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Journal of Business, Economics and Technology

EDITORIAL NOTES

The continuing goal of the *Journal of Business, Economics and Technology* (JBET)*,* formerly the Journal of the Northeastern Association of Business, Economics and Technology*,* is the publication of general-interest business and economics articles that demonstrate academic rigor, while at the same time are readable and useful to others in academia. Consistent with these goals, this and future issues of JBET presents authors' papers in the three research categories recommended by AACSB: Research that advances the knowledge of business and management theory (Theoretical), Research that advances the practice of business and management (Practice), and Research that advances learning/pedagogy (Pedagogical).

In addition to being listed in *Cabell's Directory,* JBET is also available through the EBSCO Host research database, which we expect will increase our readership and the citations of our authors.

The current acceptance rate for JBET is roughly 35%. We have striven to accept only high-quality research, while at the same time maintaining JBET as a realistic publishing outlet for business and economics faculty throughout the United States. Key to this process is our referees who have worked hard to help "grow" papers that have significant potential by providing authors with critical review comments. We generally require two to three rounds of review prior to accepting articles for publication. At the same time, we are attempting to shorten the average review time for each article to less than three months.

JBET *Research Notes* comprises a relatively new feature of JBET. For the *Research Notes* section of the Spring 2018 Issue, we have encouraged the further development of work that cannot be considered as full research or methodology articles. At JBET, we support the research community across all of the disciplines of Business, Economics, and Information Technology by providing this forum for sharing information and data regarding the works-in-process of our constituents. This includes, but is not limited to updates to previous work, additions to established methods, short publications, null results, case series, research proposals, and data management plans. Further, each article in the *Research Notes* category has undergone the same double-blind peer review process as all articles that are published in JBET. For the current issue, the editors determined that three articles qualify for this category. We encourage future submissions for JBET *Research Notes.*

The Spring 2018 issue of JBET reflects the commitment of numerous volunteers. Referees who performed in an exceptional manner in helping to complete this issue are:

> M. Arshad Chawdhry, California University of Pennsylvania
> Linda Hall, State University of New York - Fredonia
> Michalina Hendon, Bloomsburg University of Pennsylvania
> Loreen Powell, Bloomsburg University of Pennsylvania
> Lisa Walters, State University of New York – Fredonia

We thank the officers of the Northeastern Association of Business, Economics, and Technology, the NABET Executive Board, as well as all of the referees who reviewed articles for this edition.

The co-Editors,

Jerry D. Belloit, Clarion University of Pennsylvania
Norman C. Sigmond, Kutztown University of Pennsylvania
Kurt Schimmel, Slippery Rock University of Pennsylvania

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CUSTOMERS ARE LESS PATIENT: SUSTAINABLE ADVANTAGE BECOMES TRANSIENT AND THE KEY FOR FIRMS TO SUCCEED IN FAST CHANGING MARKETS

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ABSTRACT

By combining systemic thinking and traditional logic of reasoning of microeconomics, this paper establishes a main result on how the base of loyal customers diminishes with increase in the number of competing firms. On top of this result, the rest of the paper provides deductive explanations by using the systemic yoyo model for why markets change faster and customers are less patient than ever before, and what the most important organizational element is for firms to successfully surf through waves of transient competitive advantages one after another. Other than what is illustrated in this paper, this work provides a practically useful intuition for making sound and quick managerial decisions.

INTRODUCTION

With online retail business blossoming, traditional, storefront-based retail businesses get hit big time. Currently, a massive number of retail stores are closing and a huge number of employees are laid off from the retail industry..., as the news goes. That is only a snapshot of avalanche changes in the business world, where markets change faster, competitive advantages of companies become much shorter lived, and business entities are organized as more cohesive wholes.

Looking at the dramatic development in the business world, other than mustering comprehensive conjectures about what is underneath the fast changing practices behind magnificent successes and devastating failures based on anecdotes and data mining, a natural question arises: Can a general theory be developed, from which we can plausibly and deductively explain what is happening with reliability?

To possibly address this question, this paper establishes the following result by employing the intuition of systemic thinking and the rigor of game theory: Within an oligopoly market, in the Nash equilibrium, when the competition of the market grows with an increasing number of firms entering the market, the base of loyal customers for each incumbent firm will gradually diminish. Based on this result, derived deductively is a natural explanation on why markets have been changing faster and customers become less patient than ever before. To understand why the idea of sustainable competitive advantages is a concept of the past, Bjerknes' Circulation Theorem is employed to develop a systemic view of how local, regional, and then world economies evolve with time. That naturally explains deductively what makes present competitive advantages feel like transient. As for what is the most important organizational characteristic for a firm to have in order to successfully ride waves of transient competitive advantages, this paper shows by using systemic thinking and reasoning that it is internal stability of the firm in terms of a long-term stretch ambition and major investment in creating a common identity, culture, and commitment to leadership development in individual employees. So, a necessary organizational cultural foundation is cultivated and ready for necessary organizational changes to take place.

In terms of the related literature, Chan and Chan (2010) maintain that in the fast-changing fashion market, being flexible and adaptive is a key to survival. So, they study supplier selection to support supply chain strategies with quick responses through presenting an example of solving the problem in the apparel industry by using the Analytical Hierarchy Process, while taking the operational performance, such as flexibility, cost, and delivery, into account. Based on their previous conclusions that technology strategy variables tend to predominate as predictors of survival in the fast-changing rigid disk drive industry, Christensen et al (1998) test the hypothesis that the technological and market strategies of a new entrant are highly interrelated and that their joint effect plays an important role in a firm's probability of survival. In particular, these authors propose that firms that target new market segments with an architectural innovation will tend to be more successful than those that target existing markets or innovate in component technology, even after controlling for all the competing predictors of survival.

Because organizations evolve through periods of incremental or evolutionary change punctuated by discontinuous or revolutionary change, Tushman and O'Reilly III (1996) consider it a challenge for managers to adapt the culture and strategy of their organizations to its current environment, while not undermining the companies' ability to adjust to radical changes in that environment. They conclude that the managers must create an ambidextrous organization that

is capable of simultaneously pursuing both incremental and discontinuous innovation. Day (1994) studies how market-driven orientation of businesses can be achieved and sustained. It is found that the emerging capabilities approach to strategic management, coupled with total quality management, offers a rich array of ways to design change programs that will enhance a market orientation with increased capabilities in market sensing and customer linking. By contrasting two distinct business cases Day and Schoemaker (2016) assess the managerial implications of sensing, seizing and transforming, critical capabilities for successful organizational adaptation. Among other results, these authors develop an embryonic contingency model to illustrate why the relative importance of dynamic capabilities varies across firms.

Kaharuddin et al. (2017) investigate and measure the transient competitive advantage readiness among hotels, cafes, and fashion retail industry in Bandung, Indonesia, and find based on a total of 60 managers that most managers of hotels, cafes, and fashion retails in Bandung do not have enough readiness and proper strategy to create the transient competitive advantage. Contradicting Porter's views, Bashir and Verma (2017) highlight how business model innovation can serve as a competitive advantage by reviewing and analyzing the literature on competitive advantage, because imitating an entire novel system is quite difficult compared to imitating a product or a service. Leavy (2016) considers what dynamic capabilities will be needed to compete in a world of transient advantage, like modern China, with its complicated and quickly changing demand pattern, hyper-competition, shifting industry boundaries, and discontinuities in the regulatory context. He believes that China is the business management laboratory within which these skills are already being honed, and that it would be wise for foreign multi-nationals to consider what capabilities will have to be developed in China, for China, learn from their Chinese rivals and ask where it might be possible to use these new China' capabilities to enhance performance globally.

By reviewing the literature on adaptability, Koller (2016) introduces the concept of adaptive advantage and addresses the problem of its implementation in an organization by looking at innovation culture, decision-making style, and accumulated experience of a sample of "old" and innovative firms. He finds that these firms' cultures promote innovation, are analytic and adaptive in their decision making and have relatively high levels of accumulated experience. Purkayastha and Sharma (2016) inductively analyzes the unique decisions of three firms that develop a competitive advantage by shaping their business model. The authors emphasize on the criticality of the business model as a higher level construct formed from multiple structural and strategic decisions that, eventually, become a source of competitive advantage.

So, comparing what we develop in this paper and what has been established in the literature, this work enriches the relevant knowledge at the height of theoretical abstraction with a much wider range of applicability. And, beyond these contributions, the general question this paper attempts to address is to show that other than inductive reasoning, deductive reasoning should be employed to produce scientifically sound theories and conclusions. Here, inductive reasoning is the exclusively used logic of thinking in the literature in areas related to this work, where anecdotes and data mining are employed to draw general conclusions. However, such conclusions are known in science to be generally not reliable. To this end, this paper establishes a theoretical model for how a marketplace should develop and evolve by using concepts, theories, and laboratory observations of systems science, and a theoretical result by employing game theory. After that, this paper shows how empirical conclusions, drawn previously and inductively on anecdotes and data mining by various scholars, can be deductively established or improved. Scientifically speaking, such theoretical conclusions are more reliable than those conjectured on the basis of anecdotes and data mining.

Although written statements in daily language, mathematical equations, and systemic reasoning are essentially articulations of logic, the difference is this: On their own, even the most logical and precise written arguments in daily language are often inconclusive because they are linear and sequential, they cannot quite control for the simultaneous effect of several arguments in combination; and they are generally unable to pinpoint one optimal outcome – "equilibrium" – out of many. On the other hand, mathematics and systems science are languages, too, but they are precise languages because they feature complex "claims" or "arguments" in their totalities – both mathematics and systems science do control for the simultaneous effect of multiple variables; and they pinpoint the optimal equilibrium. Like others before us, then, in this paper we use both mathematics and systems science to rigorously derive our main results. So, in terms of methodology and the reliability of conclusions, this end is the main contribution of this paper to the existing literature.

The rest of the paper is organized as follows: In Section 2, necessary concepts, models, and history of systems science are introduced in order to make this presentation self-contained. Section 3 addresses the question of why markets have

been changing faster and customers become less patient than ever before. Section 4 considers what makes the sustainable competitive advantages of the past grow into transient advantages. Section 5 looks at a key organizational element that makes firms successful in their ride from one wave of transient competitive advantages to the next. Section 6 concludes the presentation of this paper.

SYSTEMS SCIENCE AND SYSTEMIC INTUITION

To make this paper self-contained, this section introduces the basic ideas and a brief development history of systems science, how this science complements the conventional science to form a two dimensional spectrum of knowledge and the systemic yoyo model as the playground and intuition of systems science and applications. Because scholars in business areas are more familiar with game theory, the relevant details are omitted.

Von Bertalanffy (1924) pointed out that the fundamental character of living things is their organization, the customary investigation of individual parts and processes cannot provide a complete explanation of the phenomenon of life. Since then, this holistic view of nature and social events has permeated the entire spectrum of science and technology (Lin, 2009). And in the past 90 some years, studies in systems science and systems thinking have brought forward brand new understandings and discoveries to some of the major unsettled problems in science (Klir, 1985; Lin, 1999). Because of these studies of wholes, parts, and their relationships, a forest of interdisciplinary studies has appeared, revealing the development trend in modern science and technology of synthesizing all areas of knowledge into a few major blocks, and the boundaries of conventional disciplines have become blurred ("Mathematical Sciences," 1985). Underlying this trend, one can see the united effort of studying similar problems in different scientific fields on the basis of wholeness and parts, and of understanding the world in which we live by employing the point of view of interconnectedness. As tested in the past 90 plus years, the concept of systems and results of systems research have been widely accepted (Blauberg et al., 1977; Klir, 2001).

Similar to how numbers and algebraic variables are theoretically abstracted, systems can also be proposed out of any and every object, event, and process. For instance, behind collections of objects, say, apples, there is a set of numbers such as 0 (apples), 1 (apple), 2 (apples), 3 (apples), …; and behind each organization, such as a business firm, a regional economy, etc., there is an abstract, theoretical system within which the relevant whole, component parts, and their interconnectedness are emphasized. As a matter of fact, it is because of these interconnected whole and parts, the totality is known as a firm, an economy, etc. In other words, when internal structures can be ignored, numbers and algebraic variables can be very useful; otherwise the world consists of dominantly systems (or structures or organizations).

When the traditional science is joined with systems science that investigates systemhood, that collectively gives rise of a 2-dimensional spectrum of knowledge, where the traditional science, which is classified by the thinghood it studies, constitutes the first dimension, and the systems science, which investigates structures and organizations, forms the genuine second dimension (Klir, 2001). In other words, systems research focuses on those properties of systems and associated problems that emanate from the general notion of structures and organizations, while the division of the traditional science has been done largely on properties of particular objects. Therefore, the former naturally transcends all the disciplines of the classical science and becomes a force making the existing disciplinary boundaries totally irrelevant and superficial.

The importance of this second dimension of knowledge cannot be in any way over-emphasized. By making use of this extra dimension, the exploration of knowledge has gained additional strength in terms of the capability of solving more problems that have been challenging the very survival of the mankind since the beginning of time. Such strong promise that systems research holds relies materialistically on the particular speaking language and thinking logic – the systemic yoyo model (Lin, 2007), Figure 1, similar to how the Cartesian coordinate system plays its role in the development of modern science (Kline, 1972).
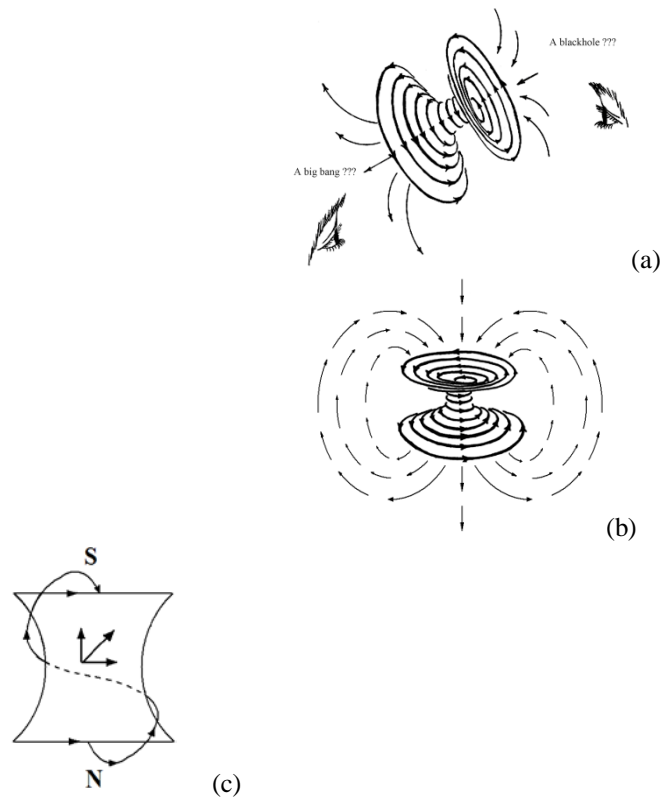
Figure 1. (a) Eddy motion model of the general system; (b) The meridian field of the yoyo model; (c) The typical trajectory of how matters return

Specifically, on the basis of the blown-up theory (Wu & Lin, 2002) and the discussion on whether or not the world can be seen from the viewpoint of systems (Lin, 1988; Lin et al., 1990), the concepts of black holes, big bangs, and converging and diverging eddy motions are coined together in the model shown in Figure 1 for each object and every system imaginable. That is, each system is a multi-dimensional entity that spins about its axis. If we fathom such a spinning entity in our 3-dimensional space, we will have a structure as artistically shown in Figure 1(a). The black hole side pulls in all things, such as materials, information, energy, profit, etc. After funneling through the "neck", all things are spit out in the form of a big bang. Some of the materials, spit out from the end of big bang, never return to the other side and some will (Figure 1(b)). For the sake of convenience of communication, such a structure as shown in Figure 1(a), is referred to as a (Chinese) yoyo due to its general shape.

What this systemic model says is that each physical or intellectual entity in the universe, be it a tangible or intangible object, a living being, an organization, a culture, a civilization, etc., can all be seen as a kind of realization of a certain multi-dimensional spinning yoyo with an eddy field around. It stays in a constant spinning motion as depicted in Figure 1(a). If it does stop its spinning, it will no longer exist as an identifiable system. What Figure 1(c) shows is that due to the interaction between the eddy field, which spins perpendicularly to the axis of spin, of the model, and the meridian field, which rotates parallel to axis of spin, all the materials that actually return to the black-hole side travel along a spiral trajectory.

As expected, this yoyo model has successfully played the role of intuition and playground for scholars who investigate the world and explore new knowledge holistically, just as what the Cartesian coordinate system did for the traditional science (Lin, 2009; Lin & Forrest 2011; Forrest 2013; 2014; Forrest & Tao, 2014; Ying & Forrest, 2015). In particular, this yoyo model of general systems has been successfully applied in the investigation of Newtonian physics of motion, the concept of energy, economics, finance, history, foundations of mathematics, small-probability disastrous weather forecasting, civilization, business organizations, the mind, among others. Along this same line of logic, in this paper we will use this model as our intuition to establish our conclusions.

MARKETS CHANGE FASTER AND CUSTOMERS LESS PATIENT THAN EVER

Because of the advent of the internet and the knowledge-based economy in general, decreases in protective trade regulations, and advances in technology, consumers and markets are changing faster than ever; and customers are less patient with businesses than ever before. Consequently, the advantages that made many commercial companies iconic, such as the 163-year-old Alliance Boots (UK), have ended. So, many companies now seek to be quicker, more decisive, and more candid so that any negative news is immediately addressed. They spend more time thinking about the future than ever before. To capture opportunities and act as an organic whole, many companies seek to break down internal structural solos, while creating courageous leaders who are fully engaged in capturing opportunities and moving away from strategies and practices that no longer represent the future (McGrath, 2013, p. ix). So, the following natural questions arise:

Question 1: What makes markets change faster and customers less patient than ever?

Question 2: What makes past sustainable competitive advantages presently transient?

The answers to these two questions are closely related. Let us address Question 1 first. To this end, we assume that the oligopoly market of our concern has m incumbent firms, named 1, 2, …, m, which provide horizontally differentiated products at constant marginal costs, which we set to zero without loss of generality. Assume that each incumbent Firm k has a market share α of the loyal customers such that these customers only purchase the product of Firm k provided that the price is no more than their reservation value, which is set to 1. Let $\beta = 1 - m\alpha$ be the portion of the switchers who base their purchase decisions on which price is lower between 0 and 1. The risk-neutral managements of these m firms are well aware of the pricing strategies of the other firms and have established their best responses by playing the Nash equilibrium through pure self-analyses.

Theorem 1. In the Nash equilibrium, when the competition of the market grows with more new firms entering the market, the loyal-customer base of the incumbent firms deteriorates over time.

Proof: This market does not have any pure strategy Nash equilibrium and nonsymmetrical mixed strategy Nash equilibrium (Forrest et al., 2017). Let $F_i(P)$ stand for the price distribution of Firm i, $\in \{1, 2, \ldots, m\}$, which compete with each to attract switchers. The assumption that an increasing number of firms enter the market implies that the consumer surplus satisfies $\beta = 1 - \alpha > 0$. Assume that there are n new firms that enter the market by uniformly randomizing its price P over the interval $[0,1]$, where their cost basis is also assumed to be constant and set to zero. Then, the profits of incumbent Firm i are given by $\alpha P + \beta P (1-P)^n \prod_{j \neq i}^m [1 - F_j(P)]$ and the objective function of incumbent Firm i is $max_{F_i(P)} E(\Pi_i) = \int_0^1 \{\alpha P + \beta P (1-P)^n \prod_{j \neq i}^m [1 - F_j(P)]\} dF_i(P)$. The equilibrium indifference condition for incumbent Firm i is $\alpha \times P + \beta \times P (1-P)^n \prod_{j \neq i}^m [1 - F_j(P)] = \alpha \times 1$. So, the symmetric equilibrium price strategy of each incumbent Firm i, $i = 1, 2, \ldots, m$, is $F(P) = F_i(P) = 1 - P^{\frac{-1}{m-1}} (1-P)^{-\frac{n-1}{m-1}} \left(\frac{\alpha}{\beta}\right)^{\frac{1}{m-1}} = P^{\frac{-1}{m-1}} (1-P)^{-\frac{n-1}{m-1}} h(P)$, where $h(P) = P^{\frac{1}{m-1}} (1-P)^{\frac{n-1}{m-1}} - \left(\frac{\alpha}{\beta}\right)^{\frac{1}{m-1}}$.

For this strategy $F(P)$ to be valid, we must have $F(P) = 0$, for $P \leq \underline{P}$, $F(P) = 1$, for $P \geq \bar{P}$, and $F(P) \geq 0$, for $\underline{P} \leq P \leq \bar{P}$, where $\underline{P}$ and $\bar{P}$ are some fixed price levels such that $0 \leq \underline{P} < \bar{P} \leq 1$.

For such price levels $\underline{P}$ and $\bar{P}$ to exist, $h(P)$ must satisfy the following: $h(P) \geq 0$, for $\underline{P} \leq P \leq \bar{P}$, where $\underline{P}$ and $\bar{P}$ are some fixed price levels such that $0 \leq \underline{P} < \bar{P} \leq 1$, and that $h(0) < 0$ and $h(1) < 0$. Since $h'(P) = \frac{1}{m-1} P^{\frac{1}{m-1}} (1-P)^{\frac{n-1}{m-1}} [P^{-1} - (n-1)(1-P)^{-1}]$, it can be shown that $h(P)$ reaches its maximum at $P = 1/n$. That is, in order for the previously mentioned price levels $\underline{P}$ and $\bar{P}$ to exist, $h(P)$ must satisfy $h\left(\frac{1}{n}\right) > 0$, which means $\frac{\alpha}{\beta} < \frac{1}{n}\left(1 - \frac{1}{n}\right)^{n-1} = \left(1 - \frac{1}{n}\right)^n \left(1 - \frac{1}{n}\right)\frac{1}{n}$. So, when $n \to \infty$, $\alpha/\beta \to (1/e) \times 1 \times 0 = 0$. This end means that the base of loyal customers for each incumbent firm gradually diminishes when an increasing number of new firms enter the market. QED

The result in Theorem 1 provides an answer to Question 1: What have made markets change faster and customers less patient than ever? In particular, because of the growing globalization of the world commerce, consumer markets, which were once regional and tightly controlled by local firms, are becoming international with increasing number of firms from different corners of the world competing for the same customers. In terms of the systemic yoyo model, initially, the world consisted exclusively of local markets, as indicated by the small eddy leaves in Figure 2(a), where the overall circular pool stands for the world market. Because the international commerce did not exist or the scale was very small and could be ignored, the overall circular dish in Figure 2(a) does not spin. That is, the businesses of the world are not seen as a system. Next, with the advancement of modern transportation and communication technology, the world becomes more connected through international transfers of goods, information, and knowledge, the originally disconnected regional markets becomes connected as shown in Figure 2(b). The counterclockwise spin of the overall dish models the fact that goods, information, and knowledge are now travelling throughout the world, while originally local firms, the local eddies that also rotate round with the overall dish, are also serving the entire world market. Such much increased sources of suppliers of goods and services make customers spoiled so that they become less patient than ever before with anything unsatisfactory.

(a) Regional markets
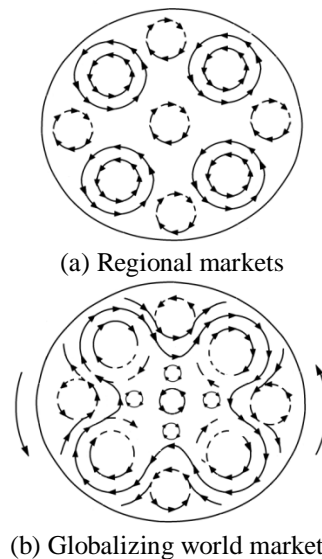
(b) Globalizing world markets
Figure 2. The world full of regional markets

SUSTAINABLE COMPETITIVE ADVANTAGES BECOME TRANSIENT

In this section, let us answer Question 2 in two parts: Why do competitive advantages of the past seem sustainable? And what makes present competitive advantages feel like transient?
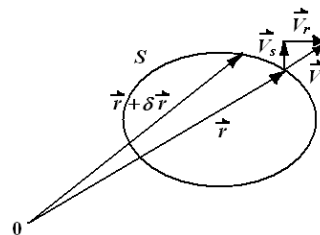
Figure 3. The definition of a closed circulation

To address the first part of Question 2, let us start by looking at Bjerknes' Circulation Theorem (1898) (Hess 1959). This theorem shows that nonlinearity mathematically stands (mostly) for singularities, and in terms of physics it represents eddy motions. Such motions are a problem of structural evolutions, a natural consequence of uneven evolutions of materials. In particular, at the end of the 19th century, V. Bjerknes discovered the eddy effects due to changes in the density of the media in the movements of the atmosphere and ocean. By a circulation, it is meant to be a closed contour in a fluid. Mathematically, each circulation Γ is defined as the line integral about the contour of the

component of the velocity vector locally tangent to the contour. In symbols, if $\vec{V}$ stands for the speed of a moving fluid, S an arbitrary closed curve, $\delta\vec{r}$ the vector difference of two neighboring points of the curve S (Figure 3), then a circulation Γ is defined as $\Gamma = \oint_S \vec{V}\delta\vec{r}$. Through some ingenious manipulations (Wu & Lin 2002), the following well-known Bjerknes' Circulation Theorem is obtained:

$$\frac{d\vec{V}}{dt} = \iint_\sigma \nabla\left(\frac{1}{\rho}\right) \times (-\nabla p) \cdot \delta\sigma - 2\Omega\frac{d\sigma}{dt}, \quad (1)$$

where σ is the projection area on the equator plane of the area enclosed by the closed curve S, p the atmospheric pressure, ρ the density of the atmosphere, and Ω the earth's rotational angular speed.

The left-hand side of equation (1) represents the acceleration of the moving fluid, which according to Newton's second law of motion is equivalent to the force acting on the fluid. On the right-hand side, the first term is called a solenoid term in meteorology. It is originated from the interaction of the p- and ρ-planes due to uneven density ρ so that a twisting force is created. Consequently, materials' movements must be rotational with the rotating direction determined by the equal p- and ρ-plane distributions (Figure 4). The second term in equation (1) comes from the rotation of the earth.
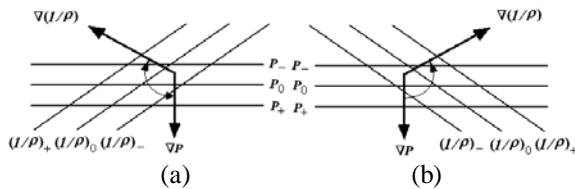
Figure 4. Solenoid circulations: (a) and (b) represent different rotational directions

This theorem reveals the commonly existing and practically significant eddy effects of fluid motions and implies that uneven eddy motions are the most common form of movements observed in the universe. Because uneven densities create twisting forces, fields of spinning currents are naturally created. Such fields do not have uniformity in terms of types of currents. Clockwise and counter clockwise eddies always co-exist, leading to destructions of the initial smooth, if any, fields of currents. What's important is that the concept of uneven eddy evolutions reveals that forces exist in the structures of evolving objects, and do not exist independently outside of the objects.

Now, let us look at the question we are addressing: Why do competitive advantages of companies in the past seem sustainable?

At the early times, people lived in more primitive conditions when compared to the present time. Due to the existing natural conditions and available resources within the environment and societies, some people and households started to exchange their surplus of goods with others for the purpose of improving the quality of their lives. That led to the formation of very beginnings of business transactions. Because the population density was low, tools available for production, transportation, and communication were limited and inefficient, minor obstacles of the environment in today's standard easily divided the flow of goods and services into small-scale shops. Because other than some luxury goods and services, these individual and separated shops mostly provided the basic necessities for human survival, they naturally delivered mostly identical set of goods and services with some minor differences. As time went on, better tools for production and transportation and better practices of management were designed and employed in various individual shops. The natural desire for better living conditions paved the way for inventions of new tools, discovery of new methods of production, and introduction of more efficient ways of management to pass around the land through word of mouth and improving technology of communication. So, a circulation of information and people with special abilities and resources started to form. As the circulation started to appear, Bjerknes's Circulation Theorem guarantees the appearance of abstract eddy motions over the land consisting of migration of people, spread of knowledge and information, and transportation of goods. That explains how local and then regional markets were initially formed and why all markets have conditions and barriers against new entrants. That is, over time incumbent firms have naturally established their respective competitive advantages that have been part of the conditions and

barriers that help the firms to exploit their market shares while preventing competitions from new entrants. That explains why competitive advantages of the past seem to be sustainable; and indeed they were for the most part sustainable. As a consequence, most of strategy frameworks and tools in use were based on the single dominant notion: The purpose of designing and adopting strategies is to achieve a sustainable competitive advantage.

At this junction, there is a natural need to justify the scientific validity for us to employ the Bjerknes' Circulation Theorem as in the previous paragraph, because in theory this theorem holds true only for fluids. Firstly, when the systemic yoyo model is initially introduced earlier, we have given a relevant explanation for how and why each human organization is a spinning pool of fluid, consisting of flows of such fluids as energy, information, materials, etc., that circulate within the inside of, go into, and are given off from the organization. Secondly, the systemic yoyo model of systems naturally leads to the realization that the universe is a huge ocean of eddies, which changes and evolves constantly. That is, the totality of the physically existing world can be studied as fluids. Thirdly, as described in the previous paragraph, people in the land helped to circulate information, knowledge, goods, etc., all of which are studied using continuous or differentiable functions in social sciences in general and economics in particular. When these aspects of a market are modelled by such functions, they are generally seen in physics and mathematics as flows of fluids and are widely known as flow functions. Specifically, in the formation of an economy, it is these commonly shared aspects (or fluids) that make the land to have living markets, where individual persons are simply local "impurities" of the fluids; and each of the "impurities" carries some concentrated amount of "energy", information, knowledge, etc.

Secondly, let us see what makes present competitive advantages feel like transient. Recent frequently occurring breakthroughs and fast advances in communication technology, management methodologies, and manufacturing capabilities have made important know-how information more widely available, helped remove many insurmountable barriers of the past for the general public. In other words, such detailed information as for how to start up a competitive company, how to run a firm efficiently, and how to improve and market product beautifully have helped companies, either incumbent or new coming, to compete with each other on an unprecedented, equally levelled ground due to the fast advancement of communication technology. And, with the development of modern engineering technology, manufacturing an imagined product, which combines all the best-selling functionalities of relevant products, has become doable and much less costly than before. So, the secrets behind most of the so-called sustainable competitive advantages of the past have become common knowledge, while as soon as a new advantage leads to success, the underlying ideas becomes public information in no time. That is exactly the reason why newer competitive advantages have to be introduced frequently and evolved into fresh formats quickly.

In terms of the systemic yoyo model, the evolution of an economy, just as described in the previous paragraphs, can be shown most closely and vividly by using the dishpan experiment. To this end, let us first look at the basics of this experiment. As initially conducted successfully by Raymond Hide (1953) of Cambridge University, England, and then by Dave Fultz and his colleagues of University of Chicago (1959) independently, this experiment shows that when the movement of the fluid within a rotational dish is under enough pressure created by either the sufficient speed of rotation or sufficient difference in temperature between the center and the periphery of the dish, the pattern of uniform movement, as shown in Figure 5(a), will develop into the chaos, as shown in Figure 5(b). The number of local eddy leaves is determined either by the rotational speed or by the temperature difference or both and increases with the speed and the temperature difference.
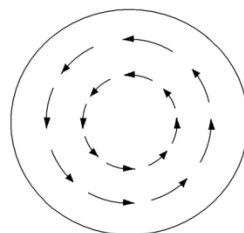
(a) Initial even flow of fluid
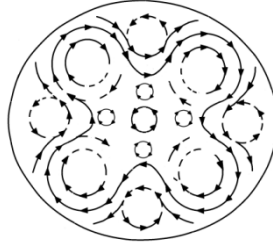
(b) Periodic appearance of chaos
Figure 5. The dishpan experiment

Of course, for our situation in hands, the pattern in Figure 5(a) should be replaced by that in Figure 2(a), because different from the perfect symmetry in the setup of the dishpan experiment, the initial distribution of local markets (and economies) is not even or symmetric. Instead, it is dictated by natural conditions and availability of resources. Additionally, the symmetrical distribution of local eddy leaves in Figure 5(b) would not be so symmetrical for our model of the world economy either. Now, if we look at this model closely, we can see that as the pressure increases, caused by either the spinning speed or the "temperature" difference between the center and periphery of the dish, the number of eddy leaves will grow larger. So, competitive advantages have to become temporary and transient in order for the incumbent eddy leaves to maintain their quality of livelihood. That is, to win in volatile and fast-moving environments, business leaders need to learn and master the skills of how to discover and exploit short-lived opportunities with speed and decisiveness, while realizing the fact that the deeply ingrained structures and systems that these leaders used to reply on to extract maximum value from a competitive advantage are actually liabilities, which are outdated and even dangerous, in the current fast-moving competitive environment.

A KEY ORGANIZATIONAL ELEMENT TO SUCCESSFULLY RIDE TRANSIENT-ADVANTAGE WAVES

Recent business practice, such as Fuji (film)'s story (Kunii et al., 1999; Inagaka and Osawa, 2012), suggests that simply managing well, developing quality products, and building up well-recognized brands are insufficient to remain on top in the increasingly heated global competition of the world economy. It seems that what is working in the face of rapid change is to invest in new competitive advantages while pulling resources from declining ones. Although no one gets it right every time and sometimes the moves are painful, companies cannot afford to be trapped by their past.

Historically, each iconic company found itself successfully in a favorable position in a well-defined industry and then optimally exploited a long-term competitive advantage. However, many of such storied organizations are either gone or no longer relevant today. Their downfall is the outcome of practices that are designed on the concept of sustainable competitive advantage. The deeply ingrained organizational structures and management systems, as designed to extract maximum value from a competitive advantage, become liabilities when the competition of the business world requires instead the capability to surf through waves of fleeting opportunities. To compete in these volatile and uncertain environments, companies have to conduct their business differently. For example, such big name companies as DuPont, 3M, Nokia, Intel, IBM, and others have all realized that traditional approaches weren't keeping pace with the speed of the markets in which they were competing (McGrath, 2013).

As proved in the previous section, competitive advantages come and go in waves; so the job of strategists is to discover and take strategic initiatives by launching ever-new waves (MacMillan, 1982). To this end, MacMillan (1988) and D'Aveni and Gunther (1994) introduced the concept of hypercompetition to characterize markets in which firms' competitive advantages would be quickly competed away. And in practice, successful firms look candidly at what happened, figure out how to do what they attempted to do better the next time, and move on. They move from one wave of competitive advantages to another without staying with one wave too long because it will become exhausted; and they always look for the next one. Just like great surfers, after having ridden a wave either successfully or not, they get back on their boards to challenge the next tidal wave. In other words, most of the sustainable competitive advantages of the past have been replaced by transient advantages of the present.

To adapt to the new environment of transient competitive advantages, companies have to design and apply new and different strategies on where to compete, how to compete, and how to win by constantly looking into the future. Central to this end is to reconfigure and renew advantages internally. It is through the reconfiguration process that

assets, people, and capabilities make the transition from one advantage to another. Without such dynamism in the structures and processes of the organization, the firm will likely experience difficulties as soon as its competitors are competing in the next wave of transient advantages (McGrath, 2013).

By studying the best performing companies with a market capitalization of over $1 billion U.S. dollars as of the end of 2009 in 2010, ten such companies stood out for the time period of 2000 – 2009 (McGrath, 2013). These companies successfully coped with and then thrived amidst the challenge of moving from one advantage to the next, while their leadership promoted common key themes that came out of compelling strategy diagnoses. What is common to these outlier firms is their public commitment to world-class ambition, coupled with a clear sense of strategic direction. For example, at Infosys the leaders talk about Infosys 1.0 (basically labor arbitrage), Infosys 2.0 (global expansion into services), and then the emergence of Infosys 3.0 (McGrath, 2013).

The strategies for each of these companies were grounded in its stretch ambition for the firm, while the ambition provided an aiming point for the people directly or indirectly related to the company. And, the ambition turned out to be important to long-term ongoing reconfiguration of the firm and is essential for preventing the company and its people from becoming complacent and content in pursuing yesterday's advantages.

Other than long-term, unwavering world-class ambitions, the outlier firms also stabilize their organizations by investment in creating a common identity, culture, and commitment to leadership development. They wage significant attention to values, culture, and alignment in order to create the right cultural foundation that allows for changes to be made. As confirmed by Bob Best, CEO of Atmos energy, "Culture is the foundation for all success. This has been a very important process to the long-term health and success of our company." For details, see (Senn-Delaney Leadership Consulting Group).

In terms of the systemic yoyo model, what is unearthed above inductively based on anecdotes can be derived deductively as follows: Having a long-term, unwavering ambition is equivalent to fixing the direction of the axis of spin for the underlying yoyo structure of the firm Figure 6. When the direction of the axis is fixed, supported and promoted by the leadership, all layers of the eddy pool that spins around the axis will be able to focus their attention on interacting with their neighboring environments. That is, all employees located on different layers of the eddy pool can direct their attention to what is important for their divisions without the need to worry about potential change in the organization's business direction.
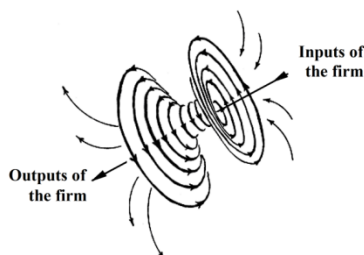
Figure 6. A underlying yoyo structure with its axial direction fixed

In terms of creating a common identity and culture for a firm to be health and prosperous, its importance is well spelled out by the following theoretical result:

Theorem 2 (Forrest & Orvis, 2016). Inefficiency always exists in the organizational system of any firm that has at least one full-time employee whose personal value is not in total agreement with the organization's mission, where the concept of organizational efficiency is defined as how well its employees help reach the defined mission of the organization.

From how personal values are formed (Forrest & Orvis, 2016), it follows that finding employees with identical personal values are practically impossible. And, personal values evolve with time and changes of the environment within which people live. So, initially similar personal values tend to diverge over time. Additionally, suppose a firm can find all the employees who have the desirable identical personal value, then what is observed in the dishpan experiment suggests that differences among the personal values will inevitably appear within the smooth operation of the organization. In particular, within our current context, we can naturally imagine that the entire dishpan stands for

the mission of our organization and the spin of the dishpan the operation of the organization, while individual employees' personal values are drops of the water inside the dishpan. So, this dishpan experiment indicates that although the organization of our concern could find and hire supposedly employees with identical personal value, this initial uniformity in individual personal values will soon be destroyed by the smooth operation of the organization. Speaking in terms of our daily language, the uniformity in personal values is materialistically destroyed by the interactions and conflicts of interests of the employees of the organization. Therefore, Theorem 2 implies that organizational inefficiency starts to appear.

By pondering over Theorem 2 in more details from various angles and based on the discussion in the previous paragraph, we can readily see that organizational inefficiency always naturally exists within the operation of any firm (Theorem 2). So for the firm to perform well while riding through one wave to next of competitive advantages, the firm has to behave as an organic whole with its unique identity, culture, and commitment to leadership development (that potentially lead to discovery of new competitive advantages by individual employees). Without doing so, Theorem 2 implies that over time, no matter how successful a firm can presently be, it will be eventually destroyed by internally mounting inefficiencies.

Summarizing what is discussed in this section, a key organizational element for a firm to successfully ride transient-advantage waves is its internal stability. Here, the stability is characterized by the fixed direction of the axis of the underlying yoyo structure of the firm (a long-term stretch ambition); that direction is supported and promoted by the leadership; and major investment is made around the fixed direction in order to create a common identity, culture, and commitment to leadership development in individual employees. More specifically, the particularly chosen direction of the axis aims at cultivating the necessary organizational cultural foundation through emphasizing on values, culture, and alignment so that changes can be readily made when needed. This end is similar to how human mind works (Lin & Forrest, 2011), while the term "human mind" is replaced by the "mind of a firm."

SOME FINAL REMARKS

By first establishing a systemic model and intuition and then a rigorous theorem, this paper develops a general theory on what makes markets change faster and customers less patient than ever before. Then, deductively, instead of inductively based on anecdotes and data mining, as exclusively used in the relevant literature, this general theory is employed to develop an evolutionary theory on how local, regional, and then world economies evolve through time, and how advances in technology help to make once sustainable competitive advantages transient. Thirdly, this paper shows why internal stability is the key for a firm to successfully ride the waves of transient competitive advantages with a long-term stretch ambition, supported and promoted by the leadership with major investment in cultivating common identity, culture, and commitment to leadership development in individual employees. Therefore, an organizational culture is established to emphasize on values, culture, and alignment so that changes can be readily made when the market demand such.

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PRODUCT COLOR IMPORTANCE, COLOR CHOICE, AND MEANING OF COLOR AMONG CANADIAN CONSUMERS

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ABSTRACT

This research paper focuses on understanding of the importance and meanings of color among Canadian consumers when making purchasing decision for variety of products. In a cross-country study, Canadian buyers were found to be significantly different than buyers from five other countries, which provided the impetus for further study of the behavior of Canadian buyers. A useable sample of 123 Canadian potential buyers revealed that the majority view color as an important factor in the purchasing decision. There is also a statistically significant difference between men and women views of importance of color. Women are more likely to view color as extremely important and very important, while men show indifference (somewhat important). Personal items such as clothing, shoes, sun glasses, are ranked highest in terms of color preference, while electronics are rated lowest. These results were confirmed using both Kruskal-Wallis nonparametric test of equal medians and logistic regression of odds ratios.

INTRODUCTION

Color is a highly important product attribute because it is what differentiates otherwise similar products. Product differentiation can take different forms. Products can be differentiated by quality, location, style, brand name, packaging, service and color. Product differentiation plays a crucial role in business that are classified as monopolistically competitive, and allows business firms to acquire some market power and charge a different price than other competitors. Color could be used to identify a business or a product. General Motors challenged the Ford Motor company of one- style one-color strategy for cars. Differences in consumer tastes and preference must be accounted for when trying to sell a product. For example, IBM is identified as Big Blue, and McDonald is known as the Golden Arches. It is a key feature for shaping consumer feelings and responses when making purchasing decisions (Clarke and Honeycutt, 2000). It also influences consumer's behaviors and helps company's position their products in the market place or differentiate themselves from the competition (Grossman and Wisenblit, 1999; Aslam, 2006). In general, color has the potential to affect a consumer's overall perception of a product (Sable and Akcay, 2010). Product color connects the consumer more quickly than any other identifying product characteristic. Studies have shown how color can grab and retain attention, can stimulate emotional responses and can affect an individual's perception. It can also form attitude, improve learning and persuasiveness regarding product purchase decisions. Overall, color is influential in every level of the marketplace, from brand, to logo, image, packaging and even the product itself (Sable and Akcay, 2011). Color is used to attract or draw a customer's attention and certain colors can create a purchase intention (Bellizzi, et al., 1983; Kerfoot, et al., 2003).

Summarizing and analyzing the findings of color choice, meaning, and gender are of paramount importance for producers and marketing managers. Therefore, the purpose of this study is to determine the importance of color when making purchasing decisions for different products. Those products are purchased on a daily basis by Canadian consumers. Additionally, our goal, in this paper, is to examine the gender differences towards color importance, especially gender differences in a specific country such as Canada. In a companion paper, we studied the importance of color in several countries (Dalgin, Sraiheen, and Akcay, 2017). There we examined the importance of color with respect to gender in cultural context while controlling for various other socio-economic characteristics. In that study, Canadian consumers showed distinctive and strong preference for the color of products[1]. Consequently, in this paper we focus on the color preferences of Canadian consumers when they make purchasing decisions. The contribution of our paper is to provide quantitative estimates for the difference of importance of color between males and females regarding various consumer product categories. The remaining part of the paper focuses on describing the sample and then analyzing it. Section 2 explains the sample data and methodology that was collected between 2013 and 2015; section 3 discusses non-parametric inference results; section 4 focuses on logistic regression estimation and analyzes its results; section 5 concludes.

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[1] India was another country where women showed strong and statistically significant preferences for the product color.

LITERATURE REVIEW

Knowledge of consumer's color preferences enables marketers to identify the most popular colors in different product categories. Research suggests that meanings of color and product color choice vary according to age, gender and ethnicity of consumers (Akcay, et al., 2012; Akcay, 2014). Color improves recognition and memory of, and increases attention paid to a product. It is one of the most noticeable attributes when presenting a product (Singh, 2006; online, pcmag.com, 2002; Akcay and Sun, 2013). Color preferences change every seven to ten years and color change more quickly in the high fashion industry (pcimag.com, 2002). Fashion trends symbolize the varying decades and so do color; bright, clean pastel color dominated the 50's, earth tones the 60's and 70's and natural colors in the new millennium (Ogden, et al., 2010). According to the literature, marketers know that product color influences a consumer's decision to purchase a product by up to 62-90% (Singh, 2006 and Wagner, 1988). The color of a product increases brand recognition by 80% and can also differentiate a product and create positive or negative images about a product (Grossman and Wisenblit, 1999 and Singh, 2006). Promotion or selling a product in the same color around the world may not be the best strategy. Color has different meanings and perceptions in different cultures (Wagner, 1988; Aslam, 2006; Madden, et al., 2000; Akcay, et al., 2011). There is a strong relationship between the geographic location of a country and the color of its national flag (pcimag.com, 2002). It is very important to explore the meanings and perceptions of a chosen color in every target market before launching a new product in global markets (Aslam, 2006; Jacobs, et al., 1991). Global marketing managers must recognize how their company and product colors are perceived across national markets (Madden, et al., 2000; Akcay, et al., 2011). Advertisers should carefully select colors that maximize attention while providing a more realistic and appealing portrayal of the products in global markets (Gorn, et al., 1997; Akcay, et al., 2011). Many researchers have indicated that there are differences between genders in preference for color. Women might be more color conscious in their color tastes, more flexible and diverse than men. Women are more likely than men to have a favorite color. They prefer soft colors and men prefer brighter colors (Khouw, 1995; Funk and Ndubisi, 2006). Color improves recognition and memory of, and increases attention paid to, a product. It is one of the most noticeable attributes when presenting a product (Singh, 2006; online, pcmag.com, 2002; Akcay and Sun, 2013). Color may play a significant role in consumer's purchasing decisions for many products, such as the clothes we wear, the handbags or backpacks we carry and the shoes we wear (Ogden et al., 2010; Akcay et al., 2011; Akcay and Sun, 2013). Product color has a strong influence in creating brand image, affecting the buyer's decision making process, and changing the mood of consumers. It can also contribute to differentiating a product and creating positive or negative images about consumer goods (Grossman and Wisenblit, 1999; Sing, 2006 and Akcay et al., 20012).

SAMPLE AND DATA COLLECTION METHODOLOGY

Our sample of Canadian buyers included 123, 50 female and 73 male participants. The sample included participants range in age from very young (college students) to older individuals (65 years and older). The participants come from varied backgrounds including different educational levels, income levels, and other socio-economic characteristics. Before the data was organized and analyzed, we tested the reliability of all the responses to the questionnaire using Cronbach test of reliability and concluded that the data collected is reliable (Cronbach Alpha = 0.76).

The data was collected by a Canadian student who was enrolled in marketing classes at Kutztown University using convenient sampling method. As potential buyers enter malls in the area where the student reside, they were asked to fill the survey questionnaire. The questionnaire was printed in English and 150 questionnaires were distributed in the Quebec and Montreal regions utilizing random sampling. 123 usable questionnaires were returned. The response rate was 82%.

The questionnaire was divided into five sections. The first section dealt with the importance of color when making decisions about purchasing products. The second section rates the importance of color for various products. Color importance is a ranking variable from 1 extremely important to 5 not important at all/ The third section asked respondents what their favorite color was for different types of product used on a daily basis. The fourth section asked respondents to assign meanings to colors by associating specific emotional words with various colors. The last section asked about the demographic characteristics of respondents.

RESEARCH FINDINGS

Table 1 below is a frequency distribution of the color importance for the sample of 123 Canadian buyers. Canadian buyers view color as an important factor regarding their decision to buy different products. The majority, 77.2 percent of all buyers view color as extremely important and very important. Only 4.1 percent of all respondents indicated that color is not important when deciding to buy or not to buy a product. 94 percent of females regard color as an important factor in their purchase decision and only 65.7 percent of males.

Table 1

Color Importance Regarding Purchase Decision by Canadian Buyers.

Importance	Frequency	Percent	Female	Male
Extremely Important	53	43.1	31	22
Very Important	42	34.1	16	26
Somewhat Important	23	18.7	2	21
Not very Important	5	4.1	1	4
Total	123	100.0	50	73

Table 2 shows the percentages and ranking of color importance for a variety of products. It shows that the top five products for all buyers are clothing, house paint, shoes, sun glasses and bathing suites. The bottom five ranked products beverages, toothbrushes, game systems (play-station, X-box), candy, and mouthwash. It seems that for these products, brand name (Coca Cola, Pepsi; Microsoft, Sony; etc.) is more important to buyers than color.

Table 2

Ranking of Color Preference of a sample of 123 Canadian Buyers.

Product	Extremely important	Very Important	Extremely+ Very Important	Rank
Clothing	73.4	20.5	93.9	1
House Paint	70.2	16.1	86.3	2
Shoes	63.7	21.8	85.5	3
Sun Glasses	46.0	29.8	75.8	4
Bathing Suits	46.8	26.6	73.4	5
Watch	24.2	36.3	60.5	6
Backpacks	15.3	28.2	43.5	7
Hats	16.9	25.0	41.9	8
Cell Phones	7.3	33.1	40.4	9
IPods	4.8	12.9	17.7	10
Umbrella	4.0	11.3	15.3	11
Computers	0.8	10.5	11.3	12
School Supplies	2.4	7.3	9.7	13
Digital Cameras	0.8	8.1	8.9	14
Beverages	1.6	4.0	5.6	15
Toothbrushes	0.0	5.6	5.6	16
Game Systems	0.0	4.0	4.0	17
Candy	0.8	3.2	4.0	18
Mouth Wash	1.6	1.6	3.2	19

KRUSKAL-WALLIS TEST

Since the variable under study is color importance being nominal, ordinal variable, it is more appropriate to use a nonparametric statistical method to test whether or not difference exits between male and female buyers. Like other nonparametric methods, Kruskal-Wallis test of equal medians does not require the assumption that the data comes from a particular statistical distribution. This test is almost as efficient as the t-test but does not require the normal probability distribution assumption. The test statistic H is Chi-square distributed with c-1 degrees of freedom.

$$H = \left[\frac{12}{N*(N+1)} x \sum \frac{T_C^2}{n_C} \right] - c(N+1);$$

Where N is number of participants, n_c is number of participants in each group, c is number of groups, T_c is rank sum of each group.

To provide a clear understanding of the Kruskal-Wallis test results, one should first look at the null hypothesis of the test. The null hypothesis is that there is no difference between female and male medians when it relates to color importance. Second, the median for each group, where lower median indicates higher importance of color and a larger median indicates less importance of color. Third, Average rank sum, the lower the average rank sum, the more important color is. And finally H-test statistics and its significance. The H-Statistic is Chi-square distributed with c-1 degrees of freedom.

OVERALL IMPORTANCE

The majority (77.2 percent) of all Canadian buyers view color as extremely important or very important. Only 4.1 percent of all respondents indicated that color is not important factor in purchasing decision. Females and males differ in their views with regards to product color choice. In our study of Canadian buyers, 94 percent of females regard color as an important factor in their purchase decision as compared to 65.7 percent of males.

Figure 1 below clearly shows that there is a difference between males and females with regards to the importance of color. Female distribution is skewed right with most female respondents concentrated around lower ranks extremely important and very important while male distribution resembles a normal distribution centered around somewhat important.

Figure 1: Color Importance by Gender
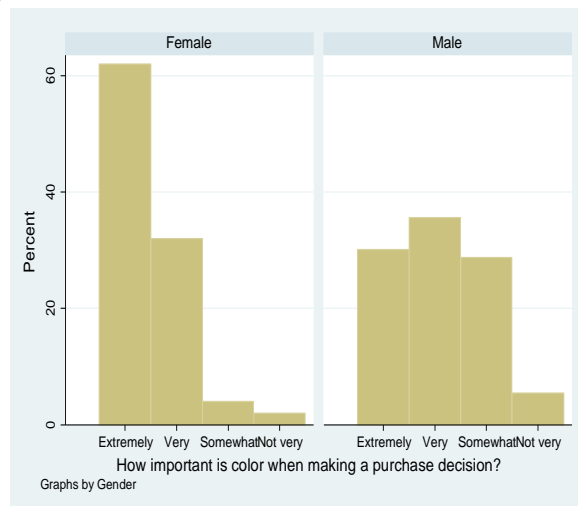
We tested several hypotheses on color importance and gender. We hypothesize that color choice and gender are independent of each other. This means that there is no difference between color preferences of female and male buyers.

H1: Color choice is independent of gender
Table 1 below shows the results of the Kruskal-Wallis test. The null hypothesis of equal median is rejected (H = 19.49, p = 0.0000). Females have a lower median, and lower average rank than males. Females view color as extremely important when making a purchase decision.

Table 3
Kruskal-Wallis test of Color Importance

Gender	N	Median	Average Rank	H-statistic
Females	52	1.0	46.5	19.49
Males	71	2.0	73.4	

H2: Female sample and male sample come from the same population (female median is equal to male median)
The second hypothesis was test for several products.

Table 4, reports the Kruskal-Wallis test results. Table 4. The null hypothesis (H2) of equal medians of males and females was rejected for clothing, shoes, house paint, backpacks, IPods, cell phones, watches, game systems, umbrellas, bathing suites, sun glasses, beverages, school supplies, and mouth wash. This means that gender is significant in color choice. We fail to reject H2 for computers, digital cameras, hats, candy, and tooth brushes. It is important to note here that for certain products such as IPods, game systems, umbrellas, and mouthwash (higher medians) color is not important to both males and females, there is a significant difference between male and female color preferences.

Table 4
Kruskal-Wallis Test of Equal Medians of Color Preference of
Male and Female Sample of Canadian Buyers (n = 123)

Product Category		Median*	Average Rank	H- Statistic†
Clothing	Females	1	49.6	18.45
	Males	1	71.0	
Shoes	Females	1	44.6	29.54
	Males	2	74.7	
Cell Phones	Females	2	47.0	16.53
	Males	3	72.3	
Hand Bags	Females	2	40.2	35.63
	Males	3	77.3	
IPod	Females	3	49.0	12.63
	Males	4	70.8	
Game system	Females	5	77.0	19.99
	Males	4	50.0	
Sun Glasses	Females	1	43.7	24.74
	Males	2	73.3	
Watches	Females	2	51.1	8.03
	Males	2	68.4	
Umbrellas	Females	3	48.8	13.38
	Males	4	71.7	
House Paint	Females	1	50.1	15.67
	Males	1	70.7	
School Supp.	Females	3	53.1	5.62
	Males	4	67.7	
Beverages	Females	3	51.9	6.60
	Males	4	67.1	
Mouthwash	Females	5	67.5	4.68
	Males	4	55.2	
Bathing Suits	Females	1	42.3	29.90
	Males	2	75.1	

† All H-statistics are significant at the 99% significance level.

LOGISTIC REGRESSION ANALYSIS

In the previous section, we explored the independence of gender and importance of color in a non-parametric fashion whose results strongly indicated that color preferences are conditioned by gender. In this section, we will employ the ordinal logistic regression methodology in order to calculate the relative odds ratio of men's importance category compared to women of a particular product's color. In order to account for the likelihood of being in one category versus in another with respect to gender we will use ordinal logistic regression analysis. Because the importance categories include an inherent ordering, use of the ordinal logistic regression is appropriate in order to exploit this structure in the data. Moreover, use of the logistic regression allows us to control for various demographic characteristics, which may very well impact color preferences as well as gender considering that we do not have randomized controlled experiment a regression technique controlling for several important variables which might have impact on the color preference is the next best thing.

To calculate the overall importance of color and ordering of importance of color for a particular product we used ordinal logistic regression because we have inherently ordered outcome categories. The general approach to logistic regression is given as

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k + \epsilon.$$

Parameter estimates of the logistic regression model above help us calculate an estimate of the success ratio, $\hat{p}$, which can easily be obtained by taking the logs of these estimated model. If, indeed, x_1, is the gender dummy variable then changing the value of this variable from females, coded as 0, to males, coded as 1, yields the relative odds ratio after taking logs as

$$\frac{\frac{\hat{p}_M}{1-\hat{p}_M}}{\frac{\hat{p}_F}{1-\hat{p}_F}} = e^{\hat{\beta}}.$$

Therefore, the coefficient of the gender variable will yield the odds of male preference compared to the female preference; this is how we are going to interpret the results below. Our questionnaire included several questions about the demographic background of the respondents such as age, income, education, where grew up, which we included in our logistic regression analysis as right-hand side variables in order to control for various socio-economic characteristics that might impact the importance of color when it comes to making purchasing decisions. The questionnaire results are multi-category outcomes either as nominal or ordinal variables. These outcomes can be modeled and tested as extensions of binary logit regressions. We used a multinomial and ordered logit models to analyze the outcomes on the basis of various demographic variables.

Table 5 gives the relative odds of men's preference of product color with respect to women for each country in our sample and for the importance of color in general without specifying any product categories. It gives higher odds for men to be in lower importance category for majority of the consumer good categories we had in our questionnaire but unfortunately not all of the estimates are significant. As far as the overall importance of color is concerned the odds for the Canadian men to be in lower importance category is almost five times more than women that is significant at one percent level of significance. The regression results quantify what we see in the descriptive statistics and the non-parametric tests, that is Canadian females are very distinctive about the color of the products they are purchasing.

Table 5 also breaks down the products into various consumer categories which lets us compare the importance of color for each consumer good category between males and females. There we see that clothing and shoes categories are the most important consumer items when it comes to color of product: in terms of odds they are 37 and 39 times, respectively, more important for women than men at one percent level of significance. We also need to emphasize that the next item for which color is so much more important for women, about 22 times the odds for men, compared to men is the bathing suits. Backpacks and handbags is another wearable group of items where there is a general agreement among women that the color of bag is more important compared to men. These results are in agreement with our non-parametric tests in the previous section.

In Table 5, we see that in general for women product color is more important, in our sample, than men. But, there are some consumer items in the sample for the color of which males are more willing to show stronger preference such as the computers and game systems category: in general men are more concerned about color of products in this category than women, where men have ten times as many odds as women to be in a higher importance category at one percent level of significance, implying that it is more likely that Canadian males care about the color of their game systems and computers than their female compatriots. Digital cameras are another group of consumer items where men might be more interested in color than women but we do not have statistically significant results here in this category. Furthermore, the non-parametric tests indicate a difference between men and women concerning the color importance for the game systems but this time it is usually the men.

To summarize our findings in Table 5, we see that overall the product color is more important for women than men. Moreover, when we examine the preferences on the basis of individual products we observe that there are quite a few items where women are more interested in color than men; on the other hand, there are some categories such as computers, game systems, and digital cameras where males have preferences about the product color.

Table 5
Odds Ratios, multiplicity of males being in a lower
importance category with respect to females color choice.

Item Category	Odds ratio†	Standard Error
Overall Importance	4.593***	1.97
Clothing	36.54***	36.24
Shoes or sneakers	39.00***	30.38
Cell phone	3.696***	1.45
Backpack or Hand bags	10.44***	4.69
IPOD or MP3 Player	2.316**	0.92
Computer; laptop or desktop	1.042	0.39
Game systems; Play station and Xbox	0.105***	0.05
Watch	2.420**	0.93
Digital Camera	0.679	0.26
Hat	1.735	0.67
Umbrella	3.317***	1.30
Paint for house	11.13***	7.52
Candy	1.541	0.59
School supplies	1.771	0.68
Beverages	1.819	0.73
Toothbrush	0.762	0.30
Mouth wash	0.397**	0.18
Bathing suits	22.66***	13.00
Sunglasses	6.366***	2.87

Table 6

Odds Ratio Estimates for Color Preference of a sample of Canadian Buyers

Products	Red	Blue	Yellow	White	Green	Brown	Gray	Black
Computer				1.59			5.22**	(Base)
Game Systems		13.9		3.59**			1.71	(Base)
Watch	(Base)		1					
Hat	(Base)	7.11**		2.37		15.94**	0.60	1.29
School Supplies	(Base)	1.43	0.13	0.77	0.954			1.28
Toothbrush	(Base)	10.14***	2.12	2.26	7.91**			
Mouth wash	0	(Base)			0.75	1.24	50.10	0
Bathing suit	(Base)	15.75***	0.89	6.01*		0		1.06
Sunglasses	(Base)			0.14	0	0.22		0.422
Clothing	(Base)	115.14***	0	157.40***			53.87**	2.24
Shoes or sneakers	(Base)							
Cell phones	(Base)	23.29***		4.49		0	17.74***	5.79**
Backpacks or handbags	(Base)	11.92		0	7.81	0.38		0.54
iPod or MP3 players	(Base)	109.3***		7.23*	21.42		58.01**	40.29***
Digital cameras	(Base)							
Umbrellas	(Base)	137.5***	0.04	35.61	0	0		42.90***
Paint for house	(Base)	19.14***	0	18.51***	44.52**	3.08		2.58
Candy	(Base)	1.44	1.02		0		12.15	0.72

We also did various testing and logistic regression estimates in order to determine if one color is preferred to another. Table 6 gives those estimates as multiplicity of odds ratios compared to a base color. For some product colors we did not have enough responds hence we could not estimate relative odds for this color compared to the base color as a result we do not have any estimates for this color in some product categories. For computer systems gray is preferred to black but for game systems the preferred color is white at 5% level of significance. For hats blue and brown are the preferred colors compared to red, which is the base color in that category. Our results show that blue is quite popular compared to red for some electronics as well as for clothing, especially it has gets a very good rating considering umbrellas and clothing relative to red, all at very high levels of significance. For cell phones, iPod, and MP3 players we see three favorite colors: blue, gray, and black. For umbrellas blue and black are the preferred colors. In our survey we consistently observe the color of the house paint is very significant and our logistic analysis indicates that blue, white, and green are the preferred colors at high levels of significance.

Table 7 below shows the relationship between household income and color choice for several products. Our study found a significant positive relationship between income and the color choice for clothing, shoes, watches, bathing suits, and sunglasses. This means that higher income families tend to view color as extremely, very important. Family income and color choice are negatively related for players, computers, game systems, and digital cameras. This is not surprising given that Canadian buyers view the color of these products as not important.

Household Income and Color Choice by a sample of Canadian Buyers

Product	Relationship to color*
Clothing	(+)
Shoes or sneakers	(+)
IPod or MP3 Player	(-)
Computer; laptop or desktop	(-)
Game systems; Play station and Xbox	(-)
Watch	(+)
Digital Camera	(-)
Bathing suits	(+)
Sunglasses	(+)

*Indicates a positive/negative significant relationship

THE MEANING OF COLOR

The meaning of color is reported in Table 8. Canadian buyers equates the color red to love, warmth and passion, blue meant calm, green is nature and money, yellow is happiness and caution, purple is mystery and royalty, brown color is earth, black is both death and elegance, white is associated with purity, gray is futurism, and finally orange is considered as energy and warmth.

Table 8
The Meaning of Color for the Sample of Canadian Buyers

Red	Percent	Blue	Percent	Green	Percent	Yellow	Percent
Love	79.8	Calm	81.5	Nature	83.9	Happiness	55.6
Warmth	57.3	Trust	41.9	Money	55.6	Caution	40.3
Passion	57.3	Masculinity	40.3	Good Luck	40.3	Prosperity	39.5
Danger	48.4	Cleanliness	33.6	Christmas	24.2	Hope	37.1
Energy	41.9	Security	10.5	Safety/Go	21.8	Dishonesty	35.5
Anger	37.1	Conservative	6.5	Youth	21.0	Success	26.6
Christmas	30.6	Order	5.7	Fertility	16.9	Optimism	20.2
Power	15.3	Authority	5.6	Health	10.5	Royalty/Grace	16.1
Aggression	5.7			Renewal	8.1	Betrayal	4.8
				Jealousy	3.3	Coward	4
				Sour	3.2	Earth	4
Purple	**Percent**	**Brown**	**Percent**	**Black**	**Percent**	**White**	**Percent**
Mystery	52.4	Earth	74.2	Death	72.6	Purity	76.6
Royalty	50.8	Nature	19.4	Elegance	62.9	Neutrality	51.6
Spirituality	39.5	Reliability	11.3	Sexuality	45.2	Death	10.5
Mourning	15.3	Endurance	11.3	Mystery	41.9	Joy	9.7
Cruelty	8.1			Evil	31.5		
Arrogance	7.3			Unhappiness	29.8		
				Power	21.8		
				Fear	12.1		

Gray	Percent	Orange	Percent				
Futurism	66.9	Energy	64.5				
Modesty	40.3	Warmth	60.5				
Sadness	33.9	Inexpensive	19.4				
Intellect	22.6	Balance	14.5				
Decay	17.7						

CONCLUSION

In general, color has the potential to affect a consumer's overall perception of a product. The color of a product increases brand recognition by 80% and can also differentiate a product and create positive or negative images about a product. Promotion or selling a product in the same color around the world may not be the best strategy.

Overall, color is important factor in the purchase decision of buyers. We found a significant difference between male and female perception of color importance. We also found that color is important for a group of items such as clothing, shoes, house paint etc. and color preference is gender dependent: female consumers show very strong preferences for the color of what they wear and males are more discerning compared to females when it comes to the color of digital products they use. Descriptive statistics from our Canadian survey indicate that female medians for many products were significantly lower than male counterparts. These results we confirmed using two different statistical testing methods, nonparametric test using the Kruskal-Wallis test, and logistic regression.

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PROMISE AND PRACTICE: GREEN IT AND BYOD

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ABSTRACT

We consider the relationship between current corporate Green IT objectives and Bring Your Own Device (BYOD) initiatives. Although organizations implementing BYOD often frame the initiative as a form of Green IT, what are these organizations doing to determine whether, in practice, it complements or conflicts with their Green IT objectives? As a first step to our project, we describe both practices and promises, as found in the academic literature, and identify points of commonality or difference as a 2x2 matrix, combining concepts from a Green IT framework by Philipson (2010) and work by Harmon, Deirkan & Raffo (2012). We explain the use of the matrix to evaluate an organization's use of IT to accomplish sustainability goals.

INTRODUCTION

Many business organizations publicly embrace environmental sustainability efforts as part of its corporate social responsibility (CSR) program, helping corporations to be seen as leaders. One form of environmentalism is "green IT," a broad term that encompasses any environmentally friendly effort that involves information technology. Information technology requires devices made from metals mined from the earth, powered by electricity produced from fossils fuels, and which generate greenhouse gases. Although many business organizations have developed policies for acquiring, powering and disposing of IT devices, these are potentially weakened by another recent trend called BYOD, which allows employees to use personal devices to partially or fully replace employer provided IT devices. Companies expect BYOD to provide benefits in increased employee productivity and reduced IT costs. Most adopt BYOD after considering the potentially negative effects on data security from the unwanted actions of unauthorized users, but it is not clear if the effects of BYOD on Green IT are evaluated.

Our review of related academic and industry journals suggest factors that influence an organization's approach to Green IT, which we call Organizational Green IT culture. We propose a 2x2 matrix as a tool for evaluating an organization's Green IT culture, and which can also be used to set Green IT strategic and operational objectives. Determinants of the 2x2 matrix are labeled "Practice" and "Promise," relating to "Actions" and "Strategic Goals."

GREEN IT

Green IT refers to two different types of practices or objectives. The first type describes practices designed to reduce the negative environmental effects directly related to using information and communication technology. In this case, unrestricted IT use is an environmental problem and Green IT refers to organizational practices or policies that govern IT use. The second type of Green IT relies on IT as a tool to inform environmentally-friendly changes to business practices that do not otherwise use IT. Here IT provides a tool for modifying practices that have negative effects on the environment, but that are not IT related or dependent.

The negative effects of IT use on the environment include contribution to carbon emissions and therefore, to greenhouse gases. For example, Corbett (2013), referring to a 2008 The Climate Group study, states "that 3 percent of global carbon emissions are directly attributable to IT, and that this percentage is expected to continue to grow" (p 342). Large data centers, such as those used for search engines like Google, not only consume energy directly, but also generate a lot of heat. Cooling systems, lighting and other infrastructure requirements for housing the data center often can "consume more power than the IT equipment within it" (Philipson, 2010, p. 80). In 2009, datacenters used for search engines and social media consumed "more energy worldwide than the entire country of Sweden" (Atkinson, 2014, p.56).

Bohas and Poussing (2016) surveyed 815 small and medium-sized companies in Luxembourg and found a large proportion of companies have adopted at least one Green IT policy, with the most widespread being practices to reduce energy consumption related to IT. Most of these companies, 59%, adopted Green IT to reduce operating costs (p. 244). According to Wehrum (2009), writing for Inc.com, "… employing green IT practices can help businesses save thousands of dollars each year." A report produced by Knowlege@Wharton provided several specific examples of cost savings related to Green IT and reduced energy use. The Wharton School of Business projected savings of $8,300

annually, as well as avoiding the annual production of 122,000 pounds of carbon emissions as a result of changes to monitor settings on 500 public computers (p. 3). A "major Indian telecom provider" was saved $620,000, due to Green IT changes suggested by Wipro (Ibid.) Nortel projected that changes to its servers will reduce electricity consumption, "resulting in an annual savings of about $530,000" (p. 4)

Energy consumption is only one source of environmental impact related to IT. Practices in manufacturing IT equipment have significant environmental impact, as well (Bohas & Poussing, 2010; Chou, 2012; Costley, 2015; Philipson, 2010). Appasami (2011) reports that "the PC manufacturing process accounts for 70% of the natural resources used in the life cycle of a PC" (p. 42). One impact of manufacturing is the energy use related to manufacturing IT equipment. "At least as much energy is spent in manufacturing a PC as it consumes in its lifetime" (Philipson, 2010, p. 78). However, negative environmental effects also result from the use of "rare and toxic resources" (Cooper & Molla, 2014, p. 271), such as copper, silver, gold and palladium, which require mining. Toxic materials, such as lead, nickel, cadmium and mercury, can be harmful if they end up in landfills after the equipment is discarded (EarthTalk, 2015).

Many corporations have developed policies to reduce negative environmental impact related to IT asset procurement and disposal. Philipson (2010) notes disposal policies predate Green IT, as many organizations are aware of "the importance of reducing environmental damage from e-waste (electronic waste)" (p. 79). The need to dispose electronic equipment responsibly, which is often required by law, has spawned a new industry of e-waste services (Ibid.). "Over the past few years, an increasing number of Global 1000 companies have adopted comprehensive sustainability policies that include responsible e-waste disposition as fundamental to corporate social responsibility" (greenbiz).

BRING YOUR OWN DEVICE (BYOD)

Bring Your Own Device (BYOD) policies in business organizations allow employees to use their personal IT devices in and outside the workplace for work-related tasks. The reasons for adopting BYOD vary. Some businesses frame the initiative in terms of increased employee productivity. Employees can more easily adopt the productivity tools they prefer if they are not restricted to a specific organizational standard for operating systems. Arguably, BYOD simply recognizes that employees will use their personal smartphones, tablets, and laptops for work-related activity, whether the behavior is approved or not. To date, BYOD can reduce operating costs by pushing the costs for some mobile user devices, including data and energy costs, to individual employees, although recent litigation in the US moves some of these back to the employer. (Kaneshige, 2014; Rotholtz, 2015)

Despite these challenges, Gartner says 90% of organizations will support some aspect of BYOD by 2017. These programs today have varying degrees of maturity, but the firm predicts that by 2018 there will be twice as many employee-owned devices used for work than enterprise-owned devices (networkworld). The trend reflects both push and pull – business organizations' goal for efficiency and cost reduction, on the one hand, and the consumerization of IT, as people adopt technology tools, including mobile devices, software and social networks, in ever larger areas of their personal lives, on the other.

The effect of BYOD on Green IT goals is less obvious; however, BYOD is sometimes framed in the context of Green IT. The CIO of Wipro, T. K. Padmanhabnon, identified BYOD as part of his company's Green IT initiative in an interview published in 2012. "Bring Your Own Device (BYOD) is another trend that helps in reducing power consumption. Smart phones and tablets, which employees are using after the policy adoption, consume 10 times lesser power than destops (sic) or laptops" (Shukla, p. 36).

BYOD can lead to reduced energy consumption. However, end user equipment lifecycle is also part of Green IT, and BYOD shifts the responsibility for procurement and e-waste disposal to the employee, or the company from which the employee purchases his/her device. It can, in effect, outsource (or crowdsource) these aspects of Green IT.

PROMISE AND PRACTICE AS FRAMEWORK

In 2010, Graeme Philipson suggested a "Green IT framework" for evaluating the effectiveness of an organization's Green IT strategy (p 77), which defines "actions" based on G-readiness drivers proposed by Molla, et al. (2008). The Green IT framework actions include, inter alia, "attitude, policy, technology and metrics." We suggest these actions can be grouped into two categories. Attitude and policy are elements associated with strategy and management,

whereas technology and metrics refer to practices that are operational or tactical. Attitude and policy, in addition to shared values, can be considered the aspiration or "promise" of Green IT goals; technology and metrics represent "practice" required to achieve or support Green IT goals. Viewed through an organizational behavior lens, the concept of promise also requires an organizational value component in terms of leadership.

Figure 1
Promise and Practice Matrix
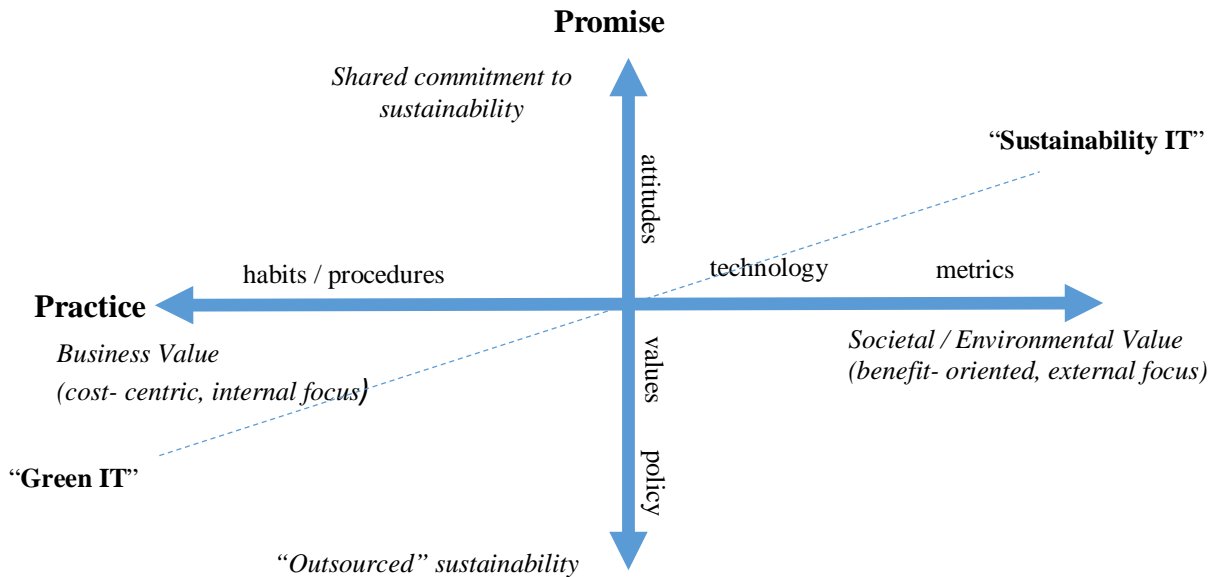
Our model relies also on a strategic planning tool proposed by Harmon, Demirkan and Raffo (2012), that depicts a progression from early, immature Green IT practices, providing business value in terms of cost reduction, to mature "sustainable IT services", that reflect integration of green IT into a broader culture of corporate social responsibility. The Harmon study predicts, "Over time, as the initial green IT cost-centric target market matures and commoditizes, value is migrating to the emerging opportunities in the broader sustainable IT services segments that focus on environmental and CSR requirements" (p. 130). Our model combines these tools to suggest four categories of organizational Green IT culture, from low practice and low promise, which implements Green IT for business value, to high promise and high practice, which embeds "sustainability IT" among shared integrated societal value. We suggest leadership can move an organization from one quadrant to a higher quadrant, toward sustainability IT.

The matrix describes four categories of Organizational Green IT culture. Organizations in the upper left quadrant, with high promise and low practice, are described as Improvement Oriented organizations. Low promise and low practice, in the lower left quadrant, describe Limited Green IT organizations. We describe organizations in the lower right quadrant, low promise and high practice, as Limited Sustainability IT organizations. Organizations in the upper right quadrant, with high promise and high practice, are Sustainability IT organizations.

CHARACTERISTICS OF ORGANIZATIONAL GREEN IT CULTURE BY QUADRANT

Figure 2
Organizational Green IT Culture Matrix
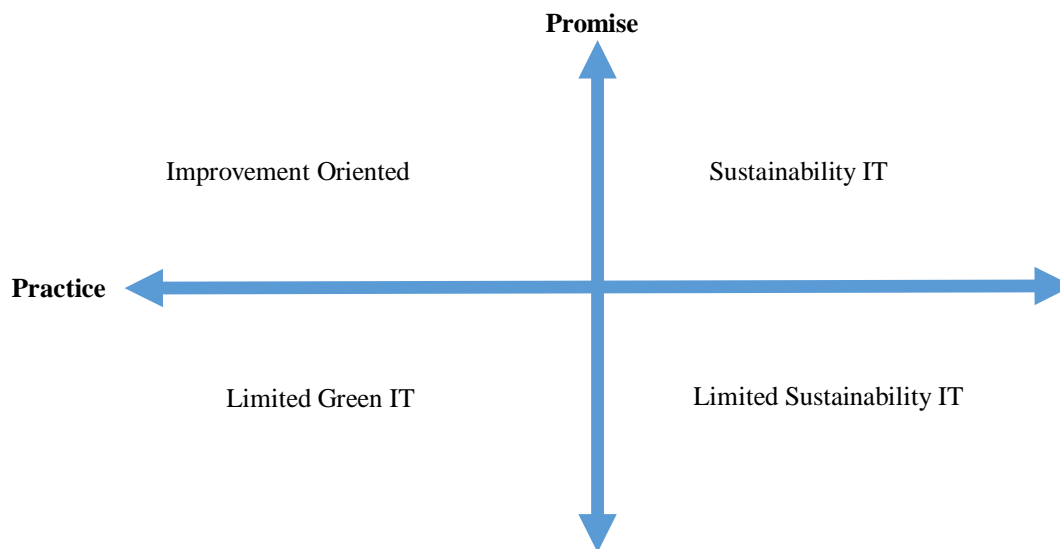
Table 1
Characteristics of Organizational Green IT Cultures

Characteristics of Organizational Green IT Cultures

Improvement Oriented (high promise, low practice)	Sustainability IT (high promise, high practice)
▪ Articulated vision for sustainability ▪ Shared values ▪ Empowered community ▪ Internally focused IT sustainability ▪ "Green IT" for cost reduction ▪ Few / no sustainability metrics	▪ Articulated vision for sustainability ▪ Shared values ▪ Empowered community ▪ Externally focused IT sustainability ▪ Benefit-oriented IT practices ▪ Sustainability metrics
Limited Green IT **(low promise, low practice)**	**Limited Sustainability IT** **(low promise, high practice)**
▪ No articulated vision for sustainability ▪ Contractor or Just-in-Time model ▪ Internally focused IT sustainability ▪ "Green IT" for cost reduction ▪ Few / no sustainability metrics	▪ No articulated vision for sustainability ▪ Contractor or Just-in-Time model ▪ Externally focused IT sustainability ▪ Benefit-oriented IT practices ▪ Sustainability metrics

IMPLICATIONS

An organization's use of information technology has associated negative environmental effects. Although much of the literature addresses these effects in terms of energy consumption, fewer studies consider IT equipment lifecycle, including procurement, maintenance and disposal of end-user devices. Many studies focus on either the operational, cost-based, aspects of Green IT, or the strategic, CSR perspective. Harmon, et al. consider both, but as different stages of maturity for the same thing. Arguably, Green IT has not had sufficient history to provide mature models or metrics that address both organizational and technological components to an effective Green IT strategy.

At the same time, in many organizations the IT department is a cost-center, and the commoditization of IT supports outsourcing and use of the cloud, for example, provides opportunities to minimize capital investment and better align costs to revenue. Both of these options also provide cheaper and faster scalability, to support nimbleness and Just-in-Time growth. However, the commoditization of IT, and related trends of cloud-computing limit the reach of an organization's Green IT or sustainability program.

For example, some negative environmental effects of IT in a business are related to device acquisition, use and disposal. In the early 2000s, many large US organizations adopted environmentally responsible IT device procurement and disposal practices, such as approving only vendors and equipment that met green standards, extending the time before devices are replaced, ensuring materials are recovered and recycled when possible, and keeping toxic materials out of landfills. The adoption of BYOD shifts responsibility for device procurement and disposal to the individual employee. Employees may be unaware of the environmental consequences of their IT devices, or may find the costs associated with environmentally responsible device procurement, use and disposal burdensome. Our model suggests strong organizational leadership is a critical component to an effective sustainable IT program.

CONCLUSION

Our matrix expands on earlier work to reflect the relationship between meaningful Green IT goals and trends in IT management. Most notably, it highlights that aligning Green IT goals and practices like BYOD requires shared values and attitudes, as well as clearly articulated policies.

The proposed 2x2 matrix clarifies the organizational behavior and leadership components essential to Green IT goals. Our goal is to refine it as an evaluative and prescriptive tool. We anticipate its evaluative use in situations such as mergers and acquisitions, or venture capital investment decision, for comparing or evaluating organizational green IT culture. We hope in a future form it can be used to inform management decisions for achieving strategy and CSR goals.

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ANALYSIS OF UNIVERSITY ENTREPRENEURSHIP EDUCATION AND REGIONAL DEVELOPMENT IN CHINA

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ABSTRACT

With the growing pace of globalization, connecting a model of entrepreneurship education to regional development is urgent for both local governments and educators. Under the influence of the worldwide entrepreneurship education tide, there are two issues. 1) How to effectively implement entrepreneurship education in Chinese universities, and 2) how to develop a feasible entrepreneurship model in China that aligns with local regional features in order to spur economic development.

There are four topics covered in this literature review. First, the paper reviews the five phases of entrepreneurship education in China with relevant policy initiatives. Second, this paper analyses the achievements of Chinese University's entrepreneurship education programs and activities. Third, utilizing four different perspectives, this paper discusses the problems within Chinese Universities' entrepreneurship education. Fourth, this paper proposes a series of constructive suggestions for the sustainable development of entrepreneurship education in Chinese universities.

The purpose of this literature review is to investigate opportunities to improve entrepreneurship education in China.

INTRODUCTION

At present, entrepreneurship education in China is still in its initial stage. Due to increased enrolment in Chinese higher education and the severe challenge of placement after graduation, entrepreneurship education has become an increasingly essential field. It is one possible answer to solve the employment problems of graduates. This paper will explore the issues involved in connecting a conceptual model of entrepreneurship education to regional development.

This project has four sections. First, this paper reviews the five milestones in entrepreneurship education in China with the relevant policy initiatives. Second, this paper analyses the achievements of Chinese entrepreneurship education programs and activities. Third, this paper discusses the problems of entrepreneurship education utilizing four different perspectives. Fourth, this paper provides a series of constructive suggestions for the sustainable development of entrepreneurial education for local universities. The areas of the suggestions cover government policy, assistance from enterprises (both financial and non-financial), and a reorientation of the role entrepreneurship education can play in universities students' academic life.

DEFINITION OF ENTREPRENEURSHIP EDUCATION (EE)

In 1989, in an *International Education for the 21st Century* seminar, UNESCO described Entrepreneurship Education (EE) as the development and training of entrepreneurial knowledge, skills, values, and understanding, as well as cultivating a creative personality (Briga, 1996). EE activities aim to improve the comprehensive quality of college students education, boost their ability to adapt to the society, cultivate an entrepreneurial spirit, and enhance students' entrepreneurial skills (Watson, 2008). EE may be fundamental to helping solve the problem of employment of university students (Lange, 2008). However, there are many educational aspects to entrepreneurship beyond teaching entrepreneurial attitudes and skills. EE encompasses social enterprise, self-employment, venture creation, employment in small businesses, small business management, and management of high-growth ventures (L. Pittaway & Cope, 2007).

SIGNIFICANCE OF EE

In recent years, higher education in China has faced great difficulty with the subsequent unemployment of university graduates. Expansion of higher education has created more graduates, but jobs have not expanded proportionately resulting in more competition for jobs. Not only is the job market getting tougher due to growing competition, a delayed-retirement policy in public positions is compounding the problem. Entrepreneurship is being presented as one solution to the problem. Creating new opportunities through entrepreneurship may be an essential step to improve

student employment and to promote economic development. After several years of exploration and practice, EE is noted as an integral part of higher education reform (Bridgstock, 2011).

According to Shirokova, et al., universities can help develop entrepreneurship-related skills and competencies, which have been shown to correlate with entrepreneurial intentions and early-stage entrepreneurial activity (Shirokova, Osiyevskyy, Morris, & Bogatyreva, 2017). There is also a call for more and better research in entrepreneurship. In recent years, entrepreneurship has gone from a nearly unknown field of study to a legitimate multi-disciplinary field (Fayolle, Landstrom, Gartner, & Berglund, 2016). As EE journeys to full academic institutionalization, some scholars call for more research into entrepreneurship, especially EE in different countries. One reason for this is to compare entrepreneurship in more-developed regions versus less-developed regions (Batjargal, 2010; Dodd & Hynes, 2012).

Research in this field is not easy. The definition of entrepreneurship itself is dependent on the regional context, and is a moving target as more countries and more cultures get involved in the concept of entrepreneurship (Berglund & Johansson, 2007; Dodd & Hynes, 2012; Fayolle et al., 2016). The number of students starting their own business upon graduation is low, compared to the total number of graduates according to a report by human resources website Zhaopin. Only 3.1 percent of students expecting to graduate in July of 2016 said they will start their own business, down from 6.3 percent in 2015 (S. Zhou & Jinran, 2016). Possible reasons for the low numbers of students starting their own business may be a relatively poor domestic capital market, low investment in the economic field, and financial difficulties caused by the recent world-wide recession. In addition, many new business plans are not put into practice due to immature concepts and strategies. Other reasons include immature EE for university students in China, a poor entrepreneurial culture atmosphere, and a lack of entrepreneurial competence.

Generally speaking, EE in China started five decades later than EE in the United States (US), which began in 1947 at Harvard University. Starting in 1997, with Tsinghua University as its birthplace, there are five milestones commonly associated with the development of EE in China (University, 2009):
- Milestone 1: 1997 - Tsinghua University started the first Student Business Plan Competition and became the birthplace of EE in China.
- Milestone 2: 2002 - The Department of Higher Education set guidelines and funded the establishment of EE pilot programs at nine prestigious universities across China.
- Milestone 3: 2008 - The Ministry of Education and the Ministry of Science and Technology jointly initiated Entrepreneurship Parks and Science Parks in 66 selected universities to foster student entrepreneurial ventures.
- Milestone 4: 2012 - The Ministry of Education advocated for EE. The essential requirements of an EE system is promoted and becomes popularized.
- Milestone 5: 2017 - *Innovation and Entrepreneurship Education Alliance of China Annual Meeting 2017* was held at Zhengzhou University in Central China's Henan province. Five hundred out of the 2914 universities in China attended.

A SUCCESSFUL CASE OF ENTREPRENEURSHIP EDUCATION IN CHINA

Tsinghua University started the first Student Business Plan Competition and became the birthplace of EE in China. The competition initiated an alliance between universities that aimed at building a network for universities to share their successful experiences in EE, contribute to the improvement of educational reform, and to cultivate students' entrepreneurial spirit. Building on its strong research advantage and its promotion of EE, Tsinghua University used the entrepreneurship course curriculum of the alliance to increase an enterprise's capacity for market competitiveness. The China Center for Entrepreneurial Research and Technological Innovation at Tsinghua University has set up more than 10 entrepreneurship courses, most of which are focusing on practical lessons. In addition, the Tsinghua-Berkeley Global Technology Entrepreneurship Program partnered with the University of California at Berkeley. The partnership created customized courses and compulsory practical projects like "technological entrepreneurship", "characteristic industry innovation and entrepreneurship", and "intellectual property management". In addition, it helped and helps students get access to the leading technology enterprises in Zhongguancun (the Silicon Valley of China) and increases their capability to achieve technology innovation. Further, Tsinghua has a special Science and Technology Innovation Center with a Science and Technology Innovation Fund to support students' innovation activities and provides guidance and consultation. In 2016, Tsinghua invited US venture capitalist and entrepreneur Peter Thiel from Stanford University to teach a one-credit elective course "Start-Up Thinking", which brought the latest ideas in innovation and entrepreneurship to Tsinghua.

In recent years, the Ministry of Education and Central Committee of Youth League continued to establish a number of projects such as "Innovative Experimental Zone", "Students KAB (Know About Business)", and "Entrepreneurship Education Base". The Ministry and Committee provided better guidance for colleges and universities for EE and backed it up with funding. Tsinghua University is one successful example. Chinese EE has achieved much in recent years, both in theory and in practice. However, there are still problems to be solved. Not all universities have the same potential to start EE programs.

EXISTING PROBLEMS IN ENTREPRENEURSHIP EDUCATION

There are five problems in the practice of EE at universities in China. First is the lack of a standard system of curriculum provision or evaluation of the curriculum. Currently most of the Chinese EE research lacks discipline, research content, and research methods. Additionally, there is a disconnect between the EE and the practice of entrepreneurship. Only a few prestigious universities have created Entrepreneurship Centers to offer assistance to students to put theory into practice.

Second, only students from prestigious universities get access to local organizational support – like the trial zones where the Chinese Government has encouraged entrepreneurial ventures. Local enterprises are needed to support the EE program, as well as local capital funding sources which are needed to finance entrepreneurship practices. In 2002, in China, only a few prestigious universities such as Tsinghua University were granted the trial zone of EE by the Department of Higher Education. This proportion is too small compared to the total number of universities in China.

Funding is a primary problem for EE in Chinese universities. Funds needed to meet the needs of students' entrepreneurship practices come from three sources: 1) the entrepreneurial fund established by the government, 2) the investment and risk fund established by private entrepreneurs, and 3) the entrepreneurial fund established by universities. These funds are very limited. It is difficult for the majority of universities to spend substantial money on supporting students' entrepreneurial practices. This limitation leads to underdeveloped entrepreneurial conditions at most universities.

The third problem is the conflict between entrepreneurial education and traditional discipline-based education. Most universities in China haven't put entrepreneurship courses into their regular curriculum, even in the form of elective courses, seminars, or lectures. The formal Chinese education system often considers EE to be extracurricular, taking up valuable academic time. The formal Chinese education system places more emphasis on lectures rather than on experiential learning; on theory rather than practice. This traditional view of education makes it difficult to bind EE with specialized subject education organically because the key to EE is the experiential opportunities that foster mastery of a whole host of skills associated with business ownership. This difference in view prevents EE from being integrated into the whole education system (Shirokova et al., 2017).

In response, there has been a movement toward moving EE outside of formal Chinese university education. It is unclear whether that move would promote or prevent effective EE, though some experts feel that EE would benefit by being taken out of the university environment (Johannisson, 2016). Another related issue is the problem with integrating EE theories from foreign universities directly into Chinese universities. Often these independent theoretical innovations require the specific local conditions of the country of origin. In addition, the education mode and method is not practical for Chinese students of different levels and different professional disciplines.

The fourth obstacle is a lack of a qualified teaching force with real entrepreneurship experience who can mentor student entrepreneurs. Professors who teach entrepreneurship and have entrepreneurial or investment experience are familiar with how an enterprise operates. However, the majority of the teachers engaged in entrepreneurial education and training courses in China are either teachers who originally taught enterprise management or teachers who originally gave students employment guidance. These two kinds of teachers bear a common weakness: lack of practical entrepreneurial experience.

The fifth problem is the majority of university students lack understanding and awareness of the importance of EE. Most universities implement EE simply through individual electives and lectures, without integrating this education into the rest of the curriculum. Furthermore, the teaching modes are often confined to theory, without giving students enough practical opportunities and development space.

One of the reasons for these five problems is a bias and misunderstanding of the concept of EE. According to a report by the European Commission, EE emphasizes that the benefits of EE are not solely for start-ups or innovative new ventures, but rather helps those in more general education learn how to turn ideas into action. They see EE as helping all students become more creative and self-confident (Hahn, Minola, Van Gils, & Huybrechts, 2017; Leitch, Hazlett, & Pittaway, 2012). But some universities have a narrow understanding of EE and see it as training students to become business owners. Many even use the data point of *graduates becoming business owners* as the evaluation criteria to assess the quality of EE. Many universities only view EE as just a way to follow the tide of national policy, rather than realizing its essential function of enhancing entrepreneurial learning. This misunderstanding ignores the in-depth basis of innovation and entrepreneurship practice and leads to a model of education that is impractical.

SUGGESTIONS FOR THE SUSTAINABLE DEVELOPMENT OF EE IN CHINA

Based on the literature, the overwhelming sentiment appears to be that EE is much more than simply memorizing facts and figures or the discussion of theory. Wang expressed the view succinctly:

> *The implementation of entrepreneurship is the foundation to realize the goal of cultivating talents, which is the way and means of education. Its content relates to how to promote the development of students' comprehensive quality, how to make them change from passive recipients of the curriculum to active participants, how to realize the combination of professional education and entrepreneurship education, paying attention to the knowledge education and ability education, how to arouse the students' entrepreneurship awareness and enthusiasm, and how to cultivate the entrepreneurial quality and entrepreneurial ability* (Wang, 2013).

After much discussion, the authors propose the following series of constructive recommendations for positive development of EE in Chinese universities:
1. For the government to launch a national strategy and develop a policy framework for EE.
2. For the universities to integrate entrepreneurship-related programs and activities into their curriculum across different subjects.
3. To find ways to improve the training and selection of instructors teaching in entrepreneurship programs.
4. To provide effective support for mentors and counsellors from both the academic world and the non-academic world, and to encourage students and graduates with potential business ideas to develop them into enterprises.
5. To utilize Chinese consumer culture and local regional environmental features as part of the EE rather than simply copying programs from other nations without regard for Chinese specific culture.

DISCUSSION OF SUGGESTIONS

A National Strategy and Policy Framework

From the perspective of the nation, the government can do more to launch a national strategy to call for the active involvement in EE and to develop a policy framework to mainstream EE. According to the latest policy (in May of 2015), the State Council issued legislation to promote education in innovation and entrepreneurship at universities. The legislation has enhanced awareness of local governments and universities and has garnered greater public participation in this key area of the economy. But more needs to be done.

Integrate Entrepreneurship-Related Programs across Different Subjects

In China EE tends to be offered in stand-alone courses rather than being integrated into the content of courses in other departments or disciplines. Instead, Universities can integrate entrepreneurship-related programs and activities into their curriculum across different subject areas. Universities would benefit by creating a more flexible system to aid this implementation. EE is people-oriented. It makes sense to emphasize the personality of the students (Raffo, O'Connor, Lovatt, & Banks, 2000) as well as basic foundational entrepreneurial skills (Hahn et al., 2017; Johannisson, 2016). It would be more advantageous if EE courses began with a definition and conceptual explanation of entrepreneurship that focuses on the fundamental skills of starting a business rather than the technical aspects of starting a business. In other words, EE should be about generating an idea, analysing a market, finding capital, and developing management and accounting procedures for running a business. Co-curricular activities such as entrepreneurship clubs, lectures and speakers, workshops and seminars, business plan competitions, internships, and

venture incubators would be an integral part of an effective EE program. Local entrepreneurs could serve directly as adjunct professors and involve students directly in enterprise activities.

One way to address the regional impact on EE is through entrepreneurship clubs. These clubs, by their very nature, are going to reflect the surrounding environment relative to student make-up, business make-up, and the culture unique to the region. Further, the clubs are an inexpensive way to bring faculty, students, budding entrepreneurs, successful entrepreneurs, and government agencies together for a common purpose. Pittaway, et al., found that typical activities of clubs include networking events (93%), presentations by entrepreneurs (89%), presentations by other business people (88%), competitions (86%) and workshops (73%). All of the activities offer opportunities for both long and short term mentoring relationships (L. A. Pittaway, Gazzard, Shore, & Williamson, 2015).

Improve Training of Instructors

From the perspectives of both the country and the universities, it is essential to provide intensive training to teachers in entrepreneurship programs, and to increase funding to support teacher training, curriculum development, and professional development. Much of the learning for entrepreneurship in the university context takes place beyond the formal classroom environment. Student learn entrepreneurship more through experiential and discovery learning. This sort of learning is often a challenge to traditional teaching techniques (Shirokova et al., 2017).

Universities can provide incentives for faculty members to conduct research in EE, evaluate the effects of EE in order to prove its legitimacy on campus. Teacher qualifications could include practical real-life experiences in entrepreneurship, as well as the ability and willingness to mentor students considering entrepreneurial opportunities. Only through a better teachers' training entrepreneurship program can the innovation of the teaching approach in accordance with EE be realized. Teaching methods should be developed that are different from the traditional theory-based instruction. Existing research can be utilized to improve this training (Kyrö, 2015). For example, according to Fugate, the factors required for a successful entrepreneur process include 1) integration of core competence, 2) knowledge structure, 3) social consciousness and 3) personality traits (Fugate, 2004).

It would make sense that the factors identified by Fugate would benefit from more experiential activities. Students can be guided in the process of creating a business enterprise utilizing a simulation that reflects the dynamic process of starting a business. Students could be guided toward activities and projects that solve social and economic problems or other issues that concern entrepreneurs. Teachers could illustrate and analyse practical examples when teaching. More focus is needed on problem-centered teaching models and guiding students into actively thinking about starting a business to solve a problem. The case study method is also useful in this type of teaching. Through the study of carefully selected cases, students' entrepreneurial problem analysis, judgment, and abilities can be cultivated. In addition to the use of practice-oriented experiences, students can be provided with access to entrepreneurship parks, capital support, consulting services, and incubators to broaden their entrepreneurship abilities. In addition, trained teachers can play the role of consultants to give practical financial and technical advice to student entrepreneurs.

Mentors and Counsellors

Mentors and counsellors can be used to encourage students and graduates with potential business ideas to develop them into enterprises. Since constructing an EE practice platform is a practical education activity, providing mentorship is an effective way to cultivate a university student's entrepreneurial consciousness and ability. Educators can serve as mentors to encourage students to engage in entrepreneurship practice, not just completing the study of EE.

Mentors can also introduce students to business networks. Universities are often under-utilized as key players in aligning the knowledge-producing network of the university with the profit-producing network of regional businesses (Huggins, Johnston, & Stride, 2012). Fillis reports that the lack of skill with networking is a key reason for college students not obtaining jobs in the labor market (Fillis, 2006). In both cases, strengthening contacts and cooperating with the business community is important in the process of the implementation of EE in universities (Schumpeter, 2009). Educators can take it upon themselves to build a bridge of communication between their universities and business enterprises. Combining learning and research with entrepreneurial practice will cultivate students' professional skills.

Entrepreneurial practice and traditional classroom teaching are different (Holden, 2007). Teachers who have experience can mentor their students in ways that teachers without experience cannot understand. Educators in EE could provide students with a more authentic environment within the context of a university for entrepreneurial learning. Having a mentor, or knowing someone personally who has started a business, would encourage students to create their own enterprises and to participate in entrepreneurial practice. All the components of building a new business should be completed by the students while the educators provide students with guidance and evaluation. A mentorship program can improve the student's ability to practice networking and business management. This practice can enhance their sense of competition and develop their cooperative spirit. As a result, the quality of entrepreneurial students can be significantly improved through the entrepreneurial environment created by the educators with entrepreneurship experience.

Local Culture and Features

Existing programs in China have sometimes copied from other country's EE examples, sometimes without considering the unique features in China. Eesley points out that China's economy is organized regionally rather than centrally (Eesley, 2009). Regional environments often have important resources and characteristics that could be considered when developing entrepreneurial opportunities and these characteristics should be reflected in the EE in the region. For example, if a region is agricultural, it does little good to provide EE that is based on examples from the technology industry. Some researchers believe that the relationship between *innovation*, which is a core characteristic of entrepreneurship (Schumpeter, 2009), and *growth* which is a measurement of entrepreneurship, is affected by the local culture.

An entrepreneur belonging to a national culture is nested in an entrepreneurial subculture. Moreover, each venture is reflective of that subculture (Rauch et al., 2013). EE programs should focus on the regional resources and provide innovation and practical experiences in that local framework rather than focusing on disparate or distant cultures and resources. Even a successful platform from a prestigious university may not fit well into a smaller local university from another area trying to utilize the program. Universities at different levels need to carry out EE according to their own potential and capacity.

Importance of Change

Universities in China are facing a crucial crisis. The value of routine classroom-based learning and a rigidly structured curriculum is rapidly declining. The current generation of students requires more up-to-date practical courses with experiential learning related to their future career (Cope, 2003; Leitch et al., 2012). The need for experiential learning is especially true for EE.

Universities in China can learn from the successful experience of EE in other countries. EE was introduced by the United States (US) in 1947, when Harvard University School of Business opened the first EE curriculum at American University. Since then, over 1,600 American colleges and universities offer courses and degrees in EE. As noted earlier, however, these programs cannot just be copied; they need to be modified to reflect local characteristics and needs. While entrepreneurship is becoming more popular throughout the world, EE should be based on regional needs to achieve the optimum effect. The authors believe that the unique cultural context differentiates Chinese students from their American counterparts in terms of several entrepreneurial characteristics including:
- the intention of venture creation and confidence in it
- the knowledge and ability to create innovative ventures
- recognition of the importance of entrepreneurship education
- working with an overseas team for international venture creation

EE would need to recognize these critical personal and cultural differences in order to be effective in China. In comparison, the core of EE in the US focuses on how to cultivate an entrepreneurial mind-set. The success of entrepreneurship in the US is that it transforms the concept of seeking a job passively into creating an entrepreneurial opportunity actively. The students themselves are the decision-makers of their future, not the conditions they face. On the basis of a more systematic and mature teaching curriculum and faculty team, EE in the US places more emphasis on practical training and content than Chinese EE. Entrepreneurial skills gained through practical and experiential training can better equip students to be innovative relative to their job options and interests.

Furthermore, there are various funding organizations and entrepreneurship alliances that support EE effectively and actively, which in turn provides various opportunities for the students to get in touch with entrepreneurship. In the US, more than 1500 colleges and universities offer entrepreneurship-related training and more than 100 active university-based entrepreneurship centers (Charney, 2000). The entrepreneurship-oriented education and culture in the US has been the foundation for a strong infrastructure and has helped create many world-class organizations such as Microsoft, Oracle, Dell, and Wal-Mart—as well as 36 million new jobs (Timmons, 1999).

Zhou notes that "China today is not fully exploiting its entrepreneurial potential, and enhancing this will help the country in further transforming its economy and achieving future economic and competitive strength" (M. Zhou, 2012) China still has a long way to go before EE is as effective as it is in other countries. Universities can play an important role in the development of both individuals and entire regions.

In the 21st century, job security is no longer assured as it was in the past. Individuals across all industry sectors would benefit from additional entrepreneurial skills that can help them overcome uncertainty factors, continually innovate, and pursue opportunities more creatively. EE in China would benefit greatly from the combination of a clearer and broader meaning of the concept of entrepreneurship, an insightful and visionary strategic framework at the national level, an integrated curriculum across the disciplines, an intensified training program for the faculty who can act as mentors, and a closer link between the university and industry. Additionally, it would be beneficial for universities in China to apply a localized approach to EE, built on the basis of both national policy and regional cultures. Because of the Chinese emphasis on decentralization, and based on China's local experimentation with reforms, private sector development has been greatly influenced by reforms – but only locally. This includes the attitudes of local government towards the role of the market, which itself may be viewed as a form of informal institution. In other words, if the local area is has a market open to entrepreneurial activities, the local government is influential. But if the local market resists entrepreneurial activities, the local government cannot influence it much. As a result there are marked regional variations in the nature and extent of private enterprise development in which institutional factors play a key role." (Smallbone & Welter, 2012).

In the final analysis, EE can emphasize practical guidance, incubator facilities and engagement with local businesses. All of these reflect key principles that can cultivate student enterprise awareness.

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REQUIRED FRESHMAN AND SOPHOMORE BUSINESS COURSES AS PREDICTORS OF PERFORMANCE IN OPERATIONS MANAGEMENT

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ABSTRACT

Performance in freshmen and sophomore courses is used as a screening mechanism to control access to majors and/or junior and senior level courses by many colleges of business. Since many colleges use this approach to control access to their courses, the validity and efficacy of this mechanism through to their senior level courses should be of interest to policy makers. This paper uses an Ordered Probit Model is used to investigate how well performance in a senior level Operations Management course can be predicted by performance in required freshman and sophomore courses.

INTRODUCTION

Many Colleges of Business require students to enroll in a number of foundation courses, the successful completion of which, often with a minimum required grade point average (GPA) allows the student to then access junior and senior level courses and/or declare a business major. This paper investigates how well aggregate performance in certain required foundation courses predicts success in a senior level Operations Management (OM) course, a course which is often taken two or more years after the completion of many of the gatekeeper courses. It then continues on to examine how performance in these foundation courses can be used in setting admission standards.

Student performance in Principles of Economics courses has been investigated by Kim (1976), Becker (1983), Borg et al. (1989), Park (1990), Watts and Bosshardt (1991), and Islam and Islam (2013). Performance in Intermediate Macroeconomics has also been investigated by Spector and Mazzeo (1980) who used a logit model, and by Raimondo, Esposito, and Gershenberg (1990), and Yang and Raehsler (2005). Performance was further studied by Asarta and Butters (2012) who revisited the "Discouraged-Business-Major hypothesis" and by Bosshardt and Walstad (2016).

Simpson and Sumrall (1979) were early in the examination of student performance in finance courses with their examination of the determinants of test scores in finance courses. Following after their work, Berry and Farragher (1987), Liesz and Reyes (1989), Ely and Hittle, (1990), Paulsen and Gentry (1995), Chan et al. (1996), Cooley and Heck (1996), Sen et al. (1997), Chan et al. (1997), Didia and Hasnat, (1998), and Nofsinger and Petry (1999), all examined various aspects of student performance in introductory finance courses. Performance in higher level and graduate level finance courses was also investigated by Rubash (1994), Mark (1998), and Trine and Schellenger (1999). Recently, Pilloff and Kling (2017) examined how student characteristics affectes performance in introductory finance course.

In the Accounting literature many studies with a gender focus have been undertaken such as those by Mutchler et al. (1987), Lipe (1989), Tyson (1989), Doran and Bouillon (1991), Ravenscroft and Buckless (1992) and, Rayburn and Rayburn (1999). Johns et al (2005) examined student performance in a sophomore accounting course, and others such as Murphy and Stanga (1994), and Graves et al (1993) have studied such topics as CPA exams or income tax courses.

Various studies of differing aspects of student performance in OM have been performed in the past. Desai and Inman (1994), Morris (1997) and Peters et al (2002) explored the possibility of a decline in quantitative ability and an increase in mathematics anxiety of students. To address these problems Griffin (1997) suggested an integrative approach to teaching OM which would connect various areas and build students' confidence in their ability as problem solvers. Using t tests and Pearson correlation techniques, Peters et al (2002) examined the role of homework in overall student performance. They found, surprisingly, that homework did not improve student performance in an OM course. Recently, Mustapha et al (2015) used an Operations Management Performance Scorecard (OMPScard) to monitor student performance in an OM course because students often struggle due to having to study both business operations theories and calculations.

Student performance in OM based on students' choice of major, gender, overall GPA, and two composite variables Comp1 and Comp2 which consisted of the students grades in two groups of courses which were separated based on whether they were perceived by the authors as being more qualitative or quantitative courses was examined by Raehsler et al (2012). They found that overall GPA and Major were significant predictors of performance while Gender and their a priori groupings of courses Comp1 and Comp2 were not significant. Subsequently, Johns (2015)

found that some courses were significant predictors of performance in OM if they were considered individually as opposed to being grouped with other predetermined courses.

While many studies have found that gender does not make a difference in performance in coursework, Kimmel et al (2014) did find some differences between the motivations of male and female students. Specifically, they found that motivations for seeking higher education, and barriers to higher education, differed by gender and that these factors changed over time.

This paper differs from previous research in that it examines the role of using required freshman and sophomore courses as "gatekeepers" to restrict access to an upper-level (junior and senior) level business course, namely Operations Management. Secondarily, it examines whether or not remedial math courses and gender are determinants of performance. Mathematics is a subject where student preparation can vary greatly from student to student. It is of interest to know whether or not the need for one or more remedial math courses is an indicator that a student may be a lower performing student for their entire college career or, if the successful completion of any required remedial mathematics courses fully compensates for any beginning mathematics deficiency.

EXPERIMENTAL DESIGN

An ordered probit model was used in this study to determine the significant predictors of student performance. The ordered probit model is a great improvement over the more commonly used t-test (difference between two numerical means), ANOVA (difference between several numerical means), ordinary regression (continuous dependent variable), and the multi-category logit or probit (predict two or several unrelated categories) models used in many earlier studies. The advantage of the ordered probit model is that it can adequately address student performance that has been categorized into letter grades of A, B, C, D, and F. It is an improvement over the binary logit or probit model which was used by Spector and Mazzeo (1980) which can only separate student performance into the binary results of pass and fail. The ordered probit model allows the dependent variable, in this case letter grades in Operations Management, to be ordinal in nature. The data are ordinal in nature because the same scale may not be applied to every letter grade. For instance, while a B might be from 80 to 89.99 (10 points) a C might range from 68 to 79.99 (12 points) with similar variations for other possible grades. In this study, the data were classified as Y=4 if the student received an A, and 3, 2, 1, & 0 were used if the student received a B, C, D, or F, respectively.

The data were collected in a public university in rural western Pennsylvania with an enrollment of approximately 6,000 students over a 15 year period. The school is part of the Pennsylvania State System of Higher Education, a system of 14 state owned universities. The College of Business Administration at this university has an enrollment that has varied between 700 and 900 students over the course of this study. The College of Business Administration offers seven different academic majors that lead to a Bachelor of Science in Business Administration (BSBA) degree. The seven majors are accounting, economics, finance, human resource management, international business, management, marketing, and real estate. The data were collected across all majors. The college is accredited at both the undergraduate and master's level by the Association to Advance Collegiate Schools of Business International (AACSB International).

Due to the size of the sample gathered, only the grades of students who had complete records were used which resulted in a sample size of n=1173. While a number of instructors taught the various courses that made up the explanatory variables, the same instructor taught all of the sections of OM. Employing an ordered probit model the following explanatory variables were examined: Math050 (basic algebra), Math110 (college algebra), and Gender, (as binary variables yes or no, male or female), and then the required courses for all business majors Math131 (applied finite math), Math232 (business calculus), Econ211 (macro economics), Econ212 (micro economics), Actg251 (financial accounting), Actg252 (managerial accounting), Econ221 (business statistics I), Econ222 (business statistics II), CIS217 (applications of micro computers), and BSAD240 (legal environment of business) as ordinal variables. The explanatory variables were then used to predict the probabilities of receiving different letter grades as shown below in equation 1:

$$y^* = x'\beta + \varepsilon$$

$$= \beta_0 + \beta_1 \text{Math050}_i + \beta_2 \text{Math110}_i + \beta_3 \text{Gender}_i + \beta_4 \text{Math131}_i + \beta_5 \text{Math232}_i + \beta_6 \text{Econ211}_i + \beta_7 \text{Econ212}_i$$
$$+ \beta_8 \text{Actg251}_i + \beta_9 \text{Actg252}_i + \beta_{10} \text{Econ221}_i + \beta_{11} \text{Econ222}_i + \beta_{12} \text{CIS217}_i + \beta_{13} \text{BSAD240}_i$$
$$+ \beta_e \dots \dots \dots \dots \dots \dots . (1)$$

Where;

$y_i^* =$ unobserved Operations Management grade,

$y_i =$ letter grade for Operations Management,

$y_i = 0$ if $y^* \leq 0$, indicating the student received a letter grade F,

$y_i = 1$ if $0 \leq y^* < \mu_1$, indicating the student received a letter grade D,

$y_i = 2$ if $\mu_1 \leq y^* < \mu_2$, indicating the student received a letter grade C,

$y_i = 3$ if $\mu_2 \leq y^* < \mu_3$, indicating the student received a letter grade B,

$y_i = 4$ if $\mu_3 \leq y^*$, indicating the student received a letter grade A, and

$\mu_1, \mu_2,$ and μ_3 are jointly estimated threshold values which determine the letter grade a student is expected to receive.

HYPOTHESES

Based on the above design the following hypotheses were tested:

H1: Performance in freshmen and sophomore required business courses is a significant predictor of performance in a senior level OM course.

H2: Freshmen and sophomore courses which are quantitative in nature will be better predictors of performance in a senior level quantitatively oriented course than will freshmen and sophomore level course which are non-quantitative in nature.

H3: Students who need to take additional math courses, Math 050 and/or Math 110, are able to close any gap that exists between themselves and the other students by successfully completing one or both of these math courses.

H4: Gender is not a significant predictor of performance.

ANALYSIS

The initial results of the analysis, as shown in Table 1, is that performance in freshman and sophomore level courses is a significant predictor (p=.000) of performance in a senior level OM course with a scaled R^2=.36 and n=1173. As shown by Estrella (1998), scaled r-squared is a better measure of goodness of fit than the McFadden r-squared due to its consistency in interpretation. Furthermore, the estimated coefficients of the three threshold variables (μ_1, μ_2, and μ_3 or five minus two categories) are all statistically significant which indicates that the use of a five category ordered probit model is appropriate.

TABLE 1
Ordered Probit Results for all Predictors

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
C	-.895268	.233131	-3.84019	[.000]
BSAD240	-.019499	.044959	-.433714	[.664]
GENDER	-.041262	.067133	-.614635	[.539]
ACTG251	.039943	.043533	.917530	[.359]
MATH050	-.120167	.122731	-.979103	[.328]
MATH110	.120945	.071283	1.69669	[.090]
CIS217	.068848	.041393	1.66328	[.096]
MATH131	.140184	.049485	2.83287	[.005]
MATH232	.224375	.044324	5.06220	[.000]
ECON211	.095519	.048432	1.97222	[.049]
ECON212	.156642	.047381	3.30598	[.001]
ACTG252	.215519	.044061	4.89142	[.000]
ECON221	.202386	.044530	4.54492	[.000]
ECON222	.157778	.040719	3.87484	[.000]
μ_1	.921100	.106075	8.68348	[.000]
μ_2	2.34337	.116983	20.0317	[.000]
μ_3	3.55220	.124266	28.5855	[.000]

Next, reverse stepwise regression was performed to remove the non-significant predictors. The data in Table 1 is ordered so that the predictors are listed from the top down to aid in understanding the order in which they were removed. One-at-a-time the variables were removed from the model, after each variable was removed the model was recalculated to account for any multicollinearity between the variables that remained. Variables were removed in this order; BSAD240, GENDER, Actg 251, Math050, Math110, and CIS217, which left the variables in Table 2 as the significant predictors of performance.

The results shown in Table 2 are that the model is a significant predictor of performance (p=.000) with R^2=.35 and n=1335. The sample size is slightly larger for this model due to fewer variables resulting more complete student records.

TABLE 2
Ordered Probit Results for Reverse-Stepwise Regression

Parameter	Estimate	Standard Error	t-statistic	P-value
C	-.756690	.165781	-4.56439	[.000]
MATH131	.157286	.044285	3.55171	[.000]
MATH232	.213138	.040898	5.21147	[.000]
ECON211	.127978	.044329	2.88696	[.004]
ECON212	.188733	.043531	4.33558	[.000]
ACTG252	.174424	.038710	4.50596	[.000]
ECON221	.204831	.040236	5.09069	[.000]
ECON222	.153843	.037425	4.11066	[.000]
μ_1	.902795	.093979	9.60640	[.000]
μ_2	2.28844	.104099	21.9834	[.000]
μ_3	3.47436	.111028	31.2926	[.000]

After determining the set of significant predictors, a new variable QuantGPA was constructed from those predictors. QuantGPA is simply the average of the student's grades in Math131, Math232, Econ211, Econ212, Actg252, Econ221, and Econ222 using A=4, B=3,…, E=0. The result of this regression is shown in Table 3 with n=1335, p=.000, and scaled R^2=.34.

TABLE 3
Ordered Probit Model for QuantGPA

Parameter	Estimate	Standard Error	t-statistic	P-value
C	-.757421	.163560	-4.63085	[.000]
QuantGPA	1.22180	.055786	21.9016	[.000]
μ_1	.898601	.093555	9.60503	[.000]
μ_2	2.28068	.103644	22.0051	[.000]
μ_3	3.46566	.110573	31.3428	[.000]

Restating equation 1 as equation 2 for use with the QuantGPA model:

$$y_i^* = \beta_0 + \beta_1 QuantGPA_i + \beta_e \ldots\ldots\ldots\ldots\ldots\ldots. (2)$$

Where, the average student has a QuantGPA of 2.829312 which, when combined with estimated threshold variables of μ_1= 0.898601, μ_2=2.28068, and μ_3=3.46566, can be used to calculate the probability that the average student will receive each of the five possible grades in Operations Management. This can be accomplished by substituting the above information into equations 3 thru 7 which are shown below.

Prob [y=0 or E] = φ (-β' x) …………………………….……(3)

Prob [y=1 or D] = φ [μ_1– β' x] – φ [– β' x] ………………..……(4)

Prob [y=2 or C] = φ [μ$_2$ – β$'$ x] – φ [μ$_1$– β$'$ x] …………….……(5)

Prob [y=3 or B] = φ [μ$_3$ – β$'$ x] – φ [μ$_2$– β$'$ x] …………………(6)

Prob [y=4 or A] = 1 - φ (μ$_3$ – β$'$ x) ……………………….……(7)

With φ in each formula represents the cumulative normal density function and β$'$ x is calculated as shown in equation 8 using the information from Table 3.

β$'$ x = C * 1 + QuantGPA * 2.829312 = 2.69943 ……………..(8)

Using the value of β$'$ x as found in equation 8, the probability of the average student receiving any letter grade in Operations Management can be calculated using formulas 3 thru 7. For example, the probability that the average student will receive a "C" in Operations management is: Prob [y=2 or C] = φ [2.28068 – 2.69943] – φ [0.898601– 2.69943] = 0.301834.

Following from the above, the marginal effect of an increase in a student's QuantGPA, from 2.0 up to 4.0 in increments of 0.5, on the probability of earning each of the possible grades (A, B, C, D, and F) was calculated. The results of these calculations are shown in Table 4 and graphically in Figure 1.

TABLE 4
The Probability of Receiving any Letter Grade for a Given QuantGPA

		QuantGPA				
		2.0	2.5	3.0	3.5	4.0
Grade Received in Operations Management	E	0.0459	0.0108	0.0018	0.0002	0.0000
	D	0.1696	0.0702	0.0204	0.0042	0.0006
	C	0.5084	0.4125	0.2430	0.1034	0.0316
	B	0.2385	0.3853	0.4462	0.3710	0.2211
	A	0.0376	0.1213	0.2885	0.5212	0.7467

As the reader can see, as a student moves up from a 2.0 score in QuantGPA (a very minimal score) the probabilities of receiving a D or F fall off dramatically. The probabilities of receiving an A, B, or C are of the most interest and are easily viewed in Figure 1. As the student's QuantGPA moves above 2.0, the probability of receiving a C decreases steadily and the probability of receiving an A increases steadily to where at QuantGPA values of 3.5 and higher A is the most likely grade. What is also interesting is the behavior of the probability of receiving a B. The probability of receiving a B increases as QuantGPA moves from 2.0 to 2.5 and then peaks at 3.0 then falling as QuantGPA increases to 3.5 and 4.0.

See Figure 1, below:

FIGURE 1
The Relationship Between QuantGPA and Performance in Operations Management
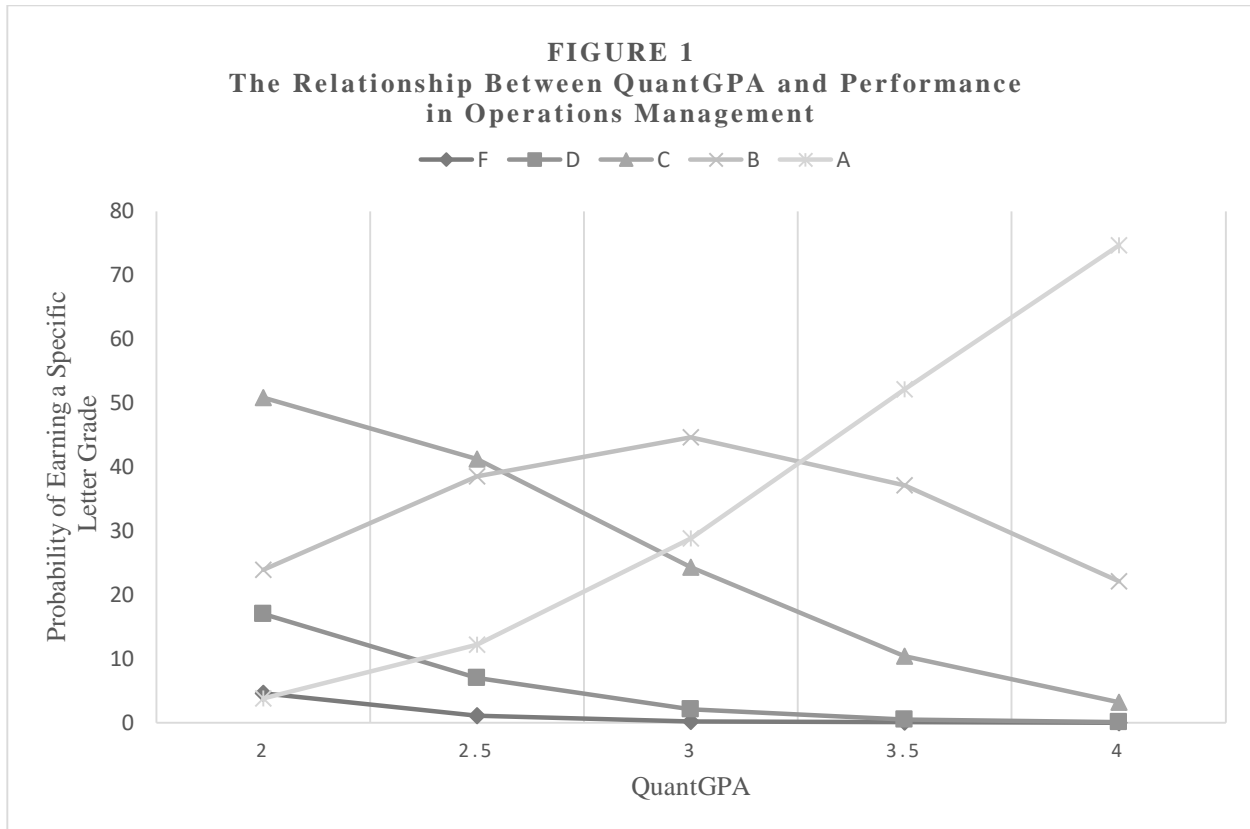
EXPERIMENTAL RESULTS

H1: Is strongly supported by the results. A scaled R^2 of .35 is high for social research leading to the conclusion that freshman and sophomore courses are significant predictors of future performance, even performance three or more years later.

H2: This hypothesis is somewhat supported. The course related variables that dropped out of the model were BSAD240, CIS217, and Actg 251. While BSAD240, Legal Environment of Business, and CIS117 Applications of Microcomputers are not quantitative in nature, the question of Actg251 remains. While some readers may consider Actg251 to be a quantitative course others may not. Also, while Actg251 fell out of the model, Actg252 remained a significant predictor. Because of these factors, this hypothesis is said to be somewhat supported.

H3: This hypothesis is strongly supported. Both Math050 and Math110 were not found to be significant predictors of performance.

H4: This hypothesis was strongly supported in that GENDER was not found to be a significant predictor of performance.

CONCLUSIONS

The efficacy of using of a core set of freshman and sophomore courses to control access to a senior level Operations Management course has been supported. Performance in a senior-level OM class can be predicted by performance in freshman and sophomore level courses which may have been taken as much a three years before the senior-level course. Furthermore, the expected performance of students as a whole can be greatly influenced by increasing the minimum required QuantGPA from say 2.0 to 2.5, which would reduce the number of expected D's and F's by more than 50%. This result helps to validate the model used by many colleges of business that require a minimum level of performance in foundation courses before a student my progress to junior and senior level courses.

Also, at least with respect to the senior-level OM course, the need for students to take one or two lower-level mathematics courses before enrolling in the required mathematics courses was not found to be a significant predictor of performance for the students that made it to the OM course. It is recognized that this study only examines survivors in that students who may have needed one or both of the lower-level mathematics courses but who did not make it to the OM class do not appear in the analysis.

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ECONOMICS DEPARTMENT INVOLVEMENT IN THE AACSB ACCREDITATION PROCESS: PERCEPTIONS OF BUSINESS COLLEGE DEANS

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ABSTRACT

This paper utilizes a survey of all AACSB accredited business college deans in Pennsylvania to determine the perceived effect economics faculty have on the AACSB accreditation and reaccreditation process. General results show that deans believe economics helps students develop critical thinking and quantitative skills; both important standards in the AACSB process. Survey results show that economics is viewed more favorably by deans of business colleges that include the economics discipline as opposed to those where economics is housed in another college. Additionally, business college deans in the survey report that economics is more important in the initial accreditation process than in the reaccreditation process.

INTRODUCTION

Accreditation by the Association to Advance Collegiate Schools of Business (AACSB) is an important goal of most business schools wishing to be competitive in attracting the best students and faculty available. Once accreditation is achieved, programs face the continued challenge of maintaining accreditation (or achieving reaccreditation). The AACSB accreditation process and reaccreditation process is a significant task facing most business colleges requiring a concerted effort by all stakeholders in an academic institution. While it is important for all members of a college to take part in the process of assessment and improvement, much of the burden related to the AACSB accreditation process falls on the college administration. As a consequence, there is a significant amount of research related to the AACSB accreditation process (along with the maintenance of accreditation) as well as the impact it has on various academic departments within a business college. Fitzpatrick and McConnell (2014), for example, present a detailed discussion how the AACSB accreditation and maintenance process has impacted a department of economics in terms of program assessment, development of program learning objectives, changes to the department mission, and maintenance of faculty competencies. The primary area of development involves assessment but it is also clear that the AACSB accreditation and maintenance process requires a close integration of academic units within the business college.

Very little research has been done, however, to determine the reverse impact the inclusion of a department of economics has on the AACSB accreditation and maintenance process for business colleges. Even though economics represents an important academic discipline underpinning business education, there is variation as to whether it is included as a department in a business college or one that is outside the business college environment (usually in the liberal arts or school of social science). One would presume business colleges that include a department of economics would view the discipline as an important factor in business education and, therefore, helpful in the accreditation endeavor. Programs where economics is not closely linked to the business college presumably do not view the discipline as a significantly positive one in advancing business education. Given this dichotomy, it would be interesting to see how the inclusion of economics into a college of business environment helps in the accreditation process. Historically, economics has been viewed as a discipline helping students develop important critical thinking skills along with helping train students in advanced quantitative topics. Much of the research conducted by undergraduate students related to economics since it is one of the first business disciplines to which students are exposed. Given the concept of the counterfactual as described by Fogel (1964), it is not entirely possible to determine the actual impact of economics in the AACSB process in a precise manner. It is possible, however, to better understand the overall perception of the economics discipline in the AACSB accreditation and reaccreditation process by surveying business college leaders on the subject. This paper attempts to do that by analyzing a survey sent out to business colleges in Pennsylvania currently accredited by AACSB. Results of survey questions are studied in the aggregate as well as looking at comparisons between deans of colleges where economics is a discipline within the business college to those where economics is not in the business college. While the results are derived from a relatively small sample, they provide some insight into the opportunities as well as challenges faced by business schools involved in the AACSB accreditation and reaccreditation process relative to one particular discipline.

AACSB ACCREDITATION AND ECONOMICS

The AACSB accreditation process involves a substantial investment in time and financial resources for business colleges interested in attaining this important distinction. The potential gains to business colleges in attaining AACSB accreditation are clear in terms of attracting students and faculty in competitive markets for both. Financial gains for business faculty in an accredited institution can also be substantial. Levenier and Miles (1992) showed a statistically significant difference in average business faculty salaries favoring AACSB accredited programs over those without accreditation. In addition, accreditation resulted in a widening gap between the average salary of business faculty and average salaries observed in cross-disciplinary fields. As a consequence, there are significant and broad gains for business colleges obtaining AACSB accreditation.

AACSB presents applicants with the highest standards in business education and requires applicants to meet each standard. According to the Eligibility Procedures and Accreditation Standards published by AACSB, the necessary categories of standards are:

Standard 1:	Mission, Impact and Innovation
Standard 2:	Intellectual Contributions
Standard 3:	Financial Strategies and Allocation of Resources
Standard 4:	Student Admissions, Progression, and Career Development
Standard 5:	Faculty Sufficiency and Deployment
Standard 6:	Faculty Management and Support
Standard 7:	Professional Staff Sufficiency and Deployment
Standard 8:	Curriculum Management and Assurance of Learning
Standard 9:	Curriculum Content
Standard 10:	Student-Faculty Interactions
Standard 11:	Degree Program Educational Level, Structure, and Equivalence
Standard 12:	Teaching Effectiveness
Standard 13:	Student Academic and Professional Engagement
Standard 14:	Executive Education
Standard 15:	Faculty Qualifications and Engagement

Economics provides important aspects related to AACSB that include evaluation, critical thinking skills, quantitative skills, teaching improvement and research participation, service, experiential learning, emphasis on material relevant to business leadership. Borg and Stranahan (2010) showed that students who gained a high level of economic understanding in their introductory economics courses exhibited higher scores on the Watson-Glaser Critical Thinking Appraisal. The level of critical thinking skills improved among students taking a higher number of courses in economics. Faculty members in economics are also typically in charge of quantitative courses for a business college including business statistics and econometrics. Related to these are initiatives to engage undergraduate students in research activities. As a consequence, it is likely that if economics can be linked to positive attributes such as critical thinking, quantitative analysis, and undergraduate research it might be an important discipline in the achievement of AACSB accreditation. Since all programs need to maintain standards once accredited, this value should still be significant during the reaccreditation process.

Santomero (2003) considers these important attributes in an opinion piece discussing the importance of economic education in business. As past president of the Federal Reserve Bank of Philadelphia, Santomero led an initiative to improve economic education among secondary schools in his region under the belief that is was vital to the future health of the United States economy. It was his opinion that economic education is critical in linking education institutions, businesses, and consumers. Healey (1993) also recognized the importance of economics in business education but pointed out that, in order to compete for students, many business programs have sought to downgrade both the level and amount of economics taught in the business curriculum. As a consequence, some business colleges include the economics discipline in the program while others see economics housed outside the business college.

METHODOLOGY

As discussed above, a true measure of causality with regard to activity by departments of economics and the success or failure of the AACSB process is not empirically feasible. It is possible, however, to analyze the perceptions held by academic leaders of business colleges that do hold AACSB accreditation with regard to views on whether economics helps or hinders the accreditation or reaccreditation process. Casile and Doris-Blake (2002) showed that an important predictor of how quickly an accredited business college responded to changes in AACSB standards was the experience exhibited by the dean of the business college. As such, it is reasonable to assume that perceptions of business college deans are fairly accurate indicators of existing conditions at each academic institution.

To this end, a survey consisting of eight statements related to the initial accreditation and the same eight statements linked to the reaccreditation process was sent out to each of the business college deans in programs holding AACSB accreditation in Pennsylvania. Of the twenty-five academic leaders representing the accredited programs, twenty returned the online survey; a very respectable eighty percent. Interestingly, a total of seventeen responded within one week of the survey being send with the remaining three returned the following month. Surveys were available to each of the business deans to be completed online. Given the small population of AACSB accredited programs in Pennsylvania, respondents were only presented with basic statements and were asked about the placement of economics relative to the business college. This was done to preserve the anonymity as much as possible among those responding in such a small group.

The eight base questions pertaining to the initial accreditation were:

1. Economics courses were important in helping business students achieve higher critical thinking skills.
2. Faculty in economics were important in helping business students reach important academic research levels.
3. Faculty in economics played a major role in providing necessary quantitative skills to students.
4. Faculty in economics played a major role in the initial accreditation process.
5. Economics is not an important discipline in the AACSB accreditation process.
6. AACSB accreditation would not have been achieved without assistance from faculty in economics.
7. Faculty in economics worked well with other business disciplines in the AACSB accreditation process.
8. Most faculty members in economics were opposed to AACSB accreditation.

The term "AACSB accreditation" was simply replaced with the term "AACSB reaccreditation" for the second set of statements so that respondents could indicate the involvement of economists in each process. While similar, the initial accreditation process is one that is markedly different than the maintenance of accreditation (or reaccreditation) so it is useful to determine whether there is a difference in any perception regarding the importance of economics in the entire process. There are certainly many examples of how the acquisition of initial AACSB influences faculty involvement during a reaccreditation period; both in a positive and negative sense.

For each of the statements above, respondents were asked to provide one of the following numerical choices (a seven point Likert scale):

    7 = Strongly Agree
    6 = Agree
    5 = Slightly Agree
    4 = Neutral
    3 = Slightly Disagree
    2 = Disagree
    1 = Strongly Disagree

As a consequence, the higher the average value of responses to each statement the more general agreement there is with the statement among respondents. Likewise, the lower the average the more disagreement respondents have with the statement on average. Matching with the specific statements it is clear that a higher average response on the first four statements along with statements 6 and 7 tend to provide favorable results with regard to the perceived effect economics has on the AACSB accreditation and reaccreditation process. Lower averages are desired for statements 5 and 8 if one wishes to show that economics is perceived to be a useful discipline in business college AACSB activities among Pennsylvania programs.

The specific analysis will simply consist of average response values for each of the statements using the full sample along with a separate analysis partitioning the sample into two sub-samples based on where economics is placed in the academic environment. More precise statistical significance tests are not reported as the small sample and data collection technique lead to violations in underlying assumptions necessary for such analysis. This is a weakness of this study outlined in the conclusion.

SUMMARY RESULTS

Of the twenty-five business colleges accredited by AACSB in Pennsylvania, fourteen have the economics discipline within the college (call the Economics In) while eleven do not have economics housed within the college (call this Economics Out). Interestingly, the response rates were higher among deans of colleges where economics was housed outside the business college rather than within the business college. A total of eleven among the Economics In group responded (a 78.57 percent response rate) whereas nine of the Economics Out programs responded (a response rate of 81.82 percent). It is worth noting that among the initial seventeen responses, the entire sample of eleven for the Economics In group were submitted and only six of the Economics Out group were completed. Responses were generally faster for the Economics In programs when the survey was initially distributed while the responses for the Economics Out group tended to come later.

Table 1 below provides average results across all respondents for the statements posed involving the initial accreditation and the subsequent reaccreditation activities. With regard to the initial accreditation process, the two statements that generated the highest average level of agreement among all business deans involved the linkage of economics to critical thinking skills and to quantitative skills. These results with regard to perception, at least in terms of critical thinking skills, seem to match the work of Borg and Stranahan (2009) who showed a very strong linkage between economics exposure and student scores on the Glaser Critical Thinking Appraisal test. In both cases the agreement that economics is important in developing critical thinking and quantitative skills among business students is slightly weaker during the reaccreditation process, but they are both still in the agreement range. While it is clear that academic leaders in the surveyed business programs believe that economics is important for critical thinking and quantitative skill development among students, academic deans very slightly agree that economics faculty worked well with other disciplines in the AACSB accreditation and reaccreditation processes. This overall perception appears to be supported by the general level of disagreement with the statement that economics faculty opposed AACSB activity. Average results also showed that business deans believe that economics faculty tended to promote undergraduate research; an important consequence of improved critical thinking and quantitative skill development.

Interestingly, among all deans returning the survey the average was even higher for the statement that economics worked well with other faculty in the reaccreditation process than under initial accreditation. This is in contrast with results that showed business leaders generally agreed with the notion that faculty played a major role in the initial AACSB accreditation process but were relatively neutral on the importance of economics faculty in the reaccreditation process. One odd result is that, on average, deans were relatively neutral to the statement that economics is not an important discipline in AACSB accreditation and reaccreditation (although only slight disagreement with reaccreditation) despite the more positive results on related statements. It is also clear in Table 1 that business deans did not view economics to be absolutely essential to AACSB accreditation or reaccreditation success.

While it is important to consider the aggregate results of the survey, it is of greater relevance to see whether perceptions related to the role economics plays in the AACSB processes by business college deans differ based on the academic organization of the college. Table 2 below reports average survey results separately for the Economics In programs and the Economics Out programs. Generally, the results are as one would anticipate with regard to the comparison of the two sub-samples. Programs where the economics discipline is part of the business college generally have a much more favorable view of economics in the AACSB processes when compared to the perception of leaders in colleges where economics is a discipline outside the program. It also appears, in general, that the perception of academic deans toward the role of economics in AACSB reaccreditation is not as strong or favorable as it is with the initial accreditation process. It appears the bloom has faded concerning economics over time among business deans of accredited programs.

Among deans where economics is within the business college, the discipline is viewed very strongly in helping students with important critical thinking skills, quantitative skills, and undergraduate research abilities. Deans of

programs where economics is not part of the business college are relatively neutral on the discipline's importance to critical thinking and quantitative skills and do not tend to believe that economics assists undergraduate students in developing strong research skills. These are significantly different results from the Economics In sample despite existing research that indicates the importance of the field in critical thinking and quantitative skill development. Borg and Stranahan (2009) discussed above is an important study addressing critical thinking while Schumann, McGoldrick, and Burrus (2005) represents one study showing the strong link between economic literacy and student quantitative literacy.

The statement that faculty in economics played a major role in AACSB accreditation/reaccreditation is, in a sense, a mirror image of the statement that economics was not an important discipline in the process. Both statements provided similar empirical results in that Economics In program leaders viewed the economics discipline more favorably with higher averages on economics playing a major role and greater disagreement on the statement that economics was not an important discipline in the AACSB process. Likewise, business deans of Economics Out programs did not believe economics played a major role and strongly agreed that economics was not an important discipline in the AACSB process. Among both sub-samples, economics was viewed less favorably for the reaccreditation process with the exception of programs where economics is not in the business college concerning the last statement above (less agreement on the statement that faculty members in economics opposed the AACSB process). Economics Out average results showed there was less agreement, on average, with the statement that economics was not an important discipline when reaccreditation took place. This seems to indicate that during reaccreditation, economics is viewed as neutral in the AACSB process.

Both groups disagree with the notion that AACSB accreditation/reaccreditation could not have been achieved without assistance from faculty in economics. This disagreement is especially strong among business deans in colleges without economists with regard to initial accreditation. In that sub-sample the average level of disagreement is less pronounced concerning reaccreditation. The statement concerning opposition by faculty members in economics to AACSB accreditation/reaccreditation also shows significantly different results between the two sub-samples. Leaders among Economics In programs strongly disagree with the assertion that economics faculty oppose the AACSB process while dens from Economics Out programs are neutral on the question. A similar degree of difference is seen looking at the statement regarding how well economics faculty worked with business faculty in other disciplines during the AACSB processes. Predictably, deans from business colleges that include economics thought economics faculty worked well with others in the process. Deans from business colleges where economics is outside the college did not believe economics faculty worked well with business faculty during the initial accreditation process. Interestingly, this view changed significantly for that sub-sample concerning the reaccreditation process. On average, deans for Economics Out programs slightly agreed that economics faculty worked well with faculty in their college. It seems that they viewed economists as coming on board with the reaccreditation process as opposed to initial accreditation. This could be due to the necessary linkage of the disciplines or, perhaps, a willingness of business faculty to reach out to economists for assistance in maintaining some of the AACSB standards.

CONCLUSION

Even though the survey sample is extremely small in this analysis, a few interesting results related to the possible linkage between the economics discipline and the AACSB accreditation and reaccreditation processes results from looking at perceptions measured from responses by business deans. It is clear, for example, that economics is viewed most favorably with regard to its impact on the development of critical thinking skills of students. This is a very important skill for students to master; both in terms of their own professional development but also in terms of its importance in business schools achieving long-term accreditation and a successful base of alumni. This attribute is empirically supported in the business education literature and it appears to be recognized by most business deans in Pennsylvania regardless of whether economics is a discipline in the college. Economics is also recognized by most business college deans in Pennsylvania to be important in helping students develop strong quantitative skills. Given the increasing dependence of the business field on advanced quantitative techniques, this is another important function of economics in developing successful graduates and a positive environment for accreditation activities. For these reasons alone, it seems prudent for business college deans to foster a strong linkage between economics faculty and other business disciplines.

As expected, the survey results show that economics is generally considered to be more important in the AACSB accreditation and reaccreditation processes among business college deans where economics is included as a

department or part of a department within the college. Additionally, economics is generally viewed to be more important to AACSB activity in helping with initial accreditation as opposed to reaccreditation efforts. Together, this implies that business colleges including economics as an important discipline will likely experience a more positive experience in the AACSB accreditation process and observe greater assistance between faculty members. It seems that the stronger linkage advised above will only see significantly positive perceived effects on the AACSB process if economics is physically housed within the business college environment. This is also true in the reaccreditation process. While not as positive a perception, the pattern between different types of business college structures persists throughout the sample and inclusion of economics in the process by means of incorporation within the college will help in the later maintenance of accreditation.

There are a number of caveats to consider when assessing this study. Aside from the small sample, there was also no distinction made for the type of institution in question. It seems reasonable to assume that larger research institutions will view the AACSB process in a different fashion than would be seen at a smaller teaching institution. Due to the small population of AACSB accredited business programs in Pennsylvania, a request to have deans identify the type of institution would have compromised the promised anonymity for the respondent. One way to correct this is to expand the sample size by sending the survey to schools in a wider region. In addition, it would be valuable to look at programs that either are not accredited by AACSB or those seeking AACSB accreditation without success in order to expand the analysis beyond simple perceptions. While these are planned changes for future work, this initial study does provide some important results concerning views of how economics faculty impact the AACSB accreditation and reaccreditation processes.

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Table 1
Average Responses of Survey Statements for Full Sample

Survey Question	Average Response for Initial Accreditation	Average Response for Reaccreditation
Economics courses were important in helping business students achieve higher critical thinking skills.	5.40	4.95
Faculty in economics were important in helping business students reach important academic research levels.	4.70	4.35
Faculty in economics played a major role in providing necessary quantitative skills to students.	5.00	4.75
Faculty in economics played a major role in the initial accreditation (or reaccreditation) process.	4.75	3.95
Economics is not an important discipline in the AACSB accreditation (or reaccreditation) process.	3.95	3.50
AACSB accreditation (or reaccreditation) would not have been achieved without assistance from faculty in economics.	2.55	3.05
Faculty in economics worked well with other business disciplines in the AACSB accreditation (or reaccreditation) process.	4.55	5.30
Most faculty members in economics were opposed to AACSB accreditation (or reaccreditation)	2.70	2.65

Table 2
Average Survey Responses for Economics in and Economics Out Sub-Samples

Survey Questions	Economics a Department in the Business College		Economics Not a Department in the Business College	
	Average for Initial Accreditation	Average for Reaccreditation	Average for Initial Accreditation	Average for Reaccreditation
Economics courses were important in helping business students achieve higher critical thinking skills.	6.182	5.636	4.444	4.111
Faculty in economics were important in helping business students reach important academic research levels.	6.000	5.818	3.111	2.556
Faculty in economics played a major role in providing necessary quantitative skills to students.	5.818	5.545	4.000	3.778
Faculty in economics played a major role in the initial accreditation (or reaccreditation) process.	5.727	4.545	3.556	3.222
Economics is not an important discipline in the AACSB accreditation (or reaccreditation) process.	2.545	2.818	5.667	4.333
AACSB accreditation (or reaccreditation) would not have been achieved without assistance from faculty in economics.	3.364	3.091	1.556	3.000
Faculty in economics worked well with other business disciplines in the AACSB accreditation (or reaccreditation) process.	6.273	5.818	2.444	4.667
Most faculty members in economics were opposed to AACSB accreditation (or reaccreditation)	1.545	1.636	4.111	3.889

JBET Research Notes

Emotional Intelligence: Performance Matters – or Does It?
Justin C. Matus

Experiential Learning For MBAs: Are We Closing The Business Competency Gap?
David C. Nash
T.L. Hill
Marilyn Anthony

A Gender Comparison of Entrepreneurial Motivations for Starting a Business
Denise T. Ogden

EMOTIONAL INTELLIGENCE: PERFORMANCE MATTERS – OR DOES IT?

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ABSTRACT

The purpose of the study was to determine if Emotional Intelligence (EI) predicted performance. Performance was measured via a business simulation game, commonly known as The Business Strategy Game (BSG). The Business Field Exam was used a measure of business aptitude and served as a control variable. Volunteer subjects were drawn from an MBA capstone strategy course. Data was collected over a two and a half year period across several sections of the class with 93 subjects included in the final study. A regression model indicated that EI did not predict performance, however gender and business aptitude did predict performance as measured by the BSG.

INTRODUCTION

The purpose of this study is to examine the relationship between Emotional Intelligence (EI) and performance, specifically work performance. EI has been defined variously as a combination of self-awareness, awareness of other's emotions and the ability to self-regulate one's own emotions. A more formal definition was offered by Salovey and Mayer (1990) who state, "We define emotional intelligence as the subset of social intelligence that involves the ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p. 189). The importance of the EI construct was further thrust into mainstream management thinking in the book entitled *Emotional Intelligence* (Goleman 1995) followed by the widely read and often cited article in The Harvard Business Review, entitled *What Makes A Leader?* (Goleman 1998).

Since Goleman's book and follow up article, it is fair to say that the EI construct has been widely embraced by mainstream managers and management consultants as a valid construct and indeed, a necessary ingredient for the successful manager. The reasoning is fairly straightforward and follows the basic logic that people with a high level of EI are better leaders and therefore produce better results. This relationship has been studied rather extensively over the past twenty five or so years.

While a number of excellent studies have attempted to validate both the EI construct and the nexus of EI and performance, no single study has carefully and directly measured the performance of a manager. There have been proxy measures of a manager's performance such as subordinate's rankings of managers (Wong & Law, 2002), (Kerr, Garvin, Heaton & Boyle, 2006), (Barbuto, Gottfredson & Searle, 2014), but like many other studies of EI they side step the fundamental question about EI and performance. An ambitious meta-analysis by O'Boyle, Humphrey, Pollack, Hawver and Story (2011) suggests that EI "exhibited substantial relative importance in the presence of the Five Factor Model and intelligence when predicting job performance" (p. 788). However, as pointed out in a comprehensive review of the EI literature Matus (2015) posited:

> … these meta-analyses are built upon a seemingly shaky platform drawn from the literature which is filled with qualifying statements, limitations and the usual requisite calls for further research (Cote, S. and Miners, C., 2006; Brackett, M. A. & Mayer, J. D., 2003; Murphy, K., 2009). Yet the researcher teams in both these examples forge ahead, plugging into their model data gleaned from a virtual hodge-podge of populations and methodologies with no regard for the underlying weaknesses in the original studies.

Cote and Miner (2006) state, "despite the popular interest, there is a paucity of studies on how emotional intelligence is related to job performance". This study attempts to address this shortfall.

METHODS

This study was designed to directly measure the subject's EI, job performance and business aptitude. Business aptitude is used as a control variable. The study's population was drawn from volunteers enrolled in an MBA capstone business strategy course. Data was collected over the course of two and half years from several sections of an MBA capstone course. Typical class size was between eighteen and twenty-two students. A goal was to achieve a total sample size of approximately one hundred subjects. The study used three instruments to measure the variables of interest. Basic demographic data for each subject was also collected.

The first construct, EI, was measured using the EQ-1 2.0, an on-line, self-administered instrument, widely regarded as a reliable and valid measure of the EI construct (Brown, Bryant, & Reilly, 2006). It takes approximately 20-30 minutes to complete the 133 item questionnaire. The EQ-I 2.0 is based on the original Bar-ON EQ-I developed by Reuven Bar-on, copyright 1997. Subjects completing the EQ-I 2.0 receive an overall EI score, five composite scores and from those five composite scores, another fifteen subscales. Scores range from 60 to 140. This study will focus on the overall EI score.

The second instrument used to measure job performance is the Business Strategy Game (BSG), an on-line business simulation. The BSG is a robust and complex simulation which allows each student to manage their own company in a competitive environment. In the BSG simulation, players are pitted against one another as they all attempt to gain market share and earn the maximum amount of profit during each round of decisions. The total number of players may vary, with a maximum of 12 students in a given simulation. During this study, there were typically between 6 to 12 students competing against one another. The game is played over the entire semester, about twelve to fifteen weeks. Each week, the students earn a score for the week as well as a cumulative, overall score. The cumulative, overall score is the measure used for job performance. Scores range from 0 to 100. Using the BSG is an objective and direct performance measure since the simulation and scoring are all contained within the context of the computer program. There is no opportunity for evaluator bias to enter into the scoring and all performance results are based on the efficacy of the business decisions the player makes. These decisions include things like pricing, compensation, employee training, charitable donations, advertising, etc. Put simply, the decisions the student-player must make emulate all the management and leadership decisions a manger would have to make in the real business world.

The third and final instrument used, is the Business Field Exam (BFE), a standardized test developed and administered by Educational Testing Service (ETS). The field exam is an on-line, 3 hour exam, consisting of 124 multiple choice questions reflecting the content of a typical MBA program. Students receive a total score on a scale of 220-300. The BFE has been widely used and is considered reliable and valid (ETS 2017). The rationale for this measure is to offer some control for individual differences in terms of intelligence and business acumen. I recognize that the BFE is not an IQ test per se, nor is it necessarily intended to measure an individual inasmuch as one could use it to measure an MVA program's overall efficacy in delivering the content measured.

DATA

Data was analyzed using IBM SPSS 23. Tables 1 and 2 present descriptive statistics. The average age of the sample (n = 93) was 29. 53% of the population were female, 47% were male. The mean score for the BSG game was 84, std. deviation was 25.13. The mean score for the BFE was 247.96, std. deviation was 13.12. The mean score for EI was 103.10, std. deviation was 12.75. Mean scores by gender are also presented for BSG, BFE and EI. Table 3 presents regression analysis results with gender, BFE scores and EI scores as independent variables and BSG scores as the dependent variable. The results of the regression analysis suggest that gender and BFE scores predict success in the Business Strategy Game simulation, however Emotional Intelligence does not. The model has a modest R square of .198, with BFE's beta of .276 (sig = .005) and gender's beta of .307 (sig. = .002). EI does not enter the model significantly with a beta of .145 (sig. = .133). A post hoc t-test of BFE, BSG and EI scores by gender is presented in table 4. There were no statistically significant differences in BFE or EI scores, however there was a statistically significant difference in BSG scores (p = .002) between men and women.

DISCUSSION

This study addressed the question if Emotional Intelligence predicts performance, specifically in managing a business in a simulated environment. The evidence suggests that EI does not predict success in this simulated business game, however business aptitude as measured by the Business Field Exam and gender do predict success. Like many other studies, the challenge seems to be measuring performance. This study sought to use an objective and direct measure of one's managerial, if not entrepreneurial skill. As with any simulation, there are limits as to what and how things like performance are measured. In this study each student earns an individual score for how well they played the game which is determined by a variety of different inputs with different weights. No doubt there is an element of uncertainty in which the student player operates, and the game is played over a relatively short period of time (approximately 15 weeks). Moreover, the game has not been developed specifically as a measure of managerial skill per se, and is as much meant to be a learning tool encouraging trial and error, experimentation and risk taking. These elements also

suggest the need for further investigation into some of the performance differences between genders and suggest future study as well.

LIMITATIONS

The study has several important limitations. Generalizability is limited due to the narrow range of the population in terms of age, education and occupation (manger/student of management) and the sample size is also very modest. The EQ-Q 2.0 has been criticized because of its self-reporting nature and is subject to gaming or manipulation by respondents attempting to offer socially correct responses (Sy, Tram & O'Hara, 2006). Other EI instruments include the MSCEIT V2.0 (Mayer, Salovey, Caruso, & Sitarenios, 2003) and the Trait Emotional Intelligence Questionnaire–Short Form (Cooper & Petrides, 2010), either of which may yield a different result. As previously discussed, the BSG is not designed specifically as an assessment tool of performance nor has it been validated as such. Most notably, the BSG only simulates interaction with employees. Given the very nature of the EI construct, the dynamism and variety of a real work/supervisory milieu also severely limits the simulation's power to measure performance. It is also possible students suffered a level of fatigue after playing the game for 10 to 12 weeks, and perhaps giving up prematurely if they were not doing as well as they might have hope during the early stages of the simulation. This possible fatigue may therefor exaggerate the differences in scores between low performers and high performers. Finally, the differences detected between genders are surprising and not immediately explained by any design artifacts, it does call into question if some other undetected variable is at work.

CONCLUSIONS

As for the EI construct, I suggest that its value as an employment screening tool in order to predict job performance is questionable. While the results of this study are far from definitive, they do call into question the appropriateness of how one uses EI assessments in the workplace as well as how much emphasis should be placed on EI in leadership theory and teaching. The literature is rich with a variety of positions on its import and value, so I will not debate the merits here. Rather, I will suggest that the EI construct be held fast for now and that more research with stronger direct measures of a manager's performance be evaluated in relationship to one's EI. The current study is modest in size and the sample population is rather narrow in terms of age, experience and occupation. Future research may find that in different cultures, populations or occupations a stronger or weaker relationship between EI and performance exists. Until such further studies are undertaken, I think it is critical for leadership educators and hiring managers to use extreme caution when discussing EI, its predictive power and its relative value when forming judgements about people and their performance potential. Just as diversity of thought is often times viewed as an organization's strength, so too might a diversity of EI be an equivalent organizational strength.

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Table 1

Gender		Age	BSG	BFE	EI
female	Mean	28.8883	76.5571	246.5102	104.7347
	N	49	49	49	49
	Std. Deviation	5.56936	26.00800	11.31946	12.71609
male	Mean	29.7688	92.5909	249.5909	101.2955
	N	44	44	44	44
	Std. Deviation	6.24416	21.44291	14.85483	12.70704
Total	Mean	29.3049	84.1430	247.9677	103.1075
	N	93	93	93	93
	Std. Deviation	5.88234	25.15153	13.12933	12.75987

Table 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	49	52.7	52.7	52.7
	male	44	47.3	47.3	100.0
	Total	93	100.0	100.0	

Table 3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.445[a]	.198	.171	22.90554

a. Predictors: (Constant), Gender, BFE, EI

Table 3 (cont'd) ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11504.078	3	3834.693	7.309	.000[b]
	Residual	46695.090	89	524.664		
	Total	58199.168	92			

a. Dependent Variable: BSG

b. Predictors: (Constant), Gender, BFE, EI

Table 3 (cont'd) Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-83.993	49.597		-1.693	.094
	BFE	.530	.183	.276	2.891	.005
	EI	.287	.189	.145	1.517	.133
	Gender	15.388	4.834	.307	3.183	.002

a. Dependent Variable: BSG

Table 4 Independent Samples Test

		F	Sig.	t	df	Sig. (2-tailed)
BSG	Equal variances assumed	2.643	.107	-3.222	91	.002
BFE	Equal variances assumed	2.797	.098	-1.131	91	.261
EI	Equal variances assumed	.148	.701	1.303	91	.196

EXPERIENTIAL LEARNING FOR MBAs:
ARE WE CLOSING THE BUSINESS COMPETENCY GAP?

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ABSTRACT

Recent literature highlights the pragmatic and pedagogic challenges faced by MBA programs trying to serve the expressed needs of employers while providing educational value to students. In June 2017, *The Economist* cited employers' complaints that business schools "encouraged students to think rigidly, to value cautious consideration over risk taking" and described industry-led curriculum design initiatives that focused on "experiential learning with large companies, solving real-world problems."

Building on Kolb's theory of experiential learning and critiques of the mismatch between MBA education and the professional competencies required by employers, the Temple University/Fox MBA has developed a competency-driven curriculum capped by a highly structured, industry-academic-led, live consulting project. In its design and execution, the capstone offers student teams a systematic approach for practicing in-demand business competencies while synthesizing knowledge and applying both to the solution of a pressing business problem for a client expecting practical results. Using over 200 Professional MBA student self-assessments conducted since 2013, this paper provides empirical evidence of the impact of experiential learning. The results indicate the model achieves both professional and educational goals, though perhaps at the price of over-emphasizing competencies that students do not value in the short term.

This paper describes the role of experiential education in competency and professional development, offers initial tests of several theoretical relationships, and concludes with implications for MBA education that balances student and marketplace demands.

INTRODUCTION

As anyone involved in masters of business administration programs is acutely aware, the relevance and value of the MBA degree has been challenged by employers, academics and perhaps to a lesser extent, by students, dating at least as far back as Porter & McKibbin's 1988 report advocating a need for improved instruction for leadership, management, and interpersonal skills. In more recent times numerous critical articles have appeared, most notably Bennis & O'Toole, 2005; Ghosal, 2005; Khuranar, 2007; Mintzberg, 2004; Pfeffer & Fong, 2002, all cited as influential to the research conducted by Robert S. Rubin and Erich C. Dierdorff and reported in their study, "How relevant is the MBA? Assessing the alignment of required curricula and required managerial competencies" (AMLE 8: 208-224).

In 2012 the Fox School of Business at Temple University initiated a broad stakeholder assessment of the strengths and opportunities of their curriculum design to determine how best to close the gap critics perceived between MBA education outcomes and employer needs. One major outcome of this redesign initiative has been the development of a competency-based curriculum culminating in a highly structured, industry-academic led, live consulting project known as the EMC (Executive Management Consulting) practicum.

Central to this redesign is the Kolb educational model, positing a four-stage process as essential for effective learning: concrete experience, reflective observation, abstract conceptualization, and active experimentation (Exhibit 1). The EMC practicum adheres to this model by assigning self-formed student teams to real consulting projects with live, paying clients looking for practical, evidence-based strategic solutions. Each team of 4-6 students simultaneously confronts the complexity inherent in client relationships and a business problem (Concrete Experience); must devise a research plan that draws on their MBA foundational courses across functions (Reflective Observation); make the transition from data to key insights (Abstract Conceptualization); and finally present a set of recommendations to the client for implementation (Active Experimentation).

This paper provides a brief overview of the evolution of the masters of business degree and describes Fox's specific response to the criticisms levelled at MBA programs. We share the preliminary results of our attempt to measure the effectiveness of this learning environment as viewed from the student perspective.

Early indications are that students see improvement in areas of employer-valued "soft skills" such as communication and creative thinking, here captured as presentation skills and consulting skills. The value students place on these competencies shows some variance between current and future worth to their careers. Student responses tend to remain relatively constant across the timeframe of this study, suggesting the program design is being consistently implemented.

Based on early and encouraging findings that the EMC practicum provides the "learning space" (Kolb & Kolb 2005) requisite for behavioral change, we believe additional research is warranted to extend these initial indications from the data. We find significant potential value in replicating some of the research J. Duane Hoover, Robert C. Giambatista, Ritch L. Sorenson and William H. Bommer devised for their "whole person learning" study methodology (Assessing the Effectiveness of Whole Person Learning Pedagogy in Skill Acquisition, Academy of Management Learning & Education, June 1, 2010 vol.9 no 2 192-203). In addition, we may look to sources such as employers for further validation of outcomes to provide a lens external to the student participants.
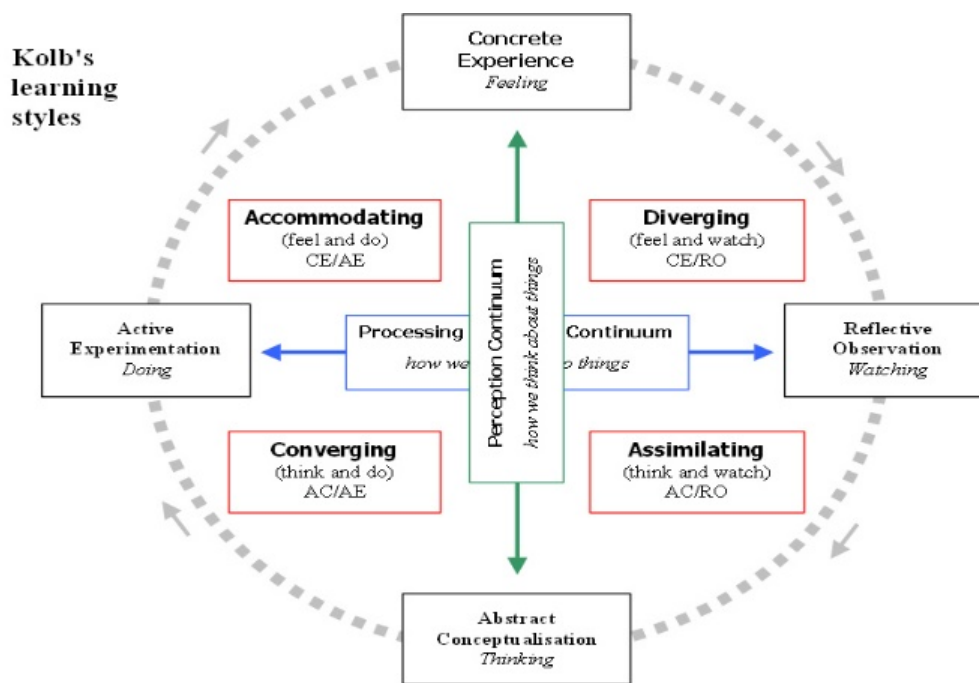
CRITIQUE OF MBA

In his November 2008 article (Harvard Business School Discusses Future of the MBA, HBS Working Knowledge, Research and Ideas), Roger Thompson provides a brief history of the MBA, beginning with a 1959 Ford Foundation report critical of the "vocational" caliber of instruction, and prompting the move to a model of business education based in more rigorous academic disciplines. But as Joel Polodny, dean of the Yale School of Management, states as part of the May 2008 Harvard colloquium as reported by Thompson, businesses no longer operate along vertical, bureaucratic models. Instead, organizations are flatter and effective leaders must be able to see opportunity and innovate across functional boundaries. Polodny goes on to describe the modern business landscape in which, "even managers in large organizations have to think and act more like entrepreneurs in their ability to synthesize information and coordinate people and resources on an increasingly global scale" (HBS Discusses the Future of the MBA). MBA programs that emphasize scientific research irrelevant to 21st century business challenges run the risk of "institutionalizing their own irrelevance," warned Warren Bennis, USC Marshall School of Business, a risk supported by ten other scholars in the December/January 2008 issue of the Academy of Management Journal, also cited by Roger Thompson.

One key finding resulting from the Harvard Colloquium was consensus that business schools in general were capable of teaching hard skills of functional and disciplinary knowledge, what the colloquium participants dubbed the "know what", but were far less able and inclined to teach the soft skills of "know how," enabling students to think beyond their specialized skills and develop more self-awareness as leaders.

HBS professors Srikant Datar and David Garvin, who conducted the research preceding the Harvard colloquium, concluded that the employers now place the higher value of "know how", and that business schools must address the "knowing-doing gap" to graduate students with immediate value to employers. A key element of the evolution from knowing to doing can arise from experiential learning, and consequently Datar and Garvin conclude that experiential learning must comprise an essential part of a relevant MBA curriculum.

Specifically, Datar and Garvin's research uncovered a belief among academics and recruiters that MBAs lacked a range of desirable "soft skills" such as emotional intelligence, critical and creative thinking, empathy and introspection and communication skills. Teaching these "soft skills" presents a different set of challenges to universities who have traditionally valued research by their faculty and favored large class formats.

Exhibit 1-KOLB'S THEORY OF LEARNING APPLIED TO FOX CURRICULUM

Kolb's learning styles

Concrete Experience
Feeling

Accommodating
(feel and do)
CE/AE

Diverging
(feel and watch)
CE/RO

Active Experimentation
Doing

Processing Continuum
how we think about things

Perception Continuum
how we think about things

Reflective Observation
Watching

Converging
(think and do)
AC/AE

Assimilating
(think and watch)
AC/RO

Abstract Conceptualisation
Thinking

© concept david kolb, adaptation and design alan chapman 2005-06, based on Kolb's learning styles, 1984
Not to be sold or published. More free online training resources are at www.businessballs.com. Sole risk with user.

The Fox faculty, led by Professor TL Hill, embarked on a process for curriculum redesign that recognized these pedagogical and resource challenges. They turned in part to Kolb's theory of learning, shown in **Exhibit 1**, to help guide a restructuring of the classroom experience and provide the theoretical framework for the capstone project design.

In 2012, engaging Fox faculty, staff, students and industry partners, work began on a redesign of the Fox MBA. The process started with a series of regeneration consultations and retreats and led to a vision of a top-tier MBA program that clearly reflects Kolb's influence and includes:
- Life-long learning and engagement with Fox
- A revised curriculum with a compressed, industry-relevant core and a broader, market-driven array of electives;
- An increased emphasis on the learning and demonstration of management skills through an emphasis on experiential learning and portfolio development; and
- A commitment to continual improvement and regeneration through active engagement with industry and self-reflection.

The delivery of the core courses and skills was changed to reflect best practices of adult learning including increased emphasis on flipped classroom delivery; the intentional and careful reinforcement of skills and concepts across courses; the use of increasingly complex and live challenges culminating in Enterprise Management Consulting (EMC) projects for client organizations and companies; and the extensive involvement of business and nonprofit leaders in classes and as evaluators.

To help ensure that a revised educational approach would prepare Fox MBA students to excel in today's workforce, we relied on feedback from members of the business community. The Fox survey went to approximately 1,000 employers and asked for feedback on four broad themes:
- Competencies employers find to be most important

- Screening techniques employers use in assessing talent
- Employer perceptions of the Fox MBA
- Employer perceptions of a competency-based curriculum in general (non-Fox specific)

We received a 20% participation rate with a clear message from respondents: businesses hire and promote those MBAs who can *demonstrate* competencies that will enable them to facilitate effective business decision making across various technical, functional and cultural boundaries.

This is wonderfully consistent with the AACSB's new insistence that learning goals should "reflect the major intellectual and behavioral competencies a program intends to instill in its students… the learning goals should express expectations that reflect the expected depth and breadth of student knowledge and skills that are the sustainable foundations for lifelong learning in support of their professional and personal development." (White Paper No. 3, Association to Advance Collegiate Schools of Business, 2013).

Offering further proof of the need for competency-based learning, Robert S. Rubin & Erich C. Dierdorff's article, "How Relevant is the MBA? Assessing the Alignment of Required Curricula and Required Managerial Competencies" (Academy of Management Learning & Education June 1, 2009 vol. 8 no.2 208-224) used survey results from over 8600 managers across 52 occupations to conclude that the most valued behavioral competencies are the least represented in MBA programs. Their findings identified the most valued broadly described competency categories as:
- Managing human capital
- Managing logistics and technology
- Managing decision-making processes
- Managing administration and control
- Managing strategy and innovation
- Managing the task environment

Here are the seven competencies that the Fox MBA strives to develop in all students.
- Influential Communication | Listening, facilitation, writing, presentation, visuals.
- Leadership | In organizational and especially team settings.
- Financial Acuity | Apply financial analysis and modeling to facilitate diagnosis and decision making.
- Business Reasoning | Generate & apply new knowledge as conditions change. Critical & creative thinking.
- Identify and Evaluate Business Opportunities | Includes innovation management and judgment under conditions of uncertainty. | Implementation Management. Systems, processes, projects.
- Cross-Cultural Effectiveness | Global, regional, local.
- Ethical Management | Integrate ethical and financial bottom lines.

Aligning with the Fox competency findings, in a report by Hoover, Giambatista, Sorenson and Boomer ("Assessing the effectiveness of whole person learning pedagogy in skills acquisition", AMLE 9:192-203) they cite a 2003 Wall Street Journal/Harris Interactive survey rating student and program characteristics most desired by industry recruiters. The top three traits considered executive level skills were "1) communication and interpersonal skills (89%), 2) ability to work well within a team (87%) and 3) analytical and problem-solving skills (85%)."

Hoover, Giambatista, Sorenson and Bommer applied the Hunt & Sorenson model of "Learned Behavior" as an extension of Kolb's 1984 model (Experiencing/Reflecting/Conceptualizing/Experimenting) and incorporated more nuanced suggestions from Kolb & Kolb (2005: 209) that advocates for the creation of "learning space…in curricula for students to pursue such deep experiential learning in order to develop expertise related to their life purpose."

To help students learn and demonstrate these competencies, we built on the success of the Enterprise Management Consulting Practicum. As the final element of their MBA program, students take on live challenges involving real problems provided by partner or client firms. We believe these paid consulting projects must offer students the opportunity to develop and demonstrate specific combinations of competencies. Such challenges provide opportunities to learn and shine, but they can also enhance the relevance of the MBA in the workplace, provide opportunities to interact with business leaders across industries in a professional setting, and raise the expectations for performance across the entire program.

Exhibit 2-SURVEY

In the LAD survey, students were asked to respond to the following open-ended questions:

Q1. What did you learn and/or improve (through application) during the Fox MC Experience?

Q2. Which of the things that you learned/applied has been most useful in your current professional role?

Q3. What of these things you learned/applied/demonstrated do you believe will be most useful in your professional

We anticipated that the work products from successful capstone consulting projects would find their way into the students' Placement Portfolios and interview talking points, offering real world examples of their ability to apply what they have learned through their MBA course work. Successful completion of a capstone consulting project enables graduates to speak specifically about their contribution to an innovative, profitable, strategically sound and practicable business solution for an actual business, quite possibly in an industry unrelated to their professional experience.

After eight consecutive semesters of student experience with the EMC practicum and pedagogical framework, we seek to validate our assumptions that "practice makes perfect" through this experiential model.

SAMPLING METHODOLOGY

Beginning in the spring of 2013, Professor David Nash, Faculty lead for the Fox Management Consulting PMBA (Professional MBA) capstone, introduced an open-ended self-assessment survey at the end of the semester. The Fox PMBA students, with an average of 9.75 years of professional experience, tend to be well along in their business careers. Their mid-level management perspective enables them to judge what is useful and valuable in their professional development, in contrast to students at entry level positions anticipating value, or senior level managers with a top-down view.

Professor Nash requires students to complete this self-evaluation, referred to as the LAD (Learn-Apply-Demonstrate) questionnaire during class time, contributing to the high degree of participation and offering confidential insights into the individual capstone experience. The results reported here represent eight PMBA cohorts from Fall 2013 until Spring 2017, a total of approximately 200 respondents with overall gender distribution of 60% male and 40% female. This group of students averaged 9.75 years of professional experience, self-reported. Their educational backgrounds cover a wide range of majors, with only 10.5% reporting Business Administration or Management as their undergraduate degree.

Over this period both the capstone curriculum and the lead instructor (Professor David Nash) were constants, although the specific clients and consulting projects were always unique to each project team.

We collated the responses to the "Learn-Apply-Demonstrate" (LAD) survey for all participants from Fall 2013 through Spring 2017. Through an initial coding exercise that was reviewed by two additional coders, we found indications of acquisition or development of nine broadly defined skills. Of these, four skills were associated with questions 1, 2 and 3 namely:
- problem solving
- teamwork
- project management
- presentation skills

Consulting skill was common only to questions 1 and 3, suggesting a new behavior with future value. Research skills were only associated with question 1, perhaps indicating that students perceive this skill to be of low value. Business acumen and client management surfaced for question 2 as having immediate application in their professional lives. Communication appeared for question 3 as holding future value in addition to present value.

Below are the key words from student responses that we determined comprise each skill, to guarantee that all similar responses were interpreted in the same way and were attributed to the same skill heading.

Definitions for each skill
Teamwork-key words are teamwork, team dynamics, personality conflicts, team conflicts, interpersonal skills, or human resources.
Consulting skills-key word are consulting skills, client management, strategy implementation, ambiguity, project flexibility, dealing with long-term projects, listening skills, writing skills, relationship management, creating a business plan, or client specific interview skills.
Project Management-key words are project management, leadership, team management, time management, or project planning.
Presentation Skills-key words are presentation skills, storyboarding, influential communication, anticipating questions, or making concise recommendations.
Business Acumen-key words are business acumen, business reasoning, financial modeling, business cases, or business price negotiating.
Identifying business opportunities-key words are problem solving, critical thinking, brainstorming, research skills, data analytics, surveying, attention to detail, or general interviewing skills.

As **Exhibit 2** (below) indicates, the survey asked unaided, open-ended questions rather than supplying a list of specific competencies. A careful analysis and interpretation of written responses indicated seven key competencies, correlating to four of the seven core competencies that underlay the Fox curriculum.

Problem solving (correlates to Identify and Evaluate Business Opportunities)
Teamwork (correlates to Leadership)
Consulting Skills (correlates to Business Reasoning)
Research Skills (correlates to Identify and Evaluate Business Opportunities)
Project Management (correlates to Leadership)
Presentation Skills (correlates to Influential Communication)
Business Acumen (correlates to Business Reasoning)

FOX CORE COMPETENCIES	LAD Self-Described Competencies
Influential Communication | Listening, facilitation, writing, presentation, visuals.	Presentation skills
Leadership | In organizational and especially team settings.	Project management skills
Financial Acuity | Apply financial analysis and modeling to facilitate diagnosis and decision making	NA
Business Reasoning | Generate & apply new knowledge as conditions change. Critical & creative thinking	Consulting skills Business acumen
Identify and Evaluate Business Opportunities | Includes innovation management and judgment under conditions of uncertainty. |Implementation Management. Systems, processes, projects.	Problem solving skills Research skills
Cross-Cultural Effectiveness | Global, regional, local.	NA
Ethical Management | Integrate ethical and financial bottom lines.	NA

STUDY LIMITATIONS AND
IMPLICATIONS FOR FUTURE ASSESSMENT

We recognize certain limits to the design of the research methodology. The defined nature of the questions creates an opportunity for false positive/false negative responses, since respondents are not asked to identify what we are *not* teaching that would be valuable, only how they value what we feel we are teaching. A mitigating factor is that we did not force their responses into categories, for example specifically asking, "How did this experience affect your communication skills?"

We do not ask students what they believe they need to learn, or what competencies they would most value acquiring/improving. Our view derives from an employer-centric set of skills and does not include a student pre-assessment. We are only soliciting student responses at one point in time, notably the last class of the semester. We are only looking at their replies through one lens, with no triangulation of sources.

Student responses are anonymous, so there can be no external correlation by the instructor determine the veracity of the student's claim to improved performance. Additionally, there is no external corroboration by employers that they see evidence of improved competence in the student.

Despite these limitations, the self-assessments suggest that the EMC capstone experience leads to the acquisition and/or improvement of valuable and applicable career competencies. With the addition of student pre-assessments and solicitation of employer input for external validation, we may be able to arrive at more conclusive evidence of the efficacy of this specific application of experiential learning to close the competency gap for MBAs.

RESULTS

Skills Acquisition or Enhancement

From the cumulative responses, the strongest skills gains appear to be in presentation, teamwork and consulting, activities that link to Fox's core competencies of Influential Communication, Leadership, and Business Reasoning. The EMC practicum strives to develop these behavioral skills, and students seem to be gaining both confidence and ability in these areas.

The largest gains during the EMC experience captured by Q1 reflect the stresses inherent in the program structure. Over the span of 15 weeks students must: develop a high-functioning team (teamwork), complete both course and client deliverables on time (project management), and solve the project challenge, often in a wholly unfamiliar industry (identifying business opportunities).

Less apparent are gains in "hard skills" such as financial acuity. The EMC operates on the assumption that students have acquired functional business knowledge during their course of study, and thus does not attempt to teach "hard skills." It may be that students feel they are already accomplished in this area, but it may also be the case that they do not feel the EMC practicum has enhanced these skills for them.
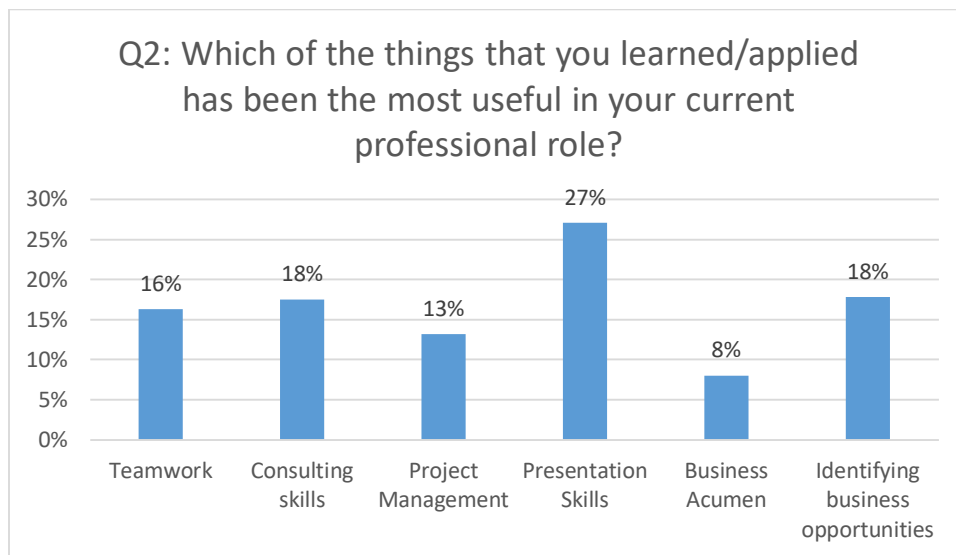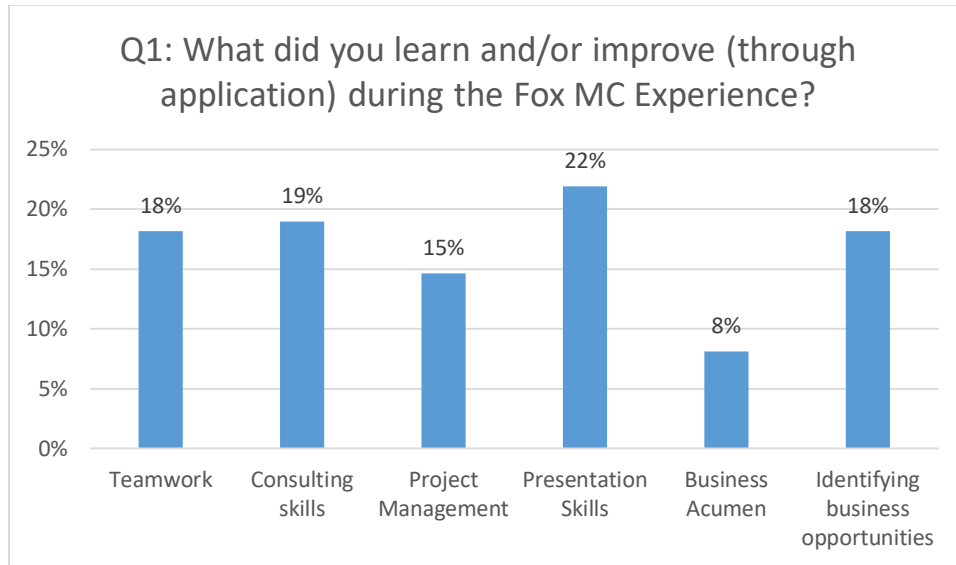
Changing Value of Skills

It is interesting to note that students distinguish between skills that are currently valuable and ones that may propel their future careers. While teamwork, presentation skills, business acumen and identifying opportunities remain relatively constant for current and future value, project management and consulting are identified as presenting future value. This is especially rewarding because it suggests that students perceive a match between what they are learning and what employers value. Colquitt, LePine, & Noe, (2000) report a strong correlation between high levels of motivation in education with students' perception of the usefulness of knowledge or skills they are acquiring.

The frequency of citing gains in communication and consulting skills aligns well with the program goals---the EMC practicum appears to be teaching the right things and students are valuing the skills they feel they are mastering.
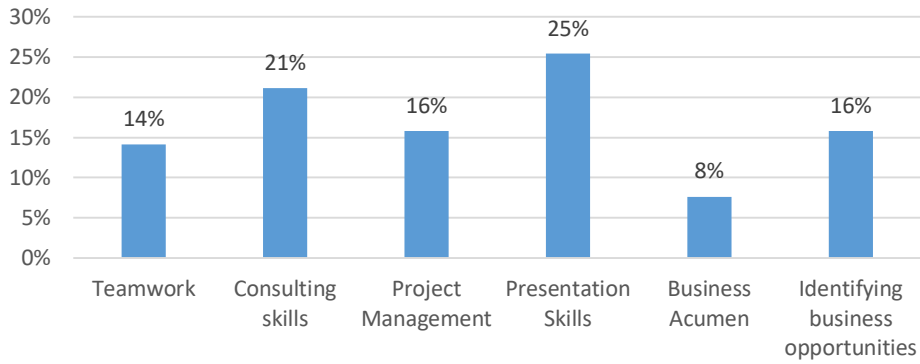
Variations Over-Time

Despite having the same curriculum and lead instructor for the duration of this study, we still see some variation in ratings over time. Business acumen (Q1) shows declines from its high in Spring 2014, then posts gains in the Fall of 2015. Consulting and project management (Q3) dip in the Fall of 2016, then show significant gains in Spring 2017. It will require further investigation to know if these fluctuations are brought on by course delivery issues or perhaps are indicative of variations in the student levels of experience.

Exhibit 3-LAD Results

Q1: What did you learn and/or improve (through application) during the Fox MC Experience?

Teamwork: 18%, Consulting skills: 19%, Project Management: 15%, Presentation Skills: 22%, Business Acumen: 8%, Identifying business opportunities: 18%

Q2: Which of the things that you learned/applied has been the most useful in your current professional role?

Teamwork: 16%, Consulting skills: 18%, Project Management: 13%, Presentation Skills: 27%, Business Acumen: 8%, Identifying business opportunities: 18%

Q3: What of these things you learned/applied/demonstrated do you believe will be most useful in your professional career?

Cross Question, Cross Semester Responses %

Comparison of Responses by Question

Q1: Responses by Semester

Q2: Responses by Semester

Q3: Responses by Semester
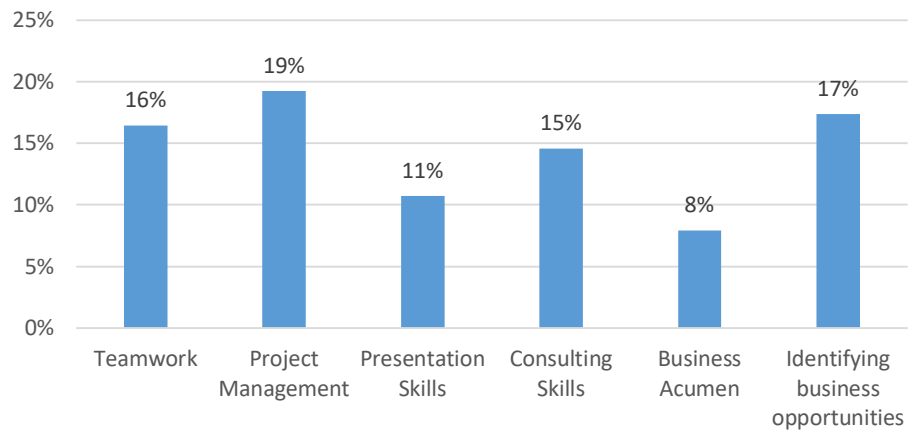
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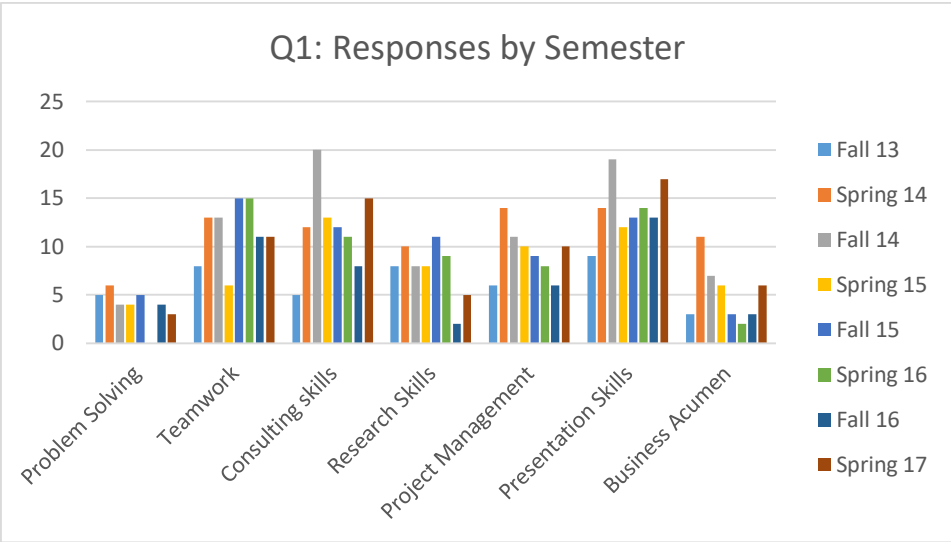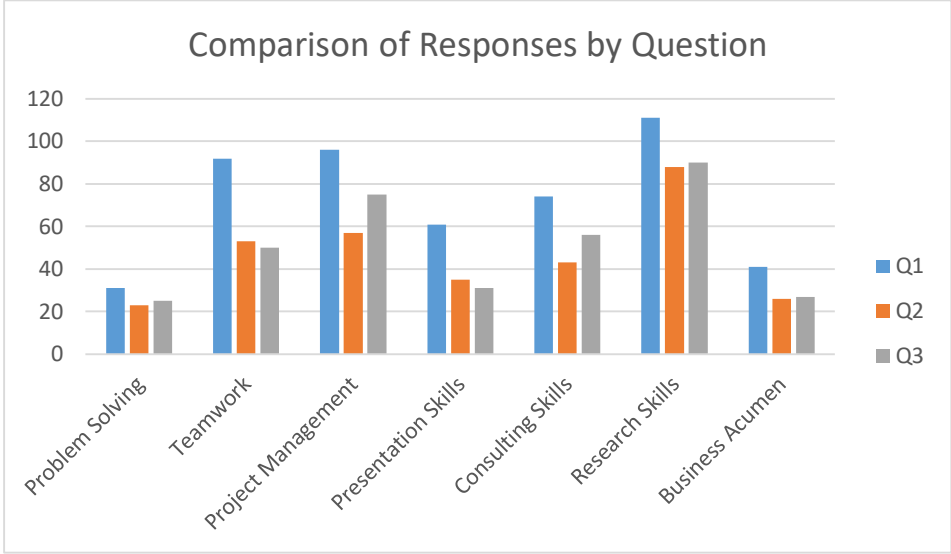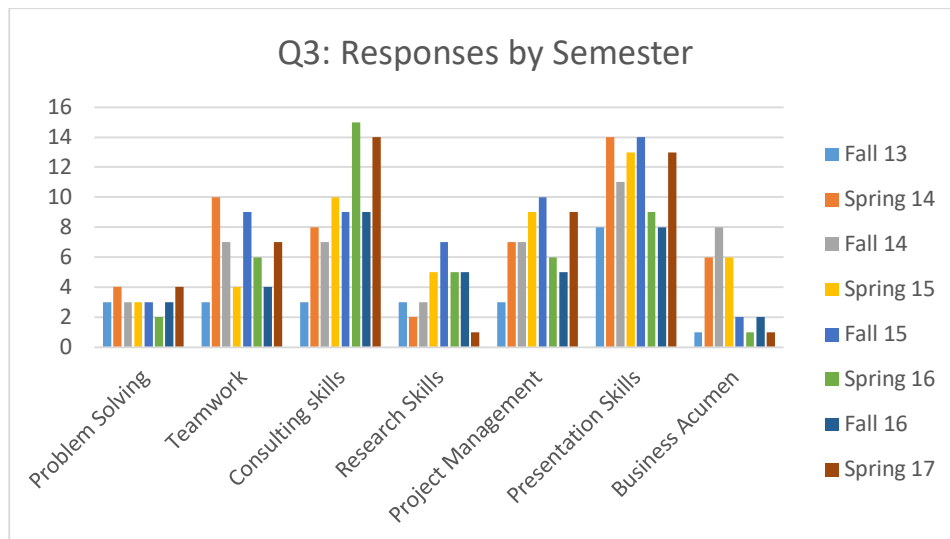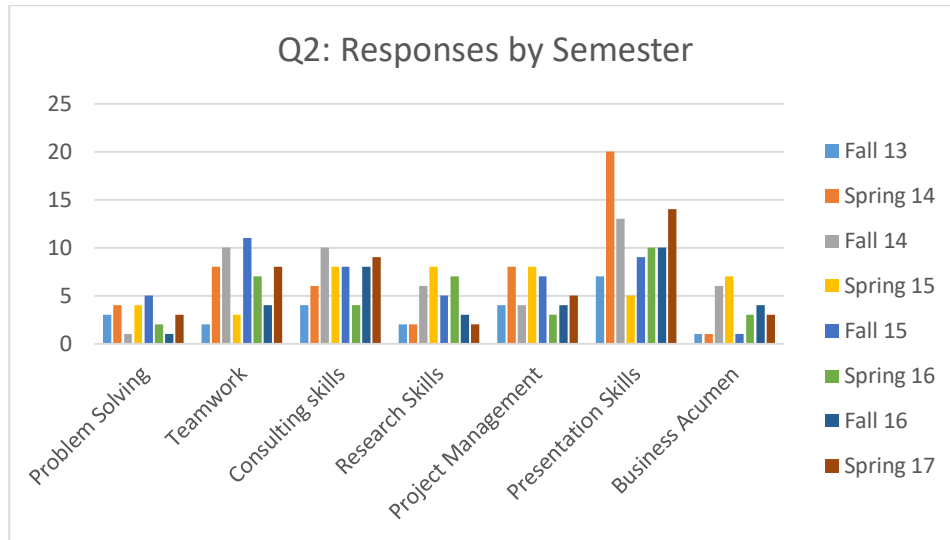Khuranar, R. (2007). From higher aims to hired hands: the social transformation of American business schools and unfulfilled promise of management as a profession Princeton, NJ Princeton University Press, Google Scholar.

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A GENDER COMPARISON OF ENTREPRENEURIAL MOTIVATIONS FOR STARTING A BUSINESS

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ABSTRACT

Entrepreneurs continue to play a vital role in the economy. Motivations for starting a business are considered important for determining success. This research examines motivations of business owners for starting their business. Push or necessity factors are environmental situations that force a person to seek starting a business. Pull or opportunity factors are voluntary and positive forces that entice a person to start a new business. A survey was developed to measure push vs. pull motivations for starting a business. A comparison between men and women business owners was conducted. Results indicate no differences in pull factors between men and women. There were significant differences between push factors, with women more likely to be pushed toward entrepreneurship compared to men.

INTRODUCTION

Since early introductions of the word, *entrepreneurship* is associated with innovation and economic growth (Schumpeter, 1934). There is no argument that entrepreneurs have played, and continue to play, a vital role in world economies. Entrepreneurship provides women an opportunity to improve their status and contribute to society (Hani, 2015). The Kauffman Index of Entrepreneurship (2017) measures the growth of U.S. entrepreneurs at the national level. The Index focuses on actual results of entrepreneurial activity (new companies, business density and growth rates). For 2016, the rate of new entrepreneurs was .31 percent, which means that 310 out of every 100,000 adults became entrepreneurs in any given month in 2016, translating to about 540,000 new business owners each month during 2016.

The U.S. Census defines women-owned businesses as businesses in which women own 51 percent or more of the equity of the business. Women are starting businesses in record numbers. According to the National Women's Business Council (NWBC, 2012), in 2012 there were 9.9 million woman-owned businesses (WOB) in the United States, representing an increase of 2.1 million (26.8%) from 2007. Male-owned firms increased from 13.9 million to 14.8 million (6.8% increase) during the same time-period. The percentage of women-owned business owners also increased from 28.8% in 2007 to 35.8% in 2012. The rate of women entrepreneurs has seen significant growth compared to men (Pofeldt, 2017). Because of the impact women entrepreneurs are having in the U.S. and in the world, it's importance that we better understand the motivations for starting a business. More recent figures indicate that women-owned businesses continue to rise. According to "The State of Women-Owned Business Report" (American Express Open, 2016), as of 2016 there are about 11.3 million WOB in the U.S., representing a 45% increase from 2007. These businesses employ 8.9 million people and generate over $1.6 trillion in revenues. According to the report, as of 2016, women own 38% of the businesses in the U.S.

Despite the growth, in comparison to businesses owned by men, WOB are typically smaller in comparison to male-owned businesses, make considerably less money and have smaller payrolls (NWBC, 2012). Women are also more likely to pursue entrepreneurship out of necessity than opportunity (Clain, 2000; Thébaud, 2016; Thébaud, 2015). There are a lack of studies comparing men and women entrepreneurs (Menzies, Diochon, & Gasse, 2004). While motivations have had considerable attention in the literature, less attention has been paid to comparing gender differences for becoming an entrepreneur (Kirkwood, 2009). The questions for this study are: What are the main motivations for people when starting a business? Are there differences between male and female respondents? Do women and men differ on the types of motivations (push vs. pull) in starting a business?

LITERATURE REVIEW

Push vs. Pull Factors

Entrepreneurs start businesses due to a wide variety of reasons. Due to the financial and personal risk there must be a reason to put forth effort to start a business (Schjoedt & Shaver, 2007). Motivation is a psychological process that provides purpose direction for people to behave a certain way (Kreitner, 1995). Aldrich & Zimmer (1986, p. 3) state "the formation of new businesses can be conceptualized as a function of opportunity structures and motivated entrepreneurs with access to resources."

Internal motivations for starting a business are considered an important aspect of entrepreneurial success (Sadi & Al-Ghazali, 2012; Pandian & Jesurajan, 2011). Motivation shapes the direction, persistence and actions of a new business (Mckelvie, Brattström, & Wennberg, 2017). According to goal-setting theory (Latham & Locke, 1991), if people are equal in ability and knowledge but some people perform better than others, the cause must be motivational. Motivations to start a business are described with the push vs. pull model (Amit & Muller, 1995; Feeser & Dugan, 1989; Gilad & Levine, 1986; Hasan & Almubarak, 2016; Kariv, 2013a; Segal, Borgia, & Schoenfeld, 2005; Schjoedt & Shaver, 2007; Shapero & Sokol, 1982; Williams, Rounds & Rodgers, 2009) and/or a necessity/opportunity orientation (Kirzner, 1973; Reynolds et al., 2002; Kariv, 2011, National Women's Business Council, 2017). DeFreitas (1991) refers to push motivations as "escape motives" and pull motivations as "mobility motives". Carsrud & Brännback (2009) refer to an internal need that motivates people as "drive theory," (similar to pull factors) and external motivations as "incentive theory," (similar to push factors). Often a person's motivation is a combination of both push and pull factors (Brush, 1990; Staniewski & Awruk, 2015).

Push or necessity factors are environmental situations that force a person to start a business, often because there is no other option (Acs, 2006; Bhola, Verheul, Thurik & Grilo, 2006; Orhan & Scott, 2001;). These situations may include job loss, seeking a better work-life balance (Fenwick, 2002), limited advancement opportunities (Chaganti, 1986), and discrimination and dissatisfaction (Weiler & Bernasek, 2001; Kariv, 2011; Schjoedt & Shaver, 2007). Many women are pushed into entrepreneurship because organizational practices are not flexible. Women who have children, for example, see entrepreneurship as a path to more autonomy and flexibility (Craig, Powell, & Cortis, 2012). Thébaud (2015) found that women are more likely than men to start a business to resolve work-family conflicts.

Pull or opportunity factors are voluntary and positive forces that entice a person to start a new business. These situations include a desire for independence (Alstete, 2008), monetary motivations (DeMartino & Barbato, 2003; Rosa & Dawson, 2006); desire to help others, new business ideas, an increase in job satisfactions and the desire for risk and reward. Pull factors are associated with the desire for upward mobility and to gain more fulfillment from entrepreneurship (Kariv, 2013c).

The more positive of the two are pull factors because people who start new businesses by choice often achieve higher levels of success and satisfaction (Shinnar & Young, 2008; Sternberg & Wennekers, 2005) including higher sales and income (Amit & Muller, 1995). In a survey of Canadian businesses, Amit and Muller (1995) found that people who became entrepreneurs due to pull factors were more successful in creating and managing their businesses compared to those becoming entrepreneurs because of push factors. According to The Kauffman Index of Startup Activity (2017), the proportion of entrepreneurs driven by opportunity rather than necessity was 86.3 percent in 2016. This represents an increase of over 12 percentage points from 2009. Adults without formal higher education, Blacks and Latinos are more often pushed into entrepreneurship. Whites, Asians and those with more education were more likely to be pulled into entrepreneurship. In terms of state trends (The Kauffman Index…state trends, 2017), for larger states, the range ran from 170 new entrepreneurs for every 100,000 adults (Pennsylvania) in a given month to 420 new entrepreneurs per 100,000 adults (California) in a given month. Among the 25 largest states by population, Pennsylvania ranked #23 in startup activity in 2016. Eighty-three percent of entrepreneurs in Pennsylvania were driven by opportunity rather than necessity.

Gender Differences

In the past, entrepreneurship was male-dominated (Ahl, 2006; Kariv, 2013a). For many years the predominant view of the entrepreneur was defined from a male perspective and many believed that only men could be legitimate entrepreneurs (McAdam, 2013). Several researchers have shown that men have stronger intentions to become entrepreneurs compared to women (Langowitz & Minniti, 2007; Wagner, 2007; Wilson, Marlino, & Kickul, 2004; Wilson, Kickul, Marlino, et al., 2009; Zhao, Seibert, & Hills, 2005). There is also a perception that entrepreneurship is more suited for men than women (Kariv, 2013b). As a result, women are less likely than men to view themselves as entrepreneurs (Verheul, Uhlaner, & Thurik, 2002) and due to work-life balance issues, are more likely to work part-time and within the home (Ahl, 2004). Several researchers agree on the continued importance of researching gender and influences on entrepreneurship (Blackburn & Kovalainen, 2009; Moore, 2004).

There is a paucity in the literature with regard to Gender differences in push and pull motivations (Menzies et al., 2004). Gender comparative research in entrepreneurship is still an emerging area (Moore, 2004). Some researchers show that women are more likely pushed into entrepreneurship compared to men (Kariv, 2013c); while others found

that women are more often pulled into entrepreneurship (Amit & Muller, 1995) compared to males. Still others found no differences in motivations (Staniewski & Awruk, 2015).

In interviews with men and women in the process of launching a business or in business for six months or less, Cromie (1987) found that both men and women entrepreneurs expressed similar levels of job dissatisfaction prior to starting a business. Women were more likely to seek entrepreneurship for a better work-life balance, especially because of child care responsibilities; while men were more likely to pursue entrepreneurship for financial gain. According to Marlow, Carter, and Shaw (2008), women are more likely to start businesses in lower yield industries such as retail, catering and health/education services.

There are still gender stereotypes that exist. Males are often seen as the provider and protector while females are more nurturing and yielding (Blau, Ferber & Winkler, 2006). Women are seen as more expressive, kind, timid, and relateable (Moskowitz, Suh & Desaulniers, 1994). Characteristics typically associated with women (collaborative, nurturing, democratic) can be assets when running a business (Sappleton, 2009). Men's qualities are more associated with persistence, assertiveness, aggression, courage and independence (Moskowitz, et al., 1994). Masculine descriptors of entrepreneurs may discourage women from entrepreneurship (Bird & Brush, 2002). These stereotypes spill over into the business world with men seen as having stronger leadership skills compared to women (Godwyn & Stoddard, 2011; Hadary, 2010). Because of gender bias, women-owned businesses are often described as under-performing despite evidence to the contrary (Marlow & McAdam, 2013). A recent article in the popular press (Titlow, 2017), described how a women-owned startup company resorted to fabricating a male co-owner in order to battle sexism.

The questions for this study are: What are the main motivations for people when starting a business? Are there differences between male and female respondents? Do women and men differ on push vs. pull motivations in starting a business? Based on the literature review, the following hypotheses are proposed:

H1: There are statistically significant differences between male and female entrepreneurs in terms of pull motivations for choosing to be an entrepreneur.
H2: There are statistically significant differences between male and female entrepreneurs in terms of push motivations for choosing to be an entrepreneur.

METHODOLOGY

A questionnaire-based survey was used to collect data about entrepreneurs and their motivations for starting a business. Surveys are the main data collection instrument utilized in entrepreneurial research (Mitchelmore & Rowley, 2013). This survey collected demographic information (age, education, gender); a business profile (number of employees, business model, years in business, industry, time devoted to business, legal structure, sales); and motivations to start the business. Motivations were measured using a 5-point Likert-type scale ranging from 1 (Unimportant) to 5 (Very Important). A Not Applicable choice was also provided. Respondents were given a list of 18 motivating factors for starting a business and asked to rate the importance of each item on the scale. The survey was initially tested on five entrepreneurs with adjustments made based on feedback. An additional ten entrepreneurs tested the revised version. A few adjustments were made prior to launch. The survey was constructed based on the review of literature and contained 18 questions to determine motivations for starting a business. The Chronbach Alpha for the entire questionnaire was .86. Nine questions were used to analyze the pull factors (Chronbach Alpha .64) and nine items for the push factors (Chronbach Alpha .87).

Software from a leading market research company was used to develop an online survey which was compatible with desktop, laptop and mobile phones. To examine the motivations of entrepreneurs the link to the survey was distributed to client bases of several local organizations that aid small businesses, including two area Small Business Development Centers and the local Chamber of Commerce. Distribution methods included organization Facebook pages, newsletters and sending directly to clients via email. This was a convenience sample. According to Bryman and Bell (2015) convenience samples are common in business and management studies and are useful when it is difficult to gather sufficient responses.

An introduction paragraph preceded each survey explaining the objectives, importance of the research, the estimated time to take the survey and contact information in case there were questions. The survey was open for two weeks in

the fall of 2017. 156 people filled out the survey. After discarding unusable or incomplete surveys, there were 118 surveys from which to run the analysis. Respondents were from Pennsylvania with the majority from eastern Pennsylvania.

Descriptive statistics were used to analyze the demographic profile of survey respondents and push/pull scale results. The Mann-Whitney test was used to compare mean motivations between males and females for becoming an entrepreneur and to identify statistically significant differences.

Respondent Profile

The analysis consisted of 70 males (59%) and 48 females (41%). In terms of education, 84 (72%) had an associate's degree or higher. Twenty-six (22%) had some college, eight (7%) had a high school degree or GED. In terms of age, the largest category was the 45-54 age group with 35 people in the category (30% of respondents). 4 (4%) were in the 18-25 year category, 17 (14%) in the 26-24 group; 32 people (27%) in the 35-44 category, and 7 people (6%) in the 65 or over category. For length of time in business, 36 (31%) have been in business for less than one year; 20 (17%) for 1-2 years, 19 (16%) for 3-5 years, 13 (11%) for 6-10 years and 30 (25%) over 10 years. 87 of the 118 respondents had businesses with less than five employees (74%). Twenty (17%) percent had 5-9 employees; Eleven (9%) had between 10 and 49 employees. While there were differences in the male vs. female percentages, a Chi-square analysis revealed no statistically significant differences on the demographic and business profile data based on gender. The characteristics of respondents and business profiles are summarized in Table 1 and 2 (rounded to neared whole number):

Table 1: Respondent Demographic Information				Male		Female	
		#	%	#	%	#	%
Gender N=118	Male	70	59%				
	Female	48	41%				
Education	Less than high school	0	0%	0	0%	0	0%
	High school or GED	8	7%	7	10%	1	2%
	Some college	26	22%	16	23%	10	21%
	Associate's degree	9	8%	2	3%	7	15%
	Bachelor's degree	40	34%	24	34%	16	33%
	Master's degree	20	17%	11	16%	9	19%
	Post master's	15	13%	10	14%	5	10%
Age	18 – 25	4	4%	2	3%	2	4%
	26 – 34	17	14%	10	14%	7	15%
	35 – 44	32	27%	17	24%	15	31%
	45 – 54	35	30%	17	24%	18	38%
	55 – 64	23	20%	19	27%	4	8%
	65 or Over	7	6%	5	7%	2	4%

Table 2: Respondent Business Profile Summary							
Length of time in business	Less than 1 year	36	31%	23	33%	13	27%
	1-2 years	20	17%	8	11%	12	25%
	3-5 years	19	16%	11	16%	8	17%
	6-10 years	13	11%	8	11%	5	10%
	Over 10 years	30	25%	20	29%	10	21%
Number of employees	1 (Only you)	38	32%	23	33%	15	31%
	2 – 4	49	42%	28	40%	21	44%
	5 – 9	20	17%	14	20%	6	13%
	10 – 49	11	9%	5	7%	6	13%
	50 – 249	0	0%	0	0%	0	0%

	250 – 500	0	0%	0	0%	0	0%
	Over 500	0	0%	0	0%	0	0%
Business Model	Run out of physical location only	53	45%	31	44%	22	46%
	Uses both a physical location and online site	47	40%	26	37%	21	44%
	Business in online only	18	15%	13	19%	5	10%
Industry (N=140 - participants could choose more than 1)	• Retail	42	30%	25	29%	17	32%
	• Professional/technical	26	19%	16	19%	10	19%
	• Healthcare	14	10%	5	6%	9	17%
	• Hospitality/Food	21	15%	12	14%	9	17%
	• Construction	10	7%	7	8%	3	6%
	• Wholesale	1	1%	1	1%	0	0%
	• Finance/Insurance	2	1%	1	1%	1	2%
	• Real Estate	5	4%	4	5%	1	2%
	• Manufacturing	17	12%	13	15%	4	7%
	• Education	2	1%	2	2%	0	0%
Hours spent on business/week	None (silent partner)	0	0%	0	0	0	0%
	1 - 20 hours	44	38%	29	41%	15	31%
	21 - 39 hours	25	21%	11	16%	14	29%
	40 hours	5	4%	2	3%	3	6%
	41 - 40 hours	15	13%	10	14%	5	10%
	51 - 60 hours	20	16%	12	17%	8	17%
	Over 60 hours	9	8%	6	9%	3	10%
Legal Status	Sole Proprietorship	33	29%	21	31%	12	26%
	Partnership	4	3%	2	3%	2	4%
	Corporation	1	1%	1	1%	0	0%
	C-Corp	8	7%	5	7%	3	6%
	S-Corp	9	8%	3	4%	6	12%
	LLC	60	52%	36	53%	24	51%
Sales (last year)	Under 10,000	41	38%	27	42%	14	33%
	10,000 - $24,999	6	6%	4	6%	2	5%
	$25,000 - $49,999	10	9%	8	13%	2	5%
	$50,000 - $74,999	7	6%	4	6%	3	7%
	$75,000 - $99,000	12	11%	2	3%	10	23%
	$100,000 - $199,000	4	4%	3	5%	1	2%
	$200,000 - $499,000	11	10%	6	9%	5	12%
	$500,000 - $1 million	7	6%	7	11%	0	0%
	Over $1 million	10	9%	4	6%	6	14%

RESULTS

The questions under study: What are the main motivations for people when starting a business? Are there differences between male and female respondents? Do women and men differ on push vs. pull motivations in starting a business?
H1: There are statistically significant differences between male and female entrepreneurs in terms of pull motivations for choosing to be an entrepreneur.
H2: There are statistically significant differences between male and female entrepreneurs in terms of push motivations for choosing to be an entrepreneur.

SPSS was used to analyze the data. The Mann-Whitney test was used to compare mean motivations between males and females for becoming an entrepreneur and to identify statistically significant differences. The top three reasons

for becoming an entrepreneur in term of pull factors were the same for men and women, although in different rank order. For males the top three pull factors were wanting to pursue new opportunities (mean=56); best avenue for my ideas/goods/services (mean=55) and desired independence (mean=55). For women the top three pull factors were best avenue for ideas/goods/services (mean=62); desired independence (mean = 61) and wanted to pursue new opportunities (mean=59). Two pull factors were statistically different (p<.05): Women were statistically more likely to enter entrepreneurship because they were encouraged by a friend or family member (mean=50) compared to men (mean=36). Women (mean = 46) were also more likely compared to men (mean = 33) to enter entrepreneurship because of an opportunity that could not be passed up.

In terms of push factors, two of the top three reasons for both men and women were similar. For men the top three push factors were wanting higher income (mean=49); wanted more flexible hours (mean=44) and lack of career advancement (mean = 42). For women the top three push factors were wanting more flexible hours (mean=60), wanting a higher income (mean=55), and needing more work/family balance (mean=54). Three push factors were statically significant (p<.05): Women were more likely compared to men to indicate they became entrepreneurs because they wanted more flexible hours, they wanted balance between work and family and due to discrimination in the workplace. Table 3 summarizes male and female differences in the survey questions by push and pull factors.

Table 3

Motivation	Male	Female
Pull Factors	Means	
Wanted to pursue new opportunities	55.63	59.00
Desired independence	54.78	61.38
Seeking more meaningful work	51.44	52.67
Best avenue for my ideas/goods/services	55.24	62.00
Working for someone else didn't appeal to me	53.12	46.26
Encouraged by a friend or family member	36.33	49.97*
I inherited a family business	12.57	14.77
I had money to invest	29.29	35.39
An opportunity came that I could not pass up	32.58	45.59*
Push Factors	Means	
Wanted more flexible hours	43.94	59.79*
Needed more balance between work and family	35.97	53.85*
Wanted higher income	48.61	55.17
Unable to find employment	28.16	25.36
Lack of career advancement	41.53	46.67
Was let go (fired, laid off)	18.98	21.08
Not satisfied at previous job	39.91	45.96
I did not have job security	29.93	37.09
I encountered discrimination in the workplace	14.53	22.47*
*Significant at p<.05 level		

Questions relating to pull factors were combined to compare the means to those of the combined pull factors questions: Table 4, below. There were no statistically significant differences between male and females when it came to pull factors but were significant differences (p<.05) when it came to push factors.

Table 4: Comparison of Means – Combined Analysis

Combined Analysis – Independent Samples T-Test	Male	Female
Pull Factors	3.56	3.81
Push Factors	2.66	3.22*
*Significant at p<.05 level		

DISCUSSION AND CONCLUSION

What motivates someone to be an entrepreneur? People enter entrepreneurship for a number of reasons and these motivations are not purely pull or push factors but a mixture of the two. The results suggest that pull motivations are similar between men and women. Both sexes are influenced by the desire for independence, the pursuit of new opportunities and the idea that entrepreneurship is the best avenue for ideas/goods/services. In relations to push motivations, two of the top three reasons were the same: Men and women in this study became entrepreneurs because they wanted higher incomes and more flexible hours. The third ranking motivations for both were different. The male respondents said they started a business due to a lack of career advancement. Women indicated they needed a better work/family balance.

Previous research supports that men are more likely to be pulled into entrepreneurship, this research suggests otherwise. Most of the pull-related questions showed no statistical differences by gender. Women were significantly more likely to indicate they were encouraged by others to enter entrepreneurship and were more likely to become an entrepreneur due to an opportunity that could not be passed up. This is great news for organizations that are helping women, because it shows that encouragement works and that women are taking advantage of opportunities instead of passing on them. Existing programs could introduce and encourage entrepreneurship. Mentor programs could be especially successful as they provide both encouragement and opportunity.

This research supports previous findings that women are more likely when compared to men to become an entrepreneur due to push factors. Women were more than men to indicate they became entrepreneurs because they wanted more flexible hours; they wanted balance between work and family; and discrimination in the workplace. There are obstacles that push women from corporations and/or working for others. In this sense, women become entrepreneurs to escape working conditions they deem unacceptable. Recommendations for existing businesses are to examine current policies. One goal would be to create an atmosphere where women are provided more flexibility, better work/family balance and face less discrimination. Because women are becoming entrepreneurs in record numbers, it is envisioned that the business environments created by them will be more conducive to needs for both women and men when it comes to work/life balance and other areas that make a person want to escape their current work environment.

Limitations of this research include the regional aspect of the survey as well as the convenience sample used. In addition, people were asked about motivations for starting the business, requiring those who have been in business for many years to have recall the original motivations. Nevertheless, this research provides insights into gender similarities and differences in motivations for starting a business.

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