean	S.V*
9. Shopping for clothes is just something to fill a basic need (to protect from cold, to cover nakedness, etc.).	1.56	1.000
10. A woman can buy certain types of clothing that normally does not usually wear to suit a particular group from wich to belong.	3.38	1.305
11. Internal factors like self-respect, autonomy and achievement and external factors such as desire for status, recognition, attention and self-actualization influence women in choosing a particular type of clothing.	4.25	0.930

Note. Survey: Field survey conducted in june, 2010.
* Standard Deviation

According to the analysis of all the Table 2, we note that, for the consumer to buy clothes is considered something to meet the higher needs of a woman, since they can buy certain types of clothing that normally do not usually use to suit a certain group that wants to belong and that both internal factors (self-respect, achievement and autonomy) and external factors (desire for status, recognition, attention) and self-actualization also influence the consumer in choosing their clothes.

4.4 Analysis of variables as the marketing Mix

In Table 3, according to the variable 12, which has mean = 3.34, showing neutrality and the need for a clothing have all the qualities of the marketing mix (good quality, point of sale near the consumer, be well publicized and be affordable), but the standard deviation = 1.412 shows that there is no consensus on this.

The variable 13, which has mean = 4.02 and 1.114 standard deviation indicates that it is important for consumers to enjoy quality clothes for her to buy. The variable 14, which has mean = 2.67 shows that the distance does not discourage the consumer on the purchase, but its standard deviation = 1.460 shows that many do not agree with that, and that for them, the distance really matter.

For marketers, the analysis of variable 15 is very important because, as can be seen in Table 3, it has mean 4.22 and standard deviation = 0.762, indicating that consumers are attentive to the disclosure of a product. Finally, variable 16, which has mean = 4.11, standard deviation = 0.947, showing that the price influences the consumer when buying a particular outfit.

Table 3
Presentation on the Variables of the Marketing Mix

Variable	Mean	S.V*
12. It is necessary that the product has all the qualities of the marketing mix (good quality, point of sale near the consumer, be well publicized and have a lower price) so that the consumer decides to choose you in your purchase.	3.34	1.412
13. The quality of clothing influence the purchasing behavior of consumers.	4.02	1.114
14. The distance between the residence of the consumers and the shops in the garment sector may discourage the consumer on the purchase.	2.67	1.460
15. The disclosure of a product influences consumer choice females.	4.22	0.762
16. The price influences the consumer when buying a particular outfit.	4.11	0.947

Note. Survey: Field survey conducted in june, 2010.
* Standard Deviation

And finally, considering all the Table 3, we note that the marketing mix is important in this segment, but the consumers believe it is not necessary to submit an outfit all components of the marketing mix, because the square, which is the distance between the consumer's residence and the premises of the garment industry does not discourage the purchase for many consumers.)

4.5 Apresentation of the ANOVA

Table 4 presents an evaluation of the above variables on the characteristics of each variable relating to influencing factors, needs, and marketing mix in relation to subgroups of the family income of respondents. To this end, we considered the null hypothesis (H_0) that there are no statistical differences between the means of subgroups of the family income of respondents in these variables on the factors influencing the needs and the marketing mix. And in return, we considered the alternative hypothesis (H_1) that there are statistical differences between the averages of these subgroups.

Using the ANOVA since the model is unbalanced because the subgroups of family income have different numbers of subjects. According to the ANOVA results (Table 4) there are significant differences between the averages for each category in respect of the “Women only wear religious clothing deemed appropriate by their religion” (F = 1.350, sig.= 0.260), “The social role of a woman in her work influences in their mode of dress” (F = 0.788, sig.= 0.502), “Fashion Tips disclosed in printed media, television and radioauditiva serve as learning and determine what the woman in the purchase fashion segment” (F = 1.981, sig.= 0.119), “It is necessary that the product has all the qualities of the marketing mix (good quality, point of sale near the consumer, be well publicized and have a price) to that the consumer decides to choose it in your purchase” (F = 0.972, sig.= 0.408), “The quality of clothing affects the consumer's buying behavior” (F = 0.893, sig.= 0.446), “The distance between the residence of the consumer and the stores in the garment sector may discourage the consumer on the purchase” (F = 2.737, sig.= 0.045) and “The price influences the consumer when buying a certain clothing “ (F = 0.756, sig.= 0.520). Thus, the test rejects the null hypothesis (H0) of these variables, proving that there is no statistically significant difference between subgroups of family income in relation to the variables listed in this paragraph.

Table 4
Assessments of Characteristics of Variable Factors Relating to influencers of consumer behavior, the Theory of Hierarchy of Needs and Mix Marketing Agreement with the Family Income Subgroups

Variable	Until R$1,020.00 (n=63)		From R$1,021.00 until R$3,060.00 (n=69)		From R$3.061,00 until R$7,650.00 (n=21)		From R$7,651.00 until R$15,300.00 (n=5)	
	Mean	S.D*	Mean	S.D*	Mean	S.D*	Mean	S.D*
1. Religious women use...	2.51	1.343	2.86	1.287	2.52	1.030	2.00	1.225
2. The way a woman...	3.63	1.274	3.80	1.145	3.62	1.117	4.00	0.000
3. The social role of a woman…	4.05	1.156	4.32	0.978	4.10	0.995	4.20	0.447
4.The family relationships or friendships…	3.89	1.049	4.01	0.978	3.90	1.136	3.60	1.517
5. The self-image and…	4.29	1.049	4.23	1.126	4.05	1.161	3.80	1.095
6.The lifestyle of women influences…	4.44	0.857	4.54	0.901	4.62	0.669	4.40	0.548
7. The perception of women in…	4.89	1.152	4.07	0.896	4.05	0.973	4.00	0.707
8. Fashion tips published…	3.43	1.279	3.55	1.078	3.90	0.944	2.60	1.342
9. Shopping for clothes is just something…	1.59	1.072	1.59	1.062	1.43	0.598	1,20	0.447
10. A woman can buy…	3.40	1.374	3.36	1.306	3.48	1.123	3.00	1.414
11. Internal factors like…	4.24	0.946	4.25	1.006	4.38	0.669	4.00	0.707
12. It is necessary that the product…	3.29	1.396	3.38	1.466	3.57	1.326	2.40	1.140
13. The quality of clothing…	4.16	1.019	3.87	1.212	1.14	0.910	3.80	1.643
14.The distance between the residence…	2.29	1.453	2.93	1.386	2.81	1.537	3.40	1.517
15. The disclosure of a product…	4.24	0.837	4.20	0.759	4.29	1.644	4.00	0.000
16. The price influences the…	4.18	0.933	4.12	0.963	3.86	1.014	4.40	0.548

Note. The means that are higlighted are those with statiscally significant differences. Survey: Field survey conducted in june, 2010. * Standard Deviation

However, it was observed that for nine of the 16 variables listed in Table 4 could not reject the null hypothesis (H0) because there was no statistically significant differences, namely: “The way a woman was brought from his childhood influences on buying a certain type of clothes” (F = 0.351, sig.= 0.788); “The family relationships or friendships influence the group of women when buying your clothes” (F = 0.351, sig.= 0.789); “The self-image and personality, which makes a woman differentiate itself from others, are crucial in finding clothes that fit their characteristics” (F = 0.475, sig.= 0.700); “The lifestyle of women influences the choice of clothes she buys” (F = 0.290, sig.= 0.833); “The perception of women in relation to the environment they live influences their decision to purchase an outfit” (F = 0.384, sig.= 0.764); “Shopping for clothes is just something to fill a basic need (to protect from cold, to cover nakedness, etc.)” (F = 0.374, sig.= 0.772); “A woman can buy certain types of clothing that normally do not tend to use suit a certain group that wants to belong” (F = 0.184, sig.= 0.907); “Internal factors such as self-respect, autonomy and achievement and external factors such as desire for status, recognition, attention and self-actualization influence women in choosing of a certain type of clothes” (F = 0.259, sig.= 0.855), “Disclosure of a product influences consumer choice female (F = 0.211, sig.= 0.889).

4.6 Testing hypotheses

To understand the degree of association among the cases cited earlier in this article, was the correlation (r) Pearson product-moment. The results show that in H_1 (there is a relationship between variables “with his family or group of friends influence a woman when buying her clothes” and “a woman can buy certain types of clothing that normally does not usually wear to suit to a certain group that wants to belong”), no correlation of the variables ($r = 0.046$, $p \leq 0.05$), ie, H_0 was accepted.

Already in H_2 (no relationship between variables “a self-image and personality, which makes a woman differentiate itself from others, are crucial in finding clothes that suit your characteristics” and “internal factors like self-respect, achievement and autonomy and external factors such as desire for status, recognition, attention and self-actualization influence women in choosing a certain type of laundry”), H_0 was rejected because H_2 has a 99% correlation ($r = 0.291$, $p = 0.01$).

Now in H_3 (no relationship between the “fashion tips published in printed media, television and radioauditiva serve as learning and determine what the woman buys in the clothing industry” and “disclosure of a product influences consumer choice female”), H_0 was rejected because H_3, shows a correlation of 95% ($r = 0.178$, $p = 0.05$). While in H_4, which states that a relationship between the variables “on the lifestyle of women influences the choice of clothes she buys” and “buying clothes is just something to fill a basic need (to protect from cold, cover your nakedness, Etc.”), H_0 was accepted because there was no correlation between variables ($r = -0.057$, $p \leq 0.05$).

Finally, the H_5 (no relationship between variables “perception of women in relation to the environment they live influences their decision to purchase an outfit” and “it is necessary that the product has all the qualities of the marketing mix (good quality, point of sale near the consumer, be well publicized and have a lower price) so that the consumer decides to choose you in your purchase”), H0 is accepted, since the variables were not correlated ($r = 0.114$, $p \leq 0.05$).

The testing of hypotheses in this article was important to show which elements addressed in our study (influencing factors, needs, and marketing mix) are linked together at the time of purchase. Thus it is concluded that personal factors and self-actualization and esteem needs are intertwined at the time a woman is deciding what clothes to buy, as the analysis of hypothesis 2, and that psychological factors and distribution of clothing significantly influence the consumer's time purchase, such as pointing to analyze hypothesis 3.

5. CONCLUSION

Upon completion of this study, since all the influencing factors have relevance in the consumer's purchase decision, although not all cultural factors, such as religion, are really so important in this decision. When it comes to the needs identified by Maslow in his theory, those that affect women more time to buy their clothes are the social needs, esteem and self-actualization, or the higher needs of the hierarchy.

It is noteworthy that among all components of the marketing mix, which has less influence on consumers is square (distance between the residence of the consumers and the shops in the clothing sector), but all others are considered very important. It is also important to note that marketers have to perfect it enough time to promote your product, since, as we saw in this research, the dissemination of a product has a high degree of relevancy when buying in this segment. For marketers it is essential to successful dissemination of their products to try to reach their consumers of psychological factors and personal factors and also the needs of esteem and self-actualization.

We conclude that all these elements addressed in this study influence the purchase decision of consumer marketing and through these exercises power over the woman when she buys products from the fashion sector (clothing), also demonstrating the importance that marketers have depth knowledge about factors that influence, the theory of Maslow's hierarchy of needs and on the marketing mix, because they all have great influence on the consumer when making your decision about which clothes to buy.

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ARE BUSINESS STUDENTS MORE SAVVY ABOUT DEBIT AND CREDIT CARDS THAN NON-BUSINESS STUDENTS?

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ABSTRACT

Credit card use among college students has received a great deal of research attention. However, previous research has not investigated whether students differ in their credit card use based upon the disciplines they study in college. Business and non-business majors were compared to learn if their credit card usage patterns and attitudes differ. The results indicate that there are few differences in student attitudes toward credit card use, but significant differences in the actual usage patterns of both debit and credit cards. Business students possessed more credit cards, more debit cards and more debt than non-business students.

1. INTRODUCTION

Some researchers (Borden et al., 2008, Lyons et al., 2006, and Robb and Sharpe, 2009) have investigated whether or not financial education had a favorable impact on reducing college students' reliance on credit cards, and several researchers, as the following background review will attest, have focused on the psychological and behavioral characteristics of credit-card debt, but little research has been done to determine if business students made better choices with their finance particularly credit-card and debit-card usage. The purpose of this article is to investigate if business students' usage of credit cards and debit cards differ from non-business students.

2. BACKGROUND

Credit-card use among college students has received much attention from college administrators, parents, and even the banking industry. Susswein wrote that "college students are part of a very privileged class these days. They are held to a different standard than the rest of us. College students with no job, no assets, no income, no credit history, and no means of supporting themselves are eligible for unsecured credit—and in some cases quite a bit of credit," (Susswein, 1995, 21).

According to the NellieMae report released in 2005, there is both good news and bad news for college students with credit cards. Seventy-six percent of undergraduates began the school year with a credit card, an eight percent decrease from 2001. The average credit-card balance for college students was $2,169, a seven percent reduction from 2001 and the lowest balance reported since 1998. It seems that the freshman year in college is when most (56 percent) get their first credit card. As for the bad news, as the students progress through the ranks in college so too does their credit-card usage, with 91 percent of seniors having a credit card compared to only 42 percent of freshmen. The report also indicated that 56 percent of the seniors carry four or more credit cards with an average balance of $2,864. Only 24 percent of the students said that they paid their credit cards off each month, and 11 percent are making less than minimum payments on their debt. According to an April 30, 2011, report, the average credit-card rate for college students increased by .23 percent while other business and consumer cards remained the same (Credit Card Monitor Archives, 2011).

The NellieMae report continues that most of them got their credit cards through mail solicitation and use them most often for school supplies, textbooks, and food. Silver-Greenberg (2007) indicated that the freshman 15 has taken on new meaning with some freshmen having more than $15,000 in credit-card debt before they can legally drink. The students also do not have a clear idea of how much their outstanding balances are on their cards. Students from the northeast have the lowest credit-card balances while students from the midwest have the highest. The credit-card usage by college students is a concern and worthy of investigation because of the mounting credit debt college students face but also because of the debt they incur from increasing tuition costs at both public and private institutions. On top of credit-card debt, many students also face student-loan debt upon graduating. Hess (2011) reported that the average student-loan debt for college students graduating in 2008 was $23,200 with only a third of the students graduating with no debt at all. Colleges are graduating a class of citizens with overwhelming debt into a work environment in a suffering economy with fewer and fewer high-paying careers.

Credit-card usage by college students has been the subject of interest with the popular press (e.g., Palmer, 2007, Brandon, 2007, and Silver-Greenberg, 2007) as well as of interest to several disciplines in the academy. Several researchers have investigated college students' knowledge of credit-card usage. Warwick and Mansfield (2000) found that the majority of students did not know the interest rate that they were paying on their credit card. However, almost half of them did know their credit-card balance and credit limit. Kenner, Mize, Gilbert, and Saracino conducted a pretest-posttest survey of 360 undergraduate college students and found that, "students are in need of consumer knowledge information prior to entering college and incurring credit-card debt," (Kenner et al., 2001, 76). They (2001) found that college students were particularly ignorant about interest rates, credit balances, minimum payments, and future ability to borrow and acquire additional credit. Jones (2005) found that freshmen students knew very little about credit, and that female students and non-white students scored lower than their counterparts.

Several researchers have investigated college students' attitudes toward credit in the hopes of understanding why they are so eager to sink into debt. Davies and Lea (1995) found that students were a relatively low-income group with a highly tolerant attitude toward their high debt. They (1995) concluded that students tend to come from prosperous socioeconomic groups, and they view their low incomes as temporary so they are using credit cards to sustain the lifestyle that was provided for them prior to college and that they expect upon graduation. Hayhoe, Leach, Allen, and Edwards (2005) investigated college students' attitudes toward credit cards (cognitive, affective, and behavioral), the number of credit cards they had, and the frequency and pleasantness of imagined interactions with parents about their credit. They (2005) found that college students without credit scored higher on the cognitive and behavioral aspects while the students with credit cards scored higher on the affective component of attitudes toward credit. They (2005) also found that students without credit cards had more imagined interactions with their parents about credit than the students with credit cards.

Norvilitis, Szablicki, and Wilson (2003) investigated why college students accumulated large amounts of debt. They found that students who sought credit cards from on-campus sources had greater credit-card debt than students who received their credit cards from other sources. The students were under the mistaken perception that their colleges supported these companies. They (2003) also found that most of the students with credit-card debt felt that the debt was transitory and would be paid off once they were graduated. The authors (2003) felt that a need existed to educate college students about the long-term consequences of debt.

Characteristics of college students have been studied in order to understand credit-card usage. McCall and Eckrich (2006) focused on the gender of the college students and their attitudes toward credit and found that female students reported shopping more, having more credit cards, and repaying debt of greater importance than male students. Hayhoe, Leach, and Turner (1999) used several scales to measure college students' use of credit. They looked at students who had four or more credit cards compared to students with less than four credit cards and found nine variables that were significant predictors: a high affective attitude credit attitude (high score from using credit cards), age, the cognitive credit attitude (consequence of using credit cards), gender, having taken a course in personal finance, less likely to borrow from friends or relatives, the retention money attitude (low score), use of money as a reward, and preparing a list before shopping.

Pinto, Parente, and Palmer (2000) used a materialism scale and measured the number of credit cards owned as well as the average balance owed. They (2000) found no differences between those college students who scored high or low on the materialism scale on either the number of cards or the average balance owed. However, they did find that the low-scoring materialism group used their credit cards less frequently, spent less, had lower outstanding balances, and did not attempt to justify their use of the cards (e.g., method of identification, need to build credit history, and definition of necessity versus luxury) in the same way as the high-scoring materialism group. Mansfield, Pinto, and Parente (2003) used a self-control scale with six subscales to compared college students who paid off their credit cards monthly versus those students who carried forward a balance, and they found a significant difference between the two groups on self control and specifically on the impulsivity subscale suggesting that college students may be living beyond their means and that credit makes it easier for them to act on impulse purchases. Pinto, Mansfield, and Parente (2004) also looked at the students' self esteem and locus of control in relation to their attitudes toward credit and debt. They looked at students who paid off their credit cards monthly versus those students who carried a balance forward and found no significant differences between the two groups based on locus of control. However, they did find that the heavy users of credit cards recognized that negative consequences of using their credit cards, but it did not limit their usage. Joo, Grable, and Bagwell (2003) did find that the students' ethnic background, their parents' use of credit cards (role models), their credit card ownership, academic level, money ethic (how much they value money), and locus of control were associated with the students' attitudes toward credit.

Roberts and Jones (2001) used three dimensions (power prestige, retention-time, distrust—hesitant, suspicious, and doubtful, and anxiety—money as a source of anxiety and a source of protection from anxiety) on a money attitude scale. First, they found that credit-card usage does increase compulsive buying. Secondly, they found that power and prestige or status is associated with compulsive buying. Lastly, they found a relationship between compulsive buying and anxiety in that shopping is used to reduce stress, making anxiety both an antecedent and an outcome of compulsive buying.

In 2003, The Center for Student Affairs Research (CSAR) located at the University of Oklahoma worked closely with the Council on Student Affairs (a group consisting of vice presidents or deans of students affairs in the state of Oklahoma) and the Oklahoma State Regents for Higher Education staff in developing an instrument for assessing significant issues related to credit-card use among college students in Oklahoma. A total of 28 institutions within the state participated in the study. (Tan, 2003) The study revealed important information for institutions regarding credit-card companies, college students, and parents. While it was found that most students were indeed managing their debts well, there was reason for concern that over a quarter of them had found themselves in a financial bind due to their credit-card usage. Additionally, there was significant evidence to indicate that this debt had influenced their collegiate experiences in a negative way. Oftentimes, this effect involved the decision to carry a reduced course load and, thus, prolong the graduation date. Oftentimes, students had to take fewer courses so as to find part-time employment to pay off the credit-card debt. Because of the need to be employed while attending college, there was less time to be involved in extracurricular activities, internships, co-op programs, etc. Some students felt that their credit-card debt and the need to pay off their credit in a timely fashion, actually kept them from having the 'real college experience.' The study also determined that students who had problems with credit-card debt believed that the college could and should have done more to educate them on the meaning of credit and the advantages and disadvantages of credit-card use. Those students also indicated a willingness to attend useful programs about financial responsibilities and debt management. (Tan, 2003)

Many research articles call for financial education for college students about credit cards. While Borden, Lee, Serido, and Collins (2008) reported success (increased financial knowledge, increased responsible attitudes toward credit, and decreased avoidant attitudes toward credit) with a financial education seminar, other studies were less than positive about the nature of increasing financial literacy. Lyonsm, Palmer, Jayaratne, and Scherpf (2006) focused on the current state of financial education and how it was being evaluated. They (2006) advocated for a set of flexible, evaluation tools that could be accommodated to the various methods of program delivery. Richter and Prawitz (2010) administered a pretest and posttest survey in their personal finance classes. They (2010) found that the financial education did not have the intended effect of getting students to use their credit cards less. Instead, they (2010) found that they intended to use their credit cards frequently and for the majority of their shopping. The authors (2010) concluded that financial education is needed prior to the students getting the credit cards and incurring debt. Robb and Sharpe (2009) also found that students with higher levels of financial knowledge also had significantly higher credit-card debt.

Debit cards and college students' attitudes toward them have not received the depth of academic research attention that credit cards have. Items from the College Board (2010) provide parents with a discussion about whether or not to send their student off to college with a credit card or a debit card. A primer on how to handle debit and credit cards was offered by Pratt (2008) for college students in an attempt to educate them about how both types of cards work. O'Shaughnessy (2010) posits the debit card as the solution to student credit-card debt, "turning off the easy credit spigot shouldn't be that tough. Here's why: many students today use debit cards, which are just as convenient as student credit cards but not as financially scary," (O'Shaughnessy, 2010, 1). The author continues that because the debit cards are connected to the students' checking accounts, the students would be cognizant of what they can spend.

Chu (2006) in *USA Today* wrote a critical article about the university's own debit card procedure that made students open up a bank account to use a debit card on campus for purchasing books and supplies. Not only did the students not have a choice of the financial institution, but they were also frequently charged for overdrawing on their accounts, and the universities benefited from the contract (up to one million dollars a year at larger universities) that they had with the banks. At the time of the article more than half of the 15 largest universities had bank card relationships, and the author felt that it was only a matter of time until smaller universities would also have the bank relationship. An article from Fox Business in 2010 stated that students are given debit cards with their scholarships, financial aid, and work study money on them, but the students are not aware of the fees (deposit fees, transaction charges, "abandoned account" fees, ATM fees, overdraft fees, and "convenience" fees) associated with using the debit cards.

In 2008, Chu reported in *USA Today* that the banks were getting even more aggressive. A study released by the U.S. Public Interest Research Group showed that 76% of students say credit cards had been marketed to them through tables set up on or near college campuses and nearly a third of these students had been offered a free gift to sign up. (2008)

3. METHODOLOGY

A survey was developed to collect a broad range of information regarding students' use of both credit and debit cards, as well as their perceptions and feelings toward credit and debit cards. The survey included a mix of open-ended questions, multiple choice questions, and scaled items. Demographic information was collected as well for classification purposes. A convenience sample of students in several upper level undergraduate business classes and non-business classes were asked to complete the survey in 2010. Participation in the survey was completely voluntary, and students did not receive any compensation or course credit for their participation. The two samples consisted of 55 business majors and 88 non-business majors. Table 1 presents the demographic classifications of the two samples with Chi-square analyses and t-test results comparing the two samples. No significant differences were observed between the two samples based upon their demographic characteristics. Slight differences in their ethnicity and their employment status may be observed.

TABLE 1
DEMOGRAPHIC SUMMARY OF TWO SAMPLES

	Business students		**Non-business students**		**Chi Square or t test**	**p**
Gender	M 42.6%	F 57.4%	M 50%	F50%	.941	.332
Age	23.91		23.02		1.03	.302
Race	C 91.2%	AA 8.8%	C 81.7%	AA 11.7%	5.34	.150
Marital status	S 85.3%	M 13.2%	S 91.7%	M 5.8%	3.21	.201
Income	<$19,999 85.1%	>$19,999 14.9%	<$19,999 82.4%	>19,999 17.6%	.23	.633
Employment	P 64.7%	F 16.2%	P 63%	F 25.2%	5.17	.159

4. RESULTS

A comparison of how many credit and debit cards students in the two samples had was made. Among the business students, 77.9% had at least one credit card while 70% of the non-business students had a credit card (Chi square= 1.39; p=.239). The average age at which business students received their first credit card was 18.44 compared to 18.82 for the non-business students (t=-1.34; p=.184). Business students reported an average of 3.06 credit cards while non-business students reported an average of 1.48 credit cards (t=5.34; p=.000). In the two samples, 88.2% of the business students had a debit card while 90% of the non-business students had a debit card (Chi square =.142; p=.706). The business students reported an average of 1.41 debit cards while the non-business students reported an average of 1.07 debit cards (t=3.56; p=.000). The business students average estimated debt was $1,566 while the non-business student sample had an average estimated debt of $1,013 (t=1.50; p=.137). The business students' average estimate of what they charged the previous month of $300 while the estimate for the non-business students was $165 (t=2.24; p=.027).

Among the business students 51.5% reported that they knew the average percentage rate of their credit cards while 37.5% of the non-business students reported that they knew their average percentage rate (Chi square=3,73; p=.155). In the same analysis, 20.6% of the business students reported that their APR was not-applicable while 30% of the non-business students reported that their APR was not applicable, suggesting that they did not carry a balance. Similarly, 61.8% of the business students reported that they knew their late payment fees on their credit card while 50% of the non-business students reported that they knew (Chi square=.2.43; p=.297).

Table Two presents a comparison of the two samples based upon how they pay off their credit-card debt. There were no significant differences between the two groups (Chi-square = 2.96; p=.398.

TABLE 2
CREDIT CARD PAYMENT PRACTICE

Payment each month	Non-business	Business
Pay in full each month	27.5%	35.3%
Pay between the minimum and full each month	34.2%	38.2%
Pay the minimum each month	9.2%	7.4%
Not applicable	22%	19.1%

The samples were also asked whether or not their credit-card debt has changed in the last six months and in the last two years. No significant differences were observed. Table Three presents the results of comparing the two samples.

TABLE 3
CHANGE IN CREDIT CARD DEBT

	No debt	Increased	Stayed same	Decreased	Chi square	Sig.
Change in credit-card debt in the last six months						
NONB	45.8%	15%	20.8%	18.3%	1.202	.753
BUS	44.1%	10.3%	23.5%	22.1%		
Change in credit-card debt in last two years						
NONB	46.7%	24.2%	12.5%	16.7%	.226	.973
BUS	45.6%	26.5%	13.2%	14.7%		

Table Four presents a comparison of how often the two samples used their credit cards (Chi square=8.26; p=.143). The students who did not have a credit card were part of the sample, but their results are not presented in the table.

TABLE 4
CREDIT CARD FREQUENCY OF USE

Sample	None	1-3	4-7	7-10	10+
Non-bus.	10%	33.3%	10.8%	11.7%	5.8%
Business	6.0%	40.3%	14.9%	4.5%	13.4%

Table Five presents a comparison of how often the two samples used their debit cards (Chi square =4.38; p=.625). The students who did not have a debit card were part of the sample, but their results are not presented in the table.

TABLE 5
FREQUENCY OF DEBIT CARD USE

Sample	None	1-3	4-7	7-10	10+
Non-bus.	5.8%	12.5%	13.3%	17.5%	40.0%
Business	2.9%	7.4%	8.8%	20.6%	50.0%

Table Six presents the results of t-tests between the two samples on a series of attitude statements about credit and debit cards. The scales were five-point scales, and the numbers were labeled with strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). Only one significant difference was noted in that the non-business students feared the consequences of using their debit cards more than the business students.

TABLE 6
COMPARISON OF ATTITUDE STATEMENTS

Statement	Non-B	Bus	t-value	Sig.
Acceptable to borrow money for school expenses.	4.31	4.30	.072	.943
Acceptable to borrow money to cover living expenses.	3.43	3.50	.381	.704
Acceptable to borrow money to purchase luxury items.	2.21	2.13	.407	.685
Credit cards are safe and risk free.	1.94	1.71	1.534	.127
The cost of using credit cards is too high.	3.73	3.71	.152	.879
Too easy to overspend with a credit card.	4.27	4.40	.883	.378
Credit cards should only be used in an emergency.	3.44	3.49	.220	.826
Debit cards provide a needed service.	4.03	4.12	.229	.819
Fear consequences of overspending with debit card.	**3.37**	**2.96**	**1.943**	**.053**
I am in control of my money.	4.13	4.32	1.196	.233
I have financial goals that I am working towards.	4.34	4.50	1.225	.222
I understand the way I spend money to make a budget.	4.08	4.21	.898	.370
I prefer using my debit card for majority of purchases.	3.88	3.74	.617	.538

5. DISCUSSION

Based upon the results obtained in this research, business students and non-business students do differ in their use of and attitudes toward credit cards and debit cards. Non-business students have significantly fewer credit cards and debit cards than business students. Non-business students are also charging significantly less on their credit cards than the business students. The data also seem to suggest that the non-business students are more likely not to carry debt on their credit cards than the business students. The non-business students also seem to be more wary of their debit-card usage than the business students.

These results are in some sense surprising, and somewhat unexpected. Given business students' presumably increased exposure to the principles of accounting and finance, and the presumed greater financial acumen that such exposure ought to provide, business students appear to have a more liberal view of the value and use of credit. One interpretation of this observation is that business majors understand better than non-business majors how credit cards can be used effectively and judiciously to obtain the products that they need. Business students may be leveraging their creditworthiness, prudently using credit cards and managing their personal finances more effectively by doing so.

Conversely, it is also possible that business students have a very optimistic view of their future earnings and their current credit habits reflect at least in part their future expectations of earnings. Business students may be more confident of obtaining a well-paying job in the relatively near future than non0business majors whose job prospects may be less attractive. Consequently, business students may be approaching their credit and debit card use a bit too causally, anticipating that their future earnings will compensate for somewhat lax current practices.

6. LIMITATIONS

As with all research, there are certain limitations which must be noted. The samples were both relatively small convenience samples from the same university in the same geographic area of the United States.

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OVERCONFIDENCE IN GROUPS VERSUS INDIVIDUALS: EXPERIMENTAL EVIDENCE

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ABSTRACT

We employ experimental evidence to test whether overconfidence bias present in individuals is also present in groups, and compare the degree of overconfidence between genders. Our results suggest that men display a higher degree of overconfidence. This result also holds for experiments conducted with groups. Furthermore, groups display a higher degree of overconfidence than individuals in simple decision taking processes.

Keywords*: experimental economics; decision taking; overconfidence; behavioral finance*

1. INTRODUCTION

In this paper we test the emergence of a well known behavioral bias – overconfidence. Moore and Healy (2008) defines overconfidence in three ways: overestimation of your own skills; think that your ability is superior to the others; and a strong belief in your own convictions. This bias has been studied in several papers such as Barber and Odean (2001), Camerer and Lovallo (1999) and Kyle and Wang (1997). Since then, several papers have presented empirical evidence of overconfidence (see Glaser and Weber, 2007; Statman et al, 2006; Kaustia and Knupfer, 2008, and the references therein).

On the other hand a different literature has compared decisions made by individuals with decisions made by groups (Fraidin, 2004; Ginkel and Knippenberg, 2009; Valacich et al., 2009). Overall, most of these studies suggest that decisions made by groups may be superior to those made by individuals due to skill and knowledge spillovers. Therefore, we compare the decisions made by groups and individuals to test whether there are systematic differences.

We contribute to the literature by testing the differences in overconfidence between men and women and by also comparing groups. The results are important for several reasons. Understanding if men or women and groups have more or less overconfidence has important implications on the decision making process.

The remainder of the paper is structured as follows. Next section explains the design of the experiment, whereas Section 3 discusses the empirical results. Finally, Section 4 concludes the paper.

2. METHODOLOGY

We employ a survey based questionnaire applied to 182 students in a Brazilian undergraduate university. We invited students to participate in the experiment across the campus and the experiments were conducted in a large classroom, located in the Business Administration Department. We collected answers for individuals and for groups formed by three women and men. Students answered specific questions and how sure they were about their answers. For these questions it is not possible to assess the certainty of their answers.

3. RESULTS

We present the first question below and how students have responded to it individually and in groups. Therefore, we have a 2x2 experiment with men and women and groups formed exclusively by men and women.

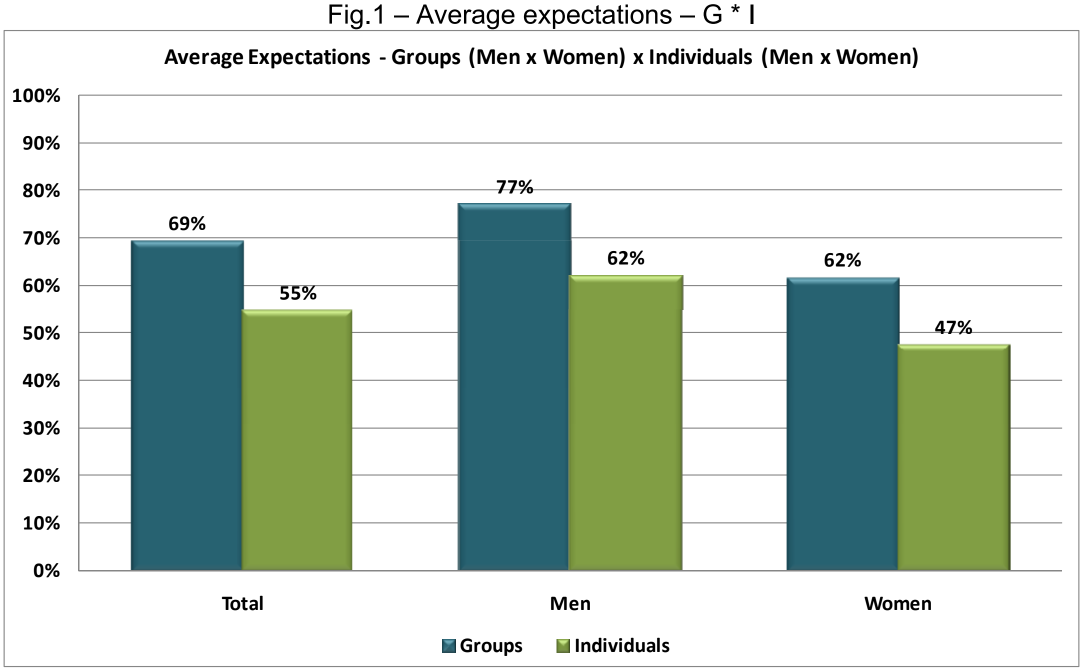
Question 1:You have bought stocks from a certain company at price of 16.75 per share. This is a high risk firm. In which interval you believe you can find the prices of these shares next year?

( ) R$12 - R$17 ( ) R$10 - R$19 ( ) R$8 - R$21 ( ) R$6 - R$23 ( ) R$4 - R$25

What is the degree of certainty in your answer? ________

Figure 1 presents the results for the average expectations on the degree of certainty of their answers. The first two columns present the results for groups versus individuals for both genders. As we can see, overconfidence seems to be higher for groups rather than for individuals. However, men are always more overconfident either in groups or acting individually. We run a Mann-Whitney test for differences in medians and find that the differences between groups and individuals overconfidence is statistically significant at the 1% significance level. Furthermore, when we compare men and women we find that the difference for individuals is statistically significant (MannWhitney p-value = 0.0155) and the difference is also significant for groups formed with men and women (Mann-Whitney p-value 0.0543). We also test whether when forming groups with men and women, they tend to become more overconfident. We find that there is a statistically significant increase in overconfidence in both cases at the 5% and 10% significance levels, respectively. Therefore, although there seems to be a group effect it acts differently across gender, with a larger increase for men than for women.

Fig.1 – Average expectations – G * I



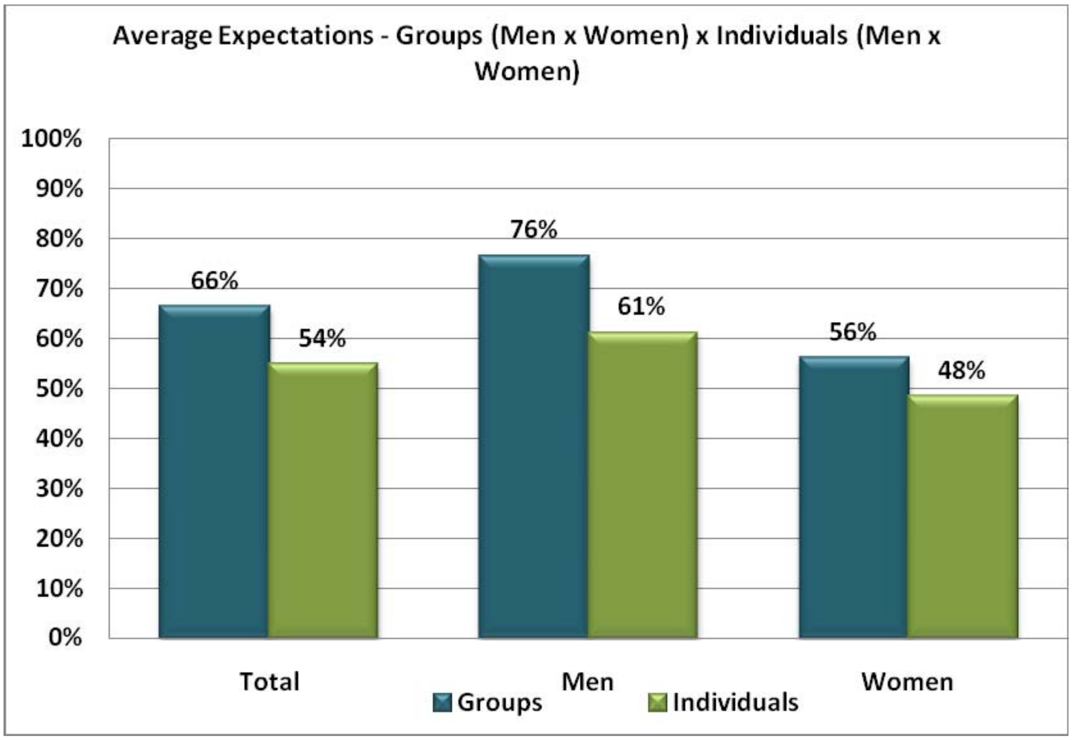
Question 2: You believe that the price of Petrobras will fall in the upcoming month. You can borrow 100 shares at a 1% for a one year period and sell the stocks at market prices of 25 per share. You can buy these stocks back at maturity (after one year or before that). The stock will probably decrease to 20 per share, and you can buy it back with 2000 and can make a profit of 500. You can return the stocks to the original owner and pay the 1% fee proportional to the renting period. Would you do that?

( ) Yes ( ) No

What is the degree of certainty that you will have a good return on this transaction? _________

Figure 2 presents the results for the average expectations on the degree of certainty. We compare the responses of men and women and find that the difference is statistically significant (Mann-Whitney p-value = 0.0574). We also compare groups versus individuals and find that groups have more overconfidence than individuals (Mann-Whitney p-value =0.0416). An important finding is that when we compare groups by gender women tend to have the same degree of overconfidence regardless of whether they respond these questions in groups or individually. However, this effect is highly significant for men that tend to increase their overconfidence significantly (Mann-Whitney p-value = 0.0235).

Fig.2 – Average expectations



4. FINAL CONSIDERATIONS

In this paper we have designed an experiment to test whether groups display a different overconfidence level, and compared groups versus individuals across genders. Our main results suggest that groups display a higher level of overconfidence and that this effect is more pronounced for men than for women. Further research could exploit these differences in a variety of contexts besides investment and provide more evidence on these differences across genders.

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PROMOTING COURSE RELEVANCY VIA STUDENT ENGAGEMENT TECHNIQUES

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ABSTRACT

Our paper is designed to illustrate to other faculty some possible teaching methods and pedagogy advances they can use to motivate and engage students in the learning process by demonstrating to the students why the subject matter of a particular course is of importance to them personally and to help satisfy the "what's in it for me" barrier to student learning behaviors. The illustrative examples take place in the introductory insurance and corporate finance courses, oftentimes considered to be some of the "most boring" courses in a finance major's curriculum.

Keywords: *Motivation, Student Engagement, Personal Relevancy, Communication, Financial Analysis, Financial Technology*

1. INTRODUCTION

As educators, we all have problems with the motivation and the engagement of students to enhance their overall learning and experiences in our classes. This may be even more prevalent in classes perceived as "boring" and irrelevant, such as an introductory class in the "exciting" fields of insurance or corporate finance.

1.1 Relevancy

While as adults we can appreciate the relevancy of understanding principles of risk management, cost of capital, rates of return, and insurance and the financial burden it places on our business and individual budgets, but to many college students, these concepts are just the opposite, irrelevant and a "waste of their time," often because they have little or no experience with them.

Therefore, the real educational challenge is to attempt to change students' attitudes about the importance of finance and insurance by relating it to them personally so it helps answer the "what's in it for me?" relevancy issues.

1.2 Student Motivation

Thus, as we struggle to motivate students to achieve increased performance, student engagement continues to be an area in the forefront of academia (Debanth, Tandon, & Pointer, 2007; Farran, 2006; Fredricks, Blumenfeld & Paris, 2004; Koljatic & Kuh, 2001; Moore, Armstrong & Pearson, 2008; Newmann & Twigg, 2000; Thomas, 2007). Solutions to questions regarding student engagement are pertinent if we seek to continue our educational system in the same form we have become accustomed to. Furthermore, we must address these big questions through various academic lenses and techniques in order to improve our educational systems, enabling the retention of our assets - quality students and faculty.

Keeping this in mind, teaching a student in an introductory finance or insurance course can be challenging to say the least. Students have been bombarded by the media with all the negative aspects of insurance, from questionable sales practices to premiums spiraling out of control and companies everywhere seeking to reduce employee benefits because of the financial strain of providing insurance coverages for them. Additionally, the financial system implosion of the last two years, the scandals of corporate governance, and the simple esoteric nature of fundamentals of finance do little to pique student interest. Consequently, it is of little wonder that when students first come to class, they are already of the "anti-insurance/finance" mind set; to be honest, it is sometimes difficult to blame them.

1.3 Student Engagement

However, as faculty members, it is our responsibility to help educate these students on why these courses can be among the most useful courses they will take in their curriculum. In order to do this, we have tried to develop a variety of techniques to help engage the students in the importance of understanding basic concepts of risk management, financial fundamentals and general insurance coverages and skills that nearly everyone will need; coverages that if not already needed will certainly be needed by graduation time when the students become more self-sufficient and enter the world of full-time employment.

Consequently, over the past thirty (30) years, Dr. McLaughlin has developed a teaching pedagogy designed to not only enhance student engagement but also enhance student motivation in this difficult subject area. Such methods include an IQ test (Insurance Quotient); a needs analysis, which is designed strictly from a student input; and the enhancement of written and oral communication skills, as the students must write and present a paper over a self-chosen insurance topic.

Dr. White's decade-plus of teaching Fundamentals of Business Finance has led him to some unique pedagogical techniques as well. Pre-testing students on skills learned in Accounting I, Accounting II and General Statistics (all course prerequisites) helps the students understand early on that there is no "free lunch" in the finance course. Emphasizing the use of a financial function calculator or Excel spreadsheet for financial calculations has brought the class more current by deemphasizing time value of money tables (which are surprisingly still included in most fundamentals textbooks). Applying the techniques of corporate finance to personal finance is also a helpful teaching tool that helps personalize the course experience and make it more currently relevant to students' current lives and interests.

The use of these pedagogical methods has a substantial impact on student engagement and motivation. Most notably, students enjoy the courses more by understanding the relevance to them; this is apparent to the extent to the students telling their friends to take the courses because they are "very useful", even for non-business majors.

Therefore, we believe the educational significance of this paper is to share with our colleagues some potential tools and examples that can translate into greater student engagement and motivation. These pedagogical methods are applicable across disciplines, not just in a "boring" finance or insurance class; they are time tested principles generalizeable to nearly any classroom environment.

2. STUDENT ENGAGEMENT AND MOTIVATIONAL TECHNIQUES

Following are some examples of student engagement activities that have helped to get students motivated and eager to learn the course material.

2.1 The Insurance Quotient (IQ) Test

On the first day of lecture, Dr. McLaughlin starts the class with what he calls an I.Q. (Insurance Quotient) Test that has six scenarios that involve life, homeowners and automobile insurance coverages. They are simple fact situations that are designed to get the students involved by "voting" for the correct answer on whether there is coverage provided, and if so, to what extent. After the votes are counted, they go back and discuss the correct answers and the reasons why, while reiterating the importance of knowing about these basic kinds of coverages both for now and in their personal futures.

Furthermore, quite frankly the questions are designed to also result in a poor performance on the students' part; hence they fail the "I.Q." test. He then takes the opportunity to explain that they are actually "lucky" to have insurance as a required course or have chosen it as an elective because they will be some of the only students to graduate from college with a better understanding of the very important concepts of risk management and basic insurance protections. Such an education will allow them to make more informed decisions on risk management and basic insurance protections on their own without relying on an insurance agent - the same agent whose livelihood is dependent upon selling them insurance (whether a necessity or not). Students also tend to rely heavily on their parents for information, parents who probably learned what they know via an insurance agent or by the unfortunate experience of an uncovered claim. Consequently, after the IQ Test they also discuss the source of their insurance information and how it obviously is an ineffective way of obtaining this valuable information.

2.2 The Needs Analysis

A second technique Dr. McLaughlin uses before the discussion of life insurance products is to have a hypothetical family of four and to develop a "needs" analysis for them. The example has a family with both parents working and two children, ages eight (8) and ten (10), who the parents want to go to college. In class, they then draft a list, totally from student input (much of which is available from the textbook if they happen to be reading it, too) of what the family needs money for if the father was unexpectedly killed in an automobile accident. After completing the list of needs, they go back and assign "minimum" amounts needed to accomplish each of the listed objectives and determine what resources might be available to the family to meet the total anticipated expenses. Finally, we look at the money that would be needed from a life insurance policy to make up the substantial difference between the resources available and resources needed. It is truly an "eye-opening" experience for them, making the chapters on life insurance much more meaningful because they begin to see its true application for them and their future families. They also discuss the current needs of a college student and why they may or may not need life insurance prior to graduation, again to stress the relevancy factor to the individual student.

2.3 Use of Written and Oral Communications

What would an upper-division course be without working on the students' written and oral communication skills? Once again, it is very important to try to make the "chore" more acceptable by making it fun for them; thus, by allowing the students an opportunity to pick a specific topic they are interested in from the areas of life, health, homeowners and automobile insurance. Then they are required to write a five to seven page paper with at least five sources, one of which is an interview.

In addition to the obvious benefit received by the student in having to do some very simple research and to writing on an insurance topic, the student must also do a presentation to the rest of the class for eight to ten minutes. During these oral presentations the use of exhibits, technology and relevant statistics are encouraged. For relevancy and evaluation purposes, all of the students receive a scoring sheet where they place written comments to improve the presenting student's oral communication skills and then assign their fellow students a score up to fifty total points for their topical coverage and the presentation itself. The students sign the scoring sheets to help with the integrity of the process, but the names are removed before sharing with the presenter. Dr. McLaughlin then averages the overall class scores and if their score is within one point of his evaluation score, he uses the class average score. Otherwise, the students are scored using his scoring of their presentation to make sure the scoring is taken seriously. (He will also assign points for the evaluators.) To further ensure and encourage student attentiveness in their process, he includes questions from the presentations on the final examination.

By making this a part of the course requirements, each student is now exposed to not only the course content and textbook materials, but also many other specific areas of insurance coverage and protection that they otherwise would not have been. Topics include distinct areas like wedding insurance, trip insurance, crop hail insurance, insurance on professional athlete's body parts, pet insurance, fraternity house insurance, steps in filing an automobile claim after hitting a deer and other coverages that would not otherwise be covered in an introductory insurance class.

2.4 Bringing Fundamental Financial Ratios to Life

Dr. White faces similar challenges with regard to material relevance and student engagement. He has found that by assigning students a semester-long publicly traded corporate analysis, students are much more likely to understand how "real-world" financial analysis works, and how professional securities analysis is done.

The students "volunteer" to research the company of their choice. The only restriction is that the company be listed on the New York Stock Exchange or NASDAQ, to prevent any claims that research and financial statements are too hard to find. Students collect a recent balance sheet, income statement and statement of cash flows from their company, along with the most recently available annual report.

As the semester progresses, and Dr. White covers topics like fundamental financial ratio analysis, break-even points in units and dollars, and a firm's weighted average cost of capital, students learn the techniques of the finance trade by working chapter and in-class problems. But the real learning takes place when students apply these same "ivory tower" techniques to the real company they have chosen, thereby engaging them into this learning process and motivating them to take the material more seriously.

Students rave about this project and feel a true sense of accomplishment by the time they turn in their term papers at the conclusion of the semester. Dr. White has received many emails from students who became so convinced and familiar with the company they analyzed, that they go on to purchase a few shares, often establishing their first brokerage account. This technique reaches beyond the walls of the classroom and helps students appreciate and get excited about investing.

2.5 Embracing Technology by Dumping the Tables

Perhaps nothing is more frustrating to a student in this digital age than being asked or required to use an antiquated method of calculation. Time value of money conversion tables are a great example of this.

In Dr. White's class, students are required to use a financial function calculator or spreadsheet technology to compute all sorts of time value of money problems. Their default choices of technology are typically the Texas Instruments BA-II+ calculator or the Excel spreadsheet application from Microsoft Office.

The use and mastery of these powerful tools gives our Fundamentals of Corporate Finance students a "leg-up" when it comes to landing a job and performing well in the real world. We have yet to come across a company that prefers tables to calculators and spreadsheets in manipulating financial data – so why do so many continue to teach these techniques the old-fashioned way? Once again, it is a great opportunity to discuss the relevance of the use of this simple technology as a motivational factor because students understand how it relates to them in a direct and positive fashion.

3. CONCLUSION

Therefore, we feel that similar types of techniques, as designed by the instructor in other courses, can get the students "on-bard" early in the semester and keep them there with follow-up techniques to emphasize the personal importance of the subject matter to them for their future careers. In fact, our student evaluations from both insurance and finance clearly demonstrate that these techniques are powerful and fully embraced, perhaps after some initial reluctance, by students completing our courses because students feel that they can relate so much better to the course materials.

In addition, as a side note, not only is it a lot more fun from the professor's viewpoint, due to the increased student interaction, but it also helps solve the students' inner conflict of "Why Do I Need to Know This?" Now you can show them!

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FOLLOWING THE LEADER: UNDERSTANDING THE QUALITIES AND COMPONENTS OF FOLLOWERSHIP

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ABSTRACT

Current studies indicate that many people think they have bad bosses! Historically, leadership wisdom has reflected the importance of style whether it is from transactional to transformational to even transcendental ways of leading others. However, little is said about the reasons why one would follow these leaders or what their traits might entice followers. When considering what makes a good leader, it is also important to first understand what is good followership and how it is created. Leaders may find it awkward to announce to their staff or their reports, 'come follow me!' This raises the question as to how are followers created? This discussion asks what are the traits, qualities, and components of followership and how can leaders leverage those elements aligning their teams to their vision. To answer these questions followership is defined with a broad discussion of qualities such as empowerment, commitment, competence, and courage. What is revealed about followership is the practice of self-leadership. The leader that understands and leverages these concepts will be more successful in creating followers that will help move their vision forward.

Keywords**:** Leadership, Followership, Follower Courage, Self-Leadership, Empowerment, Follower-Learning

1. INTRODUCTION

From the mid 1950's to today's organizational climate, studies have shown that 60% to 75% of employees within organizations reported that their immediate supervisor was the worst or most stressful part of their job (Hogan, Raskin, & Fazzini, 1990). A significant amount has been written on leadership. Many would say there are *leadership cults* that have arisen as new-age authors break down the essential fabric of leadership. However, there is relatively little written on the follower as an essential component in the art of leadership into consumable parts. However, leadership experts say very little about followers as an essential aspect of the leadership effort. Followers have been taken for granted as those that simply follow orders or do what they are told. Experience has shown that there are more things at play than just the robotic trailing of people behind the bidding of another (Coovert, 1995). What are the particular qualities, traits, and components of one who follows, which when tapped and leveraged, actually make the leader a better leader? Moreover, how can leaders employ those elements to accomplish their goals?

2. DEFINING A FOLLOWER

It is difficult to actually define a follower without some reference to leadership (Walsh, 2004). Richard Kelly, a major contributor on the definition and role of followers, defines followers as those who pursue a course of action in common with a leader to achieve an organizational goal (1995). Recently Adair wrote that, "Followership is our response to the presence of a leader who gives a personal sense of meaning to our lives, or our place in the stream of events in which we find ourselves" (2004, p.24). However, others argue that followers are simply those people in a defined group that have an active role to play keeping the leader in control of a situation (Follett, 1924). There are those that consider followers and leaders to be in revolving roles with an organization (Kelly, 1992). That would make followers leaders at one point, and leaders followers at another. The military is probably the most dramatic demonstration of this as leaders are borne of followers. As a member progresses through the ranks, they become leaders of one group and a follower in another (Latour, 2005). It can be said certainly that followership cannot be completely understood without leadership and vice versa.

Understood or not, followership is a reality. It can be observed, engaged, and even measured. For purposes here, followership will be defined as the cohesion of qualities, skills, and traits in an individual or group of individuals, collaboratively aimed at achieving the goals and/or vision of another individual or group of individuals. With that definition in mind, what can a leader do to get people to follow? As a follower, what is required in a leader that causes one to dedicate time, skills, talent, loyalty, and focus toward a particular direction or objective?

3. WHY FOLLOW

There are significant reasons why members will follow a leader. Certain leaders inspire others to move productively forward, while others fail to create any movement or may even move backward. There are some key elements that give cause for one person to follow another. These include empowerment, commitment, competence, and courage (Walsh, 2004).

Empowerment is a science in and of itself. It does not mean giving up power or temporarily handing it over to someone. It is more of *power with* rather than *power transferred* (Follett, 1924). Due to almost instantaneous communication, there is now an acute need for quick decision-making in groups. This link between leaders and followers has led to the need to empower those at the most basic levels of the organization (Howard, 1997). However, why does this cause a member to follow? Traditional leaders tend to be judges that evaluate worker productivity and then dole out recognition and punishment. When front-line employees assume additional risks and responsibilities, the leader shifts roles to one of supporter and champion. When members are allowed to make decisions, their accomplishments are recognized and their creative output focused toward an end (a decision). This supports self-motivation (Conger & Kanungo, 1988) toward even more and better effort. Bynham states, “The psychological reason for empowerment is that it motivates the empowered” (1988, p.98). Empowerment effects the follower’s commitment to take on new and different tasks. Studies indicate that empowered participants tend to be more involved and more committed to their organization (Howard & Wellins, 1994).

4. QUALITIES OF FOLLOWERSHIP

Robert E. Kelly states that there are two behavioral dimensions for determining a follower’s commitment and effectiveness: critical thinking and participation (1996). Critical thinking by a follower demonstrates the testing of their environment as a participant and not just an observer. Leaders empower this when they support aggressive questioning of their environment, treating it not as a challenge, but as a method of forging the way for critical examination and reason. In this kind of environment, the member can focus and commit to the work at hand and is driven to find new possibilities. An additional part of commitment is participation (Kelly, 1996). When a member’s role is actively engaged, it allows them to *lean forward* into the subject area and anticipate the actions necessary rather than having to passively react (Kelly, 1996). There is a critical link between the level of participation and the attachment of the activity to the follower. People will participate in an action if they find that it links them directly to a positive result. Additionally, they will aggressively commit themselves to the activity if the positive result is recognition within the organization (Hughes, Ginnett, & Curphy, 1999). Members are more committed when recognition is present. Conversely, members who are uncommitted tend to remain in a reactive shell that when pushed, react with like-force. These will look out for their safety and security, see change as a threat, and lose sight of the leader’s vision (Peters & Waterman, 1982).

Another quality of followership is competence, otherwise termed by Latour as “performance initiative” (2005, p. 4). Competence is not a quality attained, but rather a quality that is in motion. It includes a series of personal and professional aspects that leaders can integrate to enhance the followership traits of their team. One such trait is the ability to work effectively with other members. Followers with this trait balance their own interests with that of the interests of others. In that balance they discover a common purpose and therefore look for ways to lead internally as well as compromise, and collaborate in order to accomplish the goal. This trait reveals the follower’s ability to step outside of their own space and look at the big picture rather than through their own personal needs. It also reveals the followers ability to balance their self-interests with those of the team. Leaders might say that these traits are great when they are apparent to members who possess them. However, what happens when such qualities are not readily apparent in the team? Here the leader is faced with instilling positive recognition for these behaviors and seeding the organization with members that display these traits of organizational competence.

A final aspect of competence is the ability to build and maintain relationships. Much like a salesperson who cultivates clients, followers have to learn to cultivate relationships in order to navigate in a world with other members. This relational competency creates the very atmosphere in which followership can grow. Simply stated, it is the relationship between the members and the leader that engages followership. Kelly (1996) states this clearly:

> Relationship [competency] acknowledges that followers share the responsibility with leaders for an effective relationship and work to increase openness and understanding to increase the perspective around informed choices (pp. 136-137).

It is not enough to say that a follower must establish a relationship with the leader or the people around them. They must possess the elements that help build and add value in the follower-leader relationship. Kelly (1985) offers up four qualities of relationship building that are essential to the follower-leader situation. These include building trust, communicating, loyalty, and visioning.

Building trust is a time-engaged quality that at best is fragile and at worst can be lost in an instant. Trust is not just one sided, it requires an involved relationship by people to build the confidence that one will not hurt the other. That confidence allows the follower to move more freely and focus more deeply without worrying about establishing defenses. Trust also makes the follower a known entity. Members can share problems, issues, and critique processes without risk. For the leader, a trust-bond developed with the follower allows for accelerated growth and accomplishment. A key reasons for advancing followership is the establishment of trust between a leader and those that follow (Kelly, 1996).

Communicating allows the follower to deliver the outcomes of work to the leader (Bennis, 1994). It is how the leader sets expectations, confirms goals and objectives, and continuously aligns the work of the team. Communication can also be a negative trait when it is withheld in order to manipulate a situation. If not used judiciously, it can be a major cause of disharmony and loss of productivity. Communication must be timely and flow in both directions if it is to service the follower and the leader. It can be seen as the leader's investment in time and commitment to the follower. When communication is freely given and accepted, followers are enticed to produce more. Proportionately, leaders are more likely to invest more trust and autonomy (Bennis & Nanus, 1985).

Loyalty is the ability to identify with another in a consistent and positive way (Kelly, 1996). Loyalty is a condition that is earned over time. It occurs when a follower expresses care for the leader through a series of protection and support activities. Loyalty is expressed through partnerships and engaged by sharing mutual self-interests. In a leadership relationship, loyalty is demonstrated by the act of one following another based on past experiences. For the follower this means that an experience about the leader in a past situation is replayed as a decision is made in the present. The follower trusts that the present condition will achieve similar results to that past experience. Leaders that establish a *good* relational experience with followers, set the foundation to display and engage member's loyalty.

A final relationship trait for the follower is the ability to understand, set, and accomplish priorities toward a preconceived end (Hollander, 1997). This is the ability to be a visionary. Distinct from *a visionary* who sets a goal, being a visionary follower means looking for and absorbing the vision of the leader. For the leader, vision is the ability to see the conclusion of a goal before it is completed (Latour, 2005). Followers who adopt a visionary trait are able to see the boarder scope from the leader's perspective. Leaders must foster and develop visionary traits in followers (Kelly, 1996). This trait is the ability of seeing others' perspectives from their viewpoint. Followers with this trait understand their own personal viewpoints and then actively acquire and integrate others' view points as well (Latour, 2005).

The final general quality of followership to be considered is courage. This is a desired virtue and a quality that is an essential part of the make-up of both followers and leaders. The challenge is to bring it to life for the follower. The real culprit is fear. For leaders, position power tends to mitigate fear. Most everyone has someone to report to, and there is always some fear in dealing with one's higher levels. Courage means to be able to be honest in the face of the unknown no matter what the level. Follower courage means being honest despite whatever present fear. Courageous followers establish that they will continue to be truthful no matter what the pressures. Good leaders have to consider that good followers will give them the truth, but only if there is no fear of reprisal or threat to personal security. Despite stressful, sometimes politically dangerous situations, good followers must exercise courage in communicating honest information. As Latour states, “Followers tell unpleasant truths to serve the organization, seeking the same from others and risking self-exposure” (2005, p. 4).

5. FOLLOWERS AND CHANGE

The last behavior mechanism that a leader should look for and support in a follower is the ability to handle change. Leaders want members who engage and employ change. They look for people who see constant improvement of methods and practices. Good leaders look for followers who are not afraid of change, can step around it, and manage it. They want followers who embrace change, who are agents of change, and look positively at the outcome. (Latour, 2005). One reason the capability for change is important is that it is an essential motivator and differentiator of a leader. Some have dubbed leaders as engineers of change. They must identify processes needing change and then build new systems to replace them. A follower should be someone who will look for improvements, cost savings, elimination of waste, and always ask the question, *how can I make it better* (Rosenau, 2004)? This trait relies on follower courage as well as follower follow-through. This may be where many members fall away from true followership. It becomes too hard, too scary, or even, too different. DiCarlo (2002) in his article *Followership, Followers, and Following*, categorized the challenges of leading in a change environment by identifying the 5-P change types:

- Participants – actively involved in change and contributing to moving forward
- Pessimists – thinks that change means we are doomed and shares this with everyone
- Passengers – here in body only, but the thought of change causes them to only watch
- Pigs – they are only here for the food, not to do or change anything substantial
- Prisoners – they are here, but not by choice; change will only come if forced (p. 2)

Those who follow have the right to question and challenge the leader, but once these needs are satisfied, they must put away their reluctance, play their part in the change process, and become a real follower (DiCarlo, 2002).

6. CONCLUSION

This discussion has examined several definitions of followership, that speak to both structured as well as dynamic viewpoints on leadership. It was important to review behavior mechanisms the leader should look for in developing followers. Latour’s (2005) treatment on *Dynamic Followership*, provides an integrated perspective on how followership should be recognized. Followership is team oriented; it shares the credit for successes, and creates positive relationships. Followership is competent and knowledgeable; it supports critical thinking, questioning, and is forward leaning. It sees the big picture instead of the restricted view and exhibits the traits of honesty, truthfulness, and trust. It displays loyalty to the leader and to the organization. It is courageous in communicating and questioning, is always looking for improvements, and consistently embraces change. Followership is an agent of change, able to lead change as well as follow efforts with the same agility and energy. The essence of followership is to *follow* because it sees, incorporates, and even clarifies the vision put before it (Latour, 2005). These are the core marks of followership and integral to why one person follows another.

One learns to follow effectively because one learns by the example through the mentoring of a leader (Goleman, 2000). These qualities are the traits that leaders need to foster and develop in future followers. Followership is internal, self-managed leadership (Schein, 1992). There are many overlapping qualities between what constitutes good followers and what constitutes good leaders. Followers must be self-motivators, self-starters, and self-learners. This, with the qualities that parallel true committed leadership, point to the conclusion that followers must be self-leaders as well. Hollander and Offerman (1997) say it best, “Self-leaders comprise the followership of the future” (p. 4).

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THE EFFECTIVENESS OF STRATEGIC ORIENTATIONS OF SERVICE ORGANIZATIONS: THE SHIFT TOWARD AN OPEN BUSINESS SERVICE MODEL

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ABSTRACT

This study empirically examines the relationship between service business strategy and performance. Factor analysis and cluster analysis procedures are used to study the strategic orientations of 69 Portuguese organizations. Based on the results of this study, it is concluded that most of these organizations have not yet made the needed transaction from the closed business system model to the open model required by the changing service environment. However, some service organizations are beginning to innovate and integrate their strategic options in order to better service their customers.

Keywords: *Service Organization; Strategic Groups; Organizational Performance*

1. INTRODUCTION

Manufacturing organizations, to some extent, have succeeded in creating the desired consistency between the strategic and performance approaches needed to support the desired new business model. However, in the case of service organizations the verdict is still out. This may be attributed to the relative lack of empirical research in service operational settings.

The purpose of this research is to investigate the strategic approaches utilized by service organizations. In the process, a brief review of the relevant literature pretending to performance measurement and business strategy is presented. Data gathered from 69 Portuguese service organizations are analyzed using factor and cluster analysis procedures to shed empirical light on the strategic approaches utilized by these organizations, and their relationship to their overall organizational performance.

2. RELEVANT LITERATURE

Michael Porter's (1985) strategic typology has been accepted by most scholars and executives, as one of the main frameworks toward effective strategic choices (Campbell-Hunt 2000). This framework has been one of the most used to study the strategic behavior of manufacturing organizations (Allen & Helms 2006). Examples of utilizing Porter's framework continue to be found in many manufacturing industries in different business cultures (McNamee & Hugh 1989; Spanos et al. 2004; Gibbons & O´Connor 2005; Allen et al. 2007; Collins & Winrow 2010).

Although Porter's framework was utilized initially in manufacturing organizations, it found its way to service organizations. Examples of utilizing this framework in service industries can be found in literature, such as in bank (Chan & Wong 1999), retailing (Morschett et al. 2006), government/not-for-profit (Akan et al. 2006), and hospitality (Garrigós-Simón et al. 2005).

An examination of this literature tends to point to the utilizations of Porter's generic strategies both in the pure forms, and in hybrid-mix forms. The hybrid-mix forms can be viewed as adaptations to the environmental changes.For a detailed meta-analysis please see Campbell-Hunt (2000).

Typically firms included in these studies were Small and Medium Enterprise (SMEs). In recent years, such firms have been considered as the engine which drives economic growth globally (Singh et al. 2008). However, in the past, SMEs did not utilize information technologies effectively to shape their strategies due to the lack of resources, and needed skills (Maguire et al. 2007; Garengo et al. 2005). More recently, however such firms are beginning to utilize more and more of the internet resources, such as e-mail and websites in order to create global business relationships. In today's marketplace, these firms are being called upon to broaden and integrate their information technology resources in order to create competitive strategic advantages (Pavic et al. 2002; Maguire et al. 2007). Michael Porter contended that the Internet technology could be viewed as strategically significant, if its practical applications create new value (Porter 2001). In response to environmental changes, several authors studied the utilization of Porter's framework in an e-business context (Kim et al. 2004; Kim 2004; C. M. Koo et al. 2004; Jin et al. 2008).

During the 90's several researchers used Porter's generic strategies framework to study how Portuguese organizations were competing in the global market. In the process, the strategic orientations of some of the main Portuguese industries, namely textile (Raposo 1994; Curto 1993), hospitality (Matias 1992), and construction (Cachadinha 1993), were studied. For example(Green et al. 1993) studied the applications of Porter's generic strategies in the Portuguese manufacturing organizations in several industries.

More recently, this research theme was continued by Marques et al. (2000), Silva et al. (2000), Jácome et al. (2002), and Gomes et al. (2009). These studies have identified hybrid-mix forms of strategies in Portuguese firms. Therefore, Porter's model appears to be utilized in the manufacturing Portuguese environment in a similar way to other business cultural contexts. However, the Portuguese service organizations have not received equal attention. This may be attributed to the specific organizational characteristics of service organizations.

3. METHOD

The research instrument utilized in this study was designed based on an extensive, selective literature review. Based on the literature reviewed, thirty-three competitive methods were extracted and included in the instrument. Twenty-one questions were derived from Dess & Davis (1984) seminal work on generic strategies. Five variables were derived from the study made by Jácome et al. (2002) which dealt with the strategic orientations of Portuguese organizations. Finally, seven new variables were added to reflect new concerns of service organizations.

For the purpose of this study, the database maintained by CofaceServiços Portugal, a subsidiary of Cofacewas used. A random sample of five hundred (500) organizations was obtained from the database, which includes the largest fifteen hundred (1500) Portuguese service organizations.

Six-nine (69) completed responses were received. Seventeen (17) were returned because the firms do not exist anymore, or due to unwillingness to participate in the study. This resulted in a response rate of approximately 14.3%. This response rate is consistent with literature (Bhatt 2000; Valsamakis & Sprague 2001; Metts 2007; Jugdev et al. 2007). No significant differences (α=0.05) in terms of the characteristics of respondent relative to the non-respondents were detected. The participating executives were asked to provide information regarding number of employees, type of certification achieved, and the extent of utilization of integrated performance measurement systems in their service organizations.
In order to evaluate performance differences and better understand the strategic behavior of each group, a performance indicator (P_i) reflecting the net return on assets of the organizations was utilized. Finally, in order to identify which competitive methods are preferred by each strategic group, a cluster analysis procedure was utilized.

4. RESULTS AND DISCUSSION

4.1 Factor Analysis Results

Based on the factor analysis procedure, a seven-factor solution was obtained. This solution explained 69.4 percent of the total variance (see Table 1).

TABLE 1A – FACTOR ANALYSIS RESULTS

FACTORS (Cronbach's alpha value)	F 1 (0.912)	F 2 (0.861)	F 3 (0.757)	F 4 (0.724)	Comm[1]
F1 – Service Operational Innovation					
Operating service efficiency	0,811				0,767
Customer service	0,772				0,860
Continuous improvement of service process	0,710				0,695
Service quality control	0,685				0,750
Continuous investment in IT resources	0,681				0,774
Service quality improvement	0,641				0,753
Employees' competencies in IT	0,628				0,740
Experienced / trained personnel	0,623				0,745
F2 – Reputation and Service Innovation					
Forecasting market growth		0,722			0,852
Meeting service rendering times and dates		0,629			0,680
Reputation within industry		0,588			0,739
Innovation in service process		0,578			0,808
Design innovation		0,505			0,693
F3 – Cost and Service Performance					
Maintaining high inventory levels			0,760		0,791
E-procurement			0,706		0,727
Minimum use of outside financing			0,635		0,526
Service in high price segments			0,543		0,788
F4 – Marketing and Distribution Leadership					
Broad range of services				0,727	0,777
New service development				0,721	0,634
Competitive pricing				0,693	0,749
Control of channels of distribution				0,539	0,685
Eingvalues	5,700	3,278	3,202	3,066	
Percent of total variance	17,271	9,934	9,702	9,289	
Cumulative percent	17,271	27,206	36,908	46,198	

[1] Communalities

TABLE 1B – FACTOR ANALYSIS RESULTS

FACTORS (Cronbach's alpha value)	F 5 (0.702)	F 6 (0.787)	F 7 (0.733)	Comm[1]
F5 – E-Service Practices				
Procurement of materials to support services	0,769			0,806
E-commerce	0,595			0,750
E-operations	0,588			0,787
F6 – Service Marketing Innovation				
Advertising		0,742		0,815
Brand identification		0,668		0,733
Innovation in marketing techniques and methods		0,580		0,785
F7 – Standards and Service Efficiency				
OSHAS18000 norms implementation			0,732	0,763
ISO 9000/14000 norms implementation			0,664	0,643
Low service costs			0,582	0,786
Eingvalues	2,734	2,568	2,353	
Percent of total variance	8,285	7,781	7,132	
Cumulative percent	54,483	62,263	69,395	

[1] Communalities

4.2 Cluster results

Based on the cluster analysis procedure, a four-cluster solution, with significant differences between all strategic dimensions was obtained (See Table 2).

TABLE 2 – GENERIC STRATEGIES FOLLOWED BY GROUPS OF FIRMS

	Group A	Group B	Group C	Group D	F	Duncan grouping (α=0.05)
Number of cases:	19	20	9	16		
SOI – Service Operational Innovation	3.852 (4)	4.553 (2)	4.462 (3)	4.752 (1)	20.69*	A, B-C, B-D
RSI – Reputation and Service Innovation	3.397 (4)	4.364 (2)	4.111 (3)	4.638 (1)	19.67*	A, B-C, B-D
CSP – Cost and Service Performance	2.276 (4)	3.175 (2)	2.500 (3)	4.308 (1)	34.16*	A-C, B, D
MDL – Marketing and Distribution Leadership	2.956 (4)	3.125 (3)	3.250 (2)	3.938 (1)	6.52*	A-B-C, D
ESP – E-Service Practices	2.508 (4)	3.584 (2)	3.000 (3)	4.563 (1)	32.63*	A, B, C, D
SMI – Service Marketing Innovation	2.307 (4)	2.483 (3)	3.889 (2)	4.418 (1)	44.26*	A-B, C, D
SSE – Standards and Service Efficiency	2.929 (4)	3.892 (3)	4.001 (2)	4.188 (1)	10.13*	A, B-C-D
F:	15.13*	29.20*	13.83*	3.81*	Rank	
Strategy dimensions grouped according Duncan test (α=0.05) and ranked within each Group	SOI	SOI-RSI	SOI-RSI-SMI-SSE	SOI-RSI-CSP-ESP-SMI	1	
	RSI	ESP-SSE	MDL-ESP	RSI-CSP-ESP-SMI-SSE	2	
	MDL-SSE	CSP-MDL	CSP-ESP	CSP-MDL-SSE	3	
	CSP-ESP-SMI	SMI	----	----	4	

Notes: Numbers in parentheses are ranks of scores of strategic dimensions in descending order along the groups

*-F significant for α=0.05

Group A – This group includes nineteen organizations (29.7% of the sample), which tended to assign the lowest scores to all the seven strategic dimensions.

Group B –This strategic group includes twenty organizations (31.3% of the sample). Five of the seven strategic dimensions are not significantly different from other groups.

Group C–This strategic group includes nine organizations (14.1% of the sample), which tended to utilize a hybrid generic strategy, with an equal emphasis on all strategic dimensions.

Group D –This group includes sixteen firms (25.0% of the sample), which tended to assign the highest scores to all seven strategic dimensions. Market Leadership in this group is the second least emphasized, compared to the other strategic choices.

Based on the results, the Service Operational Innovation (SOI) strategic dimension is found at the top of preferences for all strategic groups. This preferred strategic orientation can be viewed as a strategic reaction to the entrance of global service organizations into the Portuguese market. Since these organizations can't compete solely based on economics of scale, they are using innovation as a strategic weapon. On the other hand, they also are using reputation (RSI) as a strategic advantage.

4.3 Strategic Group Performance

To determine the existence of significant differences in performance between organizations with certification and those without, within each group, analysis of variance was used. The same analysis was done regarding the utilizations of integrated performance measurement systems. The results of both analyses point to no significant differences ($\alpha=0.05$).

To finalize the strategic behavior characterization, a cluster analysis was used to identify which competitive methods are preferred by each strategic group. Three competitive methods were identified for strategic group A, eight were identified for group B, four were identified for group C, and seven were identified for group D. The results show that all groups, with the exclusion of group B, included customer service among the three first preference positions. Groups A, B and D also included meeting service rendering times and dates in these three positions. While strategic group B ranked service quality improvement in the first highest preference position, groups A, C and D assigned it lower preferences, respectively four, eight and six. It is to be noted that the organizations included in all strategic groups selected operating efficiency as a preferred competitive method.

5. CONCLUSION

Using a sample of sixty-nine Portuguese service organizations, this research sought to shed some light on the strategic practices of these organizations. Based on the results of the factor and cluster analyses procedures, the following conclusions and implications are drawn.

First, the majority of the studied service organizations appear to still view their strategic choices from a closed system business model orientation. In this context, they are still emphasizing classical traditional strategic choices, which are not necessarily consistent with the recent openness of the competitive service environment. Second, some service organizations appear to be adopting more open, innovative strategies. However, the extent of openness and innovation should be improved through incorporating more critical environmental, customer, and technology-related factors.

Finally, while some service organizations appear to integrate the elements of modern information technologies in order to improve their customer-strategic focus, such integration is still lacking a systematic effort to ensure the achievement of its full potential.

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EXPLORING THE UNDERLYING RELATIONSHIP BETWEEN CRISIS MANAGEMENT (CM) AND CORPORATE SOCIAL RESPONSIBILITY (CSR)

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ABSTRACT

There has been a <u>natural symbiotic relationship between crisis management issues and corporate social responsibility.</u> This symbiotic relationship benefits consumers in being able to recognize brands and corporations that produce quality products and services. The benefit to corporations is in maintaining a positive relationship with consumers as well as internal direction for employees and management. This paper addresses some commonalities between crisis management and corporate social responsibility that can likely be a prescription for future success in strategic planning. The major findings are developed through the investigation of both case analysis and data from managers and non-managers in varying industries. The results of this study provide support for the premise that there is an inherent relationship between CM and CSR.

Keywords*: Social responsibility, crisis management, correlations*

1. INTRODUCTION

The increasing complexity of products, a more observant media, and an ever increasing demand by customers have fueled the need for further study and development of the understanding of crisis management and corporate social responsibility. Crisis management and corporate social responsibility are now an important element in strategic planning. Crisis management increasingly involves more well-publicized occurrences wherein products are found to be defective or dangerous. Recent crises involving products such as tires, SUVs, milk, pain relievers, electricity, computer chips and others, have created media and consumer awareness and sensitivity to corporate images and possible crisis (Sen and Bhattacharya, 2001). Firms engaging in Corporation Social Responsibility (CSR) before and in handling crisis are driven by such costly activities as regulatory compliance. Firms are also impacted from a marketing perspective because they understand consumers' positive evaluations of the product and brands could impact the top and bottom lines. Thus it would appear that there is a clear link between crisis management and marketing (through CSR) which is intuitive, but not always discussed. In this study, we are specifically interested in understanding the extent to which CSR and product related variables are associated with crisis management.

2. LITERATURE REVIEW

2.1 Crisis management

Crisis management is a term that encompasses the process by which organizations address negative events or precarious situations surrounding the company based on product services in any way. Specifically, Pearson and Clair (1998) defined organizational crisis management as a systematic attempt by organizational members with external stakeholders to avert crises or to effectively manage those that occur. Crisis management seeks to soften the impact of those negative events that occur to the organization and its stakeholders.

> "An organizational crisis is a low-probability, high impact event that threatens the viability of the organization and is characterized by ambiguity of cause, effect, and means of resolution, as well as by a belief that decisions must be made swiftly." (Pearson & Clair, 1998: 60).

The five characteristics of crises common in the literature are: (1) crisis events have a low probability of occurring and are usually unexpected (Pearson & Clair, 1998); (2) crises can have a highly damaging impact on the environment, the organization, and society (Shrivastava, 1995); (3) crises require decisive action (Barton, 2008); and (4) crises need to be addressed within an expedient time frame (Greening & Johnson, 1996); (5) crises offer learning opportunities for organization to develop (Liu, 2004).

2.2 Corporate Social Responsibility

Corporate social responsibility (CSR) generally maintains that businesses should seek social benefits for society as well as economic benefits for the business (Klein and Dawar 2004). Firm behavior and the perspective by middle management will directly impact how the company is perceived in the short and long term. Additionally, within some research, organization identification research suggests that employees often identify with organizations they belong to and incorporate positive aspects of the organizational identity into their own for self-consistency and self-enhancement purposes (Smith 2003; Lichtenstein 2004; Klein and Dawar 2004; Sen, Bhattacharya, and Korschun 2006).

2.3 THE SYMBIOSIS OF CRISIS MANAGEMENT AND CSR

Economic, legal and ethical components of CSR are more closely tied in with business ethics. Considering organizational crises, it is clear that many are comprised of one or more of these components. Many of the ethical oriented crises that are discussed are examples of what have been labeled "smoldering crises", it starts out small and could be fixed early on, but instead are allowed to fester until they become full brown crises and knowledgeable to the public. Many reasons lead to the problems, such as no strict product quality control, no timely developing existing products, and issues with innovation. Right now, we will present cases in these areas to explain the symbiosis of crisis and corporate social responsibility.

Product quality control----The SK-II Crisis

The SK-II product line is a brand of Japanese cosmetics, sold by P&G. The products are made in Japan and sold to stores in Australia, China, Hong Kong, Japan, Korea, Malaysia, Singapore, Taiwan, the United Kingdom, and the United States. In the United States, the product line is available through Saks, with a market comprising high-end consumers. The SK-II crisis began on September 14, 2006, when authorities in South China's Guangdong Province detected chromium and neodymium in a type of SK-II cosmetic. Because these metals can cause skin irritation and disease, they are banned in all cosmetics in China. Sales of SK-II in China represent less than seven percent of the brand's global sales (Crandall, Parnell, Xihui, & Long, 2007). P&G's initial public response was one of denial, stating that it was working with the authorities to verify the validity of the findings. After the types of allegedly contaminated SK-II products increased to nine, the company reluctantly agreed to offer refunds to consumers. While P&G scrambled to minimize the scope of the problem, China's General Administration of Quality Supervision warned that SK-II products would be banned from import if problems persisted. The quality of products is one of the most important factors for companies to be successful in the long-term. From the perspective of crisis management, neither of these companies had a high risk consciousness, and took no effective measures to avoid the crisis from spreading. From the perspective of CSR, the protection of the company's image and product is through the manufacture and delivery of quality products. It is well understood that consumer prior expectations are driven by CSR and their behavior was moderated by a poor (CM) firm response.

2.5 Improving existing products ---Johnson & Johnson Tylenol Crisis

Several people died shortly after taking Tylenol made by Johnson & Johnson in 1982. Urgent warnings were broadcast, and police drove through Chicago neighborhoods issuing warnings over loudspeakers. However, before the crisis, Tylenol was the most successful over-the-counter product in the United States with over one hundred million users. By withdrawing all Tylenol, even though there was little chance of discovering more cyanide laced tablets. For reasons still unknown, a malevolent person or persons, presumably unknown, replaced Tylenol Extra-Strength capsules with cyanide-laced capsules, resealed the packages, and deposited them on the shelves of at least a half-dozen or so pharmacies, and food stores in the Chicago area. The poison capsules were purchased, and seven unsuspecting people died a horrible death. After that, Johnson & Johnson communicated their new triple safety seal packaging- a glued box, a plastic sear over the neck of the bottle, and a foil seal over the mouth of the bottle, with a press conference at the manufacturer's headquarters. Tylenol became the first product in the industry to use the new tamper resistant packaging just 6 months after the crisis occurred (Berge, 1990). After the new package development of the current product, J&J regained the confidence from customers and recovered 70 percent of its original market share in only five months after the crisis. From the perspective of crisis management, when the crisis developed into the stage of resolving, the management should react as quickly as possible, actively make response, hold the initiatives and mobilize all the resources that could be used to control the development of crises as soon as possible. Otherwise, the crises may spread wider and result in much more serious damage to companies. From the perspective of CSR, these two cases illustrate the importance of the product domain of CSR. The societal view of CSR suggests that there should be responsiveness to societal obligations or need. Intel's brand equity was damaged due to not recognizing the consumers' perspective, while J&J's brand equity was restored within a reasonable time.

3. RESEARCH METHODOLOGY

The cases above clearly illustrate the inherent relationship between CM and CSR. To further study the symbiotic relationship of CM and CSR, the authors analyzed data from businesses. It is important to understand the nature of the relationship as well as factors that may impact CM outcomes. Data were obtained through self-administered questionnaires from various businesses throughout Beijing China. International data was chosen because of the recent international events. A total of 73 useable responses were obtained. The major thrust of the survey was to gain a better understanding of facets on crisis management with select questions directed toward specific marketing areas such as product. Selected variables are listed in Table 1.

Table 1. Selected Survey Statements and Variables

learn	Learning in my organization is necessary for organizational survival
problem	I really feel this organization's problems are my own
comtool	Participative decision making is an effective communication tool
budget	The organization has an adequate budget in case of a crisis situation
corgoal	The organization views crisis management as a corporate goal
recov	The organization will quickly recover after a crisis situation

It was important to investigate the relationship of CSR and CM. The total survey consisted of 73 statements where respondents were asked to mark the whole numbers between 1 and 5. The extremes of the scale are labeled with 1 which stands for DISAGREE and 5 for AGREE. The variables are being utilized in understanding the extent that business persons understand the extent of the integration of CM and CSR. These variables are derived from the minuscule crisis management and corporate social responsibility literature.

4. FINDINGS

Regression Analysis for Crisis Management Plan

From the literature, it is well understood that the importance of a crisis management (CM) plan can not and should not be underemphasized. The variables that are derived from the strategic plan are numerous and most are captured in Table 2. The model for CMPLAN is significant and 77.9% of the variance in the variable CMPLAN is captured by the variables in the model. The model is significant ($p<.0001$). The significant predictors of a CMPLAN are captured by LEARN ($p<.05$), PROBLEM ($p<.05$), BUDGET ($p<.001$), CORGOAL ($p<.05$), and RECOV ($p<.001$). These variables are consistent in direction and sign. In our model, the LEARN and PROBLEM variables are negative implying that the business executives believe their organization does not value learning and problem solving and thus these organizations are more likely to not have a crisis management (CM plan). The budget (BUDGET), corporate goal (CORGOAL) and recovery (RECOV) variables are positively related to the organization having a crisis management (CM) plan. These variables are also captured in the corporate social responsibility literature as important aspects for benefiting the community. This is especially true of the social perspective more than other perspectives discussed earlier. One additional important aspect of this model is the adjusted R2 which accounts for the numbers and impact of the number variables in the model. The adjusted R2 accounts for 71.5% of the variance.

Table 2. Regression Analysis of CM Plan with CM and CSR Variables as Predictors				
Parameter	B	Std Error	t	Sig
Intercept	0.645	0.43	1.501	
learn	-0.18	0.08	-2.249	*
problem	-0.137	0.064	-2.156	*
oculture	0.103	0.097	1.064	
ambudget	-0.16	0.087	-1.835	
cmres	-0.068	0.1	-0.683	
budget	0.639	0.17	3.754	***
corgoal	0.189	0.086	2.205	*
cresp	0.004	0.096	0.037	
recov	0.464	0.124	3.744	***
keyemp	-0.186	0.113	-1.644	
detect	0.114	0.098	1.167	
newprod	-0.032	0.087	-0.368	
innov	0.026	0.089	0.293	
refining	-0.077	0.131	-0.591	
quality	-0.089	0.117	-0.76	
traind	0.183	0.109	1.683	
Model				***
R2				0.779
***=p<.001, **=p<.01, *=p<.05				

5. CONCLUSION AND FUTURE DIRECTIONS

From the cases mentioned above, we can generalize that each case involved both CM and CSR issues from different perspectives. The results of this study further provide strong support for the premise that there is an inherent relationship between CM and CSR. As demonstrated in our operationalization of CM and CSR based on Sen and Bhattacharya (2001) perspective on the domains of the Corporate Social Ratings Monitor (Kinder, Lydenberg, Domini and Co. Inc. 1999), it is important to incorporate product related domain for which managers and non-managers may control and influence. The product consisted of items such as *product quality, product safety, product refinement, research and development/innovation, etc.* Attention should be paid for any one of these issues whether from the perspective of CM or from the perspective of CSR; otherwise, companies would entangle themselves into big trouble and have a great loss even at the cost of bankruptcy.

Several opportunities exist for future research. First, the present study examined some crises in China, but did not consider others. The survey in other countries could provide a stronger support for the correlations between CM and CSR.

Second, the application of quantitative model to warn companies of potential CM and CSR issues including *product quality, product safety* received little research to date. Because problem avoidance is the most desirable outcome for firms, the model that assists managers to identify prospective problems before occurring is very useful.

Finally, the need to link between CM and CSR much more deeply is a great research achievement in management field. The deeper link can help managers make better overall marketing strategy, find problems as early as possible, and take right action to prevent the crisis from getting worse. More work is needed in this area, however.

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BUSINESS TRANSFORMATION ROADMAP FOR SUSTAINABLE PRACTICE

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ABSTRACT

Sustainability is gaining increasing attention and debate in business research and practice. One aim is to build approaches that articulate a symbiotic relationship between the 'triple-bottom line concept', the growing regulations on accountability and business transformation that embraces sustainable practices. This paper revisits selected IT-enabled business transformation approaches. Its main contribution is a conceptual roadmap for engaging business transformation and sustainable practice interpreted through the lenses of capability maturity levels.

Keywords: *Business Transformation, Capability Maturity Lens, Conceptual Roadmap*

1. INTRODUCTION

Business transformation is the renewal of an organization and its business environment using radial approaches (Economist Intelligence Unit, 2008; Mascaerebhas, 2011). If a successful turnaround is achieved the organization develops capabilities for improving its new processes, information technology (IT) infrastructures, physical structures and practices. The organization evolves toward aligning the transformed elements more closely with the business strategy and vision for giving employees a strategic focus and for managing the delivery of expected results (cf. Davis *et al.,* 2010; Luftman, 2003). Four other categories of transformation include repositioning, revitalization of a corporate in crisis, reconciliation of different business cultures after a merger, and managing the process of leadership succession (Miles, 1997). In any of these forms of transformation, a new business model with a new direction may be required. Regrettably, various reports indicate that at least 70% of business transformation efforts do not materialise, as do 50% to 70% of business reengineering efforts (Mascaerebhas, 2011, Pascale et al., 1999). According to Beer (2009) few organisations manage change well enough to achieve sustained improvement in performance, commitment and adaptability.

At present organizations are facing increasing pressures to adopt a plethora of sustainable objectives spurred by the binding commitments of the United Nations Framework Convention on Climate Change (UNFCC, 2004). Objectives for economic growth, environmental protection, social viability, accountability on performance reporting and ethical intactness (Epstein, 2008) make sustainability issues uniquely challenging to address effectively. Individual organisations are reported to be creating value opportunities through sustainable practices such as clean technology and reduction in carbon emissions (Esty & Winston, 2006; GEO Report, 2004; Watson et al., 2010). However, many organizations have made little progress in integrating their business transformation effort with effective sustainability plans.

This paper responds to the problem that extant business transformation approaches are not structured to produce a complete intervention change for sustainability practices. Organizations engaging in business transformation efforts lack the knowledge base about the approaches, drivers and metrics that are relevant to their business sustainability efforts. These concerns are supported by survey and interview findings presented in the MIT special report (2009). More than 70% of the respondents in this survey indicated that their company had not developed a clear business case for sustainability for the lack of facts. We therefore present the argument that, business transformation should address systemic changes embracing sustainability imperatives.
In the main contributions of this paper we approach this argument from two perspectives. First, we describe the scope of IT-enabled business transformation, followed by the core sustainability issues impacting on organizations. Second, we apply the concepts of capability maturity as a lens for appreciating sustainability efforts. From these two perspectives, we develop a conceptual roadmap which provides an integrative basis from which to consider IT-enabled business transformation, core concepts of sustainability for business optimisation and practice.

2. LITERATURE REVIEW OF BUSINESS TRANSFORMATION

There are two well-tried models that differentiate our understanding of business transformation: Venkatraman (1994) and Gartner (2003). Both these models apply classic approaches that embed radical and incremental IT-enabled business transformation, and management. Depending on the organisation's objectives, the transformation effort creates solutions for each business problem, and to ensure delivery of specific outcomes that can be adopted in the renewal process.

First, the Venkatraman model (1994) is widely cited for its scope on IT-enabled business transformation enabling organisations to align their business strategies with IT strategy and innovation. This model is divided into five levels illustrating the degree of transformations: (a) Evolutionary levels include localised exploitation of IT and internal integration resulting in minimal changes to the business processes. (b) Revolutionary levels in which IT shapes the new organisation and business processes. These levels include business process redesign, business network redesign and business scope redefinition.

Second, the Gartner business process management and adoption maturity model (2003) qualifies for IT-enabled business transformation. The six phases of this model guide an organization toward being process managed: Phase 0 the organization initially investigates and defines its inefficiencies. Phase 1, is about becoming 'process aware' establishing process owners and process performance metrics. Phase 2 is automation of specific processes to gain better control. Phase 3, the organization integrates its automated processes as well as those of trading partners and customers. Phase 4 is enterprise valuation control linking strategic goals to process execution. Phase 5 is the highest level of maturity; successful activities from phase 1 to 5 lead to the creation of an agile business structure.

2. 1 BUSINESS SUSTAINABILITY ISSUES

'Sustainability' embraces the 'triple bottom-line' concept (Elkington, 1999). The important themes underpinning this concept are that, organizations need to measure their performance and report economic viability, environmental compliance and social responsibility dimensions. Given the potential discrepancy in the meanings embedded in these themes, we define sustainability of a business as one that takes into account each dimension of how the organization operates, and how it develops the capacity and capability to remain productive over time in order to meet projected future needs. The consequences of being sustainable are articulated, for example, in the organization's culture, economic stability, management policies, processes, performance and technology (Epstein, 2008). An executable roadmap supported with comprehensive plans and sustained leadership are needed to assure success. In Table 1 next, we summarise the scope of IT-enabled business transformation and outcomes. We include the detail of core sustainability issues. Clearly, sustainability extends the business scope, which in turn, is deeply embedded in the conception of practice.

3. THEORETICAL FOUNDATIONS OF THE ROADMAP

The variety of core sustainability issues (Table 1) that any organization has to consider when implementing major changes is a compelling argument for a roadmap that provides the organization: (a) Relevance to understanding the planned direction of IT-enabled business transformation that leads to sustainable practices. (b) Developing capabilities focusing on internal processes for optimal delivery of business results and to improve performance (Eisenhardt & Martin, 2000, Ngosi & Braganza, 2010). This roadmap comprises eight factors, as follows:

[1] Maturity assessment	Gives the current *maturity posture* of the organisation and the foundations of its performance and purpose. ▪ Understanding *maturity posture* is singled out as the most important principle for defining the business vision and a set of strategic themes.
[2] Sustainability assessment:	Defines the awareness of the organization's current sustainability practices, which includes: ▪ Sustainability scenario, target areas and expected benefits. ▪ Readiness indicators, degree of required change and ease of change. ▪ Factors likely to impact the organisation's sustainability effort.
[3] Priorities:	▪ Describes clear and shared understanding of the challenges to be overcome, and actions to undertake in shaping meaning over time.
[4] Business transformation:	▪ Defines a master plan of the transformation scope, target and focus areas, approaches and metrics that are aligned to sustainability aims.

	▪	The master plan also ensures that everyone involved in the effort meets expectations.
[5] Technology Asset Scan:	▪	The organization scans its current IT systems and their usage.
	▪	Defines IT sustainability actions and required solutions.
[6] Legislative guidelines:	▪	Conducts legislative appraisals of relevant standards, based on the organization's defined target programs.
	▪	Adopts selected legislative guidelines to make sense of the dynamic interplay of required sustainability actions and inform on practice such as ISO 14000 Environment Systems.
[7] Strategy and Programs:	▪	Defines the IT-enabled business transformation and sustainability strategy that provides the pathway to execute goals defined.
	▪	Selects and defined the programs to include business case development.
[8] Capability perspective and lens:	▪	The use of incremental capability maturity levels as a lens to develop core competencies.

TABLE 1: SCOPE OF BUSINESS TRANSFORMATION

(Source: authors)

Business Transformation		Core Sustainability Issues
Scope	**Outcomes**	
Enterprise	▪ Strategy differentiation ▪ Enterprise process improvement ▪ Enterprise architecture improvement and management	▪ Business relationships (fair trading/ pricing) ▪ Corporate social responsibility ▪ Financial performance and protection of assets ▪ Stakeholder management (interest and reporting)
Organization	▪ Redefined organization structures ▪ Job functions ▪ New business model	▪ Green and smart buildings ▪ Innovation for recycling, repeatability, reproducibility ▪ Measurement of business and operational performance ▪ Reduction of organization carbon footprint ▪ Regulations and standards ▪ Social performance ▪ Waste management (paper/documents)
Technology	▪ Integration and IT simplification ▪ Management of infrastructure components (e.g. hardware) ▪ Architectural capabilities ▪ Integration and management of business applications	▪ Energy efficiency ▪ Eco-compliant design of IT resources ▪ e-waste management (recycling) ▪ Smart grid IT Infrastructures (e.g. virtualisation)
Process	▪ Process architecture ▪ Process improvement ▪ Process management as a service ▪ Product innovation ▪ Performance improvement	▪ Eco-efficient process performance ▪ Reduction of material intensity of goods & services, ▪ Reduction of toxic dispersion (use of renewable resources for products & packaging) ▪ Eco-product life cycles ▪ Product stewardship
Operations	▪ Value chain improvement ▪ Cost reduction	▪ Smart process logistics ▪ Cost reduction
Human Processes	▪ Roles ▪ Collaboration & teamwork ▪ Workspaces,	▪ Employment practices (e.g. employee development) ▪ Healthy work environment ▪ Quality of life
Customers	▪ End-to-end service processes ▪ Customer satisfaction ▪ Product and service quality	▪ End-to-end service intensity of products ▪ Market image and reputation
Extended business scope		
Governance		▪ Partnership governance and accountability ▪ Resource management ▪ Information and knowledge disclosures
Leadership		▪ Accountability, responsible authority
Culture		▪ Corporate reputation/integrity ▪ Conduct of excellence

3.1 CONCEPTUAL ROADMAP

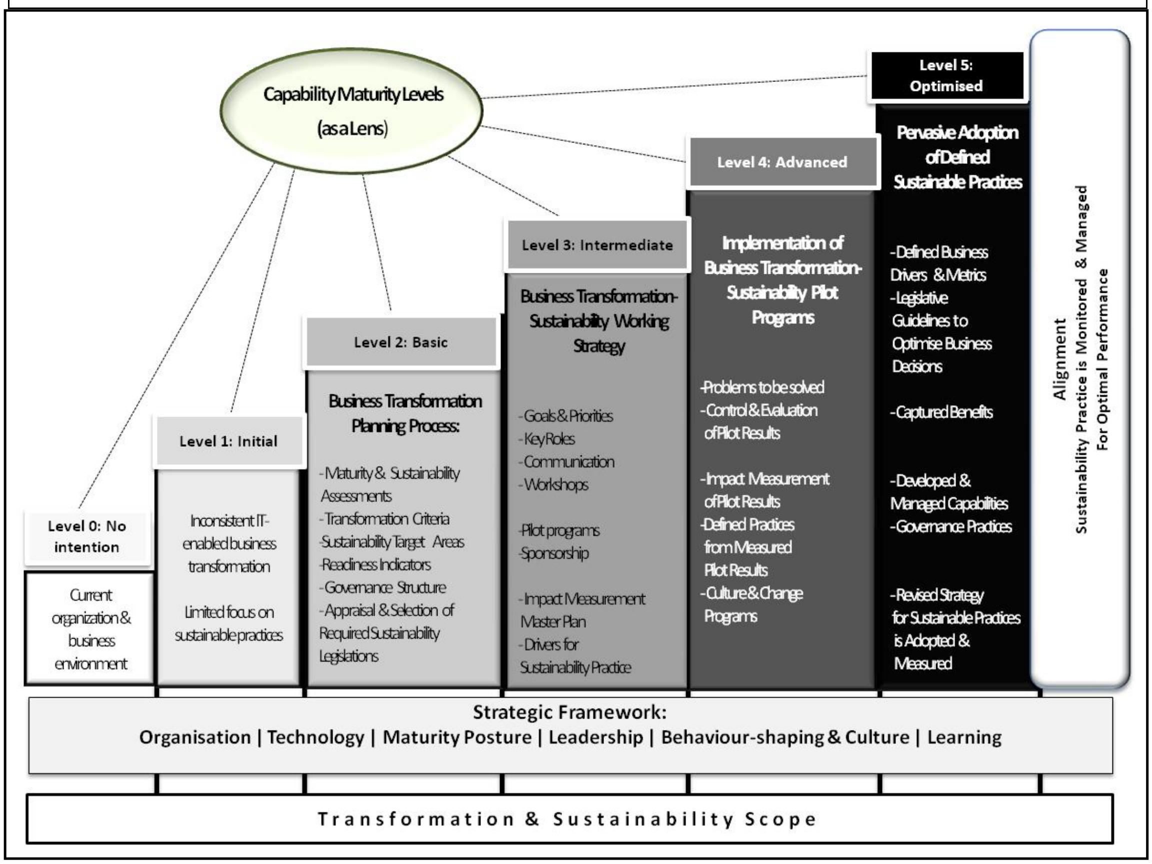
In Figure 1 is the conceptual roadmap that integrates business transformation and sustainable practice. The capability maturity levels provide a lens for defining this roadmap, which is supported with the organization's strategic framework. Each level represents the organization's intentionality to transform its defined business target areas and implement change in ways that encourage sustainability.

Level 0-*No intention*: This level suggests that the organization has no intention of implementing any change. It reflects an organization's inability or unwillingness to bring about changes that are needed.

Level 1-*Initial:* At this level the organization needs to recognise the eight factors identified earlier but have either, not begun implementing any of them. In addition, implementation of IT-enabled business transformation is inconsistent with little senior management attention and limited employee acceptance.

Level 2-*Basic*: At this level senior managers begin a basic business transformation planning process to define the roadmap. A basic list of issues to be addressed in the roadmap is identified. Maturity and sustainability assessments are carried out. Maturity posture; readiness indictors and the drivers that will affect future business viability of sustainability practice are defined. The results provide input to the planning process leading to definition of transformation approaches, metrics and governance. A governance structure is established, approved and adopted to assure the success of this effort.

FIGURE 1 CONCEPTUAL ROADMAP~BUSINESS TRANSFORMATION & SUSTAINABLE PRACTICE



Level 3-*Intermediate:* All preliminary activities should at least reach Level 3. At this level there is a dedicated senior-management team that develops the strategy to position the business transformation sustainability effort in the organization, and to guide the achievement of set goals. This management team selects pilot programs that are most likely to deliver quick plausible results. Key roles to facilitate the business transformation sustainability effort are identified within different organisation functions and they are then assigned. A senior executive sponsors the pilot programs. Implementation activities for each program are defined and supported with a complete impact measurement master plan, which includes target elements to be measured, relevant approaches and metrics. The strategy and programs are communicated to organization units. Workshops are conducted to ensure that all employees are aware of the strategy, the key issues to be addressed and how this effort is to be carried out. Key employees that show acceptance of this strategy actively participate in its mobilisation across organisation units.

Level 4-*Advanced*: This level involves the implementation of selected pilot programs and measuring the results using specified and relevant metrics. Pilot results are collected and controlled in a central source for evaluation. Positive results provide input to implement change. Education and training, and change programs are in place across the organisation, which foster behaviour shaping, internal cooperation and positive attitudes to shape the organisation's desired culture for sustainability practice.

Level 5-*Optimised:* At this level there is pervasive adoption of defined sustainable practices supported with impact measurement. Benefits and positive impacts are captured, and managed. If the adoption is successful, a long term sustainability strategy is defined and aligned to overall business strategy. Developed organisation capabilities help to encourage appropriate sustainable practices, which are monitored and managed for optimal performance. Sustainability metrics and relevant legislative guidelines are used to optimise and drive business decisions. There is formal governance of all sustainability practice.

4. CONCLUSIONS & IMPLICATION FOR PRACTICE

Business enterprises need to adopt sustainable practices. The complexity of sustainability issues impacting on the business and transformation efforts alike requires fresh approaches. The roadmap developed in this paper effectively creates an integrative basis for IT-enabled business transformation and sustainable practices, and capability maturity levels through which structure purposive actions that can be interlinked over time. A key implication for practice is that this roadmap enables an organisation to match its maturity posture to the development of sustainable capabilities, and incremental engagement of business transformation and learning orientations.

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QUO VADIS? – PUBLIC COLLEGES AND THEIR FUNDING

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ABSTRACT

This paper reviews the current debate about the motivation, adequacy and distribution of funding for public colleges. Although the debate has been ongoing for some time, it has become especially heated in recent years due to serious budget problems in many states. In addition, the paper outlines significant trends in higher education which appear to be a reaction to the increasing tuition costs, demographic changes and expectations of employment from a college education. It is expected that the trends in distance education growth, part-time attendance, competition from for-profit colleges, lower subsidy from the state, stagnant population, the lack of college-ready matriculants, and the demand for increased efficiency will forever change the public college landscape in the next decade or two.

Keywords: *higher education, public college funding, trends in college instruction;*

1. FUNDING SOURCES FOR COLLEGES

Due to tax revenue shortfalls in many states, recessionary periods have brought about a serious debate about the funding of public services including higher education.(Hood, 1996) (Wellman, 2008) Although many states concede that an educated workforce is a requirement for a healthy and resilient economy, the debate centers on exactly how much the state should fund higher education and exactly how it should be done to be fair to taxpayer and student alike.(Abel & Dietz,2009) (Selingo,2003) (Zemsky, 2003) Caught in the middle of this debate and under fire for not producing evidence that both taxpayer and student are getting a good deal for their respective contributions is the public college itself. Administrators are accused of enjoying bloated salaries and reckless spending while faculty and staff are criticized for protecting their union-gained pensions and above average salaries in the face of widespread joblessness and fewer jobs with pension benefits in the private sector.

We review the major funding sources for a public college which are – state, local taxes, tuition and fees and other. The other category includes receipts from endowment proceeds, federal grants, and auxiliary profit-making businesses that the college may operate such as cafeteria, child-care centers, sports activities and associated paraphernalia, bookstore, dormitories, etc.

1.1 State Funding

This source of revenue for the public college has been a reliable income that has been traditionally associated with keeping tuition and fees low in comparison to private colleges.(Salazar, 2006) States have considered this subsidy to colleges as simply an extension of the public school funding in the K-12 grades. Some states even label the aggregate public education subsidy as a K-20 continuum of education funding. During recessionary periods, however, state funding of education has come under scrutiny and questions have been raised as to what the appropriate level of public funding should be. (Alexander, 2000) In terms of priority, states have conceded that K-12 funding is more important than higher education and so the scrutiny has been more severe on the funding level of public colleges.(Koch, 2008) Several questions have arisen in the review of the public funding of higher education. First, how many colleges should a state have? This question is important because there is a perception that the cost of providing the capital for buildings and other infrastructure can be high if student enrollment cannot support it. That is, the region being served by the public college does not have the population base to sustain a relatively constant source of college-bound students.

1.2 Local Taxes

Local financial support for public colleges has been more pronounced for the first two years of higher education and such support has led to a proliferation of “community or junior colleges.” There are approximately 1200 community colleges in the country, the vast majority of which are public institutions. The historical origin has been that such colleges offer two year extensions of the study for graduates from local school districts. Initially, the goal was to provide post secondary education to students who would otherwise not qualify to enter traditional four year institutions.(Hudson, 2008) Further, the course of study was to be focused on training or workforce development rather than general education. The aim was job training or to prepare the student for practice oriented career in the trades such as plumbing, carpentry, welding, etc. or in technician assignments such as electronics, refrigeration, radio operators, etc. Over the years, many colleges added the goal of preparing students for entry or transfer to a four year institution in order to complete a baccalaureate course of study. A third mission was also added, namely to offer courses for self-improvement or enrichment, especially for retirees or home-bound residents of the community. Such courses may or may not earn college level credit but were seen as worthwhile since the learning center could easily accommodate them.

Communities were eager to support the two year school through local levies in either property tax or a sales tax partly because the college was seen as an economic engine in providing jobs for residents and attracting students from the surrounding area. Further, more educational opportunities for the local residents, especially its youth, formed a stimulus for regional economic development.

1.3 Tuition and Fees

In 1980-1 states provided 45% of public college revenues while tuition and fees contributed 13% while in 1995-6 states chipped in only 35% and tuition and fees went up to 19%. (Campbell, 2005).

This revenue stream is definitely user driven and is an important factor on the road to privatizing the public college. (Morphew & Eckel, 2009) Tuition is subject to more variability than any other funding source. First, students have to be recruited and retained so that they can complete their payments. The dropout rate affects the revenue collection enormously since many students pay tuition and fees on some form of time payment plan. It is not uncommon for colleges to have a large aggregated receivable for non-payment of tuition and fees from students who are never heard from again. Of course, if the student decides to come back to school, re-admittance is contingent on clearing up the receivable.

The concept of a public college is grounded on the principle that educational opportunities constitutes a public good for the citizens in the region it serves. That is why the residents are willing to absorb the self-imposed tax in order to fund the college to some degree and, in that way, lower the tuition for those who will attend.

1.4 Other Funding Sources

Some colleges have established an affiliated foundation for the purpose of raising money for capital improvements, endowed chairs in specific fields, and scholarships. However, foundations at public colleges have not seen the success in establishing endowments that private schools have enjoyed.(Strout, 2004)

Auxiliaries include businesses developed by colleges for the convenience of students such as bookstores, cafeterias, etc. These businesses have been shown, by and large, not to be money-makers for the college and frequently are out-sourced to entities that have developed efficiencies and size so that such service businesses can be profitable.

Finally, a frequently untapped source of revenue are federal agencies and private foundations who frequently solicit grant proposals with the aim of furthering a specific cause such as increasing graduates in medical, nursing and associated STEM fields. These grants often come with restrictions such as the program thus started has to be absorbed by the college over time and its continued funding must come from another source. However, these grants allow the college to pay for needed equipment, lab refurbishment, additional teaching staff, etc. In general, these grants can be supplemental funding to offset temporary setbacks in funding from the state or local taxes. Research contracts that entail delivery of new findings, patents, or data gathering and analysis form yet another source of revenue for colleges. However, these contracts or grants are awarded selectively only after stiff competition from many public schools seeking the same grant and they do take time away from tenured faculty (Salazar & Kumar, 2004)

2. TRENDS – What does the future public college look like?

In order to understand what the future holds for higher education in this country, one has to stop and understand several demographic factors that will shape that future. Following are some undeniable trends that will extend their influence into the role of the public college in America.

2.1. Slow or no growth in population.

America has always been a nation positioned for economic growth partly because it could count on a growth in its workforce. First, the efficiency of farming and ranching freed up a rural population to migrate toward industrial jobs found in metro areas. The world wars of the last century brought women into the workplace when the male population was occupied in military service. In the last fifty years, an immigrant population has helped bolster the science and engineering ranks when those graduates decided to stay and work here. However, more recently these sources of additional workers have started to dry up. Although the population of the US has continued to increase, it has done so with legal and illegal immigration so it is possible that the country may soon face the worker shortages that Japan and western European nations have already experienced. In fact, 33% of the US growth in population is due to immigration and is expected to climb to 86% in 2050, primarily due to post 1992 immigration. (US Census Bureau) The lack of population growth will translate into flat college enrollment or possibly a decline for many colleges. The public college enrollment in the US was 14.9 million in 2010 and is projected to be 16.9 million in 2019 yielding a yearly increase of a mere 1.38%. If declining enrollment happens for many schools, there will be increased competition for students among the existing schools leading perhaps to a wave of consolidations or closures. Already there is competition to attract under-represented groups such as blacks and Hispanics to attend college in order to make up for the declining enrollment of the traditional white matriculants.

2.2. For profit competition, accreditation

Competing for students is an aggressive newcomer to the higher education scene – the for-profit college. Once denigrated for their "drive through" education or as mail order diploma mills, several for-profit colleges have become forces to be reckoned with. The University of Phoenix, possibly the most notable of such colleges, had enrollment hit 224,880 in 2007, several times larger than the nearest public competitor (IPEDS). Even their lack of accreditation, often seen as differentiation from a public college, has been solved by simply purchasing a failing small private college. Their marketing departments, often outspending the academic segment, pulls in students who are led to believe that a college education is possible by simply putting the expenses on a virtual credit card – their loans. Although Congress is already looking into the predatory practices of such for-profit colleges, it is unfair to say that they have nothing else to offer. The colleges have established methods for accelerating the curriculum by using cohort studies, short term concentrated courses and instructors with extensive "practice-oriented" experience rather than those with "research" backgrounds. Despite the crackdown on college-loan loading practices, these colleges will attract and retain students who want a fast track to job training in a high paying field. In the end they will draw college bound students away from public colleges.

2.3. Commuting, parking, part-time workers

College expenses have increased faster than the cost of living, a trend that has not been controlled and is not expected to flatten out. (Cohen, 1998, pp 368-9) Undergraduate tuition, room and board at public colleges for the 2008-9 year was estimated to be $14,060 while it was $31,267 at private institutions. See Table below. (IPEDS)

Annual Tuition, Fees, Room, Board at College				
Year	4 year private	4 year public	Delta	Delta %
SY81	$ 13,670	$ 6,233	$ 7,437	54%
SY91	$ 20,926	$ 8,288	$ 12,638	60%
SY01	$ 26,426	$ 10,463	$ 15,963	60%
SY02	$ 27,202	$ 10,926	$ 16,276	60%
SY03	$ 27,653	$ 11,378	$ 16,275	59%
SY04	$ 28,520	$ 12,143	$ 16,377	57%
SY05	$ 28,998	$ 12,618	$ 16,380	56%
SY06	$ 29,061	$ 12,882	$ 16,179	56%
SY07	$ 29,990	$ 13,272	$ 16,718	56%
SY08	$ 30,778	$ 13,429	$ 17,349	56%
SY09	$ 31,267	$ 14,060	$ 17,207	55%

Tuition has been used to make up for shortfalls in state or local funding or for simply filling in the gap between traditional public funding sources and actual expenses. As a result students have found it more and more difficult to cover the tuition and fees in addition to other educational expenses such as books, supplies and living expenses. The majority of college students now work part-time (or even full-time) in order to cover expenses that are not paid by scholarships or loans. The route taken then is to work on a part-time basis and extend the period of college attendance to six to ten years. Hence, the metric of the number of students graduating with a baccalaureate in four years is largely outdated. New retention and graduation metrics are needed to reflect the result of increased tuition and fees. Compounding the problem of increasing college expenses is the need to commute to work and to a college, especially in metro areas. This means that such commuting expenses are subject to car expenses, parking hassles and the high price of fuel.

2.4. User based funding

Student payments of tuition and fees at public colleges constitute a user-based payment for services rendered. Most colleges have traditionally used a single tuition charge for a course regardless of what it costs to offer that course. Of course, this practice allows for infinite flexibility for the student to form his/her schedule without having to worry about price differences in courses. However, this means that some departments are being subsidized by others whose costs for offering courses are relatively low. Uniform pricing practices are inherently unfair and do not yield desired efficiencies in the service providers. High demand, high return professional programs such as law and business already have become self supporting at some colleges by charging cost-based tuition. (Zussman, 2005, p. 120)

Another problem with state funding of public colleges has been that it is like handing a blank check to the institutions even with the restriction that the funding be dedicated to instruction and some administration. This funding benefits both needy and well-to-do students alike. There are state services in which the benefit of public funding is enjoyed by rich and poor alike – state parks, state highways, etc. However, the costs of higher education, akin to the costs of medical services, have risen dramatically and public opinion has tended to limiting subsidy of such costs to a more controlled level. Control has been achieved in the K-12 sector by passages of state laws such as Proposition 13 in California and Proposition 2.5 in Massachusetts which limit the increase in taxation for the funding of public education. Another form of control can be realized by the issuance of vouchers or scholarships directly to students that can be redeemed at any state college. Already the federal government far exceeds states in funding student aid programs that includes grants, loans and tax benefits. (Gladieux, King & Corrigan, 2005, p.164) Vouchers have the added advantage that underperforming colleges will be penalized by student migration to colleges that offer good educational value for the money.(Koch, 2008)

2.5. Distance Education

The growth of college coursework being offered through distance learning in the last 15 years has been phenomenal and there is no sign of the growth leveling off. Ehlers and Schneckenberg (2010) in their book "*Changing cultures in higher education: moving ahead to future learning,"* cover the many changes being brought about in colleges in the US and abroad because of new distance learning technology and the growth of the internet. Over 97% of the public 2 year institutions offer distance education courses while 89% of the four year colleges do. Of all distance education offered in 2001, over 90% of it was done over the internet. (IPEDS) The availability of broadband internet service to the home and business at reasonable rates has probably been the biggest driver for the growth. Improved software for facilitating distance learning through the internet such as Blackboard and Wimba has also contributed to the growth. Whole degree programs in both the undergraduate and graduate level are now being offered by even tier 1 universities. The internet allows the remote student to be anywhere including international locations and much of the distance learning is done asynchronously, that is, the instructor and student do not have to be logged into the system at the same time. Distance learning allows the small college to compete with the large one in terms of offering competitive learning experiences. However, the "name recognition" of the better known school still has significant drawing power. We can assume the following factors are important to students: (1) No need to commute to campus several times a week; (2) No need for parking permits, catching a shuttle bus from the parking lot to the classroom; (3) No need to waste time on campus between classes, waiting for instructor, or learning that class has been cancelled; (4) No need to purchase expensive food on campus while waiting for classes.(Renes & Strange, 2010)

Also surprising is that faculty members who teach web-based courses also cite the same advantages. In fact, many prefer to work at home offices to eliminate unnecessary interruptions to their research and professional developmental work.

Another surprising aspect to the growth in distance learning is that students are willing to give up the "social" part of college life – meeting classmates, interacting on a personal level with faculty, advisors and administrators. In fact, students in distance learning programs are willing to pay more for distance education than for campus based instruction. Initially, the expense for the distance learning infrastructure – software, servers to house the databases, technicians to provide login service to students and faculty, etc.- was being paid for by the fees charged for taking the distance education coursework.

Should the growth in distance education continue, the inevitable set of questions arise – why have a campus with expensive infrastructure – buildings, dormitories, athletic fields, etc.?, Why full time faculty members, with faculty offices and support staff? Why have student services, etc.?"

2.6. Jobs, jobs, jobs – instructors with experience

Another trend that is transforming college environments is the need for instruction that is "career" or "job" related. In the past, arguments were made for coursework that enriched the student or provided a "balanced" education. This meant that students were required to take courses in humanities, languages and social sciences to "round out" their education. Such coursework amounted to as much as a year of full-time college attendance. Students have complained that such coursework really did not get them a better job or made them more competitive in the workplace, the major reason, at least in their mind, for attending college in the first place. This has led to question the amount of public funding for humanities & associated liberal arts courses. (Knight, 2001)

An associated complaint from students and their employers alike was that coursework in their major field of study was too "theoretical" and not oriented to preparing the student for "practice" in the chosen career such as business, engineering, teaching, etc. A major difference between the coursework at for-profit schools and public colleges was that instructors at the former must have extensive experience in the practice of the field of study.

2.7. Developmental courses in math and English or college preparatory instruction

A major problem that has surfaced in college education is that many matriculants are simply not prepared for college. They do not have the basic reading and math skills to compete successfully in degree required coursework. At two year schools, 61% of incoming freshmen required at least one remedial course while at four year schools it was 25%. Students who take remedial courses have a poor graduation rate in 6 years – as low as 30% compared to 69% who never required remediation.(IPEDS) Courses that assist students to get to college grade level are labeled "developmental" and are taught often by graduate students or others who really do not have the background to understand how to help marginal or underachieving students who aspire to college work. These courses have two major negative effects – they take up college resources and they take up the time and money of students who now have to look forward to an extended stay in the college environment. Some of these students are not eligible to take college level classes until the second year of study. Many policymakers who influence college funding argue that these courses are the result of substandard secondary education and blame the failure of public schools in graduating students who do not possess a 12th grade level in reading and math.

2.8. Liberal arts are support for "professions."

The study of language, literature, philosophy, and the arts at an advanced level dates back centuries to the early forms of a college or university.(Newman & Tillman, 2001) Over time, training for the professions such as law, medicine, engineering became part of the college curriculum. In recent years graduates from the departments in the liberal arts such as English, Philosophy, Languages, etc. have had to struggle to find employment despite having a college degree. (Knight, 2001) Often the jobs such graduates do find are not as financially rewarding as those in many fields associated with the professions. State policymakers have started questioning public funding of fields whose graduates do not qualify for job openings in the state. Although a college education in the professions does require coursework in the humanities and social science, the question is really how that coursework should be delivered – through full time instructors or adjunct teaching? Financial analysis of the cost of a full time instructor versus having adjunct faculty performing the same amount of instruction reveals that as much as a four to one ratio exists. That is, four courses or a full load by a full time faculty member could be taught for one quarter the cost by using adjunct faculty. Hence, it is possible for liberal arts instruction for the professions could be done for one quarter the cost since it is not necessary to use full time instructors for liberal arts courses.

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THE DETERMINANTS OF INTERNATIONAL MONETARY FUND LENDING: GDP AND COUNTRY TYPE

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ABSTRACT

The determinants of the lending practices of the International Monetary Fund (IMF) are examined in this paper. Two relationships are considered in detail: the relationship between the size of a country's economy and amount leant, and the relationship between the economic category a nation falls into and amount leant. Empirical support is found that the IMF lends more money to (1) countries with larger economies and (2) non-advanced countries. These results coincide with the theory presented.

Keywords: *International monetary fund, lending, GDP, developing countries*

1. INTRODUCTION

The determinants of International Monetary Fund (IMF) lending will be studied in this paper. The goal of this paper is to determine how the size of a country's economy and its relative state of development (as measured by country type) are related to the amount of money leant by the IMF. This may provide insights into how well the IMF is adhering to its stated purpose of lending money strictly to restore economic stability (as opposed to lending money based on some type of politics). These insights are especially important since the integrity of the IMF has been called into question in recent years (Griesgraber and Ugarteche 2006). The fundamental job of the IMF is to ensure international economic system stability. The IMF attempts to accomplish this in three different ways:

1) Monitoring the global economy and economy of member countries;
2) Lending to countries with balance of payments difficulties;
3) Advising and helping all member countries (http://www.imf.org/external/about/ourwork.htm).

The IMF grants loans to all member countries having difficulties meeting their international payment obligations and are unable to secure adequate financing (http://www.imf.org/external/about/lending.htm). These lending practices may be affected by certain variables, such as Gross Domestic Product and country type.

2. REVIEW OF THE LITERATURE AND THEORY DEVELOPMENT

2.1 INTERNATIONAL MONETARY FUND

Financial assistance made available by the IMF is intended to aid countries by restoring their economic stability by rebuilding their international reserves, stabilizing the local currency and paying their imports. Failure to do so by the IMF could otherwise hinder economic growth. Much of the money used by the IMF is obtained from member countries via assigned quotas. Member countries pay the IMF a quota that is assigned to the country by the IMF when a country first joins. Quotas are based on member country's relative size within the world economy. The quota paid by member countries dictates how much that country can borrow from the IMF.

2.2 COUNTRY TYPES

The IMF deals with 11 different country types; Advanced nations, European Union, Central and Eastern Europe, Newly industrialized Asian economies, Commonwealth of Independent States, Developing Asian nations, ASEAN – 5, Latin American and the Caribbean, Middle East and North African, and Sub-Saharan African nations (http://www.imf.org/external/np/fin/tad/exfin1.aspx). Given the available data, 7 country type dummy variables were utilized in order to ensure that all categories were mutually exclusive of one another. The list of countries utilized in this study and their IMF classifications are presented in table 1 below.

Table 1 – List of Utilized Countries

Country	Type
Angola	**Sub-Saharan Africa**
Antigua and Barbuda	**Latin America and the Caribbean**
Bosnia and Herzegovina	**Central and eastern Europe**
Dominican Republic	**Latin America and the Caribbean**
El Salvador	**Latin America and the Caribbean**
Georgia	**Commonwealth of Independent States**
Greece	**European Union**
Honduras	**Latin America and the Caribbean**
Iceland	**Other advanced economies (Advanced economies excluding G7 and euro area)**
Iraq	**Middle East and North Africa**
Jamaica	**Latin America and the Caribbean**
Kosovo	**Central and eastern Europe**
Latvia, Republic of	**European Union**
Maldives	**Developing Asia**
Pakistan	**Developing Asia**
Romania	**European Union**
Serbia, Republic of	**Central and eastern Europe**
Sri Lanka	**Developing Asia**
Ukraine	**Commonwealth of Independent States**
Armenia, Republic of	**Commonwealth of Independent States**
Moldova, Republic of	**Commonwealth of Independent States**
Seychelles	**Sub-Saharan Africa**
Colombia	**Latin America and the Caribbean**
Mexico	**Latin America and the Caribbean**
Poland, Republic of	**European Union**
Benin	**Sub-Saharan Africa**
Burkina Faso	**Sub-Saharan Africa**
Burundi	**Sub-Saharan Africa**
Comoros	**Sub-Saharan Africa**
Congo, Democratic Republic of	**Sub-Saharan Africa**
Congo, Republic of	**Sub-Saharan Africa**
Cote d'Ivoire	**Sub-Saharan Africa**
Djibouti	**Middle East and North Africa**
Gambia, The	**Sub-Saharan Africa**
Ghana	**Sub-Saharan Africa**
Grenada	**Latin America and the Caribbean**
Guinea	**Sub-Saharan Africa**
Guinea-Bissau	**Sub-Saharan Africa**
Haiti	**Latin America and the Caribbean**
Lesotho	**Sub-Saharan Africa**
Liberia	**Sub-Saharan Africa**
Malawi	**Sub-Saharan Africa**
Mali	**Sub-Saharan Africa**
Mauritania	**Middle East and North Africa**
Nicaragua	**Latin America and the Caribbean**
Niger	**Sub-Saharan Africa**
Sao Tome & Principe	**Sub-Saharan Africa**
Sierra Leone	**Sub-Saharan Africa**
Tajikistan, Republic of	**Commonwealth of Independent States**
Togo	**Sub-Saharan Africa**
Yemen, Republic of	**Middle East and North Africa**
Zambia	**Sub-Saharan Africa**
Ethiopia	**Sub-Saharan Africa**
Solomon Islands	**Developing Asia**

As was previously noted, the integrity of the IMF has been called into question in the past, and it is possible that the IMF may favor countries of certain country types. For example, the IMF may lend a smaller amount of money to countries in the Sub-Saharan type. On the other hand, for example, the IMF may lend a large amount of money to countries in the European Union. The possibility of this occurrence will be investigated quantitatively in this paper.

2.3 GDP

The gross domestic product, or GDP of a country is the sum total of all goods and services produced in a country (http://www.bea.gov/glossary/glossary.cfm). Based on this definition, it can be seen that GDP is a comprehensive measure of the size of a country's economy.

2.4 HYPOTHESIS DEVELOPMENT

As was noted earlier, the IMF may lend money to a country when that country's balance of payments due is greater than the country's available funds. Clearly, the larger a country's economy, the larger will be their GDP. The larger the economy of a country, the larger their potential cash shortages or surpluses may be. Thus, countries with larger GDPs may, from time to time, have relatively large need for cash. Hence, the hypothesis of interest follows:

Hypothesis 1: IMF lending is positively related to GDP.

The IMF lends a great deal of money to poor and developing nations; however, the money lent to these nations is somewhat less than the amount provided to advanced nations (http://www.imf.org/external/np/fin/tad/exfin1.aspx). This difference in the lending amount is because advanced nations contribute greatly to global economy and are able to pay back a greater amount of money. That said, by definition, advanced nations also have larger GDPs (per capita) than their less developed counterparts. Thus, after controlling for GDP, the IMF should be expected to lend relatively *more* to non-advanced countries. The hypothesis of interest follows:

Hypothesis 2: IMF lending is positively related to all country types (in comparison to the reference point of advanced countries).

3. DATA AND MEASURES

The data and measures used in the testing of the aforementioned hypothesis are presented below. Real GDP was measured using data obtained from worldbank.org. IMF lending data were obtained from the IMF website.

4. STATISTICAL METHODOLOGY AND ECONOMETRIC ISSUES

First, descriptive statistics of the variables of interest were calculated. These are presented in table 2 below. In the table, GDP stands for gross domestic product and ln GDP is the natural logarithm of GDP. Similarly, Lending represents the amount of money the IMF leant to a given country in a given year, and ln Lending is its natural logarithm.

Table 2 – Variables

	N	Mean	Std. Deviation	Std. Error Mean
GDP	54	5.3911E10	1.40242E11	1.90845E10
Lending	54	2.2366E6	6.02417E6	8.19785E5
lnGDP	54	22.9271	1.91568	.26069
lnLending	54	12.2233	2.23593	.30427

Next, a multiple linear regression was run using IMF lending (Lending) as the dependent variable, and GDP and the country types (European, Other, CentralE, Commonwealth, Developing, Latin, and Mideast)as the independent variables.

"Advanced economies "was used as the reference point for country type. The countries under consideration were then broken into the additional eight categories above (including the reference category). Each of these country types was coded as a 0-1 dummy variable. Hence, the parameter estimates of these variables are each in reference to the "advanced economies" countries.
Upon the completion of this regression, the assumptions of regression were assessed. Several issues were examined in detail. First, heteroskedasticity was tested for using the Breusch-Pagan test. Not surprisingly, heteroskedsastic errors were found to exist. This should not be surprising, as the error variance quite possibly should be larger as GDP increases. This problem was corrected for by taking the natural logarithm of both Lending and GDP (transforming only GDP resulted in a non-linear model and, hence, non-normality of the errors). Upon taking this transformation, the Breusch-Pagan test did not indicate the existence of heteroskedasticity at the 0.05 level.

After this correction, additional tests were conducted. First, a normal probability plot was used to determine that the errors were approximately normally distributed. Second, this normality provides some assurance that there is not significant omitted variable bias. While there may be some independent variables omitted from this model the normality of the errors implies that any such omissions are not introducing substantial bias in the parameter estimation process.
Additionally, multicollinearity was tested for by calculated variance inflation factors. All variance inflation factors were less than 2, which is far below the commonly used threshold of 10 *(www.nd.edu/~rwilliam/stats2/l11.pdf)*.
The final form of the regression utilized is therefore:

(1) $Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8$,
where Y is the natural logarithm of the amount lent by the IMF, X1 through X7 are the country types: European, Other, Central Europe, Commonwealth, Developing, Latin, and Mideast, is the Herfindahl index measure of economic diversification, and X8 is the natural logarithm of GDP.

5. ANALYSIS OF RESULTS

Results were obtained upon the running of the regression equation presented above. The results are presented in table 3 below. An * indicates significance at the 0.05 level.

Table 3: Results of regression

	Coefficient (B)	p-value
Intercept	-9.52*	0.000
LnLending	0.930*	0.000
European	1.54*	0.012
Other	2.067*	0.037
Central Europe	1.021	0.088
Commonwealth	0.925	0.056
Developing	0.792	0.129
Latin America	0.233	0.536
Middle East	0.181	0.726
R^2 = 0.851		
Adjusted R^2 = 0.825		

Before discussing the results presented above, it should be noted that the p-value of the F-statistic from the ANOVA associated with the above regression was calculated to be 0.00, on 45 degrees of freedom, thus resulting in a p-value of 0.00. This provides evidence, at the 5% level, that this model does, indeed, have predictive ability.

Regarding the regression results, the primary points of note are the significance of the coefficients for the LnGDP, European, and Other. The positive and statistically significant coefficient implies for LnGDP means that a positive and significant relationship exists between economic IMF lending and GDP. In other words, increases in GDP are associated with increases in the IMF lending. This supports the hypothesis developed at the outset of this paper.

The effect size of this coefficient will now be discussed. Since the natural logarithms of both GDP and IMF lending were used in the regression, this means a multiplicative increase of e (2.718) times in GDP is associated with, on average, an $e^{0.930}$ times increase in IMF lending, ceteris paribus. In more intuitive terms, a doubling of GDP is associated with a 1.90 times increase in IMF lending. As was hypothesized, this relationship is positive. It is can be see that, although this relationship is positive, IMF lending does not appear to grow quite as quickly as GDP (a doubling of GDP is associated with a *less than double* increase in IMF lending). In order to further assess this relationship, a 95% confidence interval was constructed for the IMF lending variable. The 95% confidence interval is (0.776, 1.084). Since this confidence interval includes 1, this means that the growth rate is *not* statistically significantly different from 1. Hence, evidence exists to support the claim that a doubling in GDP is associated with, approximately, a doubling in IMF lending.

The coefficients of two country types were also found to be statistically significant. First, the coefficient of 1.54 for the European countries implies that, everything else held constant, countries in the European category that are not in the "Advanced economies" can expect $1.54 billion more in IMF lending than their counterparts in the "Advanced economies." Similarly, the coefficient of 2.067 for "Other" implies that, everything else held equal, countries in the Other category can expect $2.067 billion more in IMF lending than their counterparts in the "Advanced Economies." These positive and statistically significant parameter estimates partially support hypothesis 2. It should be noted that, while not statistically significant, the parameter estimates for the remaining country types were positive, as predicted by theory.

The R^2 value of 0.851 is fairly large. This statistic indicates that over 85% of the variability in IMF lending is explained by the model as a whole. Furthermore, the fact that the adjusted R^2 (0.825) is only marginally smaller than the R^2 implies that the model is reasonably parsimonious.

6. CONCLUSIONS

6.1 IMPLICATIONS FOR THEORY AND PRACTICE

The primary theoretical implication of the preceding results is that they add to the body of knowledge by providing support for the assumptions that the IMF does indeed lend relatively more money to (a) countries that have large economies themselves and (b) less developed countries. These results are both intuitively appealing and support the hypotheses developed in this paper. Further, these results do not provide any evidence of any bias in IMF lending practices.

In practice, the results show that a positive relationship between IMF lending and a country being of the European or Other country types (as compared to developed countries). This supports the IMF's stated goal of providing economic support to countries with balance of payment difficulties (http://www.imf.org/external/about/ourwork.htm). This is because the less developed countries will be more likely to have greater debt and, hence, greater balance of payment difficulties (Cooper 1992).

Additionally, the finding that a doubling in a country's GDP was associated with, on average, a doubling in lending provides evidence for a proportionality or sense of fairness in the IMF's lending practices. Had a doubling in GDP only been associated with, for example, a very small increase in lending, concern could have arisen regarding the impartiality of the lending practices.

6.2 AREAS FOR FURTHER STUDY

The primary avenue for future research presented in this paper lies within individual country analyses. It would be interesting to investigate the lending practices of the IMF one country or one country type at a time. While no evidence of favoritism was found in this analysis, this future work could shed further light on whether or not IMF lending practices may favor certain countries or country types. An additional area for future research would be extending the model presented in this paper by investigating additional factors that might be related to the IMF's lending practices.

6.3 SUMMARY

In conclusion, empirical evidence was found that IMF lending is positively related to the size of a country's economy as measured by GDP. Furthermore, this lending appears to be more than just positively related to GDP but also proportional to GDP. Additionally, when compared to developed countries, statistically significant and positive relationships were found to exist between 2 country types and IMF lending and positive but not statistically significant relationships seen between all other country types and IMF lending. This shows that IMF lending is greater for less developed countries. The aforementioned results support the hypotheses developed in this paper, and provide evidence that, in practice, the IMF lends money in the equitable manner it proposes.

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WHAT ASPECTS OF CSR REALLY MATTER? AN EXPLORATORY STUDY USING WORKPLACE MORTALITY DATA

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ABSTRACT

This work contributes to a growing and important body of research that tests whether there is any relationship between reporting positive corporate social responsibility metrics and their return-on-investment for stockholders. Following a review of key literature, this article will test the following hypothesis: whether a portfolio of stocks of companies that produce CSR reports that reveal the lowest on-the-job mortality rates produce better returns for investors than a portfolio of stocks of companies that produce CSR reports that reveal highest on-the-job mortality rates. Indeed, stocks of companies with lowest rates of workplace mortality on average increased in value more than the stocks of companies with the highest rates of workplace mortality, especially in a shorter observation period. However, somewhat disturbing, counterintuitive and thought-provoking, the difference in stock performance is found to not be statistically strong over a longer observation period. In the discussion section, the authors consider whether some CSR metrics are too granular to impact stock performance, whether the impacts of changes in some metrics become evident over a longer observation period, or whether outside factors affected the results. The study concludes by pointing to several new directions for promising research.

Keywords: *Corporate Social Responsibility, CSR, human resources, mortality, stock value*

1. INTRODUCTION

Today more than ever, companies are being challenged by investors to cut costs and to best their competitors' returns. But at the same time, increasingly, the market is also starting to examine society's needs and how companies comply with these requirements. It has become trendy to incorporate Corporate Social Responsibility (CSR) into the systems of corporate governance as investors begin to study CSR reports. Slavery, dangerous working conditions, and lack safety regulations seem like problems distant in history, but the number of people in forced labor worldwide is at an all-time high and workplace mortality is still an issue in even the most developed economies. This publication examines the stock performance of the best and worst 33 firms as ranked by worker mortality and considers whether there is a relationship between this metric and stock performance.

2. LITERATURE REVIEW

The orgins of the term corporate social responsibility in scholarly literature date back to the 1950s (Caroll, 1999). Since then theory of CSR has endergone evolution. The concept of CSR can be defined in many ways. One common definition is "actions that appear to further some social good, beyond the interests of the firm and that which is required by law" (Williams and Siegel, 2001). As early as the 1970s, scholars have postulated that firms that are more socially reponsible enjoy better stock performance (Moskowitz, 1972).

Since the 1980s, research has addressed the influence of sustainability performance and CSR on various measures of firm value. One of the first widely cited journal articles concluded that there was no relationship between CSR and profitability (Aupperle et al. 1985).

Regardless, the dawn of the 1990s saw a change of behavior on the part of institutional investors and the conclusions of scholars; while many alleged that investors still refused to pay a so-called premium for responsible corporate behavior, 538 institutional investors were allocating funds based on social screens and criteria and by 1992 $600 billion of invested funds was being socially screened (Pava and Krausz

1992). Waddock and Graves (1997) suggested that firms with greater financial strength were more likely to engage in positive social performance, and that good social performance was also predictive of future strong financial performance, furthering the growing perception that a good CSR record contributes to good financial results.

Luo and Bhattacharya (2006) found that customer satisfaction partially mediates the relationship between CSR and firm market value (Tobin's q and stock return) and that corporate abilities (innovativeness capability and product quality) moderate the financial returns to CSR; namely, in firms with low innovativeness capability, CSR actually reduces customer satisfaction levels and, through the lowered satisfaction, harms market value.

As of the second decade of the 2000s, there is a nascent consensus among managers that sustainability and CSR issues can impact the financial performance and value of a firm. For example, Tsoutsoura (2004) found a positive relationship between CSR and financial performance in 500 companies over a five year period. According to one literature review, such current empirical evidence supports the statement that social performance positively correlates with financial performance, and findings to the contrary typically cite to out-of-date data (Van Beurden and Gössling, 2008).

Managers also perceive this link between CSR, CSR reporting and firm performance and have valuable opinions about how exactly sustainability and CSR performance impacts firm financial performance and value. KPMG's 2005 survey of senior executives at 1600 companies in sixteen different countries found that roughly 50 percent of respondents "listed employee motivation as their driver for CSR behavior, which is an indication of the 'war for talent' which is increasingly important" (KMPG, 2005). In the next KPMG survey on corporate social responsibility in 2008 (in which executives from 2200 companies in twenty-two countries participated), an even larger percentage of respondents - 52 percent - identified employee motivation as a driver (KPMG, 2008). Other characteristics of the internal working environment of a company were also commonly identified as drivers of CSR behavior; 55 percent indicated that innovation and learning was a key driver and 69 percent claimed that ethical considerations drive CSR practices (KMPG, 2008). The 2200 respondents in 2008 identified other major drivers of CSR activities that also impact firm performance and ultimately value; among them were brand image, access to capital, market share and risk management (KPMG, 2008).

Specifically, studies have shown that there is a connection between employee satisfaction and the financial performance of companies (Harter et al., 2002). Workplace health and safety has been found to be significant to international competitiveness of firms (Smallman and John, 2001). A study of 36 companies demonstrated a significant relationship between employee satisfaction and profit (Guest, 2002). Mortality at the workplace has postulated to perhaps affect market valuation (Dorman, 1996). However, more broadly, injury to human life was shown by empirical research to not change the perception of a company as much as damage to the environment (Zyglidopoulos, 2001).

3. HYPOTHESIS

Based on the foregoing literature review, the hypothesis to be tested in this paper is as follows: the stocks of companies with the lowest incidence of workplace mortality outperform the stocks of companies with the highest incidence of workplace mortality. Conversely, the null hypothesis is that there is no significant difference in stock performance for companies with high and low employee mortality.

4. DATA AND TEST DESCRIPTION

Two portfolios of stocks were formed using data disclosed in CSR reports. The authors used the Smartview360 CSR data aggregation tool from CRD Analytics to compile a list of 33 stocks of companies with the lowest employee mortality metrics and the 33 stocks of companies with the highest employee mortality metrics. The range of employee deaths counted in 2009 among these companies was a low of zero and a high of 36. Stock values were tracked from June 26 2010 to June 26 2011. An ANOVA test was completed using the R statistical package.

5. RESULTS

The overall increase in value of the portfolio of stocks of companies with lower incidence of workplace mortality was higher over the course of a full year, increasing in value by an average of 6.91%, while the value of the portfolio of stocks with higher incidence of workplace mortality increased an average of 5.83%.

Even more compelling, during a three-month time period in 2011, the portfolio of stocks of companies with lower workplace mortality outperformed the S&P500 by 22.31 percent while the portfolio of stocks of companies with higher workplace mortality underperformed the S&P500 by 4.8 percent.

The results of the ANOVA test of the two portfolios over the course of a year are as follows:

	y	Residuals
Sum of Squares	0.058797	3.429676
Deg. of Freedom	1	31

Residual standard error: 0.332618

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
y	1	0.0588	0.058797	0.5314	0.4715
Residuals	31	3.4297	0.110635		

The test revealed that the difference in performance of the stocks in the two sample populations over the course of a year was not statistically significant. Therefore, the study fails to reject the null hypothesis.

6. LIMITATIONS AND DISCUSSION

It is important that the limitations within our study are acknowledged. Clearly, data reflecting different periods of time produce different outcomes. Also, the same regression test using alternative measures of financial performance and/or employee safety may result in different outcomes. Finally, the European financial crisis may have played a role in confounding normal causal relationships between various variables and stock performance.

From the data we analyzed, it cannot be proven that there is a causal relationship between employee mortality and firm value. This is somewhat counterintuitive, in that one would assume greater costs, such as fines, lawsuits, and investigations, are all associated with incidence of workplace mortality. However, the firms with more mortality may be firms that are hyper-cost conscious and have - deliberately or not - sacrificed workplace safety in the pursuit of aggressive cost savings.

Further, it may be that some CSR metrics such as employee mortality data are simply too granular. CSR metrics - to be meaningful in the context of stock valuation - may need to be aggregated to reflect a *gestalt.* In other words, the overall prevailing attitude toward society and/or the environment at a company may affect firm financial performance and/or stock valuation, while certain metrics on their own may neither be predictive of stock valuation nor particularly interesting to investors.

The practical implication for managers is somewhat limited. One could interpret this study to mean that the number of workers killed in one's facilities is irrelevant to stock price, or that investments to prevent workplace mortality cannot be justified as maximizing shareholder value. However, even if one did not have ethical qualms with stating this, and even ignoring the limitations of this study, it would be a misinterpretation. There is no evidence that any firms in this study had more or less workplace health and safety investments than others. So this study's findings, even if they were repeated using different samples and time periods, could not legitimately be the basis for making a decision, as a manager, that one ought to pursue anything less than state-of-the-art health and safety standards.

This study does provoke many questions for scholars, however. It suggests future directions for research in, for example, determining if injuries and other metrics for workplace safety impact firm value and, if so, to what degree. Also, how the relationship is evolving over time between employee mortality and firm value is important. It would be of value to determine if the value of human life relative to that of the firm is growing in an accelerating, linear or decelerating manner.

More broadly, this study's findings should provoke scholars to investigate the following. First, the linkage between sustainability and/or CSR performance and financial performance and firm value should continually be tested. Second, these linkages can be tested over various time periods and geographic areas and in various market conditions and in various industry sectors. Third, the precise causal mechanisms through which one variable causes changes in financial performance and/or firm value remain a rich vein of future research. Finally, different measures of sustainability and/or CSR performance may matter more than others. For example, is environmental performance more important to the performance of a company's stock, or is social performance? Within the broad universe of indicators of social performance, what impacts stock value more: measures of gender equity or indicators of employee health and safety or even mortality? Transparency and access to data have increased, and with that has grown the opportunity to engage in further research that deepens our knowledge and increases certainty that behaving well really equates with better financial performance and value.

7. CONCLUSION

CSR has proven itself to be more than public relations and more than a passing trend. The growing consensus is that there is a connection between CSR and firm financial performance and value. Workplace safety data is one subset of CSR metrics that could potentially be connected with firm stock value. In examining two samples of 33 stocks, a relationship was found, especially during a period of three months. However, over the course of a year, the relationship was not strong enough to qualify as statistically significant. Given the limitations of the study, too much should not be inferred from these results. Rather, the foregoing literature review and results are likely to provoke further studies. Scholars have the chance to add value to the real world by testing theoretical and practical connections between CSR metrics and company performance and financial value.

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ID CORPORATE GOVERNANCE SAFEGUARD INVESTOR INTEREST IN THE GLOBAL FINANCIAL CRISIS?

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ABSTRACT

The financial crisis that started in the United States in 2008 quickly sent exchange markets into a freefall. A number of renowned investment banks, including Lehman Brothers and Merrill Lynch, collapsed. Share prices plummeted on the New York Stock Exchange. The Dow Jones Industrial Average instantly fell more than 500 points and many investors were caught in the turmoil. Even though the U.S. government immediately implemented a US$700 billion financial market rescue plan, the American economy continued to shrink and the national unemployment rate shot up to nearly 10 percent.

1. INTRODUCTION

The U.S. financial collapse sent shockwaves across the planet and throughout Asia. Immediately after Lehman Brothers filed for bankruptcy protection on 15 September 2008, Japan's Nikkei Index fell by 4.95 percent, Taiwan's TWSE Index by 4.89 percent, Shanghai's SSE Index by 4.47 percent, and South Korea's KOSPI plummeted 6.1 percent. The impact on the Asian markets was comparatively weaker than the initial crash in America. Nevertheless, Asian governments quickly adopted a range of measures, such as expansionary monetary and fiscal policies, to mitigate the effects of the crash and to stimulate the economy.

2. RESEARCH

Hong Kong, one of the world's key financial centers, was inevitably hit by the global crisis. The Hang Seng Index plunged by 5.4 percent. Like in other countries, the government and the monetary authorities implemented imperative measures to support Hong Kong's financial system. A 100 percent deposit protection scheme was promptly announced and HK$179 billion was injected into the banking system between September and December 2008 to enhance public confidence in the sector. Nevertheless, the stock market continued to tumble. On 28 October 2008 and 9 March 2009, the Hang Seng Index recorded its two lowest troughs at 11133.94 and 11344.58, respectively (- 42.47% and - 41.38%, respectively, from the end of August 2008).

The market performance of individual companies is of the greatest concern to investors. While some shares dropped by less than 20 percent (e.g. Beijing Enterprises Holdings and Addchance Holdings), others plunged over 80 percent (e.g. Agtech Holdings and Acrossasia) in the months following the September crash. These huge discrepancies raise the question of why share prices of some companies are more stable than those of other companies when the market is falling. In other words, why did shareholders or potential investors still have confidence in certain companies during the slump?

Good corporate governance is the most important factor in maintaining investor confidence. It entices outside capital during periods of economic depression. In addition, good corporate governance is expected to curb excessive levels of executive remuneration and safeguard against excessive risk-taking by management. With good corporate governance, shareholder interests can be protected. Investors are willing to pay premium prices for companies with good corporate governance. To a large extent, share price fluctuations during financial crisis reflect the degree of investor confidence in a company.

Most of the literature in this field measures the efficacy of corporate governance structures over non-crisis periods. Consequently, the results may not fully reflect the defense abilities and caliber of the mechanisms of corporate governance. Since there is inadequate research on the impact financial crises have on existing corporate governance mechanisms, the global financial disaster of 2008 offers a good setting for assessing the effectiveness of governance system in protecting investor interest when capital markets are suddenly confronted with an unanticipated and rapid decline in stock prices.

This study examines the relationship between corporate governance systems and firm market performance during the financial crisis in 2008-2009. The objective of this study is to assess the capability of corporate governance mechanism to self-defend and self-regulate during periods of crisis. While most research on financial crisis focuses on financial services companies, this study focuses on all non-financial sectors.

Financial statement information and stock price data are extracted from *Datastream* database. Information on corporate governance and firm ownership is collected from the 2008 annual reports of companies included in this study. The following regression model is used in this study.

$$Return_{t+1} = \beta_0 + \beta_1 Duality_t + \beta_2 NonExeChair_t + \beta 3NumDirs_t + \beta_4 IndDir_t + \beta_5 CEOSh_t + \beta_6 DirSh_t + \beta_7 Chg\%BlkSh_{t+1} + \beta_8 BlkSh_t + \beta_9 AudIndDirs_t + \beta_{10} AudIndSh_t + \beta_{11} RemIndDirs_t + \beta_{12} RemIndSh_t + \beta_{13} Committees_t + \beta_{14} Lev_t + \beta_{15} LnSales_t + \beta_{16} Industry_t + \varepsilon_t$$

where

$Return_{t+1}$ is one of the following five different return measures:

AbnorRtn: market-adjusted cumulative stock return
Rtn_Fall: absolute value of the lowest price minus beginning price divided by beginning price times 100%
Rtn_Bounce: absolute value of the highest price (after the occurrence of the lowest price) minus the lowest price divided by the lowest price times 100%
Day_Fall: number of trading days between the beginning of the period and the occurrence of the lowest price
Day_Bounce: number of trading days between the occurrence of the lowest price and the rebound to the highest price

$Duality_t$: dummy variable--1 if CEO and chairman of the Board of Directors is the same person
$NonExeChair_t$: dummy variable--1 if chairman is non-executive director
$NumDirs_t$: number of directors
$IndDirs_t$: proportion of independent directors
$CEOSh_t$: shares held by CEO divided by total number of shares outstanding
$DirSh_t$: shares held by all directors (except CEO) divided by total number of shares outstanding
$BlkSh_t$: shares held by all block shareholders divided by total number of shares outstanding
$Chg\%BlkSh_{t+1}$: percentage change of shares held by block shareholders during the period
$AudIndDirs_t$: proportion of independent directors on the Audit Committee
$AudIndSh_t$: shares held by independent directors on the Audit Committee divided by total number of shares held by directors on the Audit Committee
$RemIndDirs_t$: proportion of independent directors on the Remuneration Committee
$RemIndSh_t$: shares held by independent directors on the Remuneration Committee divided by total number of shares held by directors on the Remuneration Committee

Committees$_t$: 1 if the firm has all three key committees (Audit, Remuneration, and Nomination), 2/3 if two, and 1/3 if one

Lev$_t$: ratio of total long-term debt to total assets

LnSale$_t$: natural log of total sales in HK$ millions for the fiscal year ended during the period

Industry$_t$: dummy variable for industry control

Instead of measuring only cumulative return, the dependent variable, Return$_{t+1}$, used in this study is measured five different ways in two aspects: market return and duration. The five dependent variables are: AbnorRtn, Rtn_Fall, Rtn_Bounce, Day_Fall, and Day_Bounce. The first three dependent variables measure rates of return of the stocks during the period. While AbnorRtn measures the above-market return of the stock during the period, Rtn_Fall measures the return from the beginning of the period to when the price reaches its trough, reflecting the self-defense ability of the stock when the market falls, and Rtn_Bounce measures the return from when the price reaches its trough to when the price reaches its peak afterwards, reflecting the stock's ability to self-regulate when the market rebounds back from the trough. The last two dependent variables measure the duration of the price fall and the rebound of the stock price.

3. CONCLUSION

The results of this study indicate that although whether or not the CEO and Chairman of the Board of Directors is the same person does not affect stock returns, having a non-executive Chair and large proportion of independent directors on the Board boosts investor confidence during the period. Firms with independent Board of Directors are better able to self-defend and self-regulate, resulting in price stability. Although prices fall, the decline is small and gradual, but the recovery from the trough is speedy.

This study finds that high concentration of ownership leads to lower stock returns, which supports the Expropriation Theory of ownership concentration that suggests high concentration of management ownership intensifies the conflict of interest between majority and minority shareholders. The finding is in contrary to the Alignment Theory, which suggests that high concentration of management ownership mitigates the conflict of interest between managers and shareholders. The results of this study also indicate high ownership concentration results in firms' ability to better self-defend and self-regulate during the crisis. In addition, managerial ownership and block shareholdings prevent stocks from sudden share price freefall while the market is tumbling and speed up share price rebound afterwards.

WOMEN NOW EARN MORE DEGREES BUT FARE POORLY IN WORKPLACE

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ABSTRACT

American women now receive the majority of both bachelor and advanced college degrees. However, those with fulltime jobs earn only 78% of what male workers earn. During the 1980s and into the 1990s women gained ground when comparing salary with males. However, over the last decade women with degrees have actually lost ground when compared to their male counterparts

Keywords: *Gender Wage Differences; Corporate Salaries; Gap in Women's Pay*

1. INTRODUCTION

According to new data from the U.S. Census Bureau, American women have now passed men in gaining both bachelor and advanced college degrees. Findings also indicated a record number of women are now part of the U.S. workplace. However, women with fulltime jobs have salaries that are only 78.2 percent of what men earn (Yen, 2011). It has been four decades since large numbers of women entered the workforce, yet this gap in wages still exists. Some of it may be attributed to women choosing lower paying careers to obtain the flexibility of caring for children or extended family. However, many who entered full corporate careers have also earned lower wages than males, perhaps because of a lack of aggressiveness (Foroohar, 2011). Also coming into play on the issue of gender and wages is new Census data asked for the first time that show certain undergraduate majors can lead to different median wages. Males are often concentrated in the higher earning majors such as engineering, mathematics and computer science. Women, however, often gravitate toward the lower earning majors of social work and education (Matheson, 2011).

In 2004 a research study was conducted that queried all female students who were under the age of 25 when they received their undergraduate degree from my institution between the years 1990-1997. Questionnaire surveys were delivered to a total of 2443 women who graduated from the School of Liberal Arts, the School of Business and the School of Science. All questionnaires were numerically coded in anticipation of a future longitudinal study. A total of 777 surveys were returned, representing a 31.8% return rate.

The study was part of an effort to determine how these female graduates viewed the overall impact of their educational experience, and to determine how successfully they were able to compete in a job market where the vast majority of corporate leaders are men. It was designed to assess the attitudes and perceptions of these graduates as they related to the quality of their educational experiences and their subsequent workplace experiences.

2. RESEARCH PROCEDURE FOR STUDY

A Likert-style questionnaire, allowing subjects to respond with varying degrees of intensity using the five categories of very dissatisfied, dissatisfied, no opinion, satisfied and very satisfied, was used as the survey instrument. Sufficient opportunity was provided within the questionnaire for respondent comments.

All data were coded and analyzed using the *Statistical Package for the Social Sciences* (S.P.S.S.).

3. FINDINGS OF THE INITIAL STUDY

Overall, the graduates thought highly of their educational experience. Respondents expressed a 93.2% satisfaction rate with their ability to gain a broad general education and a 90.7% satisfaction rate with their ability to improve analytical and logical thinking. There were 82.7% who reported satisfaction with their ability to gain knowledge and skills applicable to a career.

A total of 61.9% of the respondents reported that they were employed in an area related to their major field; 83.1% of respondents felt their educational experience helped them advance their career objectives; and 91.7% were satisfied with their ability to maintain a meaningful job.

When asked about their ability to secure career advancement and increased financial compensation when compared to **women they worked with**, respondents indicated a high satisfaction rate in their ability to be successful. A total of 87.1% were satisfied with their ability to secure advancement; and 85.5% expressed satisfaction in the area of financial compensation.

There is literature to support that women in the corporate world are now faring better when compared to their male counterparts than women a decade ago (Francese, 2003; Hindo & Sager, 2004; Sellers, 2006:Hedgeman, 2006; Lewis, 2006).. However, when looking more broadly at the overall survey results, respondents indicated that their ability to secure job advancement and increased financial compensation at a pace equal to **men with whom they worked** was perceived as a problem area. Satisfaction responses of survey participants were only 72.4% and 64.1%.

There is also literature to support this view. Bayard, et. al (2003) point out that women have consistently earned lower wages than men in U.S. labor markets, and Sowa (2007) notes that women have lower median weekly earnings than men at all levels, even for those with a professional degree. According to Leonhardt (2006), throughout the 1980s and early 90s, women of all economic levels were steadily gaining ground on their male counterparts. However, since that time, women with a four-year college degree have stopped making progress and the gap between their pay and the pay of male college graduates has actually widened slightly.

4. PROPOSED LONGITUDINAL STUDY

I recently secured a sabbatical leave for the 2012 spring semester and will be using the time to revisit the "women of the nineties" who responded to the questionnaire. As indicated earlier, all surveys were numerically coded and it will be possible to send new surveys to the 777 respondents. . A good deal has transpired over the last several years and as we begin to emerge from a deep recession it will be interesting to learn the reaction of these women. In addition to again using descriptive statistics to reveal the perceptions of these women, I intend to add a qualitative aspect by doing some personal and/or telephone interviews.

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THE CHANGING LANDSCAPE OF U.S. BUSINESS SCHOOLS

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ABSTRACT

Today American business schools of higher education are experiencing a dramatic shift from earlier decades. In the early days, public universities were heavily supported by state funds, competition was often limited due to geographic proximity, and student demand was omnipresent. But in recent decades, business schools have been forced to adjust to the changing American landscape. The reality is that competition among academic institutions has become fierce, economies are unpredictable, there's dwindling support by federal and state governments, unemployment is skyrocketing, there's huge need for universities to collaborate with others to reduce inefficiencies and thus costs, there's a growing need to design revenue generating programs, and there's tons of opportunities in foreign markets.

So what changes can academics expect for business schools in higher education? To answer this complex query, information has been gathered from the following sources:

- AACSB Deans meeting (February 2011)
- European Foundation for Management Development Dean's meeting (February 2011)
- CASE Development meeting (February 2011)
- Chronicle of Higher Education articles
- BizEd magazine articles
- Data trends
- Personal experiences

The following changes are the future reality of business schools in higher education:

1. Increase scrutiny in higher education
2. Increase in Practitioner (PQ) Faculty
3. Increase in experiential learning
4. Increase in application degree programs
5. Increase in globalization
6. Business schools will operate like businesses
7. Increase in accrediting agencies
8. Increase in distance learning programs
9. U.S. graduate higher education will become less a target by students abroad
10. Technology will constantly change education
11. Decrease in General Education requirements
12. Closer collaboration between education institutions and community needs
13. Demise of tenure
14. Increase in entrepreneurship programs
15. Shorter undergraduate and graduate programs
16. Institutions will become more student centric
17. Many new programs will be self-supporting
18. Business schools will become increasingly flexible with their standards
19. Enhanced ethical awareness
20. Innovate to differentiate

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SUSTAINABILITY-RELATED CURRICULUM DESIGN IN BUSINESS SCHOOLS

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ABSTRACT

This study aims to investigate existing sustainability-related curriculum of business schools in China and Taiwan for further comparison. The significant findings of this study indicated that (a)there is difference between China and Taiwan's business schools in terms of given sustainability-related course number per business and their course arrangement (b) sustainability-related curriculum at compulsory and graduated level, the arrangement of China's business schools are more closer to global top-notch business schools than Taiwan.

Keywords: *Sustainability Curriculum; Business Schools in China; Business Schools in Taiwan*

1. INTRODUCTION

Since sustainability issues are related to a complex meaning system and need to have the effort of whole human being to achieve it, there already have many individuals and groups within formal educational system trying to endeavor for it. But one thing need to be notice is that education for sustainable world usually is not a priority (McIntosh et al., 2001; Cortese, 2003). Evan & Marcal (2005) indicated the role of business schools is preparing future business leaders and business students also see themselves as future leaders (Net Impact, 2010). Fortunately, the recent research of Christensen et al., (2007) surveyed the global MBA programs and pointed out that to have the inclusion of sustainability-related courses already becomes a trend. However, business schools are argued greatly unlikeness when they design and arrange their sustainability-related curriculum. Even the originally underscoring principles are the same; their applications will be affected uniquely by institutional environment, organization members, and culture (Hofstede, 1997; Evans and Marcal, 2005). As a powerful economy and largest population in the world, Asia region already draws everyone's attention for a long time. As a result, this study has interest to investigate the present situation of its sustainability-related curriculum of business schools and then take China and Taiwan these two countries as examples for comparison.

2. LITERATURE REVIEW

Nowadays, the term "sustainability" is widely used in various academic and practical scopes and the related discussion has been raised year by year (Ebner & Baumgartner, 2006). Brown et al., (1987) indicate the uses and conceptualizations of sustainability are not fixed, its value-laden is depended on the different contexts and scales and the perspective of social, ecological and economic, different societies have different cultural expectations of sustainability. In 1992 the United Nations Conference on Environment and Development (UNCED) released an action plan "Agenda 21" which describes the education is critical for promoting sustainable development and improving the capacity of people to address environmental and development issues (NCSE, 2003). Afterwards, McKeown (2002) releases a teaching suggestion study "Education for sustainable development toolkit" which not only emphasize the use of education is an essential tool for achieving sustainability but also indicate that to foster sustained literate effectively should educate all levels in the society. Hence people will own the knowledge and skills to find best solutions and make good choices for the related economic, social, and ecological issues. In addition, NCSE (2003) emphasize the innovations of teaching in education has the ability to assist people solve the environmental, social, and economic sustainability challenges. It means the role of teaching sustainability is very important in education.

3. RESEARCH METHOD

The purpose is using empirical method to observe the present situation of business schools' sustainability-related curriculum design and examine if there are difference between China and Taiwan nations. This study adopted web-based content analysis method to collect and analyze sustainability-related curriculum information including compulsory, elective, undergraduate, and graduate courses from business schools' website. Net Impact (2010) indicates business graduate and undergraduate students are the future leaders respectively; hence this study should examine both curriculum arrangements for the purpose of doing a comprehensive investigation. And because the content analysis is accurate, precise, reliable, objective, and unobtrusive, it can be a systematic and replicable technique for narrow down many words of text into fewer content categories (Stemler, 2001; Krippendorff, 2004). Some earlier related researches used questionnaire as survey instrument that should be emphasized it may suffer the bias when researcher constructed the value structure and use in cross-culture researches (Ahmed et al., 2003). As a result, 100 universities in China and 92 universities in Taiwan formed the research sample of this study. The data search was undertaken from March, 2010 and use above mentioned 39 terms as selection criteria to collect data in the websites of sampled universities.

4. RESULTS

In order to compare the number of sustainability curriculum per business school in China and Taiwan, this study first gets its mean value (total number of sustainability-related courses divided by the number of business schools by country) and the descriptive statistics of sustainability curriculum provided in China and Taiwan. On average, the sustainability-related curriculum per business school (mean value) of Taiwan is 2.86 and China is 4.69. This study uses inferential statistic Levene's test to assess the equality of variances in China and Taiwan samples. The results indicate that the variance of these two groups were not the same ($F = 0.69$, $p < .05$). It is suitable to use the mean differences test with the assumption that the variances are not the same. Table 1 showed that there exists difference on the sustainability-related courses per business school between China and Taiwan ($t = -3.94$, $p < .0001$). In further, compared to business schools from Taiwan, business schools in China have a higher average number of sustainability-related courses (mean = 4.69, Variance = 12.26). The statistical result suggested there has difference of sustainability-related courses between China and Taiwan. Each university develops its sustainability-related curriculum strategy will follow a different plan of action, depending on its type, history, culture, and mission (Savelyeva & McKenna, 2011). China and Taiwan as two different nations, the sustainability-related curriculum design strategy of business schools has difference could be expected, since they have respective political units, characteristic economic development, local social issues and modern developing histories.

Table 1 Sustainability-related Courses Provided in Taiwan and China Business Schools

	Taiwan (n=92)	**China (n=100)**
Mean (Sustainability-related courses per business school)	2.86	4.69
Standard Deviation	2.93	3.50
Variance	8.56	12.26
F-stat	0.69*	
t-stat	-3.94***	

The mean difference is significant at the 0.05 level, (*p < .05; ** p < .01; *** p < .001)

In order to distinguish which sector makes the difference in the business schools' sustainability-related courses in China and Taiwan, and for further understanding the present status of curriculum design and arrangement. This study classified China and Taiwan business schools' sustainability-related courses into compulsory/elective and undergraduate/graduate these two categories. China was 49% compulsory courses and 51% elective course; the undergraduate level covered 41% and then 59% covered by graduate level. The allocation of sustainability-related courses of Taiwan's business schools was not so even as China, the majority of Taiwan focused on elective course (73%) and undergraduate level (64%).

The results demonstrated as Table 2 that the sample groups in compulsory category ($F = 0.42$, $p < .05$) and the sample groups in graduate category ($F = 0.41$, $p < .001$) the variance were not the same. It was suitable to use the mean differences test with the assumption that the variances were not the same. Additionally, the sample groups in elective category ($F = 1.07$, $p > .05$) and the sample groups in undergraduate category (F = 0.82, p > .05) the variance were the same, hence it was suitable to adopt the equality of variance as assumption with independent samples t-test to compare China and Taiwan business schools' mean differences. The result summarized in Table 2 shows that there were differences in compulsory (t = -5.47, p < .0001) and graduate (t = -2.79, p < .001) of sustainability-related courses per business school between China and Taiwan. And the business schools in China have the higher average number in both categories: compulsory course (mean = 2.25, Variance = 4.81), graduate level (mean = 2.78, Variance = 7.12); but there were no differences in elective (t = -0.65, p > .05) and undergraduate (t = -0.30, p > .05) courses.

Table 2 Comparison of Sustainability-related Courses Design and Arrangement

	Compulsory/ Core course		**Elective course**		**Undergraduate course**		**Graduate course**	
	Taiwan	China	Taiwan	China	Taiwan	China	Taiwan	China
Mean	0.80	2.25	2.13	2.38	1.83	1.92	1.02	2.78
Variance	2.00	4.81	7.30	6.84	4.17	5.10	2.92	7.12
F-stat	0.42***		1.07		0.82		0.41***	
t-stat	-5.47***		-0.65		-0.30		-2.79**	

5. CONCLUSIONS AND DISCUSSION

The finding indicated the sustainability-related curriculum design and arrangement are different between China and Taiwan, and the business schools of China pay more attention on compulsory courses and graduate level than Taiwan. The earlier research of Matten & Moon, (2004) surveyed the CSR education in Europe; they pointed out the most popular way of teaching is through the provision of optional modules that is a relatively low cost approach. Additionally Evans & Marcal, (2005) research the ethics education in AACSB international member schools. The result show the perspective of business deans, undergraduate and MBA students all believe the ability of ethics course in undergraduate or MBA level is the same for change student attitudes and behaviors. Because Taiwan is a laissez-faire capitalism, this may be the reason that the business schools choice the more economic-effect methods for curriculum design and arrangement. However, there may have the problem like it can not make sure every graduate student owns the basis knowledge related to CSR (Matten & Moon, 2004).

As for China, private business deal is not allowed (based on communism) before 1980, although afterward it opens its economic development but there still has deep-rooted authoritarianism in their sociality (Ahmed et al., 2003). This global market economy for China is a new phenomena; when China dedicated to pursue the economic development recklessly, it suffer many external blames due to China jeopardize the world sustainable development. Scholars Christensen et al., (2007) infer the world top business schools tend to take the sustainability-related course as a non-negotiable item. The business schools in China take global top business schools as learning pattern, thus they focus on compulsory courses and graduate level heavier than Taiwan.

The survey demonstrated in this study depicts the first comprehensive research of the coverage of sustainability-related courses of China and Taiwan's business schools. This study also used the various detectable approaches to observe the sustainability-related education between China and Taiwan which including course number and course arrangement. The statistical result indicates there had difference between China and Taiwan in terms of given sustainability-related course number per business school. Moreover, this study discovered there are also differences existing in compulsory courses and graduate level courses between China and Taiwan by statistical test. Although China and Taiwan have the same history inherited, part of cultural homogeny and geographic closeness but they are still two different nations which owning specific institutional environment respectively. Therefore, that is appropriate to assume business schools of every country in Greater China have developed their own sustainability-related curriculum strategies. For future researches might be able to base on this finding to have deep insight study.

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