Volume 1, Numbers 1 and 2

ISSN 1944-656X H
ISSN 1944-6578 O

BUSINESS STUDIES JOURNAL

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Whitney Press, Inc.

Printed by Whitney Press, Inc.
PO Box 1064, Cullowhee, NC 28723
www.whitneypress.com

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BUSINESS STUDIES JOURNAL

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LETTER FROM THE EDITOR

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This is a combined edition containing both Volume 1, Number 1, and Volume 1, Number 2

Articles for Volume 1, Number 1

PARALLELISM IN BINOMIAL PRICING AND HEDGING OF EQUITY AND CURRENCY OPTIONS

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ABSTRACT

We showed by juxtaposing two numerical examples that illustrate the binomial pricing of an equity call and that of a currency call. We showed how the hedging of, or locking-in process to, the corresponding interest rates was accomplished in parallel for both cases of equity call contracts and of currency call contracts traded in the Philadelphia Stock Exchange. We priced the equity put and the currency put by invoking the respective no-arbitrage put-call-parity conditions. We expect the exposed parallelism to make easy the understanding of the binomial pricing of currency options, and consequently to increase their uses as hedging instruments.

Keywords
Binomial option pricing model, currency options, equity options, delta hedge ratio.

INTRODUCTION

We juxtapose two numerical examples to illustrate the binomial pricing of an equity option and that of a currency option following Cox, Ross, and Rubinstein (1979). In each case, we use the simple 1-period payoff table instead of any formula to keep the pricing efforts to the simplest. We focus on the cash flow involved at the two points in time. We posit that anyone who has acquired basic math skills, and who has learned the binomial pricing of an equity option in a regular investment class will be able to realize the parallelism which we hope will increase the expediency in the pedagogical delivery of the currency option which is discussed much less frequently, if at all, in extant finance texts. The latter fact is inconsistent with the use of currency options as effective hedging tools by institutional investors and corporate America alike. We continue to show the parallelism, using the same two numerical examples, on how a hedger locks into the risk-free rate of return in each case. We next show the put-call-parity condition in equity options and its parallelism in the pricing of a currency put. Finally, we present the parallelism between the Black and Scholes (1973) option pricing model for an equity call, and the Garman and Kohlhagen (1983) model for a currency call.

Binomial equity call's pricing and binomial currency call's pricing

Binomial pricing of equity call

Let S ≡ stock price, E ≡ strike.
Given: S_0 = 50 \$/share, and E=\$50,
$S_0 \rightarrow (S_1^{up}$=55 \$/share, S_1^{down}=48 \$/share).
$\therefore c_1^{up}$= max(0,55 – 50) = 5, and
c_1^{down} = max (0, 48 – 50) = 0.
Δ=(option's spread)/(equity's spread)
= (5 – 0)/(55 – 48) = 5/7

The 5/7 fraction implies a hedger needs to write 7 calls for 5 shares held.
Assume risk-free rate, R_f = 6%.

Initial transaction	t=0 CF_0	Reversal transaction	t=1 S^{up}= 55	S^{dn}= 48
Buy 5 shares	-250	Sell 5 shares	275	240
Sell 7 calls	$7c_0$	Exercise 7 calls	–35	0
Σ CF_0	$7c_0$ -250	Σ CF_1	240	240

The parity of the 240's in the last row of the last two columns shows a hedged portfolio. Now, we equate the initial cash flow, CF_0, to the terminal cash flow, CF_1, bearing in mind that since it is a hedged portfolio, its required return is hence the risk-free rate of return. We add a minus sign in front of the ($7c_0$ – 250) to indicate the reversal of transaction. So, we get –($7c_0$ – 250) = 240/(1+R_f) where R_f is the risk-free rate of return.
Given R_f to be 6% per period, we proceed to solve for c_0 as:
250 – $7c_0$ = 240/1.06
c_0 = [250 – (240/1.06)]/7 = 3.36927 \$/call
= 336.93 \$/contract.

Binomial pricing of currency call

Let s ≡ spot exchange rate, E ≡ strike.
Given: s_0 = 2.00 \$/£, E = 2.00 \$/£,
$s_0 \rightarrow (s_1^{up}$ = 2.20 \$/£, s_1^{down} = 1.80 \$/£).
$\therefore c_1^{up}$ = max(0, 2.20 – 2.00) = 0.20
c_1^{down} = max(0, 1.80 – 2.00) = 0
Δ=(option's spread)/(spot rate's spread)
= (0.20 – 0)/(2.20 – 1.80) = .20/.40 = 1/2

The 1/2 fraction implies a hedger needs to write 2 calls for 1 £ held or needed.
Assume $R_\$$ = 6%, $R_£$ = 11.1…%.

Initial transaction	t=0 CF_0	Reversal transaction	t=1 s^{up} = 2.20	s^{dn}= 1.80
Buy PV of £1 in \$	–1.80*	Sell £1** for \$	2.20	1.80
Sell 2 calls	$2c_0$	Exercise 2 calls	–.40	0
Σ CF_0	$2c_0$–1.80	Σ CF_1	1.80	1.80

* –2* (1/1.1…) = 1.80
** The £1 could well be in the order of million(s) needed to pay off a British supplier.
Since all the numbers in the above table are in \$, we can solve for c_0 by simply equating –($2c_0$ – 1.80) to the present value of 1.80 in the last row of the last two columns. The leading minus sign represents reversal of transaction, i.e.,
1.80 – $2c_0$ = 1.80/(1.06), or
c_0 = (1.80 – 1.80/1.06)/2 = .050943396 \$/£.
The 0.050943396 \$/£ is the price per call. If we use the PHLX currency options of contract size £31,250 each, then one contract will cost \$1,591.98 before commissions.

Proofs of hedged position using equity call contracts and currency call contracts

Next, we proceed to show that we have indeed "locked in" the return of 6% under the mutually-exclusive dichotomous situations. Say, we have 500 shares whose value we want to hedge or lock in to earn the risk-free rate of 6% per period. Since the delta hedge ratio is 5:7, it means we need to write 7 call contracts each of $336.93.

t=1 with S_1= 55 $/share

Equity	500*55 = 27,500
FV of calls' proceeds	336.93*7*1.06 = 2,500
Loss in calls written	–5*700 = –3,500
∑ all cash flows	26,500

t= with S_1= 48 $/share

Equity	48* 500 = 24,000
FV of calls' proceeds	336.93*7*1.06 = 2,500
Loss in calls written	0*700 = 0
∑ all cash flows	26,500

Rate of return = (26,500/25,000) – 1 = 6%.

Regardless of the state of the world, the equity portfolio earns a risk-free rate, R_f, of 6% per period.

Now, we proceed to prove the effectiveness of hedging £1m using 64 contracts since the delta, Δ, hedge ratio is 1:2, and each £1 entails the writing of 2 calls, and each £ currency option contract at PHLX delivers £31,250. In this example, we assume the buyer of the £ is an American importer who has a British vendor who insists to be paid in £ at t=1.

t=1 when s_1 = 2.20 $/£

Spot market	$2.200m
FV of call proceeds	1,591.98*64*1.06 = $0.108m
Loss in calls written	–0.2*2m = –$0.40m
∑ all cash flows	$1.908m

t=1 when s_1 = 1.80 $/£

Spot market	$1.800m
FV of call proceeds	1,591.98*64*1.06 = $0.108m
Loss in calls written	–0.0*2m = –$0.00m
∑ all cash flows	$1.908m

Rate of return = (1.908/1.80) – 1 = 6%.

In both cases, we proved that we would always have enough dollars to pay off the £1m debt regardless of the expected spot rate, e_1. At the same time, our initial capital of $1.8m continues to earn domestic risk-free rate, $R_\$$, of 6% per period.

Besides the juxtaposed parallelism in the binomial pricing of the two options, we note the following points of comparison.

The major difference between the pricing processes is that the pricing of currency options entails two, $R_\$$ and $R_£$, nominal interest rates while that of equity options entails only one risk-free nominal rate, R_f.

Consistent with PHLX currency options' quotations, only direct or American quotes can be used in the pricing process. Any indirect or European quotations have to be converted, by taking the reciprocal, to direct or American quotes before the pricing exercise begins.

Initial cash outflow for the hedger-importer = $s_1^{down}/(1+R_\$)$ = 1.80/(1.06) = \$1.698113208 for every £1 he needs to hedge where e_1^{down} is the expected spot exchange in \$/£ under the "down" state of the world. This implies that the current price of the currency call option, c_0, can be solved expeditiously once we know e_1^{down}, $R_\$$ and $R_£$ in a binomial pricing model by equating $-[(2c_0 - s_0/(1+R_£)] = s_1^{down}/(1+R_\$)$. The negative sign represents transaction reversal again.

Currency options are expensive relative to other means of hedging instruments such as currency futures and forwards contracts. To hedge £1m, the hedger incurs an initial cash outflow of \$1.698113208m. This is almost the present value of the £1m at the current exchange rate of 2 \$/£, reduced only by \$0.101886792m which is the proceeds from the writing the calls.

Binomial equity put's pricing and binomial currency put's pricing

We now find the price of the put option that has the same strike and maturity as the call option. We create a hedged portfolio by buying 1 put, writing 1 call and buying 1 share of the underlying stock. To be consistent with the earlier example, we use \$50 as the current stock price and the strike price, and 6% as the risk-free annual rate of return.

Initial transaction	t=0	Reversal transaction	t=1	
	CF_0		S^{up} = 55	S^{dn}=48
Buy 1 put strike 50	$-p_0$	Exercise of put	0	2
Sell 1 call strike 50	c_0	Exercise of call	–5	0
Buy 1 share	–50	Sell 1 share	55	48
Σ CF_0	c_0-p_0-50	Σ CF_1	50	50

To find p_0, we simply equate $-(c_0 - p_0 - 50) = 50/(1+R_f)$. When we plug in the c_0 value we found earlier of \$3.369272237 per call, we find p_0 to be \$0.539083558 per put or \$53.91 per put contract. This is the simple put-call-parity condition. In equation form, we have
$p_0 + S_0 = c_0 + E/(1+R_f)$

Let s_0 and s_1 be spot exchange rate at t=0 and t=1.
Let $R_\$$ and $R_£$ be \$ and £ interest rates per year.
At t=0, we:

1. Borrow $\$[s_0/(1+R_£)]$ at $R_\$$ for one year.
2. Sell \$, buy £, get $\$(s_0/1+R_£)*(1/s_0)£/\$ = 1/(1+R_£)£$
3. Lend $(1/(1+R_£)£$ at $R_£$ for 1 year
4. Buy 1 put and sell 1 call both of strike E.

At t=1, we have:

1. $FV_£ = [1/(1+R_£)]£*(1+R_£) = 1£$
2. Sell £, buy \$, we get $FV_\$ = 1£*e_1\ \$/£ = e_1\$$

Initial transaction	t=0	Reversal transaction	t=1	
	CF_0		s^{up} = 2.20	s^{dn}=1.80
Buy 1 put strike E	$-p_0$	Exercise of put	0	E–s_1
Sell 1call strike E	c_0	Exercise of call	-(s_1-E)	0
Lend PV s_0 in £	$-s_0/1+R_£)$	Withdraw deposit	s_1	s_1
Σ CF_0	c_0-p_0-$s_0/(1+R_£)$	Σ CF_1	E	E

Using the same numbers from our earlier example where E and s_0 were both at 2.00, $R_\$$ at 6%, $R_£$ at 11.1…%, c_0 of \$.050943396 per call, we find p_0 to be \$.137735848 per put, or \$4,304.25 per put contract of PHLX where one put contract entails delivery of £31,250. In equation form, we have $p_0 + s_0/(1+R_£) = c_0 + E/(1+R_\$)$.

We note the only difference in the last two equations lies in the undiscounted current stock price, S_0, for the equity options and discounted current spot exchange rate, s_0, for the currency options at the one-period foreign interest rate. The result of the put-call-parity models parallels the determinants of the classic Black-Scholes (1973) option pricing model for equity calls and those of the Garman-Kohlhagen (1983) model for currency calls. In the Black-Scholes model, we input the annualized continuously-compounded risk-free rate whereas in the Garman-Kohlhagen model, we input both the home-country and foreign-country interest rates. Similarly, the current stock S_0 is not discounted in the Black-Scholes model while current spot exchange rate s_0 is discounted by foreign interest rate. We juxtapose both models below for direct comparison.

Black-Scholes option pricing model	Garman-Kohlhagen currency call model
$c_0 = S_0N(d_1) - Ee^{-(R_fT)}N(d_2)$	$c_0 = s_0e^{-(R_£T)}N(d_1) - Ee^{-(R_\$T)}N(d_2)$
where	where
$d_1 = [\ln(S_0/E)+(R_f+\sigma^2/2)T]/(\sigma\sqrt{T})$	$d_1 = [\ln(s_0/E)+(R_\$-R_£+\sigma^2/2)T]/(\sigma\sqrt{T})$
$d_2 = d_1 - \sigma\sqrt{T}$	$d_2 = d_1 - \sigma\sqrt{T}$
where	where
$e \approx 2.718281828459045\ldots$	$e \approx 2.718281828459045\ldots$
$N(d_i)$=cumulative normal distribution of d_i	$N(d_i)$=cumulative normal distribution of d_i
S_0 = current stock prince in \$	s_0 = current spot exchange rate in \$/£
E = strike in \$	E = strike in \$
T= remaining option's life in years	T= remaining option's life in years
σ= annualized std dev of returns of stock	σ= annualized std dev of spot forex rates
R_f = continuous risk-free interest rate	$R_\$$ = continuously-compounded return for \$
	$R_£$= continuously-compounded return for £

CONCLUSION

The binomial 1-period pricing of currency calls can be easily extended to 2- or more-period pricing following the same generality. The binomial pricing and its concomitant hedging outcome are effective exposition tools in illustrating to students and prospective practitioners on how currency options can be used as effective hedging instruments. Both binomial models further obviate the need to estimate the annualized volatility of the returns of the underlying stock or the volatility of the spot foreign exchange rates, the determinant many researchers found to be the most sensitive in estimating the option's price, and the most susceptible to estimate bias.

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BUSINESS APPLICATIONS OF GEO-SPATIAL TECHNOLOGIES

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ABSTRACT

This paper presents information on a multi-disciplinary range of business applications of Geographic Information Systems (GIS) and related Geo-Spatial Technologies (GST) such as digital remotely sensed imagery and global positioning systems (GPS). Applications in multiple facets of the business environment are discussed. Definition and discussion of what constitutes GIS GST and its components are presented first. Those familiar with GST may wish to proceed to the discussion of applications in various business disciplines which follows. Examples of current business applications and outstanding instances of companies utilizing GST are the focus of the body of the paper. These include well established uses in marketing/market research and logistics/operations research. In addition, the future potentialities of these technologies in other business disciplines such as economics/general business, finance, accounting/auditing, human resources management and in the legal aspects of business are covered. In particular, applications in finance including the development of a concept of ***spatial diversification*** *of an investment portfolio are emphasized. Lastly, resources for obtaining additional information about GST including location and status of leading software vendors, availability and characteristics of data-sets and sources of specialized hardware are summarized.*

INTRODUCTION

Geographic Information Systems (GIS) and related Geo-Spatial Technologies (GST) such as digital remotely sensed imagery, global positioning systems (GPS), vehicle navigation and tracking systems and the availability of interactive web-based maps constitute a revolutionary and powerful set of tools for business decision makers and academics in business related disciplines to use to better understand the spatial issues surrounding their firms and fields. GST particularly those technologies like web-based mapping and vehicle navigation systems and mobile cell phone mapping applications allow consumers to visualize and analyze issues that have a spatial component. In the past, spatial aspects of many businesses related situations and decisions were ignored, or at least neglected, because of the difficulty of creating cartographic products like choropleth maps (maps that use a spectrum of color fills to convey numerical or nominal information), graduated and proportional dot distribution maps, flow maps and/or cartograms. However, the advent of GIS starting in the 1960's and the development of business and market research applications of GIS starting in the 1980's allowed large business organizations to see and understand the spatial aspects of issues like location of retail units, and the demographics of trade areas (areas where potential or actual customers resided, and to a lesser extent were employed) (Goodchild, 1989). More recently, geospatial technologies, principally GPS and remote sensing have added new dimensions to both gathering spatial data as well as helping with the process of visualizing spatial relationships important in many businesses including small and medium sized enterprises. These firms have increasingly embraced the greater functionality, increasing ease of use and progressively falling costs of GST (Leipnik, Mehta, and Maniam, 1999).

The development of numerous interactive web-based mapping tools, most notably Google Maps/Google Earth and related Google Map *mash-ups* are making spatial data available to consumers (Mehta, Maniam, and Leipnik, 2004). Likewise, the proliferation of mobile devices capable of displaying maps (typically road or more properly "street centerline" maps) and very recent hybrids of maps and imagery such as Google Streetview are bringing geospatial data into mobile and Internet environments and opening up new ways of understanding space and reach consumers with maps, directions and details about product availability and unit location, and other spatial information. In some cases they are being used to deliver location based services directly to consumers.

While GIS and geo-spatial technologies have long been used in businesses with complex and spatially extensive assets such as public utilities and for management of the extensive land holdings of railroads and of natural resource extraction industries like forestry and mining, it has only been within the last two decades that these technologies have found widespread use in many aspects of the marketing discipline, including market research, location of units, allocation of sales territories and the expanding sub-discipline of geo-demographics. A solid understanding of spatial characteristics of populations plays an important role in the success of many of these business application areas (Leipnik, Mehta, and Maniam, 2004). Logistics and related areas of operations research have incorporated some geospatial technologies, notably routing and GPS-tracking of shipments and mobile assets. Other areas of business have either used geospatial technologies (GST) (including GIS) to a lesser extent or only in the most cursory manner (such as to generate a thematic map to accompany an annual report or enhance a sales presentation). In this paper, the authors will examine the use of geospatial technologies in a wide range of business disciplines, including those such as finance, accounting, human resources and business law where the current uses of GST are limited, but we would argue that potential applications are quite promising.

DEFINITION AND FUNCTIONALITY OF GST COMPONENTS

The following are the most important components of Geo-spatial technologies along with some important methods used in GST. Note that most of the following definitions are adapted from

The Dictionary of GIS Terminology edited by Helen Kennedy and published in 2001 by ESRI Press, Redlands, California.

GST: Geo-Spatial Technology (GST) is the discipline and related technologies involved in gathering, storing, processing, and delivery of geographic information, or spatially referenced information. Geo-Spatial technology includes three main technologies that are all related to mapping features on, under or above the surface of the earth. These three technology systems are GIS (Geographical Information Systems), GPS (Global Positioning Systems) and RS (Remote Sensing). In addition vehicle navigation and tracking systems and digital aerial photography and street level photography and use of interactive web-based maps and imagery are all variants and combinations of these three main Geo-Spatial Technologies.

GIS: A geographic information system (GIS) is an organized collection of computer hardware, software, geographic data, procedures and personnel designed to efficiently capture, store, update, manipulate, analyze and display geographically referenced information stored in multiple co-referenced layers linked to descriptive attribute information stored in database tables. In a broader generic sense, GIS applications are tools that allow users to create interactive queries (user created searches), analyze spatial information, edit data, create and plot maps, and present the results of all these operations.

GPS: The GPS (Global Positioning System) is a "constellation" of 24-30 orbiting satellites that make it possible for people with ground receivers to pinpoint their geographic location (longitude, latitude and altitude). The GPS is operated by the U.S. Department of Defense but is available for general use around the world. GPS equipment is widely used in science and commerce. When the receiver is equipped with a display screen that shows a map, the position can be shown on the map. If a user is moving, their receiver may also be able to calculate the speed and direction of travel and generate estimated times of arrival to specified destinations. GPS has been built into an array of mobile devices like vehicle navigation systems as well as all 3rd generation cellular phones. Note that there is also a revitalized Russian Global Navigation Satellite System (GNSS) (called GLONAS) and ones being launched by the European Union (called Galileo) and under development by the Chinese that can augment or perhaps supplant the current U.S. GPS.

Remote Sensing:

Remote sensing is the science, technology, and art of obtaining information about objects from a distance usually from the air or space. More specifically, it refers to the gathering of information about the environment by measuring the interaction between electromagnetic energy and the materials of which the environment is composed. The principle forms of remote sensing are satellite-based remote sensing, aerial photography, aerial videography, pictometry (an oblique aerial imaging method) and LIDAR (Laser Detection and Ranging) an airborne laser-based system to map terrain.

Aerial Photography:

Aerial photography is the taking of photographs of the ground from an elevated platform, usually a fixed or rotary wing aircraft. Other platforms that have been used for aerial photography include pigeons, balloons, kites, and rockets. Aerial photography is typically converted to a digital raster image and used in cartography, land-use planning, surveying, archaeology, movie production, environmental studies, surveillance, commercial advertising, property appraisal and civil engineering. A very common application of aerial photography is the creation of orthophotos – photographs which have been "corrected" to remove several types of distortion so as to be usable as a scaled map or basis for mapping. Orthophotos have been widely used in online map systems such as Google Maps. Google Earth lays orthophotos onto a GIS-based representation of the earth called a geoid and can use digital elevation models to simulate 3D landscapes.

Interactive Web-Based Mapping:

Web-mapping is the process of designing, implementing, generating and delivering maps on the World Wide Web. Interactive web-based mapping welcomes map users' participation in the map-making process by allowing various inputs such as extent, choice of layers, and sometimes choice of symbols and colors from on-line users. Interactivity helps to explore maps, change map parameters, navigate and interact with the map, reveal additional information, link to other resources, and much more. Web-based maps are increasingly conveying information to consumers and business decision makers. A wide variety of information is available on web-based mapping sites including business locations (Google Maps), Travel information (Visit Britain and Visit Norway), geodemographic information (American Fact Finder) and real-estate related information (Realtor.com & Propertyshark.com) (Barbero, 1999).

Google Map "Mashups":

In web development, a mashup is a web application that combines data from more than one source into a single integrated tool. The term mashup implies easy, fast integration, frequently done by access to open APIs and data sources to produce freely available results that were not the original goal of the data owners. Google has made its Google Maps and Google Earth geospatial data freely available to web developers who wish to use that vast and constantly updated data source as a base-map for mapping features of interest to the developer. This includes many types of consumer, social networking and special interest data. An example of a business application of a Google Maps mashup would be the use of cartographic data from Google Maps to add location information to real estate data, thereby creating a new and distinct web service that was not originally provided by either source.

Vehicle Navigation Systems:

A vehicle navigation system uses a GPS and a specialized GIS with street centerline and point of interest data layers and a user interface often with voice recognition and simulation. It has the ability to estimate travel times and determine shortest paths and shortest time through a connected road network. Some units can use Bluetooth technology to download additional information such query on-line databases about destinations and businesses like nearby restaurants and gas stations and get real-time traffic and weather updates. The leading manufacturers of after market vehicle navigation systems are Tom Tom and Garmin. Vehicle navigation systems are standard equipment on BMW and Acura automobiles and optional on many other makes and models (like GM vehicles with their ON-STAR variation to this approach which uses a GPS along with a cellular phone to obtain geospatial guidance from a call center with GIS support).

Vehicle Tracking Systems:

A vehicle tracking system is an electronic device installed in a vehicle to enable the owner or a third party to track the vehicle's location. Vehicle tracking systems use Global Positioning System (GPS). Many systems also combine a communications component such as cellular, wireless Internet and/or satellite communication of the vehicle's location and status such as speed to a remote user. Vehicle information can be viewed using GIS on maps and/or via the Internet. Vehicle tracking systems have been widely used in the shipping industry and now can also be found in consumers' vehicles as theft prevention and retrieval devices. Increasingly, firms and local governments are tracking fleet vehicles to deter misuse, such "slacker trackers" and the tracking of the vehicles of teenagers by parents is often resented. Tracking can also determine instances of speeding, avoidance of scales, over-long shifts and determine the location of accidents and send emergency response by being linked to airbag deployment sensors. The potential exists to track vehicles by the signals emitted by tire inflation sensors, although this technology would require roadside transponders.

Radio Frequency Devices:

Radio Frequency (RF) is a frequency in the range of about 3 Hz to 300 GHz. A RF device comprises a RF transponder having a circuit and antenna, and a sensor conductively connected to the antenna so that a measurement can be retrieved from the sensor by communicating with the transponder. One example of such RF device is a radio-frequency identification (RFID) tag or label commonly used for identification of persons, animals or goods, tracking or theft protection of goods, access control for restricted areas, electronic payment systems, etc. Some RF receivers and RF devices are being equipped with GPS receivers to allow tracking inside and outside structures. RF tags built into name badges are becoming more common in the workplace. Data retrieved from RF tags can be downloaded into a GIS to study the movement of RF tagged products and/or personnel.

Geocoding:

Geocoding is the process of finding associated geographic coordinates (often expressed as latitude and longitude) from other geographic data, such as street addresses, or zip codes (postal codes). With geographic coordinates the features such as the home location of a consumer or the location of a firm's units and competitors can be mapped (usually as a point represented by a connotative or geometric symbol) and entered into Geographic Information Systems or displayed in a Google maps mashup, or the coordinates can be embedded into media such as digital photographs via geotagging. Reverse Geocoding is the opposite: finding an associated textual location such as a street address, from geographic coordinates. The Geocoding function is provided by most GIS software packages as well as by commercial consulting firms.

Geotagging:

Geotagging is the process of adding geographical identification metadata (data about the data such as its coordinates) to various media such as photographs, video, or websites. This data usually consists of latitude and longitude (or some other coordinate system) coordinates, though it can also include altitude, bearing, accuracy and place names data. Geotagging can help users find a wide variety of location-specific information. Examples of sites with geotagging capabilities include Picasa, Panaramio, Locr and Smugmug. For instance, one can find images taken near a given location by entering place name and/or latitude and longitude coordinates into a Geotagging-enabled image search engine like Picasa. Geotagging-enabled information services can also potentially be used to find location-based info on businesses, news, websites, or other resources.

Life Style Segmentation Profiles:

A lifestyle segmentation profile (LSP) is geospatial data set of a subgroup of people sharing one or more demographic or economic characteristics that cause them to have similar product and/or service needs. LSP data is used in a GIS in order to analyze decisions like siting a new unit in an area where the dominant segment is similar to those predominant in successful trade areas elsewhere. LSP data can also be used to target advertising. Market segmentation is the process of classifying a market into distinct market segments. Lifestyle segmentation is the division of a total heterogeneous market into relatively homogeneous groups, based on their race, income, educational attainment, housing characteristics, the number of children, marital status, service in the armed forces and other aspects of their lifestyles. A number of market segmentation systems exist. ESRI of Redlands, California has a lifestyle segmentation profile (LSP) classification system, known as Tapestry that classifies U.S. neighborhoods into 65 segments based on their socioeconomic and demographic composition and is mapped by zip code and census tract boundaries as well as being available by state, for metropolitan statistical areas (MSAs) and "Micropolitan" areas. The competing Prizm system from Claritas (A division of AC Nielsen, San Diego, CA) provides 59 somewhat similar categories mapped by state and zip code.

APPLICATION OF GST IN MARKETING

Marketing and market research, while not the longest duration application of GST in business, are the most important, well documented and significant in terms of the impact of these technologies on the global business environment. The primary applications of GST in marketing can be broken down into three important categories 1) unit location 2) territory allocation and 3) targeting of advertising (Goodchild, 1982). However, all these applications depend on two important techniques. One is the ability to understand and analyze customer and potential consumer demographics at the residence (household), census block, block group, tract, county, MSA and state levels as well as at zip code and zip code plus 4 levels of geographic subdivision. In the USA this is primarily derived from the TIGER data set from the 1990 and 2000 decennial census conducted by the U.S. Census Bureau. In international applications, understanding demographics at the national level for multiple countries as well as potentially at a finer level of geographic subdivision such as province, canton, commune, etc is valuable. In Europe this more granular analysis is facilitated by an evolving geospatial data set. This is the European Community's NUTS (National Territorial Units) system. This rational system divides nation level data (NUTS I) into NUTS II (Province, County, Canton), NUTS III (District, Prefecture) and NUTS IV (Commune, City, Town, Village) levels of subdivision. A vast array of socio-economic data is available for areas divided into these categories for most EU countries. The second technique is the ability to geocode customer and unit and (occasionally) competitor locations based on street address, zip or other postal codes or possibly using GPS coordinates to put those features usually as points literally on the map.

In unit location studies, retail firms and those with spatially extensive processing and distribution facilities can use GIS to determine various aspects of potential locations that are relevant to business success. Thus cost of land, construction costs, zoning, infrastructure availability and locations of existing customers and competitors can all be analyzed in a series of co-registered layers with appropriate attribute data. Tools such as buffer zone generation, travel time (isocrone) determination and other types of spatial analysis can be performed to identify potential sites and select the best locations from among those sites. In addition, geodemographics is likely to be an important consideration, so the number and characteristics of residents (and possibly workers) located in proximity to potential sites will need to be evaluated.

An example of a firm using all these methods at its corporate headquarters along with site selection teams in the field is Starbucks, Inc. of Seattle, Washington. The ESRI ArcGIS software suite is used by Starbucks in site selection studies and GPS determined unit locations are evaluated against a variety of geospatial layers which can include, appraised valuation, cost of land, zoning, flood zones, streets, traffic counts, travel times, population demographics by zip code zone, and lifestyle segments that have been identified as most likely to consume coffee products and other factors (Leipnik and Mehta, 2004). Recently Starbucks has been using spatial analysis to help determine which units to close. Taking into account changing demographics, falling sales and the duration of the units operation (recently opened units will be given more time to raise low sales and/or reverse falling sales). Close proximity of units inside trade areas is another factor in the decision to close poorly performing units which may be cannibalizing each other unacceptably in the current business environment.

This shows that methods of spatial analysis and the use of GST can be equally valuable during a contraction. In point of fact, they may be more valid, since established stores have a track record that can be compared with other factors such as potential for growth in a community and trends in sales in similar areas to make decisions on closing a unit. The fact that Starbucks has opened new units directly adjacent to existing stores (such as in downtown Vancouver, Canada) indicates that what was an easy option in the past in the case of the under-capacity of an existing unit, will now likely force the closure of one of the units. Many businesses undergoing consolidation due to recession or mergers and acquisitions or technological change such as in the case of the banking industry, can benefit from using GIS to make decisions about which branches to retain as well as where to open new ATM machines and how to use customer relationship marketing techniques to support access over the Internet and through affiliated banks for customers served by closed branches.

In territory allocation applications of geospatial technologies, spatial optimization can be used to best allocate sales territories between competing sales representatives taking into account such factors as spatial extent of the territory, minimizing travel costs over all salespersons, matching and retaining as many existing customers with their current salesperson as possible, keeping as many sales persons in their current sales territory and balancing work loads and potential customer numbers among an existing or a rationalized sales force. Just as with unit location studies, allocation studies can be constructed so as to account for falling sales volumes or loss of territories due to consolidation. As an illustration of the value of taking spatial factors into account in design of sales territories, the situation of the sales person whose territory covers all of Texas in a state by state territory allocation scheme is instructive. This sales person, if he is hypothetically making a sales call in Brownsville is farther away from his next assigned client in Texarkana, than a sales person based in Chicago would be. Taking spatial factors such as distance, travel time and cost and proximity into account can help rationalize the size and balance the work load of sales persons. A related allocation issue is the determination of the degree of cannibalization that may occur in a franchise operation when a new unit with a different franchisee enters a given market (trade) area (Goodchild, 1987). In this case, the locations of existing customers should be used to determine the approximate trade area from which existing units of the franchise are drawing customers. New units proposed by investors need to be evaluated both with respect to the degree to which they can obtain adequate sales from their probable trade area, but perhaps more importantly whether are they going to obtain those sales by cannibalizing existing units of the same franchise owned by other franchisees. If all the units proposed and existing are owned by the same franchisee then it may a matter of indifference to the franchisor, if an additional unit is added into a given market. However, if the existing units are owned by other investors it is a matter of existential importance whether a new unit is allowed in the same trade area. This situation can be resolved by application of several types of GIS-based spatial analysis to determine the size of trade areas, to conduct analysis to determine if the terms of exclusivity agreements are being adhered to and to determine the potential success of new units of a franchise *a priori*. Examples of firms using GIS for these types of analysis include Yum Brands, Gold's Gym, Ace Hardware Stores, Inkjet Inc. of Chicago and Best Western Motels (Mehta, Leipnik, and Maniam, 1999).

LOGISTICS AND OPERATIONS RESEARCH APPLICATIONS OF GST

The full range of GST is not generally used in logistics. However, the special combination of use of GPS-based vehicle tracking units generally with real-time communication links through cellular or wireless Internet devices to track mobile assets (most frequently trucks) and the analysis of that data at a dispatching center using GIS-based maps of street centerlines and other relevant features such as warehouses, delivery points, etc is a extremely powerful tool for optimizing delivery routing and logistics. The spatial optimization algorithms used include variations on the simplex algorithm and shortest path determination methods. Development and enhancement of these spatial optimization techniques is a branch of operations research. In order for these applications to work, highly specialized software such as ArcLogistics Route from ESRI and a specially structured set of street centerline data with interconnectivity and attributes such as speed limits, street names, address ranges and mobility limitations such as low bridge locations is essential. These data sets are available in the U.S. from two competing vendors: Teleatlas (owned by Dutch GPS maker Tom Tom) and Navteq (owned by Finnish telecommunications giant Nokia) Examples of firms utilizing spatial optimization and real-time tracking include package delivery firms like FedEx and UPS and the U.S. Postal Service and firms with extensive delivery commitments such as Frito Lay, Inc.

One of the best examples of a company profiting from geospatial technologies is E & J Gallo, Inc., the Modesto, California based wine maker. Gallo has to constantly vary the size and quantity and type of deliveries to over 23,000 grocery and liquor stores and manage distribution from its own and numerous independent wineries, breweries, as well as from ports and regional distribution centers. It utilizes tracking systems in delivery trucks and ESRI's ArcLogistics Route software to optimize the logistics of this complex and ever changing delivery side of its business (Arends, 2004). Also the major interstate trucking firms such as JD Hunt and Schneider National employ Arc Logistics Route or variations of the approach such as QUALCOMM's V-Tracks hardware and software. IN Europe GPS tracking is common and is mandated by the German Government for commercial trucks. Another example of a firm that is utilizing GST in many logistical aspects of its extensive businesses is Archer, Daniel, Midlands Corporation (ADM). ADM uses spatial optimization to determine where to establish processing facilities for agricultural commodities, which transportation modalities to employ given distances and relative costs and where to source agricultural commodities given prices, production and demand on a global basis. The main goal of the optimization is cost minimization while meeting demand and input/output and processing and logistical constraints (Clevenger, 2008). Recently, Caterpillar, Inc. has developed systems for tracking its equipment on and around job sites that utilizes a variety of geospatial technologies. Some firms have also taken to using GPS to map the locations of customers during service calls (or at least those customers whose locations do not geocode readily using street address data and street centerline data sets that contain address ranges and street names). These firms include Sears Home Central and John Deere, Inc. John Deere has found having locations of farm machinery it sells and/or services mapped with GPS to be very helpful, as many of their tractors, etc are located at places that do not have valid street addresses, either because they are in tractor barns or the residences in question have rural delivery route or P.O. boxes for mailing addresses. Having vehicle navigation systems in service vehicles with drivers being able to view and update GPS waypoints for customer locations greatly facilitates reaching and returning to customers in the fastest and most economical manner. A driver or service technician can add a customer residence to the system as a waypoint that in a GIS database will be linked to other customer information along with the service call details. This evolving database can then be used to find the customer again, but it can also be used in studying trade area characteristics, locating new service centers and targeting radio and TV and direct mail advertising, it is particularly effective when coupled with other GIS data about trade area demographics such as population growth and which LSP groups predominate in the areas where a large number of customers reside.

GENERAL BUSINESS & ECONOMICS APPLICATIONS OF GST

While marketing and logistics are long standing and well document application areas of GST in business there are many valuable contributions that these technologies can make in other business disciplines. A customized thematic map is a powerful tool to augment PowerPoint and print presentations for annual meetings, quarterly sales updates and the presentation of any data from a firm that has facilities, units and/or customers in spatially extensive areas. Thus any major firm is certain to gain valuable insights and to present data in a more dramatic and accessible manner by mapping that data using GIS and then exporting those maps to presentations and hard copy annual or quarterly reports and making the maps available on corporate web sites. Firms can often benefit by adding data from outside sources such as demographic and economic data from the Census Bureau, Bureau of Labor Statistics, U.S. Department of Agriculture, etc. Many businesses are incorporating GIS generated web-based maps into their web sites to help customers find the location of the nearest store. In the discipline of economics, presenting data to students and colleagues in the form of choropleth and other maps that can easily convey the spatial distribution of economic phenomena such as unemployment, productivity per worker, cost of living, etc. While in the past it was a challenge to create a state by state map, GIS can allow quick and easy generation of county level maps or more detailed maps by place, zip code, census tract, etc for regions that present economic data in a easy to grasp manner. Also geodemographic data such as population growth and educational attainment and race, gender and age all can be studied by economists using GIS to analyze and disaggregate the data (Clapp, Rodriguez, and Thrall, 1997).

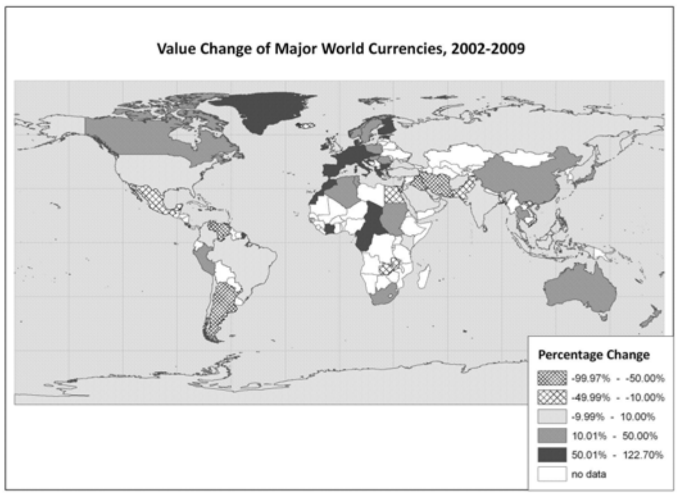
APPLICATIONS OF GST IN FINANCE

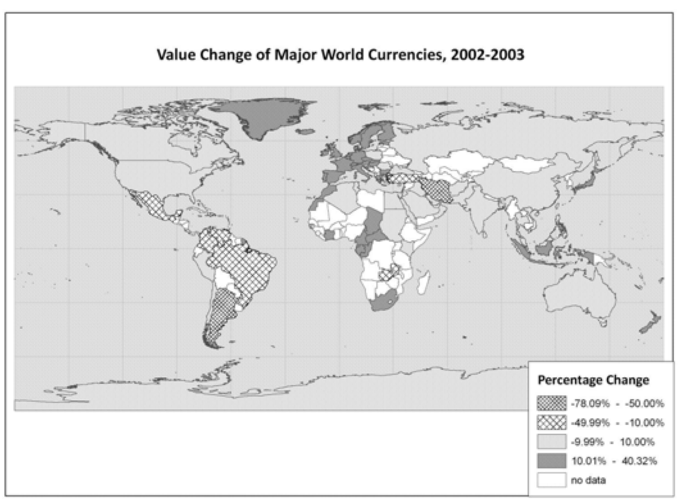
At present the most common applications of GST in finance is in the consumer banking sector, where the location of customers may be mapped to determine if lending patterns comply with Community Reinvestment Act (CRA) requirements to avoid the appearance of "redlining" (that is not lending in disadvantaged minority communities). More recently, banks and other firms engaged in mortgage lending have been studying patterns of foreclosure and late payment activity at the census tract, zip code and county and MSA levels. This analysis along with estimates of drops in property values, can alert financial institutions to serious losses months in advance of when they will formally recognize those losses. Factors such as geodemographics can be added to create predictive models of the segments of the population and the regions and local economies most likely to suffer major problems. For example JP Morgan Chase is using GIS for this purpose (Zhang, 2008). Other financial industry firms that have used GIS for unit location studies, CRA compliance and other applications include Charles Schwab, Edward Jones, Wells Fargo, Bank of America and Aerospace Federal Credit Union.

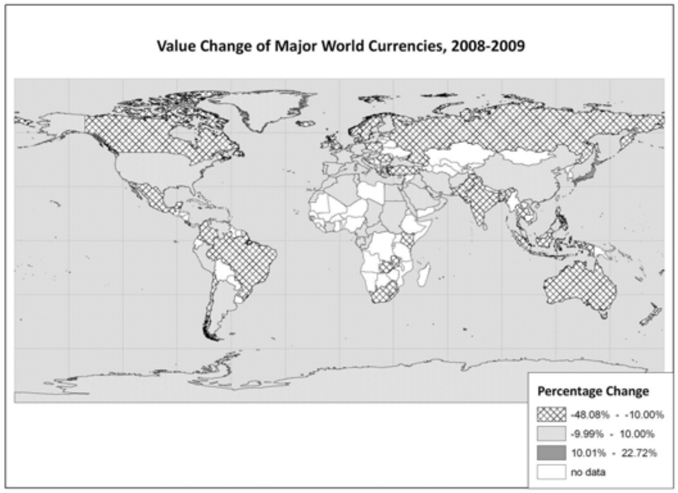
However, an entirely different and new potential application of GIS exists in the field of finance with respect to visualization of financial data. Many methods are used to visualize financial flows and structure. However, spatial factors are largely neglected by these methods. Spatial factors can be significant in understanding such issues as investment flows from one country to another or one region to another. Choropleth maps, cartograms and flow maps can all give valuable insights into the movement of funds and investments spatially and temporally. Also, the relative value of currencies involved in the vast volume of currency trading and exchanges can be viewed in a spatial context, with use of chloropleth maps as well as both continuous and exploded cartograms and with flow maps. Graduated dot distribution maps might also be a feasible tool to visualize the relative importance of financial trading centers (London, Frankfurt, Tokyo, New York, Chicago, Zurich, etc) rather than see their impact as effecting entire countries.

One example of using choropleth maps to show the relative value of world major currencies is illustrated in Figure 1 a-c, which shows several categories of percentage change in exchange rates (value relative to the dollar) of world major currencies for the period from 2002 to 2009. The exchange rates were obtained from www.xe.com and sampled on February 12 yearly from 2002 to 2009. The value of foreign currencies were all converted to U.S. Dollars and then classified into five groups with each represented by a specific color/shade used to fill in the outline of the nation involved on the map. Those countries with a loss of value relative to the dollar of from 99% to 50% were in one category, those with a loss of 50% to 10% in another. Those countries with gains of 10% to 50% in a third class, those with gains of 50% to 99% were in a fourth class. Those with either no change (because their currency was pegged to the dollar) or with gains or losses of 10% or less were also grouped together. A few countries in Africa such a Liberia, Somalia, etc some central Asian and South American nations and places like North Korea and Myanmar were not included because data was lacking, many of these countries have such weak currencies that they are not tracked or widely traded. This was helpful to the analysis because inclusion of a country with many thousand percentage devaluations due to inflation would make using the chosen categories impossible. This map graphically shows that over that time period Iran, Iraq, Argentina and Venezuela all had substantial devaluation in their currencies relative to the dollar (largely due to political instability) and that the Euro-zone countries and several West African States that use the French Franc as currency had an appreciation in the value of their currencies. One important consideration when placing financial data on a map is that sometimes large areas on the map may not have any great economic importance. Thus it would be foolish to assume that because Greenland (a dependency of Denmark and Euro-Zone area) is huge and the Danish currency and the Euro have faired very well in recent years that the importance of Greenland is equal to the area it occupies on the map. This is particularly true if the projection chosen is one such as the Mercator which expands the relative size of features like Greenland that are near the poles. These maps used an equal area projection to minimize this possibility. The same considerations apply to Argentina, Canada, Russia or any large sparsely inhabited area such as Mongolia. Taking a shorter time period such as February 2003-Feburary 2004 shows that Egypt, Costa Rica and Haiti had a loss of value relative to the dollar. As the world economic collapse deepened in 2008 and 2009 many countries suffered declines in relative values of their currencies particularly Iceland and Ireland but also Russia, South Africa, Mexico, Brazil, India and Australia these changes are not apparent over the longer seven year time horizon. Once the financial data is built into the attribute database tables with each record linked to a corresponding geographic feature (polygon representing a nation) in the GIS a new series of maps can be easily created for any day or period in the past 50 years. The number of classes used in the map can also be increased or the classification method changed from equal intervals to defined intervals, natural breaks, quantiles or one based on standard deviation using the map symbol properties tools built into the ArcGIS software.

Figure 1 a-c. Percentage Change relative to the Value of the Dollar in Currencies Between 2002-2009, also between 2003-2004 and 2008-2009.







The authors wish to propose the concept of ***spatial diversification***. In spatial diversification, the degree to which investments in a portfolio are tightly clustered in space versus widely distributed could be measured quantitatively and qualitatively. This would be a measure for the risk of natural disaster, political upheaval or economic collapse adversely affecting what might otherwise appear to be a diversified investment portfolio. Also if the economy of a city or region was dependent on a firm or industry and that firm of industry was in decline such as the U.S. automotive industry then investments that were located near that city or region would be more affected than more widely spaced (spatially diversified) investments. So for example, if an analysis of the spatial diversification of a children's toy firm with respect to potential or current suppliers were to indicate that there were dozens of potential and actual suppliers, but all were located in Southern China, Hong Kong or Taiwan then the firm would lack spatial diversification in that portion of its business model. That would imply that the firm would be subject to risks of a disaster or political upheaval affecting that region. Thus a war between China and Taiwan, a flood affecting Guangdong Province, an earthquake impacting Hong Kong and Shenzhen, etc. could all impact the ability of the firm to meet the demand for Christmas toys. To take another hypothetical case of spatial diversification of an investment portfolio: assume a wealthily retired investor purchased shares in a chocolate factory, shares in a gaming company, owned a car dealership, owned extensive acreage of raw land, owned a share in several apartment buildings, owned a share in an outlet mall, and owned an expensive primary and vacation home. That would seem to be a diversified series of investments. However, if the chocolate factory was Ethel M Chocolates, the gaming company was the Planet Hollywood Casino and time-share Resort, the car dealership was Las Vegas Chrysler Jeep, the land was in Henderson, Nevada, the outlet mall was in Barstow, California (on Interstate 15 on the way to Las Vegas), the apartment building was in West Las Vegas, the home was in the Summerlin, development in North Las Vegas, Nevada and the vacation home was on Mount Charleston, Nevada. A map generated with ESRI's ArcGIS software of the location of these apparently diversified investments and an analysis of both the Euclidean and Manhattan distances from the location of the investor home to each of these investments is illustrated in figure 2.a. The focus of the map and the investments is Las Vegas, Nevada, and as the economy of that metropolitan area faired so would all of the investments to a greater or lesser extent. Recently the Las Vegas area is suffering the highest levels of foreclosure activity and the greatest drop in property values in the U.S. A more spatially diversified series of investments would hypothetically have fared better. However, such a tightly spatially clustered series of investments is not unreasonable given that travel takes time and money and people are more comfortable investing in places they know well. Some of these investments would be less subject to a downturn in gaming related tourism or retirement home buying, but all would suffer greatly in the current economic slump. Conversely, if the chocolate factory was in Switzerland, the casino in Macau, China, the car dealership in Edmonton, Alberta, the raw land in Cabo San Lucas, Mexico, the apartments in Copenhagen, Denmark, the vacation home in Brisbane (Gold Coast) Queensland, Australia and the primary home was as before in Summerlin, Nevada, this more spatially diversified investment portfolio would be less likely to suffer declines and probably less volatility in its value. Figure 2.b. shows an example of a map generated using ESRI's ArcGIS software with points selected from a dataset of 175,000 inhabited places. The map is projected with a cylindrical projection which allows accurate calculations of distances. Actually constructing a measure of spatial diversification is somewhat complex, since one may need to take into account for a given business where its manufacturing facilities, suppliers and customers are, as well as where the headquarters are located. However, in many cases for investments in real estate, in franchise units and in smaller businesses, the geocoded street address is approximate but usually acceptable; the more precise location of the centroid of the polygon defining the footprint of the parcel of the unit or home, etc is a good approximation of location. This location can be precisely determined using GPS and GIS. The distances between many such locations can be determined using GIS highly precisely as long as an appropriate equidistant projection is used in the analysis. Then the aggregate and average distances can be summed and compared. A spatially diversified investment portfolio would have a greater aggregate distance and average distance than one that was not spatially diversified. The distance measure itself may be Euclidean distances (straight line), shortest path through a connected road network (the Manhattan distance) or some other measure, which over longer distances might be a great circle distance. A travel time estimate rather than a travel distance may be more relevant. Travel costs could also be used, but since time has value, travel time is probably a good proxy for the effective distance between locations.

Figure 2.a. spatial analysis of investment locations in the Las Vegas, Nevada area. The aggregate Euclidean distances from investor home to investments is 283.4 kilometers, while the aggregate distance by road (Manhattan distance) is 389 kilometers. Note where road connections exist both distance measurements are similar, but over longer distances and where direct routes do not exist such as between Las Vegas and Mount Charleston, the Manhattan distance will be significantly greater than the strait line (Euclidean) distance

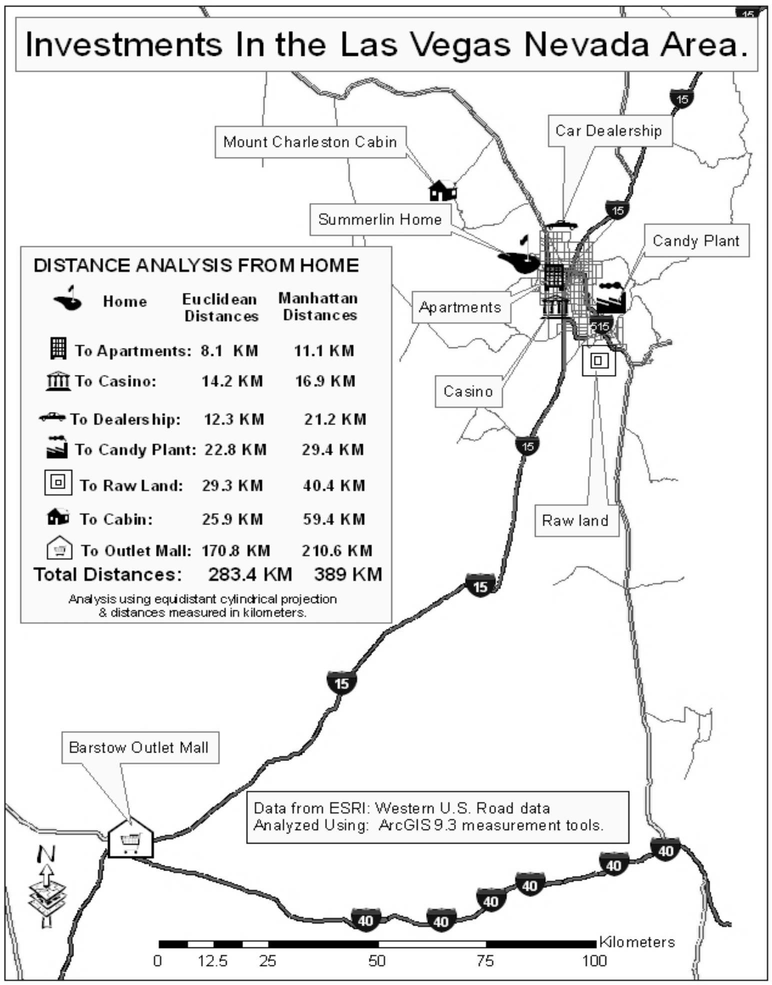
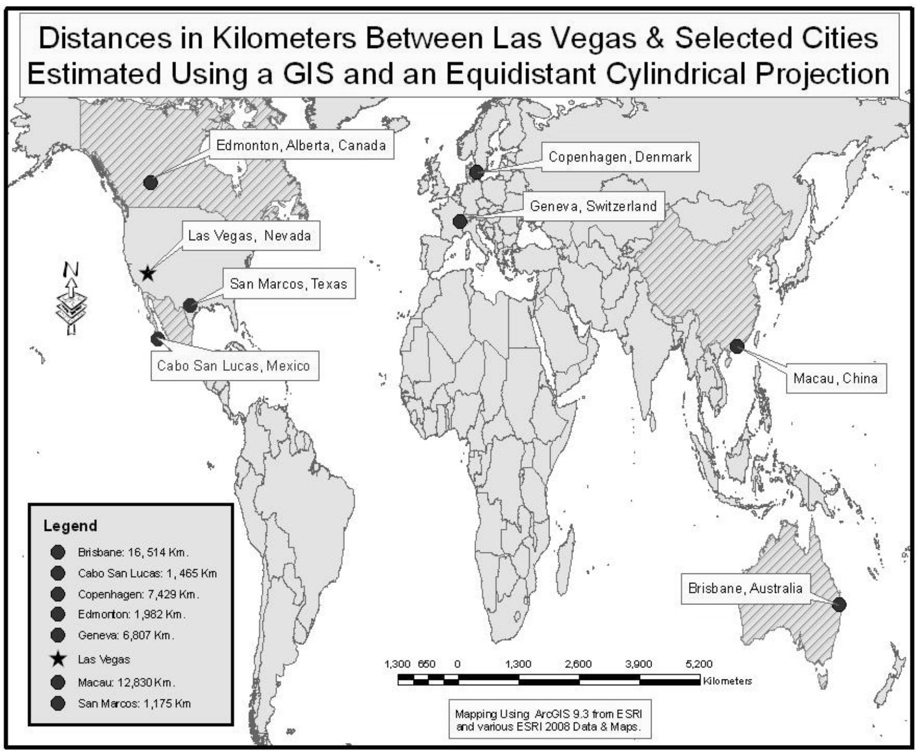


Figure 2.b. Greater spatial diversification of a hypothetical set of investments. The distances involved can be measured with a GIS in a variety of ways and the degree of separation of different investment portfolios can be compared. Here the estimated minimum total distance is 38,202 kilometers the average distance separating these investment locations is 5,457 kilometers. This distance is approximately 10 times the road distance to the first set of investment locations in Figure 2 a. Actual travel distances would be greater since travel by both air and road by somewhat indirect routes is needed to reach all these locations from Las Vegas.



THE BUSINESS LEGAL ENVIRONMENT AND GST

Geospatial technologies are finding applications in at least one significant aspect of the myriad issues that constitute the business legal environment. This is the use of GIS, aerial imagery and computer aided design (CAD) and computer generated imagery (CGI) techniques in preparation of materials for presentations to juries. Maps and visualizations are powerful tools for presenting complex information that has a spatial dimension to usually disinterested laymen. Top-notch legal firms have increasingly realized the value of arming expert witnesses and others testifying at trials and administrative law procedures with graphical materials and sometimes are providing them the results of spatial analysis that use GST in their creation. That the jury members, lawyers and frequently the expert witnesses themselves are ignorant of the source of the materials they are evaluating and presenting is ironic but irrelevant. An example of the type of case where a map created with GIS would be valuable would be a pipeline explosion related law suit such as the one involving the deaths of 10 fishermen near the El Paso Gas Company pipeline crossing the Pecos River in Texas. GIS staff at El Paso Gas worked with the company's law firm to analyze the location and impacts of the explosion and the proximity of the plaintiffs to the pipeline. Many automobile accident related personal injury and defective product cases involve GIS and visualization, such as the suit against the interstate trucking firm whose truck collided with a van in Weatherford, Texas killing 17 passengers. Visualization of the accident used a host of geospatial technologies including laser total station surveying; computer aided design, GIS, GPS, aerial imagery and CGI to create a brief spatio-temporal "movie" of the accident which had a powerful impact on observers and showed how the truck drifted onto the shoulder of the road and ran up on the disabled van parked on the side of the road before slamming it into the side of a freeway overpass. The potential to change the perception of untrained observers by various manipulations of the data such as choice of scale, extent, projection, color and use of vertical exaggeration has a profound potential to influence the outcome of litigation. So it behooves the wise corporate citizen to work closely with knowledgeable experts to both produce realistic and high impact maps and graphical materials as well as be forewarned against the manipulations of such graphical and cartographic products by adversaries in legal disputes.

APPLICATION OF GST IN ACCOUNTING

Accounting and audit/control applications of GST are largely theoretical at this point in time. Accountants are often conservative in adopting new methods. However, in theory, an accountant or auditor could use GST to augment audits, particularly for mobile and/or far-flung assets. So for example, an oil field services firm like Baker Hughes could use GPS & GIS to track locations of its assets and determine issues like taxation, depreciation and value which may be a function of physical location of specific asset classes at a given point in time. Likewise, firms like Wal-Mart which is using GIS and radio frequency ID tags (RFID) for tracking pallets and individual high value products can incorporate that data into inventory valuation systems and somewhat indirectly into accounting information. As location becomes easier to track and high resolution aerial imagery becomes easier to obtain, manipulate, view and query, accountants may start to use on-line versions of such information in intranets or from mashups with sites like Google Maps/ Google Earth to audit the existence and status of corporate assets. Thus if Enron Corporation claimed in the year 2000 that one of its special purpose entities has completed approximately 95% of the construction of the Dabhol, India gas fired $2.9 billion, two thousand megawatt power plant project, but a look at then current 5 meter resolution SPOT imagery or 1 meter resolution Digital Globe imagery showed only limited groundbreaking at the site, the auditor would be able to question the accuracy of materials presented in financial statements without the difficulty of making an arduous trip to Maharashtra

State in India. Figure 3 shows somewhat lower resolution satellite imagery circa 2009 for the current state of the Dabhol power plant which is still clearly under construction. Of course, the other edge of this sword is that imagery and maps can be manipulated to render a false picture of the status of projects to mislead auditors and investors. Once again Enron is a prime example of this possibility. Enron created a "Potemkin" trading floor in its new headquarters building in Houston outfitted with black granite surfaces and multiple plasma displays (IBS, 2002). On those displays ESRI ArcGIS generated maps were presented to visiting investors. These faux maps included "real time" maps of power demand and "lit-up" broadband network infrastructure. Traders had scripts and talked into dead phone lines about power sales and fiber optic capacity trades. While the natural gas pipeline data and maps from the former InterNorth Gas Pipeline Company portion of Enron were accurate, as were the GIS data that Portland General public utility (an Enron subsidiary) had created using GIS, the many of the other maps that Enron created from its large investment in GST were partially, or in the case of the broadband division, largely fabricated (Thomas, 2002). A savvy investor or auditor could have mined and critically analyzed the data to discover the lack of the expected associated attributes, lack of corresponding facilities visible in aerial imagery and the poor overall quality of these (highly generalized) maps and used that information as an indication of their falsity.

Figure 3. Satellite Imagery from Maplandia (Google Maps gazetteer web site) of the area around the Dabhol, India gas fired power plant. This Enron connected project is still visibly under construction in 2009 even though Enron used it as an asset and claimed a high market value in their "mark to market" accounting methods for the project back in 2000-2001 time period. A review of imagery at the time would have indicated the project was in the early phases of construction.

APPLICATION OF GST IN HUMAN RESOURCES

As with accounting, human resources is an area where GST have essentially only theoretical applications at this point in time. A human resources department could use a resource like American Fact Finder data and tools on the U.S. Census Bureau's web site to easily create on-line customized maps of gender, age and race and national origin for various regions of the country where the firm has offices, investments, etc. Attainment of affirmative action and diversity goals or need for sensitivity training could be adjusted to reflect the reality of the diversity of those areas. Thus for an office in the Bronx, New York (the county with the greatest racial and ethnic diversity in the U.S.) diversity goals are not only easier to achieve, but diversity sensitivity training and goals are essential to fitting into a community which is in a "minority-majority" area. Conversely, for a corporate facility in North or South Dakota or Wyoming, lack of diversity in the workplace is predictable unless workers are hired from outside the State and relocated. For minority employees who are relocated into areas like the upper Great Plains there is likely to be profound culture shock and poor retention. For example, consider the situation of an employee who is a member of the second or third African American family in Sublette County, Wyoming (where gas development is actively underway, but the population of 4,000 is limited to whites and a small Hispanic minority) or the second Hispanic family in Slope County, North Dakota (Population 800, with only a single Hispanic resident and no other minorities living there in 2000). Geodemographic maps of specific counties, states or other areas can be generated with only a few hours of training and at no cost, using the best available nationwide decennial census data and ACS (American Community Survey) data. ACS is an ongoing survey of 300,000 households per month begun in 2005 and designed to supplant the use of the long form in the decennial census of 2010. Both these sources of data are available to create customized on-line maps and to generate tables using the American Fact Finder web site (U.S. Census Bureau, 2008). This means that human resource professionals should consider using these tools to study the demographics of areas where facilities are located. GIS is used by some firms to provide employees information about real-estate availability (sites like realtor.com or the more powerful propertyshark.com have web-based maps of listings and other relevant factors like comparative cost of living). Information about school districts and schools and crime data is also valuable to staff in order to make an informed choice about where to live. In the age of two income families and home price volatility, these sites become a greater resource for workers and the human resource professionals who are assisting them. An example of a firm doing this for new hires and relocated employees is Exxon Mobil in Houston. They have found problems related to its Greenway Plaza and downtown Dallas office buildings being located in two of the highest crime areas in those respective cities. Employees who choose to rent temporarily within walking distance of those buildings are liable to have a rude awakening when they are mugged, car jacked or otherwise victimized. Exxon Mobil has therefore disseminated crime maps to employees that they obtained from local police departments. Some locations such as San Diego and Las Vegas have on-line crime maps provided by the Las Vegas Metropolitan Police Department and as an alternative SpotCrime.Com is a Google maps mashup of media reports of crime data (Leipnik, 2003) Many law enforcement agencies have better crime data than that available on-line and human resources people at a wise and caring corporation could obtain and disseminate this and other geospatial data periodically as part of the process of helping employees relocate wisely and commute to and from work in safety.

CONCLUSION

The use of geo-spatial technologies like GIS and GPS is well established in many areas of business today. In particular, applications in market research and logistics are widespread and in many progressive organization are essential to daily operations and are deeply integrated into the decision making process. However, geo-spatial technologies are becoming far more accessible as a result of innovations in web-based mapping, the advent of more powerful mobile devices with GPS capabilities and the ability to display and analyze spatial data and new higher resolution aerial imagery that is available for viewing and downloading at little or no cost to end users. These innovations are making geospatial technologies accessible to many new users including consumers throughout the world. There is therefore an opportunity for business professionals in fields like general business, economics, business law, finance, accounting and human resources to join with their brethren in marketing and operations research/logistics and now embrace these evolving technologies and put them to work helping to solve, or at least to visualize the spatial aspects of issues relevant to those specific business disciplines. The authors hope that by describing well established applications of geospatial technologies and by proposing some new or at least infrequent uses of the technology, that the use of the many inter-related geospatial technologies we have discussed will be encouraged and disseminated.

RESOURCES

The following are web addresses of sources of useful information about GIS software, geospatial data, GPS and other valuable information for the academic or business person interested in learning more about geospatial technologies.

ESRI (the world leader in GIS software): www.esri.com

MapInfo (an affordable desktop GIS used in many businesses): www.mapinfo.com

Intergraph (specialized GIS and CAD provider): www.intergraph.com

American Fact Finder (on-line maps and data about demographics): www.census.gov

Geolytics (provider of geodemographic data): www.geolytics.com

Claritas (provider of LSP data and geodemographic consulting services): www.claritas.com

Teleatlas (provider of street centerline and other geospatial data for the USA and worldwide): www.teleatlas.com

Navteq (provider of street centerline and other geospatial data for the USA, Canada, and some other countries): www.navteq.com

Tom Tom (leading manufacturer of vehicle navigation systems): www.tomtom.com

Garmin (leading manufacturer of GPS receivers): www.garmin.com

Trimble (leader in high end GPS and global navigation satellite system hardware and software): www.trimble.com

Pictometry, Inc. (leader in oblique digital aerial imagery): www.pictometry.com

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MANAGEMENT AND ORGANIZATIONAL LEARNING: AN UNINTENDED BENEFIT FROM A RECRUITING STRATEGY

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ABSTRACT

This research effort began as a qualitative study to assist in developing a broad frame for a system wide study of Target Corporation. The particular focus here was Target's new, innovative staffing strategy, the Target Case Program for use with university partners. The researchers asked: How was the original Target recruitment strategy successful for the organization? How did the recruitment strategy result in unintended benefits for the organization? How did Target disseminate the new learning throughout the organization? How does Target demonstrate the hallmarks of a learning organization?

Based on in depth semi-structured interviews with Target executives who participated in the case study project and a brief review of the characteristics of the case study method and the learning organization, the research questions were answered The Case Study program did yield more favorable student awareness of Target as an employer and the university partnership was enhanced. Also, solutions to corporate problems were presented by student teams to Target executives. In the process, Target executives experienced unintended learning and, through knowledge transfer at Target, organizational learning took place. The individual and organization learning behaviors that resulted are hallmarks of a learning organization, thus indicating that Target is a learning organization.

INTRODUCTION

The Target Case Study program was developed as a new, innovative staffing strategy. In the program, Target presented a university class with one of 15 cases focused on real problems faced by Target. Student teams then created solutions and presented the solutions to Target executives who judged the teams' efforts and awarded significant scholarship money to the winning student team. The purpose of the program was to strengthen existing partnerships between the retailer and universities and to better inform students about employment at Target. This and more was accomplished.

As students developed solutions to the case they learned more about the corporation and, the more they learned the more attracted they became to Target as a potential employer. Additionally, Target executives who heard the student presentations and read the student reports learned about the new millennial generation of potential employees, heard a range of solutions to corporate problems, and were able to apply this information to their own work, supporting the belief that Target is a learning organization. The benefits of the experience are not only improved learning at the university for students and faculty alike, but also knowledge acquisition for individuals at the company and for the organization as a whole.

THE TARGET CORPORATION

Target, based in Minneapolis, operates over 1600 stores in 47 states, 175 of which are SuperTarget stores. Target distinguishes itself in the large format, general merchandise discount retail sector of the retail industry through its emphasis on innovative products, great design, in-store experiences, and community partnerships. Innovation and continuous improvement are widely recognized as prominent characteristics of the products, the stores, and the operations of Target (Rheingold, 2008).

Target's values and philosophy make it a unique organization in a number of ways. Employees are team members, customers are guests and five percent of its income is given to community and educational organizations each year. Target has received numerous awards in a wide range of areas including diversity, community philanthropy and support, innovation, design, environmental protection, and health and wellness programs. A few of their recent awards are presented on the corporate website (Target Corporation: About Target: Awards + Recognition, n.d.)

Target faces challenges in a wide range of areas, as a company operating both in the increasingly competitive retail industry as well as in the increasingly competitive marketplace. Perhaps none of the challenges is as significant as being able to attract and retain talent. Target recognizes, as do strategy researchers, that the sources of competitive advantage lie in the human assets of a firm (Barney, 1986) and that staffing an organization with the correct people builds competitive advantage (Bartlett & Ghoshal, 2002).

A number of new demographic factors increasingly threaten organizations' ability to fully staff their operations with talented individuals. Baby Boomers (people born 1946-1964) are the largest generational segment of the workforce today at 40%. This generation has already begun to retire. It is estimated by the Bureau of Labor Statistics that by 2010, the combination of Baby Boomers retiring and new workforce entrants coming from the less populous Millennial generation (people born 1980-2000), will create a workforce shortfall of 10 million in the United States. Target is doubly threatened by the shrinking pool of workforce talent. Not only will there be fewer people in the workforce, but Target's growth strategy demands that the number of its employees grows also. Target opens, and must staff, 100 new stores each year. The primary responsibility for recruiting, selecting, training, and retaining employees rests with Target's Human Resource area. Their problem: “How can we effectively staff our stores with (hourly/executives) teams as we enter the competitive labor market of 2010?” (Target Corporation, 2007)

Each year, after examining their campus recruiting strategy, Target’s Human Resource area develops and implements new recruiting strategies. Past and ongoing activities have included participating in career fairs, providing grants, and underwriting events on campus. The goal of all the programs is to better inform students about Target Corporation. For Fall 2007, the new strategy was the Target Case Study Program.

The Target Case Study Program is innovative and markedly different from other recruiting activities. In the Target Case Study Program, the corporation presents a university partner with a choice of 15 case studies, designed for college classroom use, with topics related to culture/diversity, human resources, merchandising, and others. The cases represent real, current problems and opportunities that face Target and others in the retail industry. Students are given the opportunity to develop and present solutions to the cases. The case is studied throughout the semester, with students, operating in teams, competing to have their solution judged to be the best by a group of Target executives. The prize for the winning team is $3000 in scholarship money.

Target supports the case study in a number of ways. First, it provides a copy of the Target Brand DVD for classroom presentation to start the program. Second, Target makes executives available for one hour question and answer sessions in the class. Third, a panel of Target executives hears the student presentations, asks questions, reads the student reports, and determines the winning team. Of course, it also provides the scholarship money to each university’s winning team.

Target employs about 100 campus recruiters throughout the United States (Target has retail operations only in the United States). The program was presented to the campus recruiters as the new campus recruiting strategy and they were encouraged to implement it in their region. It was, however, each individual recruiter’s choice as to whether the program would be used in his or her area and which university in the area would be chosen.

The Target Case Study Program, although a new program for the Target Corporation, has some similarity to programs being used at other companies such as Cisco and Northrup Grumman. These organizations have developed programs that create learning alliances between public corporations and universities through problem solving and innovation. Indeed, asking students to solve corporate problems is not the only way corporations and universities collaborate to promote learning on both sides. There are other collaborative university-corporate arrangements, such as internship programs and co-operative education systems; they also promote shared learning for mutual benefit.

The Target Case Study program represents the confluence of two factors: the revived use of a case study method as it was originally intended and the actions of Target managers as members of a learning organization.

LITERATURE REVIEW

The Case Study Method

In 1912, when the Dean of the recently established Harvard Business School was searching for a pedagogical method for teaching the new discipline of management, he naturally looked at two other graduate schools, Harvard Law School and Harvard Medical School, for guidance. Both educational institutions developed professionals in their subject area by studying cases – case law and medical cases. The business school followed suit in using the case method (Cruikshank, 1987), with one significant difference: "It included executives coming to class to discuss practical problems in their companies, ranging from strategic issues to plant layout and personnel problems, and it involved students in active discussion and presentation of their solutions – thus was born the case method" (Greiner, Bhambri & Cummings, 2003: 402). Also, as noted in the description of the methodology above, originally both the university and the corporation in the case benefited from the case method partnership.

The case study method of teaching has become the backbone of business programs throughout the world but with a significant difference from its original use. Today cases are written by academicians based on real or fictitious companies and their behavior. Instructors select cases for classroom use from large databases developed and maintained by organizations such as the Harvard Business School, the Case Research Clearinghouse, the Society for Case Research, and others. The case study methodology is popular because it produces a number of benefits for student learning, not the least of which is allowing students to experience the challenges of being a manager (Corey, 1976). More recent discussion of the case method has further offered support for the methodology. As noted by Bailey (2002):

> Cases …supply complex situations upon which specifics furnish a springboard for generalities, complete with a glimpse into the untidy human and organizational factors that are the rule in organizational life, not the exception. In this way, cases imbue a pedagogically structured experience based upon which sound practice is built. (p.194)

Target's innovative use of the case study as a means to achieve a better staffing strategy represents a renewal of the original approach to case teaching which builds upon the value of the methodology for students but extends value also to the company. The benefits of the experience are not only improved learning at the university but also knowledge acquisition for individuals at the company and for the organization as a whole.

The Learning Corporation

The Target Case Study program has been successful in accomplishing its goals of building university partnerships and bettering informing students about Target as a potential employer. In addition to achieving its designed purpose, the program has also produced a number of other unintended but highly beneficial outcomes. The organization's ability to identify and learn from these unintended outcomes demonstrates that Target is an organization with people who are ready, willing and able to learn and innovate. In this respect, Target displays the attributes of a learning organization.

Organizational learning has become increasingly important in practice and in research (Jerez-Gomez et al., 2005). It is viewed as a complex topic the study of which draws from a number of perspectives (Easterby-Smith, 1997; Atonacopoulou, 2006) including the strategy literature and the organizational development literature. Organizational learning has been identified as essential for competitive advantage in the global marketplace (Prahalad and Hamel, 1990) but paradoxical in nature in that it represents a dynamic relationship between individual learning and organizational processes (Argyris and Schon, 1978). One particular stream of literature and research in the area of organizational learning is focused on its application; the applied area of organization learning is referred to as the learning corporation (Easterby-Smith 1997).

The learning corporation is the subject of research in academic circles and practice in corporate OD programs, but it is not easily defined (Garvin, 1993). Leitch et al. (1996) describe the learning organization as practical and aspirational. Senge (1990) found that the learning corporation comprises systems thinking, personal mastery, mental models, shared vision, and team learning. According to Garvin (1993), the learning corporation is "an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights." (80) Certainly, the learning organization is an action orientation.

As strategy authors (Wheelen & Hunger, 2008) have noted, being a learning organization is essential for developing strategic competitive advantage. Organizational learning, the primary component of competitiveness in our dynamic global marketplace, enables organizations to be strategically flexible.

RESEARCH AGENDA

This research effort began as a qualitative study to assist in developing a broad frame for a future system wide study of Target Corporation. The researchers were interested in the *how* and *why* questions best answered by qualitative research (Yin, 2003). The following questions were of particular interest to the researchers; How was the original Target recruitment strategy successful for the organization? How did the recruitment strategy result in unintended benefits for the organization? How did Target disseminate the new learning throughout the organization? How and why does Target demonstrate the hallmarks of a learning organization?

Yin (2003) recommends the use of qualitative research to develop a tentative frame from which to allow refinement prior to launching further data collection.

METHODOLOGY

In depth semi-structured interviews with Target executives who participated in the case study project were conducted. In addition secondary data from the business press, company website, and the case study project materials was used. Two researchers evaluated the interviews and secondary data and multiple informants reviewed the interview drafts, which contributed to the validity of the data (Yin, 2003).

The interviewers used a 14 question guide to facilitate the inquiry. The questions were purposely designed to be open-ended and to stimulate discussion of the experiences of the executives related to the research agenda. Questions such as, "Discuss the goals of the Target Case Study Project", and "How will Target use the information/outcomes of the student projects?", and "Is there a corporate process or mechanism for assimilating the information acquired by the case studies?" Interviews were taped and transcribed and checked for accuracy by two researchers.

TARGET CASE STUDY'S FIRST APPLICATION

In the fall of 2007, Nova Southeastern University was selected as the first university in its region to participate in the Target Case Study Program. One of the two classes to partner with Target in the case study program selected "Target Communications Case Study: Staffing our Stores" as their semester project. Coincidentally, the problem of staffing operations was the impetus for the entire Target Case Study Program.

The project outlined the challenging situation Target faces in staffing its growing organization with the demographic realities of the coming years. One major problem concerns the retirement of Baby Boomers; their retirement numbers are not being offset by the substantially smaller millennial generation as it joins the workforce. A shortfall of over 10 million new workforce entrants is anticipated by the year 2010. In light of this and other situational factors, student teams are asked to solve the problem of how Target can effectively staff their stores at both the hourly and the executive level in the year 2010 and beyond. "Target Communications Case Study: Staffing our Stores" presented a good overview to the situation factors in their case, but students were encouraged to more deeply research the factors that affect workforce supply and demand issues today. For example, one area of concern noted by many student teams was the differences in the values of the millennial generation versus the Baby boomers they would replace.

"Target Communications Case Study: Staffing our Stores" also presented a good overview of Target as a company, but students were also encouraged to find out more about Target as an employer. Each student team reported being surprised and favorably impressed with what they discovered. The culture of the organization was appealing, the benefits generous, the opportunities wide ranging, and the variety of career options plentiful.

The goal of the staffing case study was to develop an innovative staffing strategy that would enable Target to attract and retain talent. Additional material and further questions to investigate were included under such topics as retention, diversity, branding, and competitors. These suggested topics for further research allowed the students to focus their research in productive areas.

Students were given other support by the company also. A Target executive kicked off the project with a presentation and a viewing of the Target Brand DVD. Students had access, through their instructor, to Target to answer any of their questions or concerns. Students were given wide latitude in how they might research, solve, and present their case solutions. Interestingly, each student project was markedly different from the others with each team employing a variety of media in their presentations.

The final activity of the program was a presentation of projects by each student team for a panel of Target executives; each presentation was followed by a question and answer session with the panel. Students also were required to submit a full report of their analysis and solutions to the executive panel.

CASE STUDY OUTCOMES

The purpose of the Target Case Study Program initially was to create partnerships between universities and Target Corporation so that students would be better informed about career opportunities at Target (J. Lainez, personal communication, February 14, 2008). That objective was met as a number of students, both undergraduate and graduate, have applied to Target for executive entry level positions and internships. Many of the students indicated that they had never thought of Target as a possible employer, but after participating in the case study project, they could more readily see the outstanding career opportunities that were available at Target.

Interviews with Target executives, who participated in the case study project and judged the student presentations, revealed that even though the company focus was on getting the word out to university students about careers at Target, additional benefits were realized. It is how that unexpected knowledge was acquired and transferred throughout the company that shows Target is a learning organization.

DISCUSSION

Target's Lessons Learned

Since the stated focus of the Target Case Study Program was to reach out to students, universities and their faculty to not only build better relationships, but to also better inform them of career opportunities at Target, all involved in the project would agree that it was a resounding success. But it is the additional benefits that were derived from the case study project that are the focus of the following discussion. These additional benefits of the program highlight how Target encourages management learning at every level.One of the most important lessons learned by the executives participating in the case study project is that the very people they are trying to recruit, the millennials, "don't want to even come in our door because they don't know what we have to offer" (J. Lainez, personal communication, February 14, 2008). Building "relationships one-on-one with professors and students," like those that grew out of the case study project, enabled the students to "see the full range of possibilities at Target" (J. Sembler, personal communication, February 21, 2008).

Additional knowledge was gleaned from the student teams about the competition. The teams studied not only Target's retail competition, but also Target's competition for attracting the best employees in the highly competitive labor market as we move toward 2010. Students benchmarked the top retailers in the "Fortune 100 Best Places to Work" for 2007. By presenting information to the executives on these "Top Places to Work" it provided insights to the executive team "about what the competition is doing" (J. Lainez, personal communication, February 14, 2008). Understanding how top performing competitors attract, train, reward, and retain talent is vital as Target looks toward 2010.

Target executives noted that having the opportunity to interact with and observe the student teams enhanced their knowledge of how to motivate and lead the Millennials. "I think we have to adapt as managers so we can try to motivate them" (E. Estevez, personal communication, February 14, 2008). Furthermore, it helped them to better appreciate and understand the various generations in the workforce and how they can best be managed. "I honestly think it helps us understand, and we do this a lot as a company, just to look at the differences in the generations…it helps me be a better district manager." It helps me "know what they are going through and understand their expectations" (J. Lainez, personal communication, February 14, 2008).

Lastly, Target has had a long history of outstanding training programs designed to keep their associates educated and responsive. The training executive who helped implement the case study project at this university indicated that after observing the student case presentations she would make adjustments to her training methods to better reflect the preferences and tastes of the new generation. "I think it's more an observation of how the students presented their ideas…most of them were very interactive-based, video, something interesting, and I think as an adult learner…we like to be engaged" (J. Sembler, personal communication, February 21, 2008).

Organizational Learning

A hallmark of a learning organization is its ability to acquire and transfer knowledge (Senge, 1990). Target has formal and informal methods that enable employees who acquire new knowledge to share it with other, to have it presented at higher levels of the organization and to have the knowledge more widely shared throughout the organization. One example of organizational learning occurred through Jordan Sembler who was the campus recruiter for the South Florida region at the time the case study program was first conducted at the university. In a subsequent interview with Jordan, who is now the Associate Training Specialist for Target Financial Services, she noted the path her new information took through the company. First, she had been trained by the company to recognize and appreciate new information which could improve how she conducted her job as well as information that could be useful for the rest of the organization. Next, following the corporate process for knowledge transfer, she shared that information with her manager, the regional Recruitment Manager with responsibility for the entire southeast region. "Anything that I felt was innovative or possibly could be implemented, I definitely brought that information back to my leader" (J. Sembler, personal communication, February 21, 2008). From that informal sharing of information, the regional manager would then present the information in meetings with peers; at that point the transfer of knowledge throughout the corporation becomes more formal in meetings between leaders at ever increasing levels in the hierarchy of the company.

Another trait of a learning organization is its ability to modify behavior and the behavior of its organizational members to reflect new knowledge and insights (Garvin, 1993). In subsequent interviews with Target executives, each one presented examples of how he or she had learned valuable information from the case study program and then incorporated it into innovative ways to fulfill their job responsibilities. Ms. Sembler further noted that she learned new ways to present training material from the millennial generation and that the student presentations also gave her valuable ideas for developing better presentations herself. Joy Lainez, District Team Leader, recounted that the program made her more aware of competitors, especially firms who compete with Target for new employees but are not necessarily similar retailers. Eric Estevez, Store Team Leader, shared that he had changed his leadership style with different subordinates, depending on their age and experience, based on what he learned about the different needs of different generations. Again, this ability to develop employees who can recognize and implement new knowledge is a hallmark of a firm that values organizational learning.

LIMITATIONS AND FUTURE RESEARCH

Despite the serendipitous outcomes of our analysis of the Target Case Study a number of limitations exist. First, the case is a study of one company; as such, generalizations should not be drawn from it. More studies of similar undertakings would be required before one could more reliably reach conclusions. Additionally, the case under discussion is one instance of many such initiatives undertaken by Target and its corporate recruiters. Further analysis of more of the university-company case studies would be required to validate our findings.

Second, ideally our study would be longitudinal, thereby allowing us the opportunity to trace the transfer of knowledge within the company and the ability of the company overtime to use the case studies to generate more organizational learning.

Suggestions for further research echo some of the limitations of this study. Case study initiatives between Target and other universities should be studied to determine if the same positive outcomes were achieved. Were other university-Target case study partnerships as successful as this one? Longitudinal studies should be undertaken and more sophisticated tools used to analyze the increase volume of data. Finally, further investigation of Target as a learning organization should be conducted to verify our conclusions and to learn more about the nature of the learning organization. This study of Target is an initial step in developing broad frame for a system wide study of the corporation.

CONCLUDING REMARKS

Target has created a new strategic initiative with its Target Case Study Program from which it derives a fourfold benefit. First, the project provides a partial solution to the problem of attracting a new generation of employees in an increasingly competitive market for talent. Making students more knowledgeable about Target, which offers a number of advantages as an employer, increases the number of students who apply for positions with the firm. Second, the project establishes or strengthens a symbiotic partnership between the corporation, the university and the students. The Target Case Study Project creates one more activity that enables both the company and the university to derive significant benefit. Third, the project collects a wide range of solutions that address a number of problems the firm faces. Through the Target Case Study Program, Target can marshal the forces of numerous student teams, most of whom are members of the millennial generation. Their perspectives about Target and the workplace provide valuable insights about the needs and values of the newest generation to enter the workforce. Of course, they also provide many different ideas about how to solve strategic problems; in this particular case, it was a staffing problem. Fourth, the project provides a mechanism through which operating managers and staff executives learn more about millennials, the new generation of workers, and how they can best be engaged in the workplace.

This research effort began as a qualitative study to assist in developing a broad frame for a system wide study of Target Corporation. The particular focus here was Target's new, innovative staffing strategy, the Target Case Program for use with university partners. The researchers asked: How was the original Target recruitment strategy successful for the organization? How did the recruitment strategy result in unintended benefits for the organization? How did Target disseminate the new learning throughout the organization? How and why does Target demonstrate the hallmarks of a learning organization?

The results of our semi structured interviews of Target executives indicate positive responses to our research questions. Target's innovative staffing strategy achieved its goals; unintended benefits were realized by executives who evaluated student presentations and solutions to the case study; and Target did disseminate the new learning throughout the organization. Finally, based on Target's reflex action to the new knowledge generated by the case study program, we can determine that Target is a learning organization. Target executives recognized and took advantage of the new knowledge created by the case study program as it became apparent. This limited study shows how the new learning was then incorporated into organizational learning at various levels of the corporation.

Additionally, there is also a more general benefit of the program. The use of a commissioned case study with a university partner is a strategy many companies can employ to increase their organizational learning and innovative thinking. The benefits to the partnering university and its students are substantial also: enhanced learning, increased employment opportunities for students, additional scholarship funding, and the opportunity to apply classroom knowledge to real workplace situations. The Target Case Study Program represents a true example of a corporate and university partnership that has benefited the participants far beyond the intended goals of the program, particularly because the corporate partner was a learning organization.

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ACT, DON'T REACT: A CASE ON OPERATIONAL RISK MANAGEMENT IN BANKING

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ABSTRACT

This paper presents a case on operational risk management at Southeast Georgia Community Bank[1], a small community bank in rural Georgia. The case provides an overview of the current operational risk management structure of the bank as well as a detailed account of the problems that exist with the current structure. An alternative approach to operational risk management is proposed and the benefits of this structure are presented. Given the recent economic downturn and the current crisis within the financial sector, this study will be of particular relevance to academicians and practitioners alike.

INTRODUCTION

Many reasons account for the rapidly changing banking environment; the recent credit and financial crisis, the attacks of September 11, 2001, the subsequent increase in regulatory, compliance, and documentary burden, and the rapidly changing influence of technology, including its ability to increase productivity as well as significantly increase security and reputation risk are just a few. By allowing banks to compete for and serve local, national and international customers, the Internet has changed both the number and types of risks banks face today. The ability of individuals and businesses to operate on a global scale has led to an increase in risk, and by extension, the importance of risk management strategies. Due to increasing regulatory scrutiny, many institutions find themselves embroiled in a confusion of risk assessments, policies and procedures while trying to maintain a competitive edge in a competitive industry.

"Banks clearly bear the burden of organizing, implementing, and maintaining an effective compliance management program, and demonstrating the effectiveness of the program to examiners" (Moore, 2006). It is important for community banks to employ a proactive strategy to address their operational risk management needs. In order to proactively address operational risk management an institution needs both a clear set of goals and strategies and trained and experienced people to manage and monitor the program. The purpose of this paper is to examine the current structure of one bank's risk management program, identify its strengths and weaknesses, and recommend a strategy to more effectively address risk management issues. By empowering an officer to centralize the risk management process the bank will reduce duplication of effort, manage the compliance, security, and risk management effort, and produce a unified strategy for risk mitigation. This paper will show that a Risk Management Officer who is freed from significant operational duties can coordinate the risk management program and most effectively address the bank's enterprise wide risk management needs. In addition, this paper will demonstrate how an individual bank, and by extension, a bank holding company, may benefit from employing enterprise wide strategies for risk management.

BACKGROUND

In order to discuss different ways community banks can mitigate operational risk and increase productivity it is necessary to understand how we define operational risk. Additionally, we need to understand what strategies we might use for dealing with the necessary changes to the business culture required to adopt a proactive operational risk management stance. One of the ways the banking industry attempts to mitigate risk is through laws and regulations issued by bodies such as the Basel Committee on Banking Supervision. Published in 2004, the Second Basel Accord (Basel II) attempts to create an international standard for the amount of capital banks need to set aside to address various credit and operational risks. The Second Basel Accord defines organizational risk as, "…the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events"(Robinson, 2006). This definition clearly divides organizational risk from credit risk or market risk, but includes risk to reputation, operations, infrastructure, and procedural integrity. This is a broad definition and encompasses many fields and departments which have traditionally been "held apart" by the banking industry. For example, an institution's reputation can face risk from all areas of operations, lending, and management activities. Although many banks have implemented policies and procedures which help to protect the institution, in many small institutions there is no specific group or person assigned to assessing the success or failure of these policies, evaluate them against the institution's mitigation strategies, and address the new risks which inevitably appear.

Managing risk is not a new concept for bankers. The challenges the banking industry faced in the late 1980's and early 1990's made an impression on the banking industry that we still feel today. "The managers…had deeply impressed upon them anew the need to mange risks, to control costs, to build capital and reserves, and generally to focus on the lessons of banking history. The passage of time no doubt has caused the experience to fade for those banks that looked into an abyss, but survived; nevertheless the systems and procedures that were put into place by many institutions remains one of the hallmarks of today's banking industry"(Greenspan, 2004). Although the systems and procedures that were implemented, such as governing body oversight, liquidity guidelines, credit and loan policies, asset/liability guidelines, and examination guidance, to help defend banks against credit, market, and asset risk, they did not fully address the needs of the modern bank to look at risk as a global or enterprise wide issue.

Currently, "the distribution of roles between the risk and finance functions, as well as between those functions and business line management, remains to be optimally delineated. For many firms undertaking enterprise optimization, a new governance model will need to be implemented, grounded on new policies and a new culture" (Koll & Lacan, 2006). The structures, policies and organization put in place yesterday can not fully address the modern day requirements of organizational risk management. The system of checks and balances, reporting, and risk management established to address the practices and risks evident in banking twenty years ago did not foresee the continuing globalization of world economies. They did not address a bank's need to identify its customers, verify and track their relationship activity, monitor their transactions, and secure the information the bank obtained. The rapid growth of Internet banking activity, wire transfers, automated clearing house (ACH) transactions, and the Internet itself has forced the banking industry to re-evaluate its risks and the best practices to address those risks.

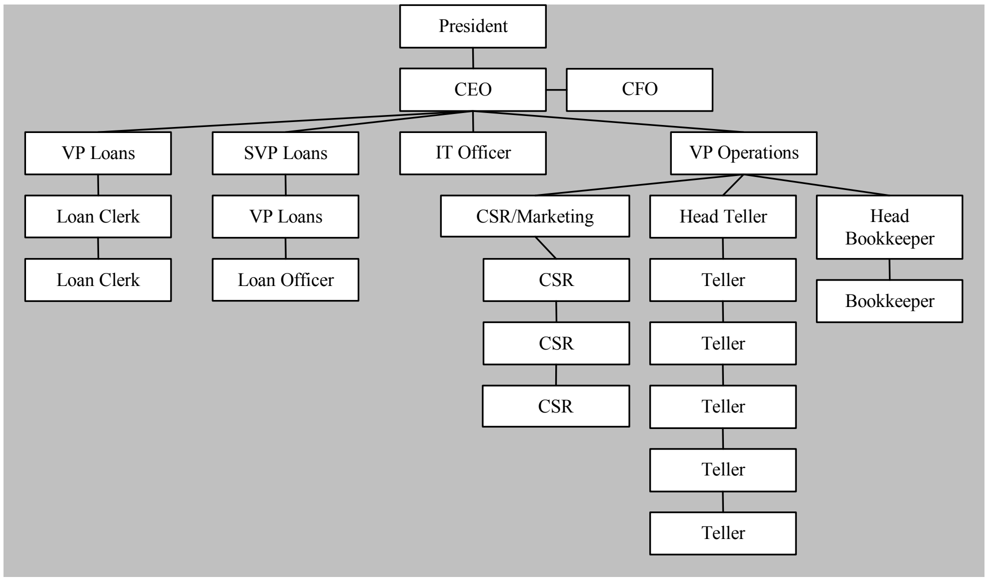
Many community banks have approached the increasing burden of risk assessment, Bank Secrecy Act, Information Technology and Security, Patriot Act compliance and even an increase in internal and external fraud by placing more pressure on "key" employees to address these needs. In the past, as issues arose, personnel were assigned to evaluate and perform whatever tasks were necessary to satisfy the board of directors and examiners. Because community banks, with small asset portfolios and the commensurate employee base, have a smaller pool of human resources to draw on they inevitably find themselves with fewer people involved in the risk management process. If we suppose that risk management is an organization wide enterprise, it follows that a more effective strategy is to involve the entire staff in risk management and planning, rather than limit it to a very few. In order to illustrate this point it is helpful to look at the structure of one bank, how it is currently structured to address its risk management needs and what might be done to more proactively approach operational risk management.

SOUTHEAST GEORGIA COMMUNITY BANK

Overview of Current Structure

Southeast Georgia Community Bank is located in a small town in Georgia, and has total assets of $65 million. The bank has three brick and mortar locations; a main branch, one satellite branch which offers deposit and transaction capability, and one drive-in branch, which offers ATM transactions as well as traditional deposit transaction capability. The bank has twenty-three full time employees and is organized as described in Figure 1. The bank's primary source of assets is customer deposit accounts and as such the bank has a large transactional and customer service requirement. Because the asset size has limited the number of employees the bank does not have true departmentalization.

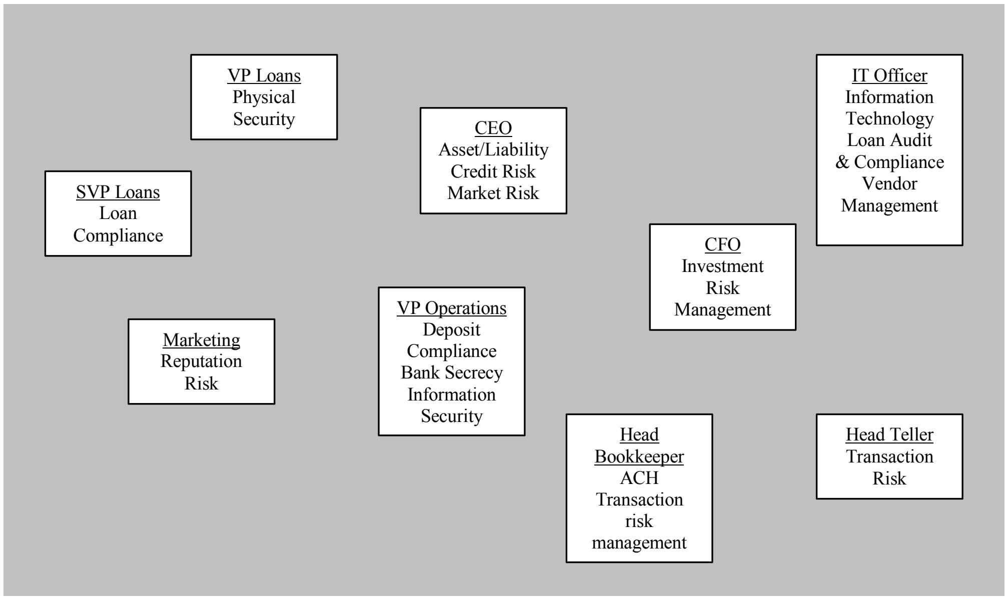
Figure 1: Southeast Georgia Community Bank Organizational Structure



The commercial and retail aspects of the loan department are run directly by the CEO with another senior officer responsible for the operational aspects of the department. The deposit functions of the bank are more closely aligned with traditional hierarchies. There is an Operations Officer who oversees the deposit, customer service, and bookkeeping functions. Best practices for bank management and oversight typically recommend a separation of duties, both at the operational and management levels. The organizational structure of the bank, due to the constraints of its limited resources, puts a great deal of pressure on management to maintain true separation of operational duties. In addition, there is a direct connection in this case between normal operational activities and management. Managers and auditors are involved directly with the day to day activities and procedures they are required to monitor. Because staffing levels are not sufficient to maximize separation of duties the community bank struggles to optimize risk management.

The picture becomes even muddier when we consider the assignment of compliance, reporting, audit, and oversight duties. As discussed earlier, and evidenced in Figure 1, Southeast Georgia Community Bank struggles to find enough experienced and capable resources to allocate these responsibilities to. Operational risk management duties are distributed as shown in Figure 2. The diagram illustrates how each area, though related to the others, is treated as a separate entity. Each area has personnel assigned to it, individual policies and procedures, separate auditing programs and schedules, and separate risk mitigation strategies. Coordination of efforts is difficult to achieve because there is no central, guiding program or principle in place.

Figure 2: Current Operational Risk Management Duties



As each aspect of risk has come to the attention of management or regulatory bodies a "key" person has been assigned to manage that aspect of risk. A policy, which generally addresses only the specific area of concern, is authored and procedures are devised to enforce the policy's provisions. Although in many cases there is a dialogue between the different areas, and one employee might seek advice or an opinion from another, there is no direct program which addresses each aspect of operational risk and how it relates to the others. Information Technology does not work with Loan Compliance to reduce compliance risk through the implementation of newer technology. The physical security policy does not incorporate aspects of information security, despite the fact that the information security program requires physical assets be protected by physical barriers. Further, there is no enterprise-wide strategy for assessing and quantifying risk, planning for the mitigation of risk, or describing the institutions stance on the acceptance of risk.

There are several problems with the "pile-on" strategy of responsibility assignment. From a risk standpoint, this type of management does not take into account the regular business processes already assigned to each person. It does not consider current reporting, auditing, and monitoring responsibilities and how these may or may not be interrelated with new assigned responsibilities. In fact, this type of strategy can actually increase operational risk for two reasons. First, employees responsible for regular business activities and risk management activities are more likely to cross the separation of duties guidelines. That is, they are more likely to have responsibilities which require them to perform changes and auditing, or action and monitoring. In effect they would be responsible for monitoring themselves, which increases risk by removing effective checks and balances. “Smaller organizations often face a challenge of ensuring independent review of processes and decisions since officers and staff members often have multiple responsibilities that can present conflicts of interest”(Bies, 2006). The second way in which the “pile-on” strategy increases risk is by creating an environment in which significant regular business processes and risk management processes are funneled to one individual. This increases risk by limiting the bank’s ability to plan for succession.

The supervisory perspective on risk management continues to expand. Although supervisors understand that small institutions will not have the same scope of risk and need the same scale risk management program, Susan Bies, a member of the Federal Reserve Board, stated in a speech to the American Bankers Association, “small and mid-size entities, for example, may choose to apply the framework in a less formal and less structured way and scale it to their own needs – as long as quality is maintained. This underscores the message from bank supervisors that good risk management is expected of every institution regardless of size or sophistication”(Bies, 2006). In addition Bies states, “running a smaller or less complex bank presents different types of challenges and requires a risk management framework appropriately tailored to the institution”(Bies, 2006). Bies’ comments underscore the reality that auditors will require banks to have a systematic strategy for addressing operational risk no matter what size or personnel base they have. In order for an institution to have an effective risk management program it must have established goals, defined strategies to meet those goals, and processes and procedures in place to evaluate how the strategies meet or do not meet program expectations.

Southeast Georgia Community Bank has no formal risk management program. There are no defined goals and there is no accepted risk “stance” with regard to reputation, operations, information technology, or regulatory compliance. Service level employees are not involved in the planning or evaluation process, and there is no system to measure whether activities are in line with the bank’s strategies. As seen in Figure 2, the bulk of risk management responsibilities are divided between a few officers and upper management positions that have additional operational responsibilities. The lack of a formal risk management program is a result of both a lack of resources, which hurts the bank’s ability to plan, implement and assess a program, and the lack of a defined set of goals which a program might be designed to achieve. Current bank leadership has chosen to place greater emphasis on the individual units responsible for various risk management tasks. The traditional risk management structure employed by the bank is considered to have been effective thus far, and though the CEO and Board of Directors can see the potential for savings and improved risk mitigation in the future, implementation of a new structure will not be undertaken at this time. Based on historical projects, such as centralization of IT functions and policies and the perception of success of the current risk management structure, leadership is unwilling to commit additional resources, time and energy to implement changes at this time.

Decentralization of the risk management function leads to two problems. First, banks have traditionally loaded responsibility on "key" employees who have a history of strong performance. As time goes by, and operational and regulatory burden increases, these employees are overburdened with responsibilities until they are unable to effectively monitor each aspect of their job. As more responsibilities are added to each employee's job description earlier responsibilities drop off to make room. An issue's importance to management may wane and become forgotten until that particular item is discovered during an audit, or in the worst case, leads to a significant loss. Managing the assignment of responsibility is a key component of an effective operational risk management program.

The second problem goes hand in hand with the first. In a small banking environment employees are valuable assets and personnel cost is traditionally kept to the bare minimum. All employees need to maintain some kind of operational duty in order to maintain the cost effectiveness of the organizational structure. Because of this, loan officers, who are the primary marketing and sales force of the bank, often find themselves responsible for physical security, deposit compliance, BSA compliance, asset and liability management, human resources management, and information security, among others. Management of these responsibilities often takes a back seat to accomplishing the operational goals of the institution. "Compliance-risk management can be more difficult for management to integrate into an organization's regular business processes because it often reflects mandates set out by legislation or regulation that the organization itself does not view as key to its success"(Bies, 2006). In most community banks items such as superior customer service, community service, marketing, and sales generally take precedence. This is especially true when the primary operational duty generates income for the bank through sales, business development activities or customer service. What activities are employees routinely rewarded for: those which generate income and profit or growth for the bank or those which are primarily designed to assuage examiners and comply with regulations? Although bank employees are sometimes rewarded for compliance or risk management activities, these rewards usually come because regulatory findings or pressure have forced an institution to aggressively address an issue or policy. Employees are not routinely rewarded, or encouraged, to place an emphasis on risk management because these activities are often seen as a drain on resources instead of a generator of profit and growth. Without a strategy, and sufficient resource allocation to promote a program to achieve its goals, no institution can effectively address operational risk.

Proposed Structure

> *"For many firms undertaking enterprise optimization, a new governance model will need to be implemented, grounded on new policies and a new culture"(Koll & Lacan, 2006).*

The first step in addressing an institution's risk management program is to evaluate its operational and market position and decide what "stance" it will take regarding all types of operational risk. In order to assure that adequate time and resources are devoted to risk management it is imperative that an institution answer some basic questions about its risk stance. First, the institution must decide if it will be aggressive, averse, or neutral with respect to each risk factor. For each institution this decision will be based on their current situation, business and income strategy, and personnel. An institution may be averse to reputation risk but aggressive with regard to processing risk. In the most likely scenario, each factor will be relatively in-line with the others and there will not be factors which are diametrically opposed to one another. A risk-averse institution is likely to be averse in regard to all factors and may stray into the neutral category, but is unlikely to be aggressive in any. A primarily neutral institution may choose to be aggressive at one factor and averse in another, but will maintain its primarily neutral stance throughout the strategy. Without an understanding of the institution's underlying stance and goals, there is no way to develop an effective risk management strategy.

The second step in this process is for management and the institution's board of directors to clearly describe the institution's risk management goals for a determined period. In order for global operational risk management strategies to be successful these goals must be communicated not only to management, but to front line personnel. Understanding the institution's priorities and strategies is an integral part of the decision making process. Department heads can not successfully make decisions about personnel, asset allocation, and resources without understanding their institution's plan for risk management and how their actions will help or hinder the institution's attainment of its goals. Third, middle management and employees must come up with a plan to attain the goals set by the board of directors. This plan is the operational risk management program. It should describe the bank's policies, procedures, and decision making processes which are designed to achieve the institution's risk management goals. Once the program has been defined, it must be tested. A process of auditing and reporting must be implemented to ensure the program's effectiveness.

Although operational risk management is an enterprise wide issue, and requires the combined effort of all employees of an institution, it is helpful to reduce the scope of the problem when discussing an effective management structure to implement an institution wide management program. Every good project requires an effective project manager. The project manager is not required to be an expert in every field, but rather to have a solid understanding of the personnel, program, and goals of the project. The project manager is responsible for coordinating the members of the team and keeping the project on time and within the proposed guidelines. An effective operational risk management program requires someone who can coordinate the disparate efforts of each department or group into one homogenous program. The Risk Management Officer (RMO) should occupy a space outside of traditional bank hierarchy; with enough authority to get the job done, but without the operational responsibility of upper management.

In the proposed structure, the Risk Management Officer works as a hub or centralized base location for the dissemination of the program to department heads, middle management and employees. This structure is defined in Figure 3. As opposed to the disconnected structure described in Figure 2, this structure shows the direct connections between each area and the centralized "hub". Additionally, there is a communication line between the RMO and the CEO and Board of Directors. The RMO would be responsible both for oversight of each area of focus, but also for making sure that each area works together with the others to maximize the effectiveness of the overall program.

The IT Policy Compliance Group states, "firms performing as industry leaders are engaged in very specific activities – more frequently – while also allocating more resources to the task…than others"(Hurley, 2006). The benchmark paper goes on to state that industry leaders conduct more frequent and extensive system and program audits than others. Although this paper deals directly with success and failure within the IT environment we can apply its principles to risk management. In order to be successful, a program must have sufficient resource allocation. Having a competent RMO in place (rather than distributing risk management activities across multiple positions) can help assure that resource needs are communicated to management and addressed. In order to assure there is adequate monitoring of the system it is necessary to assign specific job roles to the implementation and assessment of the program. Decentralizing risk management across multiple employees who are primarily engaged in operational activities is less likely to facilitate inter-department communication and consistent, effective audits of the program than centralizing the risk management function in a RMO who is not responsible for other operational duties. The freedom from daily operational duties will allow the RMO to coordinate meetings, audits, reporting, and planning, and achieve maximum results by allowing the RMO to be available at all times and not tied to a specific operational job function. For this reason, the proposed structure would encourage the appointment of a RMO who does not occupy a current operational position. Furthermore, separating duties in this way has the potential added benefit of alleviating conflicts between employees tasked with making loans and those (with the exception of the RMO) tasked with various aspects of compliance. Recent failures in the financial services industry underscore the possibility that conflicts of this nature may contribute to lending practices that are "shady" at best.

In the proposed structure, the RMO would report to the Board of Directors on a monthly basis on the status of the risk management program, monthly auditing efforts and results, and current issues in the program. The RMO would be responsible for keeping a running dialogue with the CEO and CFO to ensure that the operational risk management program remains in line with the credit and market risk activities in these areas while maintaining its ability to achieve the institution's goals. The RMO would also be responsible for meeting with area managers to discuss current issues and mitigation efforts, as well as compliance and reporting activities. Perhaps most important of all, it is the responsibility of the Risk Management Officer to explain the risk management strategy to the employees and encourage employee "buy-in" to the program. As discussed earlier, the RMO occupies the position of being a liaison between the goals of the Board of Directors and the employees and area managers.

Figure 3: Proposed Operational Risk Management Structure

Benefits from the Proposed Structure

The first benefit Southeast Georgia Community Bank would see from adoption of the proposed structure is the creation of an operational risk management "stance". The creation of this risk management identity would help area managers, employees, and the RMO better understand how daily activities affect the institution's overall risk posture. Employees can measure their decisions against a baseline when determining whether procedures or activities fit within the overall goals of the institution. Once the goals have been defined and communicated to management and employees a comprehensive program can be developed to aid the institution in compliance with its "stance" and reaching its goals.

The second benefit from this structure is the homogenization of organizational risk management and coordination of effort. By centralizing the control of the risk management program we will create a central location for reporting, auditing, and management of the program. The efforts of the area managers can be coordinated to address all aspects of the risk management program and duplication of effort will be significantly reduced. The RMO will be able to coordinate program auditing and reporting and discuss issues in all areas with the CEO and, if necessary, the Board of Directors. This reporting will allow the Board and upper management to build a more comprehensive picture of the institution's risks and make better decisions regarding its stance and program implementation in the future.

In addition to facilitating communication between area managers, the RMO would also bring the ability to engage service line employees in the risk management process. Because fraud, internal and external, security, and information security are ubiquitous in the banking industry, it is imperative that all employees, regardless of position, be trained and involved in the risk management process. Procedures and policies will be created, implemented, and monitored by the RMO to bring all employees to the front line of risk mitigation.

Southeast Georgia Community Bank will benefit from having a non-operationally engaged employee dedicated to risk mitigation in two ways: one, it will free other operationally engaged employees to produce income for the bank by reducing duplication of effort and, two, it will improve the bank's position during the external audit process by demonstrating a commitment to enterprise wide risk management. As we have seen, having an established program with a comprehensive audit methodology is an integral part of satisfying examiners. An employee dedicated to enhancing all aspects of risk mitigation will provide a natural support for area managers and strengthen existing programs.

IMPLEMENTATION OF THE PROPOSED STRUCTURE

In order to implement the proposed changes bank leadership would have to decide whether to invest in a new employee or realign existing employee duties to create the resources necessary to implement the changes. It is much more likely in the bank's current environment that leadership would reorganize workloads to accommodate a centralized risk management program. An existing employee, such as the IT Officer, could accept additional responsibilities with a limited increase in compensation. For example, the bank's IT officer is currently responsible for oversight of the loan department operations and reporting. Leadership could remove the operational and reporting duties and assign Compliance and Security as well as oversight for the program. A lower level loan clerk could take on reporting and loan management duties. This type of reassignment might require additional compensation for both employees, but far less than would be required by a new position.

There are several tangible and intangible benefits of the proposed structure. One measurable benefit is less income lost as a result of reduced participation in risk management activities by income-producing employees. Loan officers, for example, are responsible for business development and loan production which results in fee and interest income for the bank. Other benefits that are more difficult to quantify include an increase in fee income from the bookkeeping department, an increase in interest income from the investment department, and a reduction of petty cash losses from the teller and customer service departments. This would be a direct result of the increased time allocated for employees to focus on operational duties, rather than risk management tasks. Lastly, the bank would expect to receive the benefit of heightened risk management from the coordination. For example, a loan officer who is not responsible for bank security or compliance is able to focus on credit analysis and evaluation. The bank could expect a higher quality of loans made and a reduction in credit risk as a result of the proposed changes. Similar intangible benefits would be expected from all affected departments.

Table 1 illustrates several key employees' estimated annual salaries as well as the number of hours spent on risk management activity per week. Officers of the bank currently have an annual salary between $45 – 50K. The hours spent on risk management (Hours/Week on RM) is an average estimate over the year of hours spent per week for each employee doing direct risk management functions (such as compliance), attending meetings, report writing, and communication with the Board of Directors and/or regulatory agencies. Currently, most employees spend between 4 – 8 hours per week on average on risk management activities.

Table 1: Salaries of employees and hours spent conducting risk management (RM) activities

Risk Management Responsibilities	Operational Job Title	Annual Salary	Hours/Week Spent on RM
Security Officer	Loan officer	$ 50,000.00	4
IT Officer	Loan Department	$ 45,000.00	8
Loan Compliance	Loan Officer	$ 45,000.00	8
Marketing	Customer Service	$ 37,000.00	4
Transaction RM	Head Bookkeeper	$ 37,000.00	8
Deposit Compliance	Operations	$ 50,000.00	4
BSA Officer	Operations	$ 50,000.00	4
Transaction RM	Head Teller	$ 24,000.00	8
Investment RM	Operations	$ 50,000.00	8

Table 2 shows the average estimated monthly income generated by loan officers involved in risk management activities assuming an average loan fee of $175/loan and an average interest rate on loans of 7%. The total annual income in interest and fees generated by the first loan officer in Table 2 is $137,200 and by the second is $93,800. The first loan officer, also the security officer, spends 10% of his time on risk management duties (see Table 1, assuming a 40 hour work week) and the second 20%. If they could instead spend all of that time on business development and loan production, they could produce an extra $32,480 ([$137,200 *.10] + [$93,800 * .20]) per year in fees and interest income. However, it is important to understand that the implementation of the proposed structure would not eliminate the participation of senior staff in the risk management process, but coordinate their efforts, reduce overlap, and increase productivity. If the workload for these employees was reduced by 50% the bank could realize an increase in annual revenue from loan fees and interest income of roughly $16,240 (50% of $32,480).

An analysis of the bank's employment market and requirements indicates that a Risk Management Officer could expect an annual salary of $40,000 – $50,000. Examination of Table 1 shows that the current IT Officer has a salary that is in that range. The extra compensation for this employee taking on the responsibility of coordination of the risk management program would be $5,000/year. The extra compensation for the loan clerk that takes on the additional responsibilities of reporting and loan management that were previously done by the IT Officer would be $2,500/year. The total annual cost of implementing the proposed structure is $7,500.

Table 2: Estimated monthly income generated by loan officers in fees and interest

Risk Management Job	Operational Job	Avg # of Loans Generated per Month	Monthly (Annual) Fee Income	Monthly Loans Generated ($)	Monthly (Annual)Interest Income from Loans
Security Officer	Loan officer	32	$ 5,600.00 ($67,200)	$1 million	$ 5,833.33 ($70,000)
Loan Compliance	Loan Officer	28	$ 4,900.00 ($58,800)	$0.5 million	$ 2,916.67 ($35,000)

Overall, the proposed structure is cost efficient. The additional measurable annual revenue generated is $16,240 with an annual cost of implementation of $7,500. While the measurable benefits do not support the hiring of a new employee to be the RMO, they do support realignment of responsibilities. Such a realignment would reduce the time income-generating employees spend on risk management tasks and allow them to redirect that time back to their primary income-generating activities.

MANAGERIAL IMPLICATIONS

- Implementation requires management "buy-in" and development of enterprise wide risk management "stance"
- Management is required to create risk management goals and timelines
- Management must be willing to allocate effective assets to the proposed structure
- Increased personnel cost
- Increased reporting, administration, and auditing cost until program can identify and eliminate duplication of effort

The implementation of any enterprise wide program or strategy will usually result in increased implementation costs. The recommended program is no exception; however, the program is designed to ultimately reduce cost through maximization of productivity and elimination of work duplication. In addition, the program will likely result in an increase in reporting and administrative costs through implementation, but these costs are anticipated to decline once the program is in place. Because increased costs are a significant implication of this program it is important that upper management understand the long term goals of the program.

The primary implication for management is that the proposed implementation of a Risk Management Officer and centralized risk management program requires management to be more proactive with regard to risk. As discussed earlier, management must decide what the bank's risk "stance" will be and what the risk management goals of the institution are. This requires the management personnel to become involved in understanding what operational risks the bank faces and what the mitigation options are. Once organizational goals are in place, the area managers and RMO, together with the CEO can begin to put together a program designed to meet the goals of the bank. Koll and Lacan write, "because achieving enterprise optimization is a multi-year journey, today's choices of technology, methods and architectures will be highly critical to the firm's ability to ensure future competitiveness"(Koll & Lacan, 2006). By beginning to make changes to our methodology and culture today we can ensure that we are ready to meet the risk management challenges of tomorrow.

For the implementation of a Risk Management Officer and organizational risk management program to be successful upper management must accept and "buy-in" to the program. Upper management must provide the vision for the institution's stance and goals. They must understand the challenges and requirements of the increased regulatory burden on a financial institution. They must be willing to review and approve the risk management program and allocate sufficient assets to ensure its success. Finally, in order to promote the long term viability of the program, upper management must be willing to treat the program as a "live" program, one that requires review, changes, and support to address the risks the institution's operating environment.

CURRENT STATUS OF THE RISK MANAGEMENT PROGRAM

Although there are both tangible and intangible benefits to be gained from implementation of an organizational risk management strategy there is significant reticence at Southeast Georgia Community Bank and its parent holding company about moving in this direction. This resistance stems both from an effort to enhance income by minimizing payroll expense and from each institution's desire to manage its affairs individually and not be covered by a homogenous holding company program. Although this individuality allows each bank to tailor its program to meet its needs, it increases the risk that a bank may not effectively assess or mitigate its risk. In recent years regulatory bodies have increasingly encouraged a more consistent environment within the group of banks by consolidating and homogenizing programs and policies.

In 2006 the holding company created the IT Steering Committee and required all banks to appoint an Information Technology Officer and an Information Security Officer. In addition to forming this committee the holding company appointed an Information Security Officer who is responsible for oversight of the program and coordinating the IT compliance effort. Although there continue to be some difficulties in maintaining a united program this effort has generally strengthened the program at each bank and within the holding company. The holding company IT Officer does not currently have any operational duties and may focus her attention on risk assessment, program implementation and co-ordination of the banks' and holding companies' risk mitigation effort. We have seen a significant increase in IT cost during this period as problems are discovered and the program is adapted or vendors are hired to help mitigate risks that are discovered. However all banks have seen a significant increase in the strength of their IT management program.

Beginning in 2007 Southeast Georgia Community Bank has proposed that the Compliance Officer from each bank be responsible for coordinating their bank's enterprise wide compliance effort. This group will further be coordinated at this time by the holding company IT Officer. Although this effort is still in the implementation stages it is anticipated that the compliance effort will benefit, as the Information Security Program has, from a more structured plan. The addition of a centralized authority will allow each bank to more readily access other's information, insights, and solutions. In addition, a centralized resource for policy generation, knowledge and coordination of effort will enable the holding company to utilize all of its resources.

Although the bank and holding company may be years from a total consolidation of the risk management effort these steps indicate a changing attitude and culture. They point to a desire to more efficiently address risk management and compliance needs. In addition, these steps are creating a framework around which an organizational risk management strategy and program can function. However, there will be continued resistance to this effort until the cost of non-compliance or the danger of having no centralized and effective organizational risk management strategy can be demonstrated to outweigh the cost allocating adequate resources to the risk management effort.

Due to the resources available at both the bank and holding company level it will be some time until a fully functional organizational risk management strategy can be implemented.

CONCLUSION

The recent growth in risk due to changes in the banking environment stemming from terrorism, government regulations, identity theft, global and international banking, multinational corporations, changing markets and economies, among other factors has necessitated a re-evaluation of the programs and procedures implemented in the past to address risk management. Historically, many banking institutions have implemented departmentalized, or "siloed", programs to address specific risk issues, but have not connected these programs into an enterprise-wide operational risk management program. Because of the rapidly changing environment and risk associated with doing business in the modern world these programs are no longer sufficient to provide an institution with the risk mitigation strategies and programs it needs. On a macro scale, the deficiencies of the legacy, "siloed" system can be seen in the financial sector today. Multi-line international conglomerates, such as AIG, conducted business on many fronts; insurance, investments, banking, etc. The company's own internal processes and the government agencies tasked to regulate these industries were ineffective at monitoring and evaluating the global business practices of these companies. This allowed one business line (investments, banking) to be so pro-risk oriented that it could put the entire corporation, and the system itself, at risk. To effectively address the current environment an institution needs a coordinated program which can address changing conditions and draw from all areas of risk management to create a comprehensive plan to address risk. We can see attempts to implement this structure in the global arena as governments seek to get a handle on and mitigate the systemic risk associated with multi-line international business. On a much smaller scale, the same homogenous system can be effective in mitigating the risk of one bank. Because the implementation of an organizational risk management program will likely necessitate a new "culture" within the institution it is imperative for the program's success that the bank commits sufficient resources to its implementation, including the appointment of a Risk Management Officer.

ENDNOTE

The name of the bank has been changed to protect privacy.

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This is a combined edition
containing both
Volume 1, Number 1, and
Volume 1, Number 2

Articles for Volume 1, Number 2

ATTITUDES OF CONSUMERS TOWARDS THE PHARMA OTC PRODUCTS IN INDIA

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ABSTRACT

The proliferation of drugs being switched from prescription (Rx) to over-the-counter (OTC) status has raised multiple concerns about consumer behavior and public policy issues. Indian consumer's attitude towards OTC products is important. There are many issues related to OTC drugs that need to be addressed, like the role of government's regulations and policies as a catalyst / barrier, building consumer preferences towards OTC products, building effective brand-identity, brand-equity through structured Advertising and also effective brand management. New marketing efforts are being directed at the consumers as well as medical professionals, as advertising is found to affect consumer purchase behavior towards OTC Products. This is paper study the attitude of Indian consumers towards OTC product.

Objective of this study was to explore the response of consumers and doctors towards the OTC products, to understand the consumer purchase behavior and the influence of various factors like Advertising and promotional schemes etc. on OTC Products.

This papers which is based on exploratory study revealed that 66 percentage of consumer surveyed uses some or other OTC products. Analgesic followed by cough & cold is the two important OTC segment in India. Study corroborates consumer preference for OTC products as a substitute for prescriptions products. Majority of doctor's had negative response towards OTC products in India.

Type of Research: Research paper, Descriptive
Key Words: OTC, Prescription, Consumer, Doctor.

INTRODUCTION

The proliferation of drugs being switched from *prescription* (Rx) to *over-the-counter* (OTC) status has raised a number of important consumer behaviors and public policy concerns issues. Given the increasing assortment and widespread availability of Rx to OTC switch drugs, how exactly consumers' healthcare preferences do change? Or in other words, what factors do influence consumers' decision to visit their physician rather than to self-medicate symptoms of heartburn and indigestion with a new switch drug? Patents for all brand name prescription drugs eventually expire.

When this happens, manufacturers of generic drugs quickly enter the market, drastically reducing the profits of the pharmaceutical firm that developed, tested, and originally introduced the drug to the market.

One way a pharmaceutical firm, whose patent for a specific drug has expired, can expand their market, is to switch that drug from prescription (Rx) to OTC (over-the-counter) status (Gibson,2003). In the USA during the last 20 years, more than 600 drugs containing ingredients that were once available by prescription only are now sold OTC, that is, without a physician's prescription (Creyer, et.al, 2001). In fact, many drugs that were switched from Rx to OTC status outsell traditional OTC brands in their product categories. For example, popular and familiar brands such as Tylenol, Advil, Benadryl, Motrin, Tagamet, Gelusil, Benadryl, Revital and Rogaine successfully switched from being available by prescription only to being available OTC at most convenience drug, supermarket, and discount stores. Drugs that have been switched from Rx to OTC status are unique, possessing characteristics of both Rx and the OTC products (Longo, 2003).

Some of the prominent drugs (generics) that are sold over the counter are Paracetamol, Ibuprofen in India. Likewise, some of the brands that are sold OTC are Crocin, Corex, Anacin, Benadryl, Aspirin, and D'cold in India. In OTC selling, there is another category of products, which have now shifted from medicinal product category to FMCG category, prominent among them are brands like: Dettol, Moov, Borosoft, Itch guard, Krack, Dermicool etc in India. The Indian OTC pharmaceuticals market has reported excellent rates of expansion for the last five years. The market has grown steadily year on year, culminating in growth of 8.6% in 2004 (www.datamonitor.com, 2005).

Pfizer made Benadryl and Gelusil as OTC products leading to upsurge in sales in India. This led many companies to think in terms of making some of their well established brand as on OTC. Ranbaxy made Revital as an OTC product two years back. This approach helped the company to improve sales. However, how will it affect the attitude by doctors & patients? This paper tries to study the attitudes of Indian consumers OTC products.

LITERATURE REVIEW

Consumer level

DTC(Direct to consumer) advertising of prescription medicines can benefit the public health by increasing awareness about diseases, educating patients about treatment options, motivating patients to contact their physicians and engage in a dialogue about health concerns, increasing the likelihood that patients will receive appropriate care for conditions that are frequently under-diagnosed and under-treated, and encouraging compliance with prescription drug treatment regimens. (PhRMA Guiding Principles, 2005).Over-the-counter (OTC) products are that category of merchandise sometimes affectionately referred to as "slow-moving packaged goods. (Lyon,1998)

In 2002 almost US 421 Billion was spent on promotion in USA, including over $2.6 billion on direct to advertising (*Canadian Medical Association Journal*, 2003). The ORG-Marg study conducted in 2001 in India has indicated that healthcare advertising expenditure grew faster (50% growth rate) than the average growth (of 25%) in advertising for all products in the industry (Shankaran, 2002).

Many misleading advertisement tactics are adopted by the marketers .As a results, voluntary codes tend to be reactive, lacks transparency and omit large areas of concern (Norms et .al.,2005) However, correct approach can give better success. Taking Zovirax (acyclovir) cold sore cream as an example, the rational features of Zovirax, are its ability to abort cold sore lesions if treated early through its unique antiviral action. In benefit terms, that means saving the cold sore sufferer from the embarrassment of a full-blown cold sore outbreak. Zovirax's ethical heritage provides an important reassurance of trust and implied physician endorsement. As per the 'Price vs. Demand' studies conducted by Glaxo and its marketing partner Warner-Lambert, most consumers are willing to pay if they believe that the core proposition is relevant, unique, and delivered by the brand (www.datamonitor.com, 2005).

According to article in *Journal of Advertising Research*, (2003) DTC advertisements also seem to encourage respondents to ask their doctors about what they saw advertised, and some respondents are likely to insist on prescriptions as well. Age and user ship of prescription drugs significantly enhance the interest and response to this category of advertising. A recent survey found that more than five million Americans have imported drugs from an online pharmacy; two million of these were obtained without an official prescription (Hoffman 2007).

Doctors response to DTC (Direct to consumer) Advertisement

Huh and Langteau (2007) found that DTC advertising may also influence the doctor-patient dyad by impacting physician's behaviors. This study found that when physicians interacted with patients who initiated discussions about an advertised drug, positive responses (e.g., prescribing a requested drug) could be predicted by a physicians' attitude toward DTC advertising, while negative responses (e.g., refusal to provide a requested prescription) could be predicted by the presumed detrimental influence of DTC advertising on patients.

Almost all doctors aged over 50 had negative response to DTC (Direct to consumer) advertisement (Norms et.al, 2005). Doctors were ambivalent about the efficacy of treatment in 50% of cases, where patients requested an advertised drug in USA and Canada. (Mintez & Bassett, 2001) However, around 67% of them remembered the advertisement where risk factor was highlighted (Morris et.al, 1984, Srivastava,2005). Consumers' perceptions about risk of and also the accessibility to non-prescription medications were studied and reported by Alexander et.al, (2005)), Friedman and Gould (2007) reports that 78 percent of the doctors believed that DTC advertising confuses patients, while 76 percent agreed that DTC ads do not provide patients with adequate information about the risks and benefits of using a drug. However, less than half of the doctors felt that DTC advertising creates tension between doctors and patients. General practitioners reported a more negative overall impact of direct-to-consumer advertisements than specialists, perhaps reflecting the ability of the more focused specialist to resist requests for specialized medications (Gregory, 2004)

PROBLEMS AND ISSUES

There are many issues like how to build consumer preferences towards the OTC products. There are various ways through which the preferences could be altered. This could be done through the effective brand building of the OTC product. The second issue could be on how to build a strong brand identity for the OTC product. The procedures and measures should be catered in order to build strong brand equity. An analysis of the role of government's regulations and policies as a catalyst or as a barrier towards the OTC product can play a crucial role .Governments decision can play a strategic role in defining the future of the industry or the fate of the products and these procedures should be critically dealt. The third issue can be on the role of advertisements, celebrity endorsements and the concept of brand management in building an effective brand image of the OTC product. How an image of the OTC product is affected and what impact the modern ways of brand building and management have on the OTC products?

Pharmaceutical marketing is divided into ethical and OTC segment. Ethical segment is basically sold through prescriptions from doctors. OTC segment is mainly using advertisement as the main tool for promotion in India. In the world of ethical pharmaceuticals, the physician is still of prime importance as has been the case in the past. However, new marketing efforts are being directed at the consumer. Prime-time television advertising and whole page newspaper ads are happening now, certainly unheard of in the past. Advertisements are found affecting consumer behavior towards OTC Products in building brand equity, to a large extent. No wonder, advertisement budget grew by 50% as reported by Shankaran, (2002). In 2002 almost US $ 421 Billion was spent on promotion in USA, including over $2.6 billion on advertising. While the consumer has been the primary focus in the past, and will certainly not be ignored in the future, campaigns to medical professionals are becoming more commonplace. As we can see, there are many changes in the roles of physicians and patients, and research has responded to these changes in a variety of ways. This research will address just a small portion of the types of research being done in the OTC areas. Therefore, the objective of the study was:

1. To find out the awareness of the consumers towards the OTC products.
2. To understand the consumer behavior and the influence of various factors like Media, Advertising towards OTC Products.
3. How doctors react to OTC products in India?

This study was conducted in India and four cities were selected for the study. Previous studies have shown that direct-to-consumer (DTC) pharmaceutical advertising can influence consumer behavior (Robinson et.al, 2004)

RESEARCH METHODOLOGY

It was secondary and primary in nature. The secondary research of published data from journals, website, and Industry related sites helped in understanding the prior work on the same or related topic and would also provide insights about the gap. It also helped us in analyzing the various trends in the OTC pharmaceutical industry and would provide an impetus to further narrow down our research.

Initially, a focus group interview of 25 people from different strata of the economy was conducted. An in-depth discussion was carried out to note the major trends, views and insights .This helped us in designing the correct and relevant questionnaire.

A primary research carried out with the help of the questionnaire in Mumbai, Nagpur, Kolhapur, and Chennai. While, Mumbai and Chennai are metro cities that represent modern and conservative section of India, Nagpur and Kolhapur are A Class cities of India. This classification is given by government based on population .Metro city mean population of over 10 million. Similarly, city with population from 5 million is considered as a class city.

This study was divided in to two parts –Research at consumer level and Research at doctor's level. 677 people participated in Consumer research and 144 doctors took part in second part of the research

Research Design

It was basically an exploratory research. Data collection Method was direct questionnaire to consumers and doctors.

Questionnaire for doctors was comprised of four questions, asking their response on whether they prescribe and/or recommend the products that have been advertised in Press/TV (Q1/Q2), whether they believe that OTC Products can deliver relief to patients (Q3), and finally will they stop prescribing other products of the company if the companies advertised few of their products (Q4).

Sampling Design

Sampling Procedure was convenient sampling. The samples were selected from Mumbai, Nagpur, Kolhapur, and Chennai under both the categories i.e. consumers and doctors. The survey was conducted from Jan 2, 2007 to Jan 6, 2007 (five days), and the responses were collected in the hard copy questionnaires.12 people participated in the study. This data was collected in one to one face to face interview basis. Out of 710 people questioned**, 677 people** responded. Hence, the Consumer Sample Size was 677, whereas out of 155 doctors questioned **144** have responded, thus resulting into the **Doctors** sample size as 144. Sample of Doctors was selected so as to cover various specializations and expertise in the field of medicine, in order to have the best reflection of doctors' population, to the extent possible. (Sample of 144 Doctors include: 71 MBBS, 14 MD, 14 MS, 11 BAMS, 8 BDS, 6 LECH, 3 BHMS, and 17 Doctors with yet other specialization apart from those that have been mentioned here. Out of 144 doctors (110 GPs, 34 Consultants) majority of doctors (93%) were from Mumbai, whereas the rest of them were from Nagpur (5%) and Kolhapur (2%). Data was compiled using Microsoft excel sheet.

RESULTS AND DISCUSSION

Consumer Level

We conducted a survey of 677 respondents of different age groups to find out Consumer Attitudes towards OTC Products. **66** percentage of consumer surveyed uses some or other OTC Products. This is quite a significant number in view of the total pharmaceutical market. This indicates that there is a good market for OTC in India. Many well known brands have a high recall value. This awareness about the brands was studied. Awareness about brands purchased and top five brands are listed in Table I.

Table I: Awareness Regarding the Otc Products Surveyed.
(Multiple Choices Allowed)

Sr. No.	Brand	No. Of Respondents (N=677)	Percentage of Total Respondents
1	Paracetamol/crocin	369	54.51
2	Vicks	278	41.06
3	D Cold Total	172	25.41
4	Dispirin	87	12.85
5	Moov	118	17.43
6	Others	279	41.21

The analgesic is number one brand followed by cough and cold segment. According to Industry source ,Cough and cold preparation, Vitamins ,Analgesics, Indigestion and Medicated skin products have 17.4%, 12.5%, 11.4%, 5.2%, 2.6% share respectively. Brands recall is an important tool to assess the impact of OTC advertising. Only brands which emerged high and top of mind & unaided recall were considered & balance were clubbed together. *Paracetamol/Crocin has 28.32% that is highest TOM & Unaided recall.* Benadryl, Corex & Anacin has low recall hence clubbed together under others. Paracetamol as a whole has the highest brand awareness. Customer is expected to buy when there is need.

For OTC product buying there is no such buying pattern, rather it's as and when need arises. *69% purchase monthly and 14% buy on weekly basis*. Reasons for Purchasing OTC Products were another area of research. *Earlier prescription from a Doctor, recommendation from a Friend/Relative, advertisements of a Product and through product Trial emerged as major reasons for purchasing OTC product*. This is given in Table-II.

Table II: Reasons for Purchasing Otc Products
(Multiple Choices Allowed)

Sr. No.	Reason for Choosing the Brand	No. Of Respondents (N=677)	Percentage of Total Respondents
1	Earlier Prescription from a Doctor	299	44.17
2	Recommendation from a Friend/relative	200	29.54
3	Advertisements of a Product	209	30.87
4	Through Product Trial	100	14.77

The brand awareness can help in increased purchase. In a study reported by Princeton Survey Research Associates International, March 2008, 11th Annual Survey on Consumer Reaction to DTC Advertising of Prescription Drugs more than half (53%) of all consumers go online to look for prescription drug information, vs. 41% in 2007, and 10% have clicked on a DTC banner ad, compared to 5% in 2006.

Reasons for *purchasing a brand* were studied, for which respondents were provided, as the options, the most important parameters influencing their purchase decision of an OTC product. The **parameters** were **Efficacy, Brand Name, Pricing, Packaging and Promotional Offer.** When it came to rating these parameters, respondents gave the highest weight-age to *Efficacy of product (33%) followed by its Brand name (27%) & Pricing (20%). Packaging (13%) and Promotional Offer (7%)* respectively as factors for purchase decision of OTC products.

Media play an important role in influencing the purchase decision. Survey shows that reach of Television Advt. is highest among other medium (with share of 365 out of 677-**68%**), whereas pamphlets, seminars & internet found having lowest reach among consumers for OTC Products.*64 % of consumers were able to recall the advt. of product they consume.* Most Recalled Advertisements are of Crocin, and Vicks Action-500. *Majority of the consumers (76%) don't know the parent company of brand consumed.* Yhis data is given in Table III

Table III: Medium of Communication Where Otc Advertisements Are Found to Be Influencing the Consumer Preferences			
Sr. No.	Media	No. Of Respondents (N=677)	Percentage of Total Respondents
1	Newspapers	75	11.08
2	Magazines	43	6.35
3	Television	365	53.91
4	Internet	19	2.81
5	Billboard	21	3.10
6	Pamphlet	18	2.66
7	Seminars	13	1.92

In OTC buying earlier prescription from Doctors is most preferred reason for buying. Efficacy is found as most important feature followed by Brand name of the product. Most common and oldest OTC product Crocin (Generic-Paracetamol) is found to have highest brand awareness. Survey shows that reach of television Advt. is highest among other medium of advertisement.

Doctors response and their reaction to DTC

Another interesting aspect was to find out the preference for OTC drugs among doctors 144 doctors who were surveyed for this objective in India.

Earlier study reported that doctors were ambivalent about the choice of treatment in 50% of cases if patients requested an advertisement drug in USA and Canada
(Petroshius et.al, 1995), No similar study was conducted during the last 10 years. There fore, this study becomes more important and relevant. *The research reveals that in India about 88% of doctors had a negative response towards OTC products*. **In India it has more strong reaction from doctors compared to US study**. However, 32%doctors believe in the quality and efficacy of these OTC products. *Infact, even young doctors don't like to prescribe OTC products however the percentage is less in India (60%). This corroborates the earlier finding of Norms et.al, (2005) of their WHO study. T*he gap and internet explosion has not changed the behavior of doctors. Doctor's response to prescriptions of OTC product is given in table IV

Table IV: Doctors' Preference to OTCc Drugs Advertised in Press and TV									
Gp/ Consultant Details	No.	Affirmative Response by Doctors to Questions (Please Refer Below)							
		Q1		Q2		Q3		Q4	
		(Nos.)	(%)	(Nos.)	(%)	(Nos.)	(%)	(Nos.)	(%)
Total	144	9	6.25	17	11.81	46	31.94	34	23.61
Gps with Age	110	6	5.45	14	12.73	29	26.36	25	22.73
< 50 Yrs	47	4	8.51	6	12.77	10	21.28	10	21.28
≥ 50 Yrs	47	2	4.26	8	17.02	13	27.66	13	27.66
Not Available	16	0	0.00	0	0.00	6	37.50	2	12.50
Consultants with Age	34	3	8.82	3	8.82	17	50.00	9	26.47
< 50 Yrs	19	2	10.53	2	10.53	11	57.89	4	21.05
≥ 50 Yrs	10	1	10.00	1	10.00	4	40.00	4	40.00
Not Available	5	0	0.00	0	0.00	2	40.00	1	20.00
Males	128	8	6.25	16	12.50	42	32.81	32	25.00
Females	16	1	6.25	1	6.25	4	25.00	2	12.50

Most physicians tended to view DTC advertisements negatively, indicating that such advertisements rarely provide enough information on cost (98.7%), alternative treatment options (94.9%), or adverse effects (54.8%). Most also believed that DTC advertisements affected interactions with patients by lengthening clinical encounters (55.9%), leading to patient requests for specific medications (80.7%), and changing patient expectations of physicians' prescribing practices (67.0%). (Robinson et.al, 2004)

Direct-to-consumer (DTC) advertising of prescription drugs can enhance the physician–patient relationship, as well as benefiting its sponsor, Another study reports that more experienced physicians, physicians who see more patients, or those who have more exposure to pharmaceutical advertisements are more accepting of DTC advertising of prescription drugs (Huh2008)

Prescriptions products when go on advertisement can improve sales. In India too when a brand reaches a maturity level advertisement approach can help to bring back the product on the growth stage. Doctor's supports in the early phase helped to establish the identity of the brand and if resources are available the brand can have leap frog effect if it is advertised. Revital and Crocin are the classical examples in India.

With numbers of drugs are going off-patent, OTC market will see an increasing market share in coming future as well. Though, Doctors are found to be little hesitant to prescribe OTC products to their patients, Consumers do prefer to purchase OTC products as a substitute to Rx products, at least in case of known and minor ailments. Hence, there lies a huge potential, yet to be explored fully, for Pharmaceutical Industry. The one, who identifies this potential, grabs the opportunity and elicit maximum benefits out of it, will have an edge over the others in this competitive world.

Pharmaceutical firms, should therefore, not only come out with the new quality products under the OTC drug category, but should also consciously focus on building consumer preferences towards OTC products through consumer awareness, effective brand building, building a strong brand identity followed by a strong brand equity, for their existing products, through a structured, well thought of Advertising and Promotional Plan directed at consumers as well as medical professionals, with the help of a right media channel. In long run, effective brand management becomes equally important.

CONCLUSION

It was an Exploratory Study. This survey conducted in Mumbai, Chennai, Kolhapur, and Nagpur and the finding gives us an insight regarding consumer Attitudes/preferences towards OTC Products. 66 percentage of consumer surveyed uses some or other OTC Products. The analgesic is number one brand followed by cough and cold segment. Paracetamol/Crocin has 28.32% that is highest TOM & Unaided recall. Benadryl, Corex & Anacin has low recall. Earlier prescription from a Doctor (44%), advertisements of a Product (31%), and recommendation from a Friend/Relative (30%) emerged as major reasons for purchasing OTC product. Efficacy of product followed by its Brand name & Pricing can play role on purchase behavior. Advertisements were found to affect consumer behavior towards OTC Products in building brand equity, substantially. Television (54%) was found to be the most influencing communication medium, followed by Newspapers (11%) and Magazines (6%). However, through survey it was quite evident that majority of the consumers (76%) were unaware of the parent company of brand consumed. Thus, study corroborates Consumers prefer OTC products as a substitute to Rx products.

The research figures revealed that in India, by and large, doctors had a negative response towards OTC products. Though 32% doctors (Survey respondents) do believe that OTC products can deliver relief to their patients in some cases, only 12% doctors recommend and just 6% of them actually prescribe OTC products that have been advertised on TV and Press to their patients. It has also emerged from the survey that 24% doctors will stop prescribing if a prescription drug is advertised. It was quite evident that Doctors', irrespective of age, do not like to prescribe OTC product.

LIMITATION OF STUDY

The survey was conducted in Western, South part of India; however, Eastern and North part of India should have been included in the survey. Gender, education variation in consumer was not taken for analysis. It is advisable to incorporate the same for future study. List of products advertised was not shown to doctors but it relied on more on their recall.

MANAGERIAL IMPLICATIONS

It is suggested that pharma companies should not go for an OTC products in a hurry but allow the product to generate enough sales through prescriptions. Once a product reaches a saturation point in terms of reach & prescription, it is advisable to go in for OTC. This will give fillip to the sales. An early approach to OTC can be detrimental incase the OTC campaign fails to click.

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APPENDIX

Questions Asked to Doctors in the Questionnaire:

Q1: Doctor, Do You Prescribe a Product Which Is Advertised in Press and Tv? : Yes/no
Q2: Do You Recommend a Product If it Is Advertised on Tv/press? : Yes/no
Q3: Do You Feel the Otc Products Can Deliver Relief to Patients? : Yes/no
Q4: Do You Stop Prescribing Other Products of a Company If They Advertise Few Products? : Yes/no

EQUINE MANAGEMENT AS A BUSINESS DISCIPLINE

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ABSTRACT

Equine management as a business discipline is a specialty area of business that supports a multibillion-dollar industry. A study commissioned by the American Horse Council indicates a significant number of equine businesses that provide $39 billion dollars annually in the United States economy. The paper advocates for Equine Management as a legitimate business program. The state of the equine industry and the need for specially trained business professionals for this industry are discussed in the paper.

INTRODUCTION

When people think of equine management programs, they do not traditionally think of schools of business. Equine subject matter is often thought of as an agricultural program. While there is a need for these traditional animal science programs, there is also a need to provide management programs for the equine industry. The American Horse Council is the national body advising Congress on equine matters. In a report to Congress commissioned by the American Horse Council, it acknowledges the equine industry contributes $39 billion dollars annually to the national economy and sustains approximately 1.4 million full-time equivalent jobs (Deloitte, 2005).

The equine industry pays approximately 1.9 billion dollars in taxes. The taxes are distributed 54 percent to state taxes, 31 percent in federal taxes, and 15 percent in local taxes. In addition, the report indicates the industry stimulates 63 billion dollars in indirect and induced impacts, attracts 25 billion dollars in investments in capital equipment and structures, and creates over 4 billion in taxes and land purchases (Deloitte Consulting, 2005). Horseracing, horse shows and competitions and recreational horse activities are the three major groups of equine activities.

This industry is national and international in scope and is worthy of business schools' attention. The equine industry is maturing and the scope includes international equine operations. Future opportunities will require well-informed business managers familiar with this industry. The United States Equestrian Federation (United States Equestrian Federation, n.d.) has undertaken a serious effort in recent years to attract international venues for equine sport to the United States. For the first time, the World Equestrian Games will come to the United States and be held in Kentucky in 2010 (World Equestrian Games, n.d.). This will create jobs and internship opportunities for students in equine programs. If Chicago is successful in its bid for the 2016 Olympics, one of the most prestigious equestrian competitions in the world will be held in the Midwest and create another source of additional revenue and employment in this industry (IOC n.d.).

Employers are increasingly looking for people with equine academic credentials for equine related business positions. There is a need for trained business professionals with specific knowledge of the horse industry to manage the numerous equine businesses (Gloeckler, 2008). The domestic and international equine markets require an understanding of both business principles and how to apply them to this industry. Other countries have a better-developed educational system for equine professionals (United States Equestrian Federation, n.d.) and if this country wishes to remain competitive, higher education must provide these programs and produce qualified individuals. Simply knowing how to care for the horse and prepare for the competitions is not adequate in a global marketplace.

STATUS EQUINE HIGHER EDUCATION

The equine industry looks to the higher education system to provide the business professionals that will lead this industry in a global market. An examination of the current academic equine programs that exist in the United States and how they are meeting the need for equine business professionals was undertaken to determine if programs existed in business schools to address the demand for equine business professionals. The investigation identified these programs utilizing the web and print materials from institutions that offer equine related degrees. The data are stored in a database with information on the institution, degree offered, program title, contact information for the program, and web address.

The initial findings show there are 45 schools teaching some form of equestrian studies with business offerings. Of those schools, 22 offered associate degrees and 21 offered baccalaureate degrees, with 2 offering only certificates. The states with 3 or more of these programs include Arizona, Colorado, Iowa, Massachusetts, Missouri, Ohio, Texas, and Wyoming. The curricula was examined and for the purposes of this paper are described in three basic categories, animal science, mix of animal science and business courses, and programs in accredited schools of business.

The majority of the equine programs are in the first category and address animal science issues such as the care and maintenance of horses including nutrition, breeding aspects, horse evaluation, and other similar subjects. These programs traditionally are found in state universities' schools of agriculture. Representative animal science programs can be found at Michigan State University (Michigan State University Animal Science, n.d.), Pennsylvania State (Pennsylvania State University Animal Science, n.d.) and Texas A&M (Texas A&M University Animal Science, n.d.). There are numerous animal science programs around the country and most of them have some type of equine component. Animal science programs are usually four-year baccalaureate programs. There are institutions that also offer graduate degrees both masters and doctoral in animal science.

The second category is equine studies programs that focus on riding and producing practitioners that train horses or instruct riders. These programs with equine management or equine business in their title may include some general business courses, but they emphasize care and training of the horses and riders not managing the horse business. These programs do not reside in accredited schools of business. These programs include both two-year associate degree programs and four-year baccalaureate programs. The University of Minnesota at Crookston has a representative four-year program (University of Minnesota Crookston, n.d.). This program resides in an Agriculture Department and is an equine science program. Another type of four-year program is the Equine Administration program at William Woods University in Missouri (William Woods University, n.d.). This program has business courses mixed with courses in horse care, first aid, and riding. This institution is structured with five divisions with one of the divisions being Equine Studies. University of Massachusetts Amherst has a representative two-year associate degree equestrian program (University of Massachusetts Amherst n.d.). Their Equine Industries program includes some business courses, riding courses, and animal science courses. The program resides in the School of Agriculture.

There are only a few programs in the nation residing in an accredited school of business focused on management of the equine industry. One of these baccalaureate programs was recognized in Business Week for meeting the needs of the racing industry in Kentucky (Gloeckler, 2008). While the racing industry does contribute a substantial share, 28 billion dollars according to the American Horse Council report (2005), there are additional segments of the industry that need qualified equine business professionals. Equine programs are critically lacking that emphasis on the business management issues of this multi-billion dollar industry. Currently only three programs were found that reside in accredited schools of business University of Louisville's Equine Industry program (University of Louisville, n.d.), Purdue University Calumet's Equine Business Management program (Purdue University Calumet, n.d.), and Cazenovia College's Equine Business Management program (Cazenovia College, n.d.). All of these programs are four-year baccalaureate programs. The Louisville and Purdue programs are comprised of equine courses that have business content. The Cazenovia program contains business courses but also includes breeding and riding courses.

CONCLUSIONS

Horses today serve the racing, recreation, and show industries and involve high dollar investments and management of substantial business assets. Graduates of equine management programs will work as equine insurance adjusters, bloodstock agents, race track administrators, farm managers, equine product salespersons, and administrators for breed and racing organizations. Equine management programs have additional opportunities in placement for internships and career positions by meeting the needs of the equine industry across the nation and internationally.

The application of business knowledge to this specific industry should be taught in schools of business. A blend of general business courses and courses with specific equine business relevance is superior to a few general business courses in an animal science or practitioner curriculum. The graduates of these accredited business schools will be better prepared to manage operations in the equine industry.

There are employment opportunities for qualified business school graduates in the equine industry. Higher education is currently producing very few graduates from accredited business schools to meet that demand. Business schools who can find professionally qualified faculty should consider these types of programs. There are no graduate level programs in business schools. There are opportunities here for business schools willing to undertake the challenge of developing equine business programs.

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AN EMPIRICAL INVESTIGATION OF THE COMMUNICATION CONTENT IN POPULAR PRESS BUSINESS BOOKS

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ABSTRACT

This study investigates differences among popular press business books (b-books) written by multiple authors, mixed-gender authors, male vis-à-vis female authors, books listed by Crainer (1997) as ultimate, books published by university presses, and books published between 1911 and 2006. These b-book variables were compared based on a depth of communication content measure (dependent variable). Using One-Way ANOVAs, six null-hypotheses were tested. No differences among means on any of the variables were revealed when compared on a depth of communication content measure. B-book authors, therefore, have consistently given advice to their readers on communication for nearly one hundred years. The evidence offers further support business communication is a dominant management function.

INTRODUCTION

Since Chester Barnard first published *The Functions of the Executive* in 1938, communication has been featured in popular press business books (b-books) ever since. This study's purpose was to investigate through content analysis if any mean differences existed in the depth of communication content (dependent variable) found in nearly a century of these b-books. Books purely on economics and marketing were excluded from this study in order to delimit its aim and scope to general business and management topics. Publication dates for these b-books ranged nearly one hundred years from Frederick W. Taylor's *The Principles of Scientific Management* published in 1911 to Judith E. Glaser's *The DNA of Leadership* published in 2006.

Crainer (1997) wrote: "*The Ultimate Business Library* is a collection of fifty of the greatest books of management." (p. 1) Whether or not this list of 50 books is definitive begs the question; even so, there can be no denial of the contribution to the evolution of management and thought many of the authors listed have made. Their lasting contributions continue to impact the management literature. Many of these authors' writings helped shape perspectives in management: 1) classical, 2) behavioral, 3) quantitative, 4) systems, and 5) contingency. Surnames of management theory elite are names easily recognized: Taylor, Gilbreth, Weber, Fayol, Follett, Mayo, McGregor, Barnard, Simon, March, Mintzberg, Schein, Vroom, are just a few.

Denying the contributions made by Frederick W. Taylor (scientific management), Max Weber (bureaucratic management), and Henri Fayol (administrative management) to the Classical Perspective would be futile. Chester Barnard, Mary Parker Follett, Elton Mayo and Douglas McGregor are credited with the theories (in some cases their practical consultative approaches) leading to the behavioral perspective. These early perspectives continue to shape management thinking, and today nearly every management textbook published includes a chapter on the evolution of management thought. Many of these noted scholars in the b-books they wrote, though covering broader business issues, found it necessary to offer their readers advice on what Simon (1976, p. 156) calls "the particular techniques of communication." Today communication is viewed as one of the main functions of management: leading, planning, organizing, staffing, controlling, and communicating. Communicating can be seen as the common thread tying all those other management functions together (Bell & Martin, 2008; Froschheiser, 2008). Several of the management theory elite put their theories into books, and many of their books include keen observations on the necessity of particular techniques of communication in management, and, in some cases, they wrote an entire chapter on communication.

Although Simon (1976) was primarily interested in administrative decision making, he understood the particular techniques of communication used by managers as being inseparable from the distribution of their decision making functions and essential to organizational existence. This Nobel laureate wrote an entire chapter on communication in his book *Administrative Behavior.* Drucker (1974) called this type of communication function "managerial communication," and it was he who appears to have first coined the phrase "managerial communication," which is now a core MBA course in most Association to Advance Collegiate Schools of Business-International (AACSB) accredited programs, offered globally.

Barnard's chapter "*Theory of Authority*" might be considered a chapter on explaining the two aspects of how human beings working in organizations accept or reject communicative authority in line-management. Despite so many noted scholars writing about communication in their b-books, there is a lack of empirical evidence in the literature on systematically comparing the mean differences on the communication content covered in b-books written over the years. Therefore, my primary purpose was to review b-books to investigate empirically if communication content as a measure in b-books differed significantly over the years. Several questions spawned from this main purpose.

THE RESEARCH QUESTIONS

First, is there any difference in communication content and the era in which a b-book was published? Second, do b-books written with multiple authors differ when at least one author is male or female (multiple mixed-gender authors)? Third, do male vis-à-vis female authors differ in the amount of communication content they cover? Fourth, does communication content differ in terms of the number of authors? And, fifth, does a b-book being labeled as an "ultimate book" or published by a university press differ in the depth of communication content measured? A content analysis of the communication content covered in these b-books would reveal some interesting unknowns about authors writing b-books over the years. The majority of b-books I examined offer a cornucopia of advice to their readers on communication in management practice. Therefore, several research questions could be answered by analyzing this rich source of data. In order to answer the aforementioned research questions, I tested six null hypotheses.

Null Hypotheses

Hypothesis 1: Means of four publication eras (1911-1979, 1980s, 1990s, and 2000-2006) of b-books do not differ on the depth of communication content measure.

Hypothesis 2: Means of b-books with mixed-gender multiple authors (at least one male or female amongst them) do not differ from books written by same-gender authors on the depth of communication content measure.

Hypothesis 3: Means for male and female b-book authors do not differ on the depth of communication content measure.

Hypothesis 4: Means for b-books with one, two, or three authors do not differ on the depth of communication content measure.

Hypothesis 5: Means for b-books listed by Crainer (1997) as “ultimate books” do not differ from other randomly selected b-books on the depth of communication content measure.

Hypothesis 6: Means of b-books published by university presses do not differ from b-books published by non-university presses on the depth of communication content measure.

RESULTS

Methodology, Sample, and Descriptive Statistics

Methods common in the social science literature were used to analyze the data. All data were analyzed using the software SPSS 15.0. Furthermore, the six null hypotheses were tested using One-Way ANOVAs. One-Way ANOVA is a robust way to analyze variables when there is only one independent categorical variable with two or more levels being compared on one dependent variable measured at least on the interval or ratio scale (Kachigan, 1991).

The statistical analyses presented in this study were based on 97 randomly selected b-books drawn from a population of 1,000 university library database business titles. The descriptive statistics were compiled and frequencies and percents are presented in Table 1a and Table 1b. My sample of 97 b-books was adequate. "Statistical theory also shows the standard deviation of a sampling distribution is inversely related to the sample size. That is, the larger the sample size, the smaller the standard deviation of the sampling distribution" (Henry, 1990, p. 39). Also, "For a sample size of 100, 95% of the sample means fall within + 1.96 standard deviation units. A sample size of 10 (9 degrees of freedom) would require + 2.26 standard deviation units" (Henry, 1990, p. 40.).

Table 1a: Descriptive Statistics for B-Books with Frequencies and Percents

B-Books = 97	Demographics	Frequency	%
Gender	Male Authors	42	43.3
	Female Authors	22	22.7
	Co-Authored B-Books	33	33.0
	Total	97	100
Mixed Gender	Same Gender	82	84.5
	Mixed Gender	15	15.5
	Total	97	100
Multiple Author Books	One Author	64	65.9
	Two Authors	27	27.9
	Three Authors	6	6.2
	Total	97	100
Ultimate B-Books	Non-Ultimate B-Books	75	77.3
	Ultimate B-Books	22	22.7
	Total	97	100
Publication Era in Years	1911 to 1979	19	19.6
	1980s	21	21.6
	1990s	31	32.0
	2000 to 2006	26	26.8
	Total	97	100

Table 1a: Descriptive Statistics for B-Books with Frequencies and Percents			
B-Books = 97	Demographics	Frequency	%
B-Books by University Presses	University Press	13	13.4
	Non-University Press	84	86.6
	Total	97	100

As can be seen in Table 1b, there are 23 b-books containing nine or more layers of communication content, as found in the index of each b-book; these are marked by an asterisk. The author and title of 22 ultimate b-books are in bold. The mode was 30 of the 97 b-books examined had zero communication content or any corresponding synonym for communication mentioned (dialogue, conversation, etc.). One b-book (Phillips, 1985) had 38 layers of communication content. There were 19 b-books with only one layer of communication content. The mean for 97 b-books was 5.21 layers of communication content with a standard deviation of 7.09. The dependent measure (depth of communication) is considered ratio-scale data: unlike temperature measured in Fahrenheit or Celsius, which easily shows an arbitrary zero-point when converting one scale to the other, there was a true zero value for the communication content measure.

Table 1b: Books Listed by the Depth of Communication Content Covered	
Phillips, J. J. (1985). Improving Supervisors' Effectiveness	38
Larkin, T. J. & Larkin, S. (1994). Communicating Change	29
Blake, R. R. & Mouton, J. S. (1964). The Managerial Grid	26
Connolly, M. & Rianoshek, R. (2002). The Communication Catalyst	25
Kouzes, J. M. & Posner, B. Z. (2002). The Leadership Challenge, 3rd Ed.	22
Boone, M. E. (2001). Managing Inter@Ctively	20
Brown, J. D. (1973). The Human Nature of Organizations	19
Katz, D. & Kahn, R. L. (1966). The Social Psychology of Organization	18
Baldoni, J. (2005). Great Motivation Secrets of Great Leaders	17
Trompenaars, F. (1998). Riding The Waves Of Culture, 2nd Ed.	17
Stone, F. M. (1997). The Manager's Balancing Act	16
Kanter, R. M. (2001). E.Volve! Succeeding In The Digital Culture Of Tomorrow	15
Glaser, J. E. (2006). The DNA of Leadership	14
Duck, J. D. (2001). The Change Monster	13
Barwick, J. M. (1998). In Praise of Good Business	12
Collins, E. G. C. (1983). Executive Success: Making It In Management	11

Table 1b: Books Listed by the Depth of Communication Content Covered	
Levinson, H. (1981). Executive	11
Barnard, C. I. (1938). The Functions of The Executive	10
Carnegie, D. (1987). Managing Through People	10
Drucker, P. F. (1974). Management: Tasks, Responsibilities, and Practices	9
Rigsby, J. A. & Greco, G. (2003). Mastering Strategy	9
Toffler, B. L. (1986). Tough Choices: Managers Talk Ethics	9
Ulrich, D. & Lake, D. (1990). Organizational Capability	9

Thirty of the 97 b-books sampled (i.e., Burns, 1978; Carnegie, 1936; Juran, 1988; Taylor, 1911) had no mention of the word communication in the index; for example, *Principles of Scientific Management* was coded as having a zero amount of the communication measure. A b-book with communication mentioned only once in its index and not having any subordinate layers received a code of one. A b-book with communication and one subordinate point, say face-to-face as its first subordinate point, received a code of two: communication plus one layer. And, the data was coded accordingly thereafter. Some books were rife with the communication measure.

Baldoni (2005) and Trompenaars & Hampden-Turner (1998) each had 17 layers, Barnard (1938) had 10 layers, Drucker (1974) had 9 layers, and Phillips (1985) had of 38 layers of the depth of communication content measure as found in the index count. Depth of communication was measured by merely counting communication and the number of layers that appeared in the index of the b-book itself. This was a true ratio level measure, because 30 of the b-books selected covered no communication at all. The depth of communication content was a simple measure to observe and code. The table of contents and indexes of each of the 97 b-books was examined.

Furthermore, 22 of the 50 books listed by Crainer (1997) as “ultimate” books were found among the list of 97 randomly selected b-books analyzed. Books purely on economics or marketing were excluded to delimit the scope of this study to general business and management. Since the volume of published b-books is disproportionate across decades, there were far fewer books on business or management published between 1911 and 1979 than in more recent years. Sampling was made more systematic by searching titles by “date” and “business” and “management” and drawing as random a sample as possible from those books published in various decades.

In order to generate a list of older business books from 1911 to 1979, the references of some of the older publications was a good source of information. It was very difficult to find some of these older titles because libraries often cull their collections. Old books often get the ax! Fortunately, the most popular books are still available in the university library database and Drucker’s (1954) *Practice of Management*, Simon’s (1976) *Administrative Behavior*, and Barnard’s (1968) *Functions of the Executive* revealed several business books in their references that could be sorted by dates, compiled into lists of titles, and sampled systematically at random.

Therefore, b-books with publication dates between 1911 and 1979 were combined and coded the same to test for differences on depth of communication across eras (hypothesis 1). The b-books published after 1980 were more plentiful; it was not until after 1982 with the publication of Peters and Waterman's book *In Search of Excellence* the main-stream publishers thoroughly understood there is a huge consumer market for popular press business books (Crainer, 1997). Generating a population of 1,000 b-books published between 1911 and 2006 and systematically sampling was made much easier this way. None of the assumptions required for ANOVA were violated. Indexes for all 97 b-books sampled were examined on the communication content measure.

Hypotheses Testing

I could not reject Hypothesis 1: Our One-Way ANOVA test in SPSS 15.0 revealed there is no difference among the means of the four publication eras of b-books and the depth of communication content measure. There were 19 books published between1911-1979; there were 21 books published in the 1980s; there were 31 books published in the 1990s; and there were 26 b-books published between 2000 and 2006 with means of 5.85, 5.81, 4.75, and 5.73 respectively. The mean for all 97 b-books was 5.21 layers of communication content. ANOVA Results are shown in Table 2.

Table 2: ANOVA Results for B-Books Published in 1911-1979, 1980s, 1990s, and 2000-2006 on Communication Depth

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	70.029	3	23.343	0.457	0.713
Within Groups	4751.848	93	51.095		
Total	4821.876	96			

I could not reject Hypothesis 2: One-Way ANOVA test revealed there is no difference between the means of same gender b-books authors and mixed-gender multiple authors (b-books with at least one male or one female amongst authors) and the depth of communication content measure. There were 82 books written by same gender author(s) and 15 written by mixed-gender authors with at least one male or female amongst authors, with means of 5.48 and 3.73 respectively. ANOVA Results are shown in Table 3.

I could not reject Hypothesis 3: One-Way ANOVA test revealed means for 42 male b-book authors and the 22 female b-book authors did not differ on the depth of communication content measure in popular press books they wrote. With means of 4.19 and 6.77 respectively, women obviously wrote more about communication, but, that difference was not statistically significant. ANOVA Results are shown in Table 4. Men and women authors are statistically the same.

Table 3: ANOVA Results for Gender/Mixed Gender B-Book Authors on Communication Depth					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	38.492	1	38.492	0.764	0.384
Within Groups	4783.385	95	50.351		
Total	4821.876	96			

Table 4: ANOVA Results for Male Authors V. Female Authors on Communication Depth					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	96.27	1	96.27	2.059	0.156
Within Groups	2898.34	62	46.747		
Total	2994.609	63			

I could not reject Hypothesis 4: One-Way ANOVA test revealed means for books written by one, two or three authors did not differ on the depth of communication content measure in popular press b-books. There were 64 single authors, 27 dual authors, and 6 b-books with three authors, with means of 5.08, 6.33, and 1.50 respectively. ANOVA Results are shown in Table 5. The number of authors is statistically the same when it comes to depth of communication covered in the b-books they write.

Table 5: ANOVA Results for B-Books Written by One, Two, or Three Authors on Communication Depth					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	117.767	2	58.883	1.177	0.313
Within Groups	4704.109	94	50.044		
Total	4821.876	96			

I could not reject Hypothesis 5: One-Way ANOVA test revealed means for the 22 books listed by Crainer (1997) as "Ultimate books" did not differ from the other 75 randomly selected b-books on the depth of communication content measure in popular press books, with means of 3.14 and 5.81 respectively. ANOVA Results are shown in Table 6. The noted scholars did not differ statistically from the less well known b-book authors.

Table 6: ANOVA Results for Ultimate B-Books V. Non-Ultimate B-Books on Communication Depth					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	121.899	1	121.899	2.464	0.12
Within Groups	4699.978	95	49.473		
Total	4821.876	96			

I could not reject Hypothesis 6: One-Way ANOVA test revealed means of the 13 books published by university presses (i.e., HBS Press, MIT Press, University of Chicago, and others) do not differ from the 84 books published by non-university presses on the depth of communication content measure in popular press books, with means of 5.39 and 4.00 respectively. The university presses are statistically the same as the other popular press publishers when it comes to the amount of communication content covered in the b-books they publish. ANOVA Results are shown in Table 7.

Table 7: ANOVA Results for University Press B-Books V. Non-University Press B-Books on Communication Depth					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21.841	1	21.841	0.432	0.512
Within Groups	4800.036	95	50.527		
Total	4821.876	96			

DISCUSSION

Communication Content in B-Books

Crainer (1997) tells us it was after the publication of *In Search of Excellence: Lessons from America's Best-Run Companies* by Peters and Waterman (1982) that publishers realized consumers had an enormous appetite for business books. Thousands of business titles have been published each year since 1982. Peter Z. McKay is a business librarian at the University of Florida and he reports more than 8,000 business titles in the University of Florida Library collection is worth $400,000. He wrote: “The titles are drawn from a database of more than 8,000 business books that I have been carefully collecting for many years…Today, you’ll find a well-rounded and up-to-date list of readings on all the major aspects of business. The estimated cost is $400,000 ($50 x 8,000).” (Retrieved December 14, 2008, from http://businesslibrary.uflib.ufl.edu/businessbooks) With so many b-books in circulation, how does one grapple with what all these b-books are advising their readers about communication in management practice?

Chester Barnard's book, *The Functions of the Executive*, was first published in 1938, revised in 1968, and is still selling today. We know Chester Barnard was writing on communication as early as 1938, and his book appears to toggle on the premise communication is the dominant function of management (Zuboff, 1988). Barnard (1968) argues that essential to organizational survival is willingness to cooperate, a system of communication, and continuing integrity of the organization purpose. He saw acceptance of communicative authority as having two aspects: the subjective and objective.

Drucker (1954) gave an enlightened example of how managers use communication in practice. In *The Practice of Management* he argues there are five basic operations in the work of the manager: 1) sets objectives, 2) organizes, 3) motivates and communicates, 4) has the job of measurement, and 5) develops people. In motivating and communicating, the manager's role is to make teams out of people responsible for various jobs using personal relationships and incentives and rewards. The manager is a "promoter of policy." Drucker (1954, p. 347) asserts "managers spend a good deal of time on communications up than down the organization…Good managers do not talk to their men about their own problems." They spend considerable time sitting down with subordinates on outlining their objectives, and as a result they do not have to worry much about communications down. Drucker (1954) appears to suggest management by objective is largely a task of motivating and communicating.

Drucker (1954) viewed motivating and communicating as tasks relating to management by objective, and Drucker (1974) saw communication as perception and expectation within the broad framework of the social sciences: he viewed communication as largely made up of all the work on learning, memory, perception, and motivation. To Drucker, a tree falling in the forest makes a sound only when there is a person there to perceive it; therefore, he urges managers to "talk to carpenters in the carpenter's own language." Drucker (1974) is possibly the first business philosopher to actually call the type of communication in management practice he was observing "managerial communication" in chapter 38 of his book, *Management: Tasks, Responsibilities, and Practices.* According to Drucker:

> Despite the sorry state of communications in theory and practice, we have learned a good deal about information and communications. Most of it, though, has not come out of the work of communications to which we have devoted so much time and energy. It has been the by-product of work in a large number of seemingly unrelated fields, from learning theory to genetics and electronic engineering. We equally have a lot of experience—though mostly of failure—in a good many practical situations in all kinds of institutions. We indeed never understand "communications." But "communications in organizations"—call it managerial communications—we do know something about now….What knowledge we have about communications is

> scattered and, as a rule, not accessible….But at least we increasingly know what does not work, and, sometimes, why it does not work. (p. 482)

Perhaps not as well known as Peter F. Drucker, Douglas J. Brown a long-time provost at Princeton University acknowledged "communication as organization in action" (1973, p. 53). He was heavily influenced by the bureaucratic nature of university administration; yet, his ten factor situational model included views largely framed around the transmission perspective (a view communication is a linear exchange of information between a source and a receiver).

Furthermore, Brown (1973) appears to view communication from the perspective knowledge of communication action can be gained by examining this linear relationship between source and receiver to be action oriented. Another noted scholar is Henry Mintzberg who observed top managers at work. Mintzberg (1973) identified three role domains that account for most managerial activity: the interpersonal, the informational, and the decision-making role. Managers spend most of their time in some communication interactions (Face-to-face, telephone, in meetings, etc.). Another noted scholar, Simon (1976, p. 154) in his book *Administrative Behavior* wrote:

> Without communication there can be no organization…Not only is communication absolutely essential to organization, but the availability of particular techniques of communication will in large part determine the way in which decision-making functions can and should be distributed throughout the organization.

Devoting an entire chapter to his framework, Simon (1976) is one of many authors whose b-books include an entire chapter on communication (Bennis & Nanus, 1985; Duck, 2001; Phillips, 1985); these authors are not writing merely on a generic form of language as platitude most people are accustom to, but those aspects of communication particular to the techniques of management in practice, in the business environment. (i.e., Baldoni, 2005; Drucker, 1974; Katz & Khan, 1966 are additional b-books with chapters on communication)

Bennis and Nanus (1985), in their b-book *Leaders*, saw leadership's attempt to shape social architecture as essential communicative action. Schein (1992) in his b-book *Organization Leadership* viewed communication so essential that no organization could exist without it. Years earlier, Katz & Khan (1966, p. 223) in their chapter called "Communication: The Flow of Information," argued "the closer one gets to the organizational center of control and decision-making, the more pronounced is the emphasis on information exchange…In this sense, communication—the exchange of information and the transmission of meaning—is the very essence of a social system or an organization." Specifically, they noted the limitations of information overload and the necessity of restricted networks.

Phillips (1985) states, "Supervising is virtually synonymous with communicating" (p. 228). Larkin & Larkin (1994) presented an exhaustive overview of managerial communication from a consultancy perspective. Their book in its entirety is an attempt to place the communicative framework into the managerial perspective. Although women were not published as frequently across time in the sample of 97 b-books I generated, especially in the b-books published prior to the 1980s, some women were writing about the role of communication in management practice before and after the 1980s.

Women, Communication and the B-Books

Mary Parker Follett's infusion of humanism into an otherwise scientific management world has been well documented (Follett, Metcalf, & Urwick, 1941; Graham, et al, 1995). Edith Tilton Penrose, also among the first women to write a b-book, wrote *The Theory of the Growth of the Firm* in 1959; she is credited with the resource-based view of strategic management; Kor & Mahoney (2004) argue Penrose (1959) contributed heavily to our knowledge of competitive advantage and sustaining competitive advantage. Kanter (1989) in her book *When Giants Learn to Dance* and earlier in her book *The Change Masters: Innovation for Productivity in the American Corporation* published in 1983 spends considerable time on giving readers advice on communication. In 1977 Rosabeth Moss Kanter wrote *Men and Women of the Corporation* which was her breakthrough work, landing her national acclaim. And, even then, Kanter (1977, pp. 97, 113-114, 148) was instructing managers to use deepening layers of communication, especially from a socio-cultural anthropological perspective, with their wives, to empower employees by opening communication channels, and through secretaries. Zuboff (1988, pp. 101-102) *In the Age of the Smart Machine: the Future of Work and Power* argues "Barnard believed that communication was the dominant function of management and, as he put it, 'the immediate origin of executive organization.'" After the 1980s considerably more women were writing b-books (Duck, 2001; Hill, 1992; Kanter, 2001) that included discussion or entire chapters on communication in management practice.

Duck (2001, p. 187), a senior vice president of the Boston Consulting Group, uses three metaphors to explain management communication: Cassandras, Networkers, and Influencers when she advises leaders "should listen to and communicate with and through three key kinds of networks during the change process." Cassandras usually middle managers and line supervisors can sound alarms and provide early warnings; Networkers know the organizational landscape and the right types of people and; Influencers can adjust and change the attitudes and opinions of the organization.

While examining the contents of 97 b-books, it did not take long to see deep layers of communication content appear frequently in the indexes of 67 of them, ranging the full spectrum of management areas. The systematic examination of the depth of communication content in these b-books contributes to the literature by offering further evidence communication can be viewed as a dominant management function.

This Study's Contribution to the Literature

Most of the books examined for this study were not about communication per se, but, each addressed much broader issues concerning management or business in general (see Barnard, 1968; Drucker, 1954; Drucker, 1974; Kanter, 1977; Kanter, 1989; Mintzberg, 1973; Phillips, 1985; Schein, 1992; Senge, 1990; Simon, 1976). Nonetheless, because of the indissoluble contributions many of these authors have made to management theory, a systematic analysis of their inclusion of communication in their books sheds some new light on the essential role business communications plays in management.

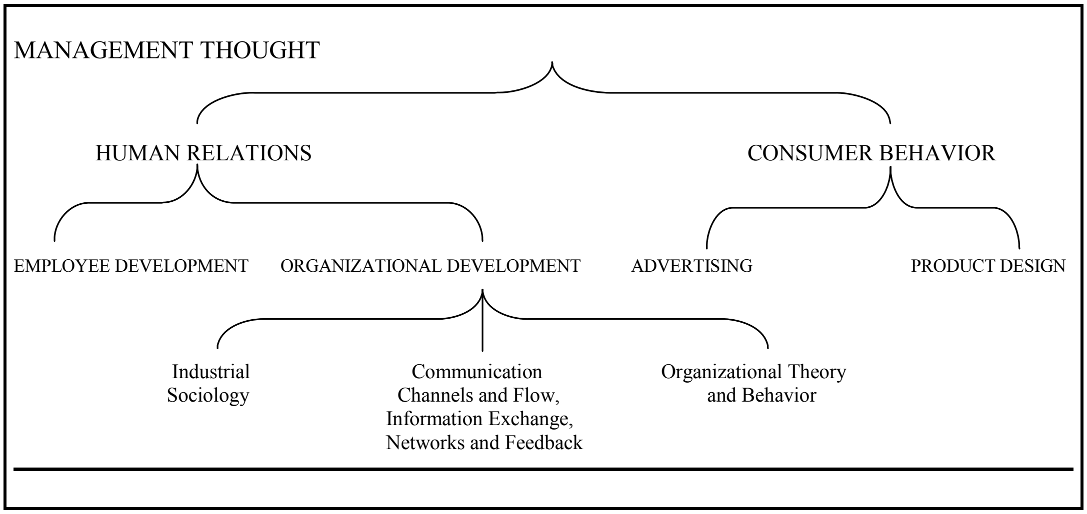
While Lewis, Schmisseur, Stephens, & Weir (2006, p. 114) offer a thematic analysis "about implementation of change" and how popular press book authors "direct readers communicate about those change programs." The themes they uncover are largely delimited to advice readers are given by authors of popular press books concerning problems in communicating organizational change. The measure of the depth of communication content in popular press business books was not the scope of their study.

In an earlier study, but very much related to the findings in this study, Aronoff (1975) traced the behavioral perspective through a content analysis of 28 general management textbooks published between 1910 and 1974. With multiple correlations analysis, Aronoff was able to show terms specific to the behavioral perspective increased pervasively over the years marking the steady increase of jargon relating to the behavior perspective influencing general management textbooks. Aronoff (1975, p. 766) specifically notes "The field of communications research, initiated in the 1940s, bears fruit in the management literature of the late 1960s with consideration of 'feedback' and 'communication networks.'"

Figure 1 presents a modified version of the map provided by Aronoff (1975) concerning the areas in general management textbooks he examined. I condensed his map and added changes only under his Organizational Development branch to better represent communication, information exchange, networks, and feedback as they should branch from organizational development as found in the advice given by authors in the b-books we examined. The advice authors give on communication in the b-books seems to be related mostly to communication's role in organizational development or change or improvement. This is consistent with Lewis, et al (2006).

Therefore, my study systematically analyzed data found in 97 randomly selected b-books, and I compared means and determined no differences on communication content measured. Our results were quite revealing too. The results of the data analyses and hypotheses testing lead to some meaningful conclusions about communication content in b-books.

Figure 1: Aronoff's Map of the Areas in General Management Textbooks Disciplines Subject to Influence of Behavioral Science Modified for Communication Advice Given in B-Books



CONCLUSION

In this study, I used One-Way ANOVA tests to compare means of variables we believe were correlated to the dependent variable: communication content as measured in b-books' indexes. What I found was no mean differences on any of the comparison we made. These are interesting findings for many reasons.

I would be the first to admit that popular press business books might not be the first place academicians (or scholars of management thought) go looking for the latest scientific knowledge on communication usage in management practice. Yet, to the contrary, I believe business practitioners buy b-books as a first-stop-shop and read them to try and find answers for many problems they face in business—including business communication related problems. These business practitioners are not necessarily reading highly specialized academic journals (*The Academy of Management Review, Management Communication Quarterly, the Academy of Management Journal, MIS Quarterly*, etc.) to gain new knowledge. Many practitioners don't have the background or training to benefit from reading such journals. This is possibly why there is a huge market for popular press business titles. As I saw through my examination, b-books contain much wisdom.

Practitioners buy a lot of b-books and perhaps they are reading them to gain knowledge on how to become better managers. The production of business books over the last twenty-five years has been enormous and they are selling like hot-cakes. Thus, I know there is a market for b-books. And, apparently, better ways to communicate is a part of knowledge managers are willing to purchase. The University of Florida business reference collection has 8,000 b-book titles worth

$400,000. I found that 67 out of 97 books I sampled had an average of 5.21 layers of communication content.

Many b-book authors were very sincere about the advice they were giving on communication in management practice. Kouzes & Posner (2002) urge their readers to collaborate by sharing information and to look for critical information both inside and outside the organization (pp. 191-193, 262-264). Baldoni (2005, p. 52) says, "Communication is integral to leadership, so much so that leaders must practice it at every level of the organization," and "Communication is the way in which leaders build the relationships they need in order to enable their people to fulfill personal, team, and organizational goals." Senge (1990) elaborates on 7 layers of "dialogue" and Glaser (2006) elaborates on 14 layers of "conversation." Bennis & Nanus (1985) argue leaders manage meaning through communication activities: they share vision by analogy, metaphor, and vivid illustration. Accordingly, leaders build trust and foster positive emotions. Blake and Mouton (1964) are a male female team giving extensive advice on communication in management.

Blake and Mouton (1964) write about the types of communication appropriate for each of the five managerial styles illustrated in a grid: the grid represents the range for managerial concern for people vis-à-vis concern for production. For example, a manager with a high concern for production and a low concern for people, "9,1 management communication is formal and is the media through which the authority-obedience system of direction and control is exercised" (p.28); on the other hand, a low functional concern for production and a high concern for people, "In the 1,9 managerial style, communication activities would be expected to be intense, with a high level of conversation in the informal system" (p. 65). Blake & Mouton (1964) provide a comprehensive analysis of communication for each of the styles in their managerial grid which is timeless and practical advice.

The analysis of the communication content in these popular press business books revealed some unknowns. What is now known is gender, a book published by a university press, the era in which a title was published, whether there was at least one male or female among multiple authors, or being listed as an "ultimate book" by Crainer (1997) made no difference as to the communication content covered in these b-books.

I can now say men and women who write b-books are statistically the same concerning the amount of advice on communication they are giving in the b-books. I can now say MIT Press, HBS Press, and University of Chicago Press are statistically the same as other publishers concerning the amount of advice on communication content found among the b-books they publish. I can now say the era b-books were published (1911 to 1979; the 1980s; the 1990s; 2000 to 2006) is statistically the same concerning the amount of advice on communication they are giving. None of the comparisons I made were statistically different on the dependent variable: depth of communication content as measured in the index of each b-book.

In SPSS 15.0, I used a random-effects model because our data was drawn randomly from a population of 1,000 b-book titles. Thus, assuming our sample to be normally distributed allows us to generalize this study's results to the population of 1,000 popular press business books I sampled, especially since there appears to be a great deal of homogeneity in the b-books we examined. I can theorize, therefore, that communication advice given by authors of such b-books will be statistically the same regardless if the b-book is written by a woman or a man, regardless if there are two or three authors and one is male or female. The b-book publisher (whether university or not) will make no difference on the communication content covered. And, the era the book was published won't make a difference scientifically: business communication advice given in the b-books does not appear to be a trend or a fad.

Communication advice to improve or change or develop organization—such as Mary Parker Follett's saying, "Getting things done through people"—appears to be the common advice linking the b-books. What this means for readers of b-books is communication advice given will be a consistent topic years to come. Furthermore, we conclude from the evidence communication can be construed as a dominant management function—as first indicated by Chester Barnard—and it appears communication has been an important topic of business since 1938. The advice authors gave spanned all tiers of management (top, middle, and frontline) and across the functional areas (leading, planning, organizing, staffing, controlling, and communicating).

This, in turn, gives some credence to what Bell & Martin (2008) argue; there has already been enough research published across all tiers and functions of management that justifies management communication as a field of research, and it is an overlaid function of management. This is very good news for management communication professionals and it as an academic field as it seeks its place beside the other disciplines in collegiate schools of business. The empirical findings for this study support the belief communication is a dominant function of management, and it is the common thread linking all the other management function together.

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EFFECTIVE INFORMATION TECHNOLOGY SUPPORT IN A DISTRIBUTED AND CULTURALLY DIVERSE ENVIRONMENT

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ABSTRACT

Providing effective information technology support in a large, distributed networks of hardware, software, and applications is challenging. Two firms that were successful in such a complex environments were studied to better understand how to effectively provide IT support. It is apparent that dynamic and flexible IT leadership coupled with team cohesion contributed to the firms' abilities to provide effective IT support in a distributed diverse cultural environment in the two firms.

INTRODUCTION

The nature of work has changed with the introduction of information and communication technologies (ICTs). Colleagues no longer have to be working side by side, in the same building, city, or even continent. Some workers may not have met their colleague face-to-face, even though they may have communicated via email, telephone or video-conference. This is especially true for distributed IT support organizations. Managing this particular type of organizational structure required a different form of leadership.

Few researchers have studied the impact of ICTs on the changes in IT support structure. Most studies frequently used ad-hoc student groups in laboratory settings rather than examining existing teams in organizations (Powell, et al., 2004).

To address organizational structure, utilizing a case study approach, we explored organizational environmental factors that contributed to a successful distributed IT support organization. We studied the IT support organizations in two corporations from different industries over a period of 26 months.

In this research, we examined the nature of distributed teams in multi-national corporations (MNCs) and factors that influenced their effectiveness. Specific research questions include:

> *How can the IT support function be organized to effectively provide support in a distributed MNC organization?*

What challenges do distributed IT support present to the organization?

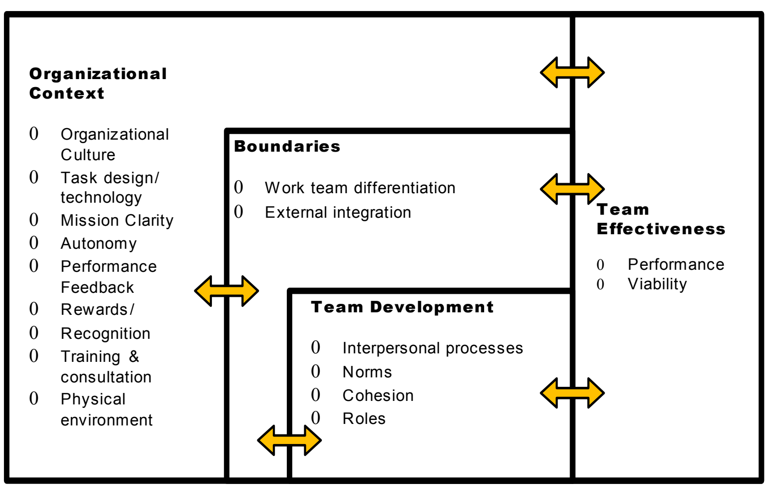
This study aimed to increase our understanding of current work practices in a distributed IT support organization. The results of this investigation can be used by organizations to develop implementation strategies and interventions to retain their IT manpower.

LITERATURE REVIEW

A complex distributed organizational structure enabled by IT inherently required a correspondingly complex group effort to maintain continual IT services. Team development research had produced a number of models representing organizational, group, and process level dimensions to assess group effectiveness.

Building on group process models as represented by McGrath (1984), Hackman (1987), and Gladstein (1984), Sundstrom, et al., (1990) proposed an 'Ecological Framework' for team development and effectiveness within an organizational complex, Figure 1, the SDF model. This framework served as a lens to assess the effectiveness of IT support in complex MNCs.

Figure 1: Sundstrom, De Meuse and Futrell's (1990) Ecological Framework



IT Support

In IT, support refers to personal assistance vendors and internal personnel provide to technicians and end users concerning hardware, operating systems, and programs. Nelson et al. (2000, p. 476) describe software operations support to include the "activities included in the IEEE (1990) definition of software maintenance, but also encompasses activities such as evaluating user business processes for opportunities, assisting users with new or modified requirements, and ongoing platform or technology changes."

IT development and support is a complex social process that is communication and coordination intensive. This complexity is illustrated in the SDF model with two headed arrows. When scaled to global dimensions, the complexity is magnified many times (Carmel & Agarwal, 2001). With people no longer collocated, direct observation and face-to-face conversation are difficult or impossible, posing problems for teams trying to work together. Furthermore, the cost of getting together for distributed team members also increases (Kiesler & Cummings, 2002).

An organizational unit such as IT support cannot function without coordination and control; unfortunately, distance creates difficulties in both. Coordination often requires intense and ongoing communication (Ramesh & Dennis, 2002). Controls can be formal (such as budgets and explicit guidelines) or informal (such as peer pressure). It is recognized today that, for knowledge workers, coordination and control have in many ways blended together.

Outsourcing

A common trend in IT support is outsourcing of various functions to IT firms. Although offering various financial benefits, these changes in how IT functions may also complicate the IT support coordination and communication processes. The SDF model can be seen to address outsourcing IT support via the external integration dimension in team boundaries.

The outsourcing literature discusses the risks and benefits associated with outsourcing, the structuring or anatomy of outsourcing contract, how to manage the outsourcing relationship, and the impact on host countries and the implications for home countries (Ang & Straub, 1996; Barthelemy, 2001; DeBow, 1994). However, little was mentioned about the impact of the outsourcing on the structure of IT support.

RESEARCH METHODS

Our research used an organizational case study design because it is suited for doing qualitative social science research that leads to understanding complex social phenomena (Yin, 2002; Stake, 1995). Case studies allowed for fieldwork that "retains holistic and meaningful characteristics of real-life events" (Yin, 1994). A goal of casework is to observe the details of interaction in a particular, complex single situation (Stake, 1995).

Case study data, though not generalizable to a population of organizations, can be helpful to generalize empirical findings in one setting to theoretical concepts and processes may be tested in other settings (Lee & Baskerville, 2003).

Data Collection

In this study, multiple data collection methods were employed—semi-structured interviews and observation were conducted over a period of 24 months for the two organizations to create rich descriptions. Documents and electronic newspaper and journal databases were reviewed before and after the interviews to provide background information and information on new developments for the two organizations. The researchers spent time at the research sites to become familiar with the structure, language and history of the corporation and the team, and to allow research site participants to become familiar with the researchers prior to the first semi-structured interview. These preliminary meetings provided background and context for the study and helped the researcher finalize the interview questions related to distributed IT support within a global corporate environment.

Thirty staff from the two organizations participated in the interviews. The managers were interviewed initially and they made recommendations of staff to be interviewed.

Table 1 presents a summary of the characteristics and practices of the two case studies. In both organizations, the organizational structure is complex. Both are subsidiaries of a larger parent/holding company. In addition, both organizations work closely with other subsidiaries of their respective holding companies.

Table 1: Summary of Characteristics and Practices

Category	Case 1	Case 2
Organization	Highly Complex	Highly Complex
	Centralized Management	Centralized Management
	Medium to High Degree of Formalization	Medium to High Degree of Formalization
	Tightly coupled	Tightly coupled
Locations	Oahu, Oahu	Terminals/ports in Hawaii
	Other Hawaiian Islands	Joint Ventures for terminals/ports on the West Coast
	Australia	Guam
	New Zealand	Arizona - Office
	Asia/Pacific	Utah - Office
Computer Operations for ERP system (including support)	In house – Oahu	Outsourced
	Outsourced – Other Locations	
PC Hardware/Software	In house – Oahu	In house
	Outsourced – Other Locations	
Web Design	Outsourced	Outsourced

Data Analysis

The case study resulted in the collection of a significant amount of data in a variety of formats. The coding scheme used was adapted from the Sundstrom, et al., (1990) Ecological Framework. Utilizing key words and synonyms from the constructs of the ecological framework, the raw data (interview and notes) was reduced reiteratively. The raw data were also re-examined without using apriori coding to discover if new categories existed. In both instances, several iterations of data coding were performed, adding and eliminating categories during subsequent passes through the data.

FINDINGS

These two organizations reflected how most MNCs were structured. Direct or dotted line reporting to supervisors located in different offices often occurred. The complex organizational structure resulted in the heavy usage of ICTs to coordinate activities. Email, telephone, teleconferencing, video conferencing, and instant messaging were used extensively. Face-to-face meetings were also held to establish relationships among the staff and vendors.

Organizational Structure

In Case 1, the CIO in worked from his home office in California half the time but kept Hawaii's hours. The CIO would hold weekly meetings with his direct reports either face-to-face or via teleconferencing. As the CIO's office is in another wing of the building, his staff do not see the CIO that often even when he is in the office. The Director of Corporate Systems commented:

> *"[The CIO] is only a phone call. He is on speed-dial, he is always accessible, and he is very good about it. It didn't make any difference if he is here in Hawaii or in California."*

The Programming Manager relied on a few contractors to help with the programming. He made use of instant messaging and emails to remain in contact with these contractors. He said, "It is too expensive to communicate with them via long-distance telephone calls. Since they have internet access, it is cheaper to talk with them through IM."

When the organization acquired a new property, the corporate IT staff would set up the property management system (PMS) and necessary infrastructure with a vendor. The vendor would then support of the operation of the local PMS. The local IT staff reported to the local property general manager. The corporate IT staff would intervene only in the case of an emergency.

In Case 2, the corporate IT department maintains a skeletal team of IT staff who were familiar with the organization's business processes. The computer operations were successfully outsourced and the department managed the relationship with the outsource partners very effectively. They used a set of metrics to measure the performance of the outsource vendor. When the vendors failed to meet or comply with the agreed upon performance level, the vendors were penalized financially.

The IT staff in the remote offices of the organization in Case 2, unlike those in Case 1, report to the corporate IT department. The supervisors often communicate with the staff via telephone daily. In addition, as the staff were located in different locations, the staff often communicates via a distributed list. In this way, everyone was kept abreast of the latest events.

The Associate Director commented:

> *"The distribution list resulted in a large amount of emails. If you have been away from the office for a few days, you would be overwhelmed the emails … information overload".*

Always On

Supporting the offices located in different time zones, meant that someone either had to come in to the office earlier or leave later. The IT supervisor in Hawaii in Case 2 commented:

> *"On occasions like this, it is very hard on the family. My wife has to take our daughter to school and everyone has to juggle their schedule."*

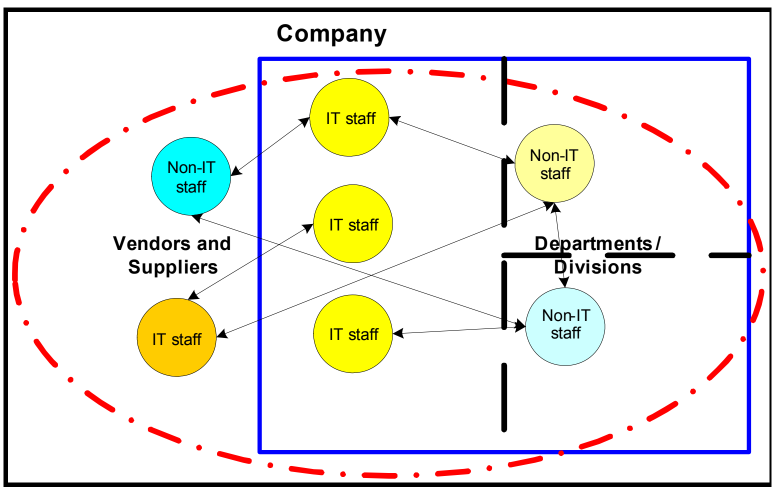
The Senior Systems Analyst (SSA) in Hawaii from Case 2 often had to go to the office to resolve systems issues after office hours. After remote access was installed, the SSA simply had to be logged in remotely to resolve issues but it was still very disruptive to his personal life as he could not be too far away from a computer when he was on-call. Even if the IT staff are not on-call, ICTs have made it possible for IT staff to be easily contacted at all times. The IT staff may have left the office but the office never leaves the IT staff.

RESULTS

The Concept of Team

Teams and teamwork are key concepts in the team research literature. However, when examined in the distributed environment context, the concept of 'team' as commonly understood is called into question. Considering that most distributed team research had used artificially created, ad-hoc student teams (Powell, et al., 2004), groups in these studies with clearly identified boundaries and a strong perception of being part of the "team" may be an artifact of the research process rather than a reflection of organizational reality. In real-life organizations, it is not so clear who is on the team, and if teams are even needed or effective in IT support activities. The people involved IT support activities can and may include the organization's IT support staff, IT support staff from different locations or offices, employees from other departments within the organization, and IT support staff from outsource vendors or suppliers. Organizational, both inter and intra, boundaries and national boundaries are traversed in order to provide effective IT support to the users. These inter and intra organizational boundary issues for IT support shown in Figure 2 are consistent with the ecological framework represented by the SDF model of a distributed team. In this distributed setting, the boundary of the team has to extend beyond the traditional boundaries of the organization.

Figure 2: Composition and Communication Pattern of a Distributed Team



Burnt-out Syndrome

With ICTs, IT personnel are always contactable and therefore always on call even though they may not be in the office. IT personnel spent long hours at work and when they return home may be called upon to resolve issues remotely. The long hours can have dire effects on the personal lives of the IT personnel and result in unhappy home situations that might severely affect the productivity of the IT personnel as IT support does not cease when personnel leave the office. A CNN news report (2005) suggested that IT personnel were in danger of being caught up in a 24-hour 'always on' society.

In addition to personal relationship issues, workforce members who engage in long work hours each week may be increasing their risk for high blood pressure (Yang et al., 2006). It has been found that "long work hours have increased mortality and have an impact on a number of adverse health condition … and lead to disability retirement" (Yang et al., 2006. p. 748).

Personnel who were unhappy and dissatisfied with their work or environment would tend to be less productive and therefore eventually separate themselves from that organization. This would be costly to the organization in terms of lost productivity, recruitment cost, and team cohesion.

CONCLUSION

Both organizations had effective IT support teams. The structure of the IT support organization had to dynamic and flexible to adapt to the more fluid composition of an IT support team. Since many organizations outsourced some of their IT functions, it resulted in IT departments having a higher number of supervisors. With so many supervisors within an organization, the IT leadership had to promote a climate that fosters autonomy and trust within the IT support function.

IT leadership and human resource department need to pay more attention to burnt-out syndrome of the IT workforce to minimize the cost to the organization and perhaps improve the morale and secure the loyalty of the staff. Loss of IT personnel can lead to a lack of team cohesion, as the team is continuously being developed due to the influx of new members.

LIMITATIONS

This study has both strengths and limitations. The strength of this research is that it involved intensive data gathering that informed our understanding of distributed IT support in natural settings. At the same time, such an approach raises questions of generalizability to other organizations. This study indicates that the case sites selected do highlight some research issues while not providing much insight into others. Another limitation is that the investigation can be so all-encompassing that it is difficult to focus. Furthermore, it may be difficult to reconcile differences and assess how representative they are.

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ON DRUCKER'S SHOULDERS, WE STAND : A CITATION ANALYSIS OF DRUCKER'S WORKS

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ABSTRACT

Peter Drucker's passing away marks an end of an era in the management history. He strode like a colossus with his many works. Using data from the ISI web of science, we present a citation analysis of Drucker's key works. We investigate the most cited works of Drucker, the citation trends over time, and citation trends across the various management disciplines. We also employ Hirsch index, key metric developed in natural sciences, to quantify and understand his contributions to the management literature. H-index reveals that Drucker's contributions parallel the Nobel Prize winners and other social science researchers. This analysis of Drucker's contributions provide an insight to both academicians and practicing managers.

Key words: Peter Drucker, citation analysis, Hirsch index

> *"We need a new theory of management. The assumptions built into business today are not accurate."* (Drucker, 2007)

INTRODUCTION

Peter Ferdinand Drucker was a nanogenarian: born in Kaasgraben, Vienna (Austria) on November 19, 1909 and died on November 11, 2005 at Claremont, California (USA). For nearly half century, Peter Ferdinand Drucker has dominated business world as a practicing manager, consultant, and academician. Describing Drucker as 'legend' in management understates his contribution, which reached across many disciplines in addition to management. Drucker earned titles that like "management guru", and "the father of modern management". Through his books and landmark papers in Harvard Business Review, Drucker has inspired and educated both managers and academicians alike.

Drucker's vision can be seen in terms of the chronological order of the books he wrote. He started his writings in 1939 with his first book titled "The end of economic man". He then wrote the book titled: "The future of industrial man" (1942). After researching General Motors for nearly two years, Drucker has understood that corporations have to play a major role in creating industrial society and he summarized all his thinking in terms of a book titled “The concept of corporation” in 1946. Then in 1954, Drucker produced a masterpiece titled : “The practice of management”, and in 1973, he elaborated the role of managers in terms of a landmark book “Management: Tasks, Responsibilities, Practices”. (Wood and Wood, 2005). [for extensive discussion of Drucker’s main contribution please see Wood, J., and Wood, M (2005) ‘Introduction’ in Wood, J., and Wood, M(ed), Peter Drucker: Critical evaluations in Business Management, Routledge, London].

H-INDEX: CONCEPT AND SIGNIFICANCE

H-index, developed by Hirsch (2005), is an index to quantify an individual’s scientific research output that aims to measure the cumulative impact of a researcher’s output by looking at various citations of a researcher’s work. H-index has now become an accepted measure of academic contribution of a researcher because it combines an assessment of both quantity (i.e. number of papers) and quality (i.e. impact of the papers assessed through citations to these papers). While other uni-dimensional criteria such as total number of papers may be misleading especially when these papers are not cited by other scholars, the citations provide accurate assessment of the contribution of researchers.

The statistics [(a) Drucker has over 433 papers; (b) the ratio of cites to paper was 36.41; (c) h-index= 43; (d) Total citations = 15765] reveal that the h-index of Drucker is comparable to the h-index of noble-prize winners. H-index of Nobel Prize winners revealed that 84 percent of them had was h-index of over 30, whereas newly elected members in the National Academy of Sciences in Physics and Astronomy had median h-index of 46 (Bornmann & Daniel, 2005).

The books and papers that were published between 2006 and 2008 (even after the death of Drucker) have received many citations (e.g. Managing oneself, 2008, Citations: 124; Managing non-profit organizations, 2006, Citations: 151; Management Tasks and Responsibilities, 2007, Citations: 1429; Innovation and entrepreneurship, 2007, Citations:1169). In these three years (between 2006 and 2008) the total papers of Drucker were 11(including books) which accounted for 2879 citations. These facts speak volumes about Drucker and his contributions to the field of management and various other disciplines.

Visionary management concepts

Drucker was a visionary. He predicted decades ahead that modern businesses will continue to grow and change at an ever-increasing pace beyond imagination and therefore managers must adapt constantly to these changes. Drucker opines that managers need to apply management principles to business practices for combating risks and availing opportunities, pertinent to current economic changes and trends. Drucker also visualized the fragility of economic systems and the reasons why success is not a permanent phenomenon for leaders (i.e. why even successful leaders fail sometimes?). According to Drucker , managers need to create ‘tomorrow’ by stressing on five important areas: (i) Connecting with customers, (ii) Innovating without abandoning what works, (iii) Developing lasting partnerships, (iv) Creating and retaining knowledge workers, and (v)Establishing disciplined decision making (Edersheim 2007). Drucker's taught final business lessons how to strategize, compete, and triumph in any market which were captured in the book titled "The Definitive Drucker: The Final word from the father of modern management" authored by Edersheim in 2007.

Outstanding contributions to business management

One of the outstanding contributions of Drucker to management is the concept of management \by objectives (MBO). Rarely do we find a textbook not mentioning about the concept, process and significance of MBO to organizations. The concept has gained wide currency over a period of time and has passed the test of 'time' for several decades. Even today, the concept has outlived its expectations. The premier book titled: The practice of management, first published in 1954, has made Drucker a practicing manager and a renowned consultant for many organizations.

Drucker's contribution to multifarious disciplines is captured in Table 1. The ranking of contributions of Drucker is captured in Table 2.

Table 1: Drucker's Contributions to various disciplines

SUBJECT CATEGORY	RECORD COUNT	% OF 981
MANAGEMENT	143	14.58%
BUSINESS	130	13.25%
ANTHROPOLOGY	121	12.33%
INFORMATION SCIENCE & LIBRARY SCIENCE	59	6.01%
ARCHAEOLOGY	46	4.69%
POLITICAL SCIENCE	43	4.38%
EDUCATION & EDUCATIONAL RESEARCH	41	4.18%
PLANNING & DEVELOPMENT	41	4.18%
ECONOMICS	39	3.98%
COMPUTER SCIENCE, INFORMATION SYSTEMS	36	3.67%
LAW	36	3.67%
HISTORY	33	3.36%
SOCIOLOGY	33	3.36%
SOCIAL SCIENCES, INTERDISCIPLINARY	31	3.16%
PUBLIC ADMINISTRATION	29	2.96%
PSYCHOLOGY, APPLIED	28	2.85%
OPERATIONS RESEARCH & MANAGEMENT SCIENCE	26	2.65%
OBSTETRICS & GYNECOLOGY	25	2.55%
ENGINEERING, INDUSTRIAL	23	2.34%

Table 1: Drucker's Contributions to various disciplines		
SUBJECT CATEGORY	RECORD COUNT	% OF 981
ETHICS	23	2.34%
INTERNATIONAL RELATIONS	22	2.24%
MULTIDISCIPLINARY SCIENCES	18	1.83%
PHILOSOPHY	16	1.63%
HEALTH POLICY & SERVICES	13	1.33%
HUMANITIES, MULTIDISCIPLINARY	13	1.33%
NURSING	13	1.33%
SOCIAL WORK	13	1.33%
PSYCHOLOGY, MULTIDISCIPLINARY	11	1.12%
ART	10	1.02%
COMMUNICATION	10	1.02%
ENVIRONMENTAL STUDIES	10	1.02%
INDUSTRIAL RELATIONS & LABOR	10	1.02%
LITERARY REVIEWS	10	1.02%
AREA STUDIES	9	0.92%
COMPUTER SCIENCE, THEORY & METHODS	9	0.92%
SOCIAL ISSUES	9	0.92%
ENGINEERING, MULTIDISCIPLINARY	8	0.82%
ERGONOMICS	8	0.82%
PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH	8	0.82%
TRANSPORTATION	8	0.82%
URBAN STUDIES	8	0.82%
COMPUTER SCIENCE, INTERDISCIPLINARY APPLICATIONS	7	0.71%
ENGINEERING, CIVIL	7	0.71%
ENVIRONMENTAL SCIENCES	7	0.71%
GEOSCIENCES, MULTIDISCIPLINARY	7	0.71%
HISTORY & PHILOSOPHY OF SCIENCE	7	0.71%
PLANT SCIENCES	7	0.71%
PSYCHIATRY	7	0.71%
RELIGION	7	0.71%
WATER RESOURCES	7	0.71%
GEOGRAPHY	6	0.61%
HEALTH CARE SCIENCES & SERVICES	6	0.61%
REPRODUCTIVE BIOLOGY	6	0.61%
ENGINEERING, MANUFACTURING	5	0.51%
HISTORY OF SOCIAL SCIENCES	5	0.51%
SOCIAL SCIENCES, BIOMEDICAL	5	0.51%
BUSINESS, FINANCE	4	0.41%
COMPUTER SCIENCE, CYBERNETICS	4	0.41%
MISCELLANEOUS		

Table 2: Ranking of Drucker's contributions			
Title (contribution)	Year Published	Rank	Citations
The Coming of New Organization	1988	1	1294
Innovation and Entrepreneurship	2007	2	1169
The Age of Social Transformation	1998	3	627
The Discipline of Innovation	1999	4	433
Knowledge-worker productivity: The biggest challenge	2000	5	362
Post capitalist society	1993	6	3064
The emerging theory of manufacturing	1990	7	276
The information executives truly need	1995	8	254
Managing for future	1992	9	258
New Productivity Challenge	1995	10	247

As Table 1 reveals, roughly 28 percent of the papers fall under 'management and business' (total count of the papers was 273 out of total 981). This explains substantial contribution of Drucker to management. As Table 2 reveals, the book titled : "The coming of new organization" published in 1988 was ranked number one in terms of citations (number of citations was 1294. Management scholars, academicians and students remember Drucker for the advocating the following most important concepts: (a) MBO (Management by Objectives): Managers need to see that there is systemic top-down communication of organizational goals and objectives to the subordinates and at the same time bottom-up communication about how subordinates receive these goals. Thus, managers need to balance variety of needs and goals of both subordinates and organization. MBO has been the outstanding contribution that was generated in his landmark book titled: The Practice of Management in 1954. While MBO was appreciated by many, some critics point out that MBO was flawed. They argue that MBO has never been effective in organizations partly because the companies may overemphasize goals and control, sometimes at the cost of creativity (Dale, 1994). According to Drucker, the CEO compensation should not be more than twenty times of the blue-collar workers and he asserts that enormous amount of CEO compensation is 'morally and socially unforgivable' (Byrne, 2005). Drucker also believed that some of the reasons why organizations collapse are use of outdated ideas, narrow conception of problems and follow old-fashioned beliefs. Drucker dislikes total command and control model of centralization; instead he emphasized that decentralization, where subordinates play a key role in decision-making, is the key to get success in modern corporations.

For the today's concept of outsourcing, corporations owe a debt to Drucker because he noticed that corporations tend to hire employees they do not need especially when the better solution of outsourcing is available. According to Drucker, manager is a 'dynamic life giving element in every business and without his leadership, resources remain resources and never become converted into production" (Drucker, 1954: 3). Drucker emphasized the conversion of Taylorian thinking of 'scientific management' to what is known as 'philosophical way of looking at management'. Drucker's managerial philosophy involved focus on 'output' when he introduced the concept of management by objectives (MBO). According to Drucker (1973) "that in modern society there is no other leadership group but managers. Drucker is of the opinion that "If the managers of our major institutions, and especially of business, do not take responsibility for the common good, no one else can or will" (Drucker, 1973: 325). Drucker emphasized that employee is the most important asset in an organization. Modern economy rests on knowledge workers and hence employees are to be treated as 'assets' rather than 'liabilities'.

Contributions to marketing

Drucker was among the first to point out the significance of customers and marketing. He was clearly a forerunner in enunciating the marketing orientation approach which became popular later. In fact, Kotler opines that if he is called the " father of marketing", Drucker rightly qualifies to be called " grandfather of marketing"(Gunther, 2008).

Contributions to economics

Drucker is very critical of macroeconomic theory as none of the school of macroeconomics will be able to explain the concept of modern economies. Drucker attended John Maynord Keynes's lecture on macroeconomics and strongly felt that the focus need to be changed to microeconomics, and especially the supply side of it where the capital formation is very important. Instead of focusing on theories related to growth, Drucker opines that economists need to focus on Schumpeterian concept of 'innovation'.

Contributions to society (ethics and social responsibility)

Drucker recommended companies to feel social responsibility in addition to maintain profits. Organizations need to provide healthcare, education, childcare support systems, apart from the wages they provide to the employees and this is the best way to ensure corporate welfarism (Wood & Wood, 2005). Drucker recommended that in order to promote healthy society, it is important to focus on non-profit sectors in an economy.

Drucker has authored 39 books on management and related disciplines (see Table.3). Some of the most important quotations from Drucker are captured in Table 4.

Table 3. List of books by Drucker	
Book	Year of Publication
Friedrich Julius Stahl: konservative Staatslehre und geschichtliche Entwicklung	1932
The End of Economic Man: The Origins of Totalitarianism	1939
The Future of Industrial Man	1942
Concept of the Corporation(A study of General Motors)	1945
The New Society	1950
The Practice of Management	1954
America's Next 20 Years	1957
Landmarks of Tomorrow: A Report on the New 'Post-Modern' World	1959
Power and Democracy in America	1961
Managing for Results: Economic Tasks and Risk-Taking Decisions	1964
The Effective Executive	1966
The Age of Discontinuity	1968
Technology, Management and Society	1970
Men, Ideas and Politics	1971
Management: Tasks, Responsibilities and Practices	1973
The Unseen Revolution: How Pension Fund Socialism Came to America	1976
An Introductory View of Management	1977
Song of the Brush: Japanese Painting from the Sanso Collection	1979
Managing in Turbulent Times (	1980
Toward the Next Economics and Other Essays	1981
The Changing World of the Executive	1982
The Temptation to Do Good	1984
Innovation and Entrepreneurship: Practice and Principles	1985
The Frontiers of Management	1986
The New Realities	1989
Managing the Non-Profit Organization: Practices and Principles	1990
Managing for the Future: The 1990s and Beyond	1992
The Post-Capitalist Society	1993
The Ecological Vision: Reflections on the American Condition	1993
Managing in a Time of Great Change	1995
Drucker on Asia: A Dialogue Between Peter Drucker and Isao Nakauchi	1997

Table 3. List of books by Drucker	
Book	Year of Publication
Peter Drucker on the Profession of Management	1998
Management Challenges for the 21st century	1999
The Essential Drucker: The Best of Sixty Years of Peter Drucker's Essential Writings on Management	2001
Leading in a Time of Change: What it Will Take to Lead Tomorrow (2001; with Peter Senge)	2001
The Effective Executive Revised	2002
Managing in the Next Society	2002
A Functioning Society	2003
The Daily Drucker: 366 Days of Insight and Motivation for Getting the Right Things Done	2004
The Effective Executive in Action	2005

Table 4. A sample of famous quotations from Drucker's writings
Quotations
In fact, that management has a need for advanced education - as well as for systematic manager development - means only that management today has become an institution of our society.
Because the purpose of business is to create a customer, the business enterprise has two--and only two--basic functions: marketing and innovation. Marketing and innovation produce results; all the rest are costs. Marketing is the distinguishing, unique function of the business.
Company cultures are like country cultures. Never try to change one. Try, instead, to work with what you've got.
The best way to predict the future is to create it.
The most important thing in communication is hearing what isn't said.
The purpose of business is to create and keep a customer.
There is nothing so useless as doing efficiently that which should not be done at all.
What's measured improves.
Management is doing things right; leadership is doing the right things.
Efficiency is doing better what is already being done.

CONCLUSION

In this short essay we attempted to summarize the contributions of Peter Drucker in terms of H-index. A overwhelming majority of works on Drucker related to management and the contributions of Drucker are well-documented by many textbook writers and researchers. However, use of a new metric, that is widely used in physical sciences, is not applied to Drucker's contributions. A cursory look at this metric reveals that Drucker's contributions parallel that of Nobel Prize winners and other scientists. Though the H-index has its own limitations, it is widely believed that higher index reveals more significant contributions, which are seen in terms of citation analysis. We expect to use H-index to other management scholars to compare and contrast their relative contributions to their respective fields.

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