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New Perspectives on the Strategic Linkages betw. Marketing Factors, R&D, Firm Performance

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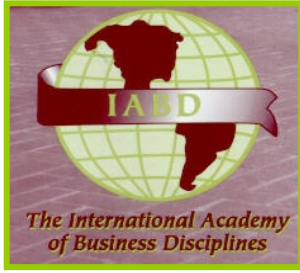


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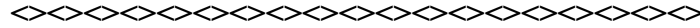
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JOURNAL OF INTERNATIONAL BUSINESS DISCIPLINES

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Editorial Note

I am pleased to present to you a collection of high-quality papers that were presented at the 2008 International Academy of Business Disciplines (IABD) and the European Academy of Management and Business Economics (AEDEM) joint conference in Salamanca, Spain. The papers were selected for publication in this issue of the *Journal of International Business Disciplines*, after going through a second round of review.

My special thanks to Jonathan Gibraltar, President of Frostburg State University; to Susan Aldridge, President of the University of Maryland University College; to Danny Arnold, Dean of the College of Business at Frostburg State University; to the Board of Directors of IABD; to *JIBD* Editorial Board; and to my distinguished colleagues who served as the external reviewers.

I also would like to thank Kathleen O'Connor, editor; Louis Falk, Web coordinator; Reza Eftekharzadeh, treasurer; and Robert Page, managing editor for their outstanding contribution towards completion of this task.

The Editorial Board members and I would like to dedicate this issue of *JIBD* to all who make a determined effort to promote peace and prosperity for all citizens of the world.

Ahmad Tootoonchi, Chief Editor
Journal of International Business Disciplines

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THE INTERNATIONAL VINICULTURE MARKET: A COMPARATIVE STUDY

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ABSTRACT

This study presents an analysis of international viniculture to explain the factors that contribute to the success of the wine business in both the New and the Old World. It also discusses the new challenges the traditional wine-producers face in competing in foreign markets. The recent trends show an increase in consumption in United States, but a decrease in some other markets. The long-term outlook for exports of wine for New World producers are predicted to improve. The results of the time series analysis (1985–2005) that were made on exports, imports, per capita consumption, total wine consumption, and production have allowed us to make reliable predictions of the wine industry in Spain, France, the United States, Argentina, and Chile.

INTRODUCTION

The international viniculture market has undergone a major transformation in the past twenty years in terms of competition, the imbalance between supply and demand, and new consumer demands, and this is forcing the traditional wine-producing countries to rethink their export strategy.

From a situation in which European wines were absolutely dominant in exports, things have changed to intense competition. Wines from the southern hemisphere are cornering a greater and greater share of the market because they are high-quality wines at very good prices. This has led the traditional wine-producing countries to consider new ways of producing so they do not lose the leading position held so far.

Aware that European wines must reinforce their position, the Common Wine Market Organization (CWMO) is developing instruments in order to, firstly, increase the competition in the viniculture sector—basically focusing on the problem of the existent imbalance in the European Union (EU) market between supply and demand—and secondly, to soften the regulatory framework and make it more efficient in terms of labeling and production (Bernal & Mercado, 2004).

INTERNATIONAL CONTEXT: WINES FROM THE OLD WORLD VERSUS WINES FROM THE NEW WORD

Globally, as much demand as supply of wine has undergone an important transformation. Consumption has diminished notably while supply increases incessantly, giving rise to an imbalance that could bring about a crisis in the sector.

Wines from the so-called New World are those produced in Australia, Chile, South Africa, New Zealand, the United States, Argentina, and some Eastern European countries. Since the 1990s, they have constituted the new protagonists on the international scene. The consumption and production of wines coming from Brazil, Peru, and Uruguay have been stagnant or in decline since the beginning of the present century. All together, the wines from the New World are rapidly increasing their share of the market at the expense of traditional European wines. Examples of this are Australia, which has gone from producing 3,110 hectoliters (Hl) in 2000, to 7,020 Hl in 2005; Chile, with a production of 650 Hl in 2000 to 827 Hl; and Argentina, from 12,060 Hl to 15,047 Hl for those same years.

At the beginning of the 1990s, European wines from the traditional producers—France, Spain, Italy, Portugal, and Greece—controlled 70% of the world production due to their tradition, prestige, and especially the minimum competition from emerging countries in the New World, whose share was then 15% of the world production. However, this European dominance has been weakened considerably in the past decade by the growth in volume and by way of the improved quality of wine exported by the new producer countries. Consequently, in 2003, the European wine producers saw their world production cut back to 65.4%, contrasted with the growth of the new wines, which are situated at 21%. It is necessary to mention the *success factors* of the wines from the New World that the authors will delineate from those shown by Gallardo (2004).

REGULATION

In European countries, there are numerous regulations in the viniculture industry and these regulations are too rigid, covering a wide field. In France, the varieties that can be planted in each region, the way in which the different varieties must be harvested, the information contained on the label, etc., are all regulated. The authorities point out that the objective of these regulations is to allow consumers to know what they are drinking, to protect tradition, and to maintain the prestige of the wine-producing regions. However, such regulations have affected the development of the industry. With respect to the countries from the New World, the regulations are fewer, and in the cases where they exist, they are much simpler than they are in Europe. This situation allowed these regions to adapt to new technologies and to the preferences of consumers, as well as to experiment with new varieties of grapes and production methods. All of that has given the new wine producers important advantages and greater flexibility in the market with respect to the producers from traditional countries. For that, the CWMO considers it of vital importance to carry out a profound reform with the aim of simplifying viniculture regulations and achieving greater international competition. The norms in the grape and wine-producing sector must be redefined, keeping in mind the diminishing and changing demand, to combine tradition with flexibility. That is, they want to achieve greater market orientation.

MARKETING

Nowadays, there is high consumer demand for Mediterranean wines because consumers believe there is no price-to-quality ratio. To a great extent, this is the consequence of pricing policies carried out in Europe. The wines of the New World are perceived as wines capable of satisfying the preferences of the consumers where the price-to-quality binomial does in fact seem to be met. Furthermore, these wines are characterized by their almost immediate drinkability, unlike European wines that spend a long years in casks. With respect to the required labeling already mentioned above, commercializing the traditional wines is complex, while emerging countries allow the consumer to select by the label. This is to say that the labels are clear and simple, and do not lead to consumer confusion. Designation of Origin (D.O.) is a prestigious product classification in Spain awarded to products like wine, cheese, and ham that are produced in designated areas and that follow strict production criteria.

COUNTRY IMAGE STRATEGY

The wine producers from the New World have presented country-brand strategies with the aim of favoring the image of these countries and stimulating wine sales abroad. Australia's strategy of "Marketing Decade" is worth highlighting, as are South Africa's "Vision 2020," the United States' "Wine Vision," and Chile's "Wines of Chile" (founded in July 2002) (Costa, 2004). Such strategies have not been carried out by the traditional countries or have not been projected correctly. In Spain, the idea of "Wines from Spain" or "Vineyards of Spain" has been launched with limited success because the producers of prestigious wines (those classified as D.O.) and the association of winery owners do not want to form part of an "umbrella" framework that would (according to them) damage their international reputation of quality. On the level of the European Union, we find sectors in which they point out the possibility of placing the logotype of the EU on bottles with the aim of strengthening promotion in foreign countries. Nonetheless, if such initiatives by the member states have not been successful on the European level because of the fragmentation of the industry, they might have even less success abroad or might not be carried out at all.

INDUSTRY STRUCTURE

In the traditional countries, fragmentation is evident. For example, in the year 2000, Bordeaux registered some 12,000 producers, the majority of them very small. That is to say, in a specific region, there were no dominant companies in the market. This contrasts with the few wineries in emerging wine-producing countries, which favors economies of scale and facilitates regular volumes of wine for the retailers. In 2003, Chile registered 85 exporting wineries, represented by two producer associations: Chilevid, with 42 vineyards, and Viñas de Chile, with 45 vineyards, responsible for 90% of the bottled wine exports, and around 90% of the domestic market (Müller, 2004). Competing with wines from the new wine-producing countries, European countries must promote measures in the private sector to draw up a common, wide-scale, exporting strategy and to establish incentives for the production of better quality wine and greater homogeneity. It is necessary to promote synergies in the wine-producing sector in European countries.

CULTURE

The central axis of European wines is the producer, who suffers from a loss of competitiveness by betting on tradition and prestige. The central axis of the new wine producers is the consumer, betting on innovation and a vision toward the future. The countries of the New World offer wines that are easy to drink, fruity, and that have other attributes that are highly valued by the present-day consumer (Hernández, 1997). The European Union has sent a message warning that the European vineyards must be adapted to the consumer if they want to attain more competitiveness.

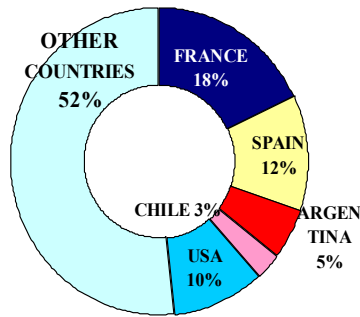
In conclusion, European wines must advance in each of the factors mentioned if the producers want to position themselves against emerging wines. The regulatory framework could contribute to those advances by strengthening promotion measures and by allowing for greater flexibility in labeling.

SECTORIAL VISION OF WINE

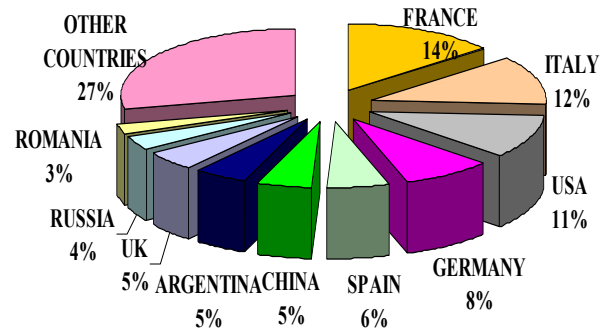
In 2005, the wine sector in Spain figured at 580,000 viticulturists, 4,055 companies within which there are 750 cooperatives producing 70% of the total and that directly employed 30,055 people, generating some 4,475 million euros (Ministerio de Agricultura, Pesca y Alimentación de España ([MAPA], 2006). According to data offered by the National Inter-Professional Office of French Wine (Office National Interprofessionnel des Vins [ONIVINS], 2007), in this same year, France had 118,586 wine-producing operations, employing 150,000 viticulturists in more than 4,500 companies of which 840 are cooperatives. As with Argentina, Chile has modernized the sector with significant investments, and the domestic wine consumption maintains more stable figures.

In 2004, Argentina has 26,011 wine-producing operations and 1,275 wineries with oak and modern casks. Its most distinguished product is definitely wine-in-bulk. In 2004, the price came down and the volume doubled. The country that receives the most Argentine exports is the United States (34% exportations in 2004), followed by Canada (8%) and Germany (6.7%) (Instituto Nacional de Vitivinicultura de Argentina [INV], 2006).

The production of wine in Spain during the 2004–2005 campaign rose to 34.75 million hectoliters (Hl), a record figure for Spain. Of that the 34.75 million, approximately 12 million Hl are allocated to domestic consumption (third consumer country, but not per capita, with 26.7 liters per person) (MAPA, 2006). This production record places Spain in third place in the world ranking, behind France and Italy. The total production of these three countries together represents 83% of the total produced in the 25 countries of the European Union (EU25), and more than 50% of the world total. EU25 produces more than 60% of the total wine production worldwide (the International Organization of Vine and Wine [OIV], 2005).

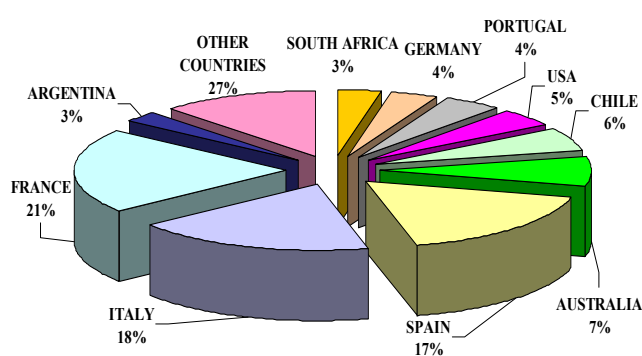


Production

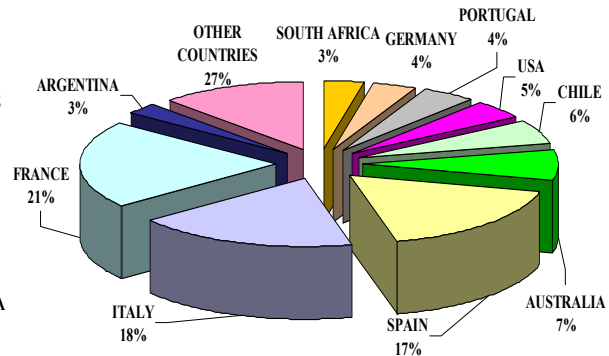


Consumption

FIGURES 1 AND 2: WORLD PRODUCTION AND CONSUMPTION OF WINE IN 2005. Authors' own work from data offered by the International Organization of Vine and Wine, CORFO, ONIVINS, MAPA, OIV and INV.



Exports



Imports

FIGURES 3 AND 4: WORLDWIDE WINE IMPORTS AND EXPORTS IN HL. IN 2003. Authors' own work from data offered by the International Organization of Vine and Wine, CORFO, ONIVINS, MAPA, OIV and INV.

The tendency of Spanish and French exports is a drop in product volume and a moderate increase and decrease, respectively, in the value of wine exports. United States has steadily increased the consumption, exports, and imports during the last 15 years. The main importers of wines—United Kingdom, Germany, the United States, and France—are purchasing wines that are of more and more varied origin, in some cases diminishing the demand from traditional providers. The market loss of traditional countries leads us to a comparative sectorial study with New World countries.

TAB LE 1: SECTORIAL IMPORTANCE OF WINE IN THE COUNTRIES ANALYZED – YEAR 2005.

Principal sectorial data	Ranking Spain	Ranking France	Ranking USA	Ranking Chile	Ranking Argentina
Vine surface area (Ha)	1° 1,205,028	2° 846,859	6° 376,420	12° 175,365	10° 212,858
Wine production (Hl 000)	3° 34,750	1° 52,004	4° 20,109	10° 7,886	5° 15,222
Wine consumption (Hl 000)	5° 14,000	1° 34,000	3° 25,929	20° 2,500	7° 11,500

Principal sectorial data	Ranking Spain	Ranking France	Ranking USA	Ranking Chile	Ranking Argentina
Wine exports (HI 000)	1° 14,439	2° 13,556	23° 388,2	11° 4,807	10° 2,100
Wine imports (HI 000)	17° 336	1° 5,514	4° 6,415	30° 93	10° 2,932

Note. Authors' own work from data offered by the International Organization of Vine and Wine, CORFO, ONIVINS, MAPA, OIV and INV.

ANALYSIS OF THE DIMENSIONS OF APPARENT CONSUMPTION OF WINE IN FRANCE, ARGENTINA, CHILE, AND SPAIN 1985–2005.

The time analysis of the level of apparent consumption analyzed (total and per capita wine consumption, exports, imports, and production) includes the period from 1985 to 2007 in two countries from the New World (Argentina and Chile), and three from the Old World (Spain, EE.UU, and France). In all of them, with the exception of EE.UU, which has raised the third ranking position in the word, the per capita wine consumption has decreased in the 21 years considered. However, Chile currently maintains wine consumption figures similar to those from 10 years ago. In 2005, this figure stood at 17 liters per person per year, against 18 liters from 1994. Even so, this makes Chile a country of low wine consumption.

France is the biggest wine-consuming country in the world (in volume and per inhabitant) with clear differences with respect to the other three countries. Despite the per capita consumption stabilizing in the past 5 years, France has reduced its consumption by 38.45% in the past 20 years, going from 76.4 liters in 1985 to 52 liters in 2005. Argentina and Spain have had similar per capita consumption levels since 1994, despite both tendencies intersecting in that period on several occasions. If we look at the total volume consumed, both countries are equal throughout the series. Adding the total wine consumption from both countries, we obtain a figure somewhat inferior to that of the total consumption in France.

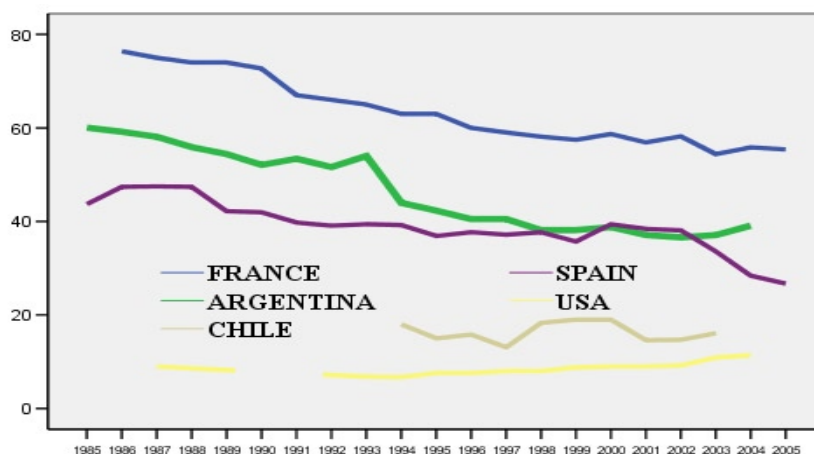


FIGURE 5. CONSUMPTION OF WINE PER CAPITA IN FRANCE, ARGENTINA, THE USA, CHILE, AND SPAIN (LITERS). Authors' own work from data from OIV, CORFO, ONIVINS, MAPA, and INV.

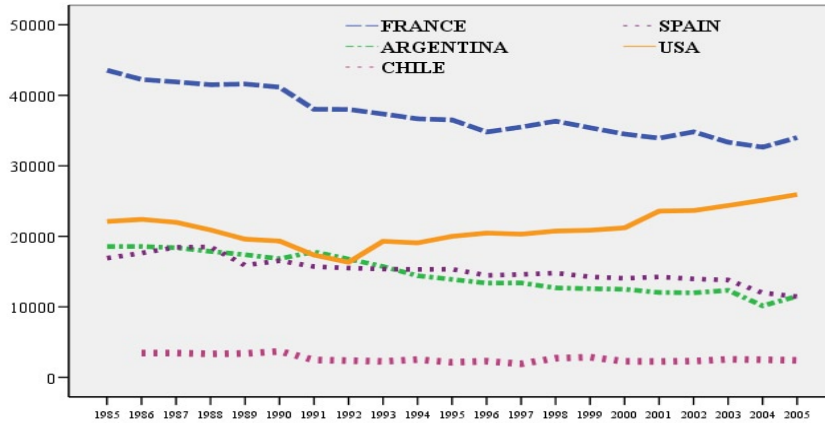


FIGURE 6. TOTAL WINE CONSUMPTION IN FRANCE, ARGENTINA, THE USA, SPAIN, AND CHILE (HL 000). Authors' own work from data from OIV, CORFO, ONIVINS, MAPA, and INV.

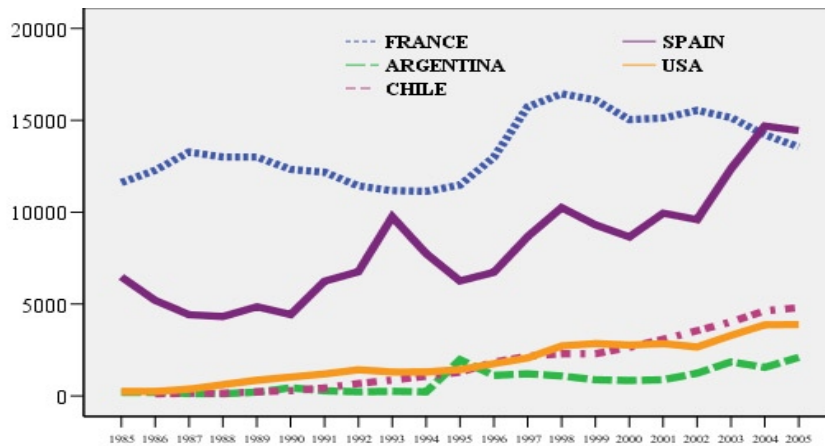


FIGURE 7. WINE EXPORTS IN FRANCE, SPAIN, THE USA, CHILE, AND ARGENTINA (HL 000). Authors' own from data from OIV, CORFO, ONIVINS, MAPA, and INV.

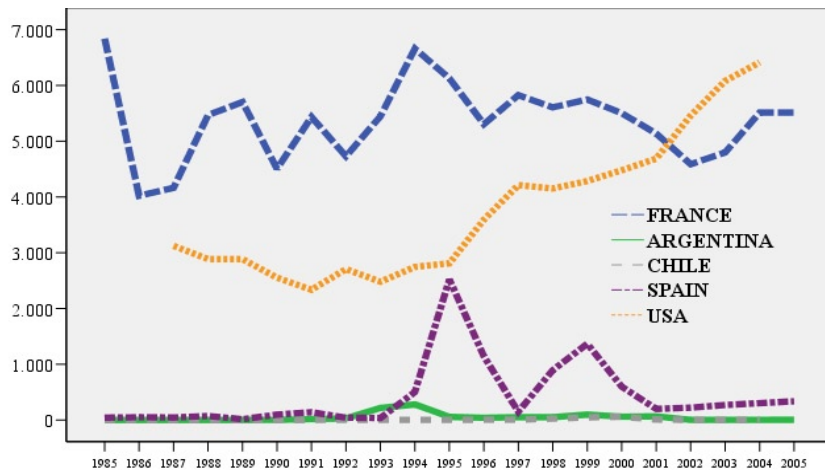


FIGURE 8. WINE IMPORTS IN FRANCE, SPAIN, CHILE, AND ARGENTINA, IN THOUSANDS OF HL. Authors' own work from data from OIV, CORFO, ONIVINS, MAPA, and INV.

Regarding foreign trade, Argentina and Chile have levels close to zero up until 1992. It is in exports where one observes sustained growth in the case of Chile, whose level of exportation in 2005 reached what was exported in 1991 by a traditional wine exporting country like Spain. The peaks of wine imports in Spain coincide with poor harvests. While, in 1995, that peak coincided with limited exports and production, paradoxically, in 1998, exports and imports recovered unexpectedly and production remained constant. This was due to the excellent quality of the harvest and to their juices. Although the volume of production and foreign trade in France is much higher than in Spain, their series maintained symmetry due to similar climatic conditions and because of the raw material of the two countries.

TIME SERIES ANALYSIS OF SPAIN

AUTOREGRESSIVES SERIES

Wine Consumption in Spain

The estimated model is an order 1 auto-regressive (AR(1)) without a constant end (given that it is not significant), of the form $z_t = \phi_1 z_{t-1} + a_t = -0,588 z_{t-1} + a_t$ using a nonseasonal series transformed with two differences and logarithms. Modeling the series on AR(1) means that each observation is made on the previous, making a chain based on the past. It has been proven that the random disturbance of this model has no structure; therefore, the AR(1) model is the appropriate one. The predictions of the model are reliable given that its AR(1) structure helps to compensate for imbalances with respect to what was modeled. In this case, the per capita wine consumption in Spain was 11,446 HI in 2005, while that modeled for this year adjusts the consumption to 10,981.73 HI, and the prediction for 2008 and 2009 for consumption was 8,360.96 and 9,056.67 respectively.

TABLE 2: ESTIMATIONS OF THE PARAMETERS.

Nonstationary delays	Estimates	Std. error	<i>t</i>	Approx sig.
AR(1)	-.588	.199	-2.948	.009

Note. The Melard algorithm has been used for the estimates.

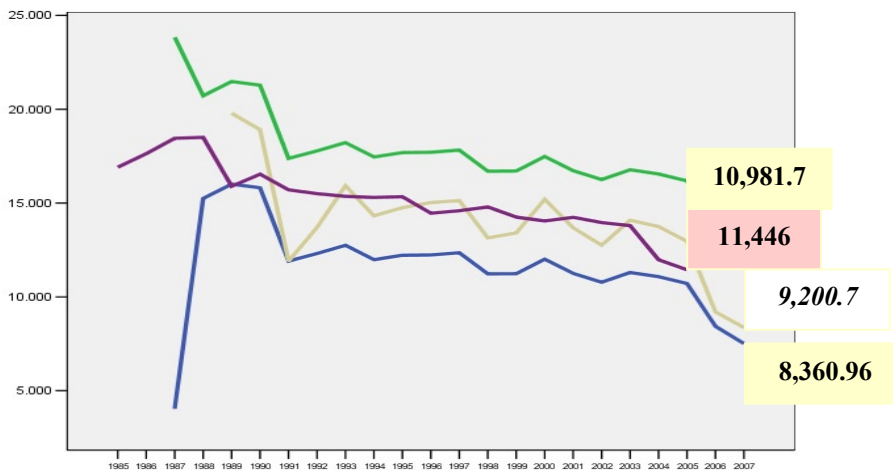
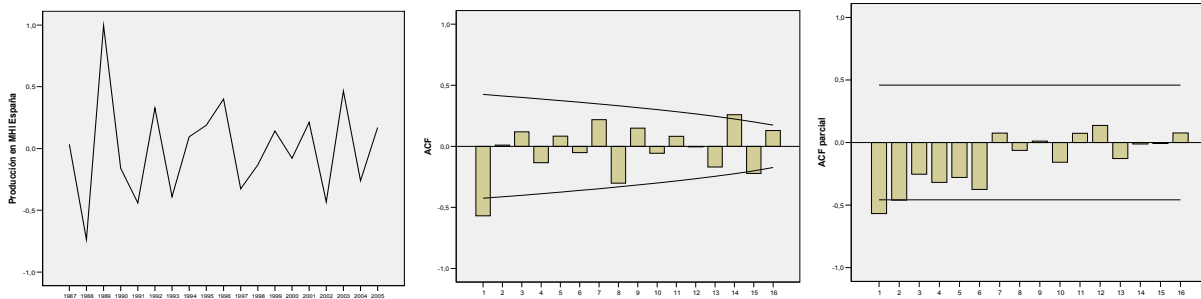


FIGURE 9: PREDICTION OF CONSUMPTION IN SPAIN IN 2006 AND 2007.

Wine Production in Spain

The estimated model is autoregressive of order 2 (AR(2)) without constant end (given that it is not significant), of the form: $z_t = \phi_1 z_{t-1} + \phi_2 z_{t-2} + at = -0,937 z_{t-1} - 0,550 z_{t-2} + at$ using a nonseasonal series (see Figure 9) transformed with two differences and logarithms. Modeling the series on an AR(2) means that each observation is made directly upon the previous observation and continuing the pattern, making a complex chain based on 1 and 2 delays.

This means that wine production depends not only on the production of the previous year, but also directly on the production two seasons previous to that year. It also means that low production has indirect effects throughout the series and a direct effect on the following two years. It has been shown that the random disturbance of this model has a white noise structure. Therefore, the AR(2) model is appropriate. The predictions of the model are reliable given that its AR(2) structure means self-adjustments on what is modeled. In this case, wine production in 2005 was 49,200 Hl, while that modeled adjusts the figure to 48,881.48 Hl. In this way, it was estimated that in 2006 and 2007 that production would be 45,154 and 57,208 Hl, respectively.



FIGURES 10, 11, AND 12: TRANSFORMED SERIES (2 DIFFERENCES AND LOGARITHM), ACF, AND PACF.

TABLE 3: ESTIMATIONS OF THE PARAMETERS

Nonseasonal delays	Estimates	Std. error	<i>t</i>	Approx sig.
AR(1)	-.937	.196	-4.777	.000
AR(2)	-.550	.193	-2.852	.011

Note. The Melard algorithm has been used for the estimates.

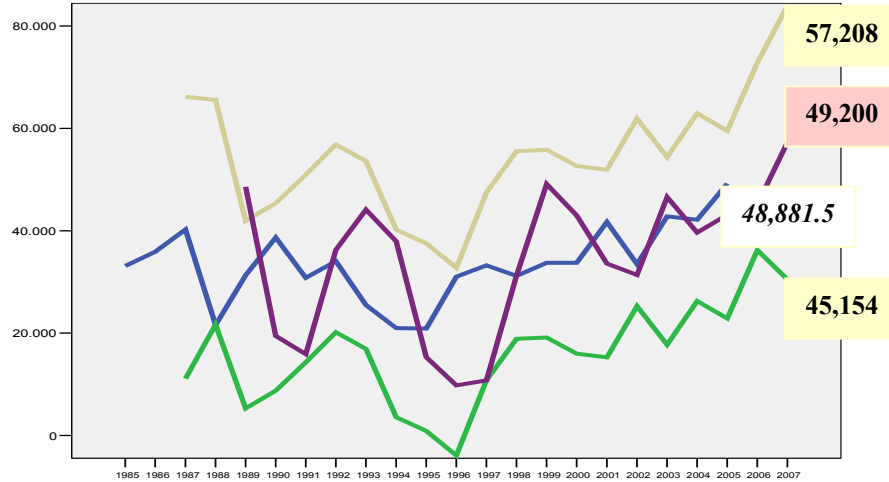
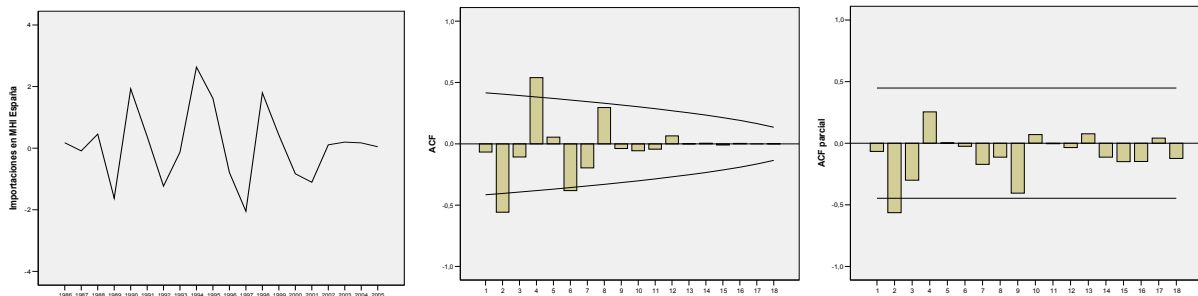


FIGURE 10: PREDICTION OF WINE PRODUCTION IN SPAIN IN 2006 AND 2007.

HALF MOBILE SERIES

Wine Imports in Spain

The estimated model is a Half Mobile order 1 (MA(1) without constant end (since it is not significant), of the form: $z_t = a_t - \theta a_{t-1} = a_{t-1} - 0,451 a_{t-1}$ using a non-seasonal series transformed with one difference and logarithms. Modeling the series on MA(1) means that, to a great extent, the effect of an observation is absorbed into the following one, so that the peaks of the series are not assimilated as tendency values and the values return to normal levels in the passing of one year. In this way, the temporary nature of Spanish imports is demonstrated, that is, only done to cover consumption peaks or falls in production. It has been confirmed that the random disturbance of this model has no structure; therefore, the MA(1) model is appropriate. In 2005, exports were 336 HI, while that modeled was adjusted to 271 HI. In this way, it was estimated that, in 2006 and 2007, the imports would be 308 and 322 HI, respectively.



FIGURES 11, 12, AND 13: TRANSFORMED SERIES (1 DIFFERENCE AND LOGARITHM), ACF, AND PACF.

TABLE 4: ESTIMATIONS OF THE PARAMETERS.

Nonseasonal delays	Estimates	Std. error	t	Approx sig.
MA(1)	.451	.207	2.183	.042

Note. The Melard algorithm has been used for the estimates.

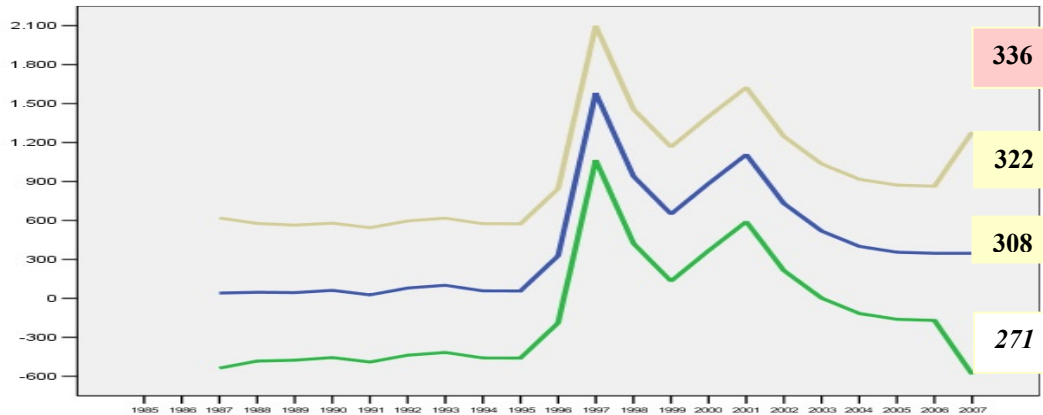


FIGURE 14: PREDICTION OF IMPORTS OF WINE IN SPAIN IN 2006 AND 2007.

CONCLUSIONS

Argentina and Chile have a clear, upward trend in production and exports that coincides with the decrease of wine exports in France. These trends form part of a global reduction of worldwide consumption.

As for the predictions in Spain, it was predicted that wine production would decrease in 2008 to 43,258 HI and will increase to 44,029 HI, and that subsequently they would again reach record figures. It was predicted that total wine consumption would fall to 8,396 HI in 2008, and that the value of wine imports in 2007 and 2008 would remain close to those from 2005 with a smooth raise.

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USEFUL LINKS

Organization	Internet Address
Corporación Chilena del Vino	http://www.ccv.cl
Corporación del Fomento de la Producción	http://www.corfo.cl
European Commission	http://ec.europa.eu/agriculture/capreform/wine/index_es.htm
Instituto Nacional de Tecnología Agropecuaria de Argentina	http://www.inta.gov.ar
Institut National de l'Origine et de la Qualité	http://www.inao.gouv.fr
Oficina de Estudios y Políticas Agrarias de Chile	http://www.odepa.gob.cl
Food and Agriculture Organization of the United Nations	http://www.fao.org
Portal del Sector Vitivinícola	http://www.vinosdeargentina.com

**DECISION MAKING WITH DEMPSTER-SHAFER THEORY AND UNCERTAIN
INDUCED AGGREGATION OPERATORS**

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ABSTRACT

We developed a new approach for decision making with the Dempster-Shafer (D-S) theory of evidence. We focused on a problem where the available information was uncertain and could be assessed with interval numbers. To aggregate the information, we suggested using different types of uncertain induced aggregation operators such as the uncertain induced ordered weighted averaging (UIOWA) and the uncertain induced hybrid averaging (UIHA) operator. As a result, we obtained new types of aggregation operators such as the belief structure—uncertain induced OWA (BS-UIOWA) and the belief structure—uncertain induced hybrid averaging (BS-UIHA) operator. The main advantage of using these operators is the possibility of using complex attitudinal characters in situations where it is not possible to simply use the degree of optimism of the decision maker. We studied some of their main properties. We also develop an application of the new approach in a financial decision-making problem about selection of investments.

INTRODUCTION

The Dempster-Shafer (D-S) theory of evidence (Dempster, 1967, 1968; Shafer, 1976) provides a unifying framework for representing uncertainty because it includes the situations of risk and ignorance as special cases. For further reading on the D-S theory, we recommend Srivastava and Mock, 2002; Yager et al. 1994; and Yager & Liu, 2008.

Usually, when using the D-S theory in decision making, it is assumed that the available information is exact numbers (Engemann et al. 1996; Merigó & Casanovas, 2006, 2007a; Yager, 1992, 2004). However, this might not be the real situation found in the decision-making problem because the available information is often vague or imprecise and, thus, it is not possible to analyze it with exact numbers. A better approach then might be using interval numbers. Note that other studies have considered similar approaches by using fuzzy numbers (Casanovas & Merigó, 2007) and linguistic variables (Merigó et al. 2007).

Going a step further, the aim of this paper is to suggest a new approach for uncertain decision making with the D-S theory by using uncertain induced aggregation operators. We will then be able to use in the same formulation a unifying framework between ignorance and risk, uncertain information assessed with interval numbers and a reordering process in the aggregation step that uses order inducing variables. We will consider different types of

uncertain induced aggregation operators such as the uncertain induced ordered weighted averaging (UIOWA) and the uncertain induced hybrid averaging (UIHA) operator.

The main advantage of using these operators is the possibility of considering complex attitudinal characters in situations where it is not possible to use the degree of optimism of the decision maker. Moreover, it is possible to assess the uncertain information by using interval numbers. Then, we are able to represent the uncertain problem considering the best and worst possible scenario. Note that depending on the type of interval number used, it is also possible to consider the most possible scenarios.

These operators provide a parameterized family of aggregation operators that includes the uncertain maximum, the uncertain minimum, the uncertain average (UA) and the uncertain OWA (UOWA) operator, among others. By using these aggregation operators, we will be able to create new aggregation methods such as the belief structure—UIOWA (BS-UIOWA) and the belief structure—UIHA (BS-UIHA) operator. We study some of their main properties and we develop different families of UIOWA and UIHA operators that could be used in the analysis such as the step-UIOWA, the S-UIOWA, the median-UIOWA, the centered-UIOWA, and the Olympic-UIOWA.

To do this, the remainder of the paper is organized as follows. In Section 2, we briefly review some basic concepts such as the interval numbers, the D-S theory, the UIOWA, and the UIHA operator. Section 3 introduces the new approach when the information is aggregated with the UIOWA operator. In Section 4, we develop a similar approach with the UIHA operator. Finally, in Section 5 we present an illustrative example of the new approach in a financial decision making problem.

PRELIMINARIES

In this Section, we briefly review some basic concepts about the interval numbers, the UIOWA operator, the UIHA operator and the D-S theory.

INTERVAL NUMBERS

The interval number is a very useful and simple technique for representing the uncertainty. It has been used in an astonishingly wide range of applications. For further reading see Kaufmann and Gil-Aluja, 1987, 1990; Kaufmann et al., 1994; Kaufmann and Gupta, 1985; and Moore, 1966.

In the literature, we find different types of interval numbers. For example, if we assume a 4-tuple (a_1, a_2, a_3, a_4) , that is to say, a quadruplet, we could consider that a_1 and a_4 represents the minimum and the maximum of the interval number, and a_2 and a_3 , the interval with the highest probability or possibility, depending on the use we want to give to the interval numbers. Note that $a_1 \leq a_2 \leq a_3 \leq a_4$. If $a_1 = a_2 = a_3 = a_4$, then, the interval number is an exact number and if $a_2 = a_3$, it is a 3-tuple known as triplet.

In the following, we are going to review some basic interval numbers operations as follows. Let A and B be two triplets, where $A = (a_1, a_2, a_3)$ and $B = (b_1, b_2, b_3)$. Then:

- 1) $A + B = (a_1 + b_1, a_2 + b_2, a_3 + b_3)$
- 2) $A - B = (a_1 - b_3, a_2 - b_2, a_3 - b_1)$

3) $A \times k = (k \times a_1, k \times a_2, k \times a_3)$; for $k > 0$.

Note that other operations could be studied (Kaufmann et al. 1985; Moore, 1966; however, in this paper, we will focus on these operations.

UNCERTAIN INDUCED OWA OPERATOR

The uncertain induced OWA operator was introduced by Xu (2006a). It is an extension of the OWA operator (Beliakov et al., 2007; Calvo et al., 2002; Merigó, 2007; Yager, 1988, 1993; Yager & Kacprzyk, 1997) that uses the main characteristics of two well-known aggregation operators: the induced OWA (Merigó & Gil-Lafuente, 2007; Yager, 2003; Yager & Filev, 1999) and the uncertain OWA operator (Ahn, 2006, 2007; Xu & Da, 2003). It then uses interval numbers for representing the uncertain information and a reordering process that is based on order inducing variables. It can be defined as follows:

Definition 1. Let Ω be the set of interval numbers. An UIOWA operator of dimension n is a mapping UIOWA: $\Omega^n \rightarrow \Omega$ that has an associated weighting vector W of dimension n such that $w_j \in [0, 1]$ and $\sum_{j=1}^n w_j = 1$, then:

$$UIOWA(\langle u_1, \tilde{a}_1 \rangle, \dots, \langle u_n, \tilde{a}_n \rangle) = \sum_{j=1}^n w_j b_j \quad (1)$$

where b_j is the \tilde{a}_i value of the UIOWA pair $\langle u_i, \tilde{a}_i \rangle$ having the j th largest u_i , u_i is the order inducing variable and \tilde{a}_i is the argument variable represented in the form of interval numbers.

From a generalized perspective of the reordering step it is possible to distinguish between descending (DUIOWA) and ascending (AUIOWA) orders. Note that in this case, it is not necessary to compare interval numbers because the reordering step is developed with order inducing variables. The only case where we need to compare interval numbers is in the final result. To do this, we will use the following criteria. First, we will analyse whether there is an order between the interval numbers. If not, we will calculate an average of the interval number. For example, if $n = 2$, $(a_1 + a_2) / 2$; if $n = 3$, $(a_1 + 2a_2 + a_3) / 4$; etc. If there is still a tie, then, we will follow a subjective criterion such as considering only the minimum or the maximum.

Note also that different families of UIOWA operators can be studied by choosing a different weighting vector such as the step-UIOWA operator, the window-UIOWA, the median-UIOWA, the olympic-UIOWA, the centered-UIOWA, and the S-UIOWA.

UNCERTAIN INDUCED HYBRID AVERAGING OPERATOR

The uncertain induced hybrid averaging operator is an extension of the hybrid averaging (Xu, 2006b; Xu & Da, 2003) that uses the weighted average (WA) and the OWA operator, at the same time. It also uses interval numbers for representing the uncertain information and a reordering process based on order inducing variables. The main advantage of this operator is that it includes a wide range of special cases such as the UWA, the UOWA, and the UIOWA operator. Then, the decision maker gets a more complete view of the different possibilities that the aggregation process can create in the uncertain environment. It can be defined as

follows:

Definition 2. Let Ω be the set of interval numbers. An UIHA operator of dimension n is a mapping UIHA: $\Omega^n \rightarrow \Omega$ that has an associated weighting vector W of dimension n such that $w_j \in [0, 1]$ and $\sum_{j=1}^n w_j = 1$, then:

$$\text{UIHA}(\langle u_1, \tilde{a}_1 \rangle, \dots, \langle u_n, \tilde{a}_n \rangle) = \sum_{j=1}^n w_j b_j \quad (2)$$

where b_j is the \hat{a}_i ($\hat{a} = n\omega_i \tilde{a}_i$, $i = 1, 2, \dots, n$) value of the UIHA pair $\langle u_i, \tilde{a}_i \rangle$ having the j th largest u_i , u_i is the order inducing variable, $\omega = (\omega_1, \omega_2, \dots, \omega_n)^T$ is the weighting vector of the \tilde{a}_i , with $\omega_i \in [0, 1]$ and the sum of the weights is 1, and the \tilde{a}_i are interval numbers.

Note that, in this case, it is also possible to distinguish between descending (DUIHA) and ascending (AUIHA) orders. Also note that it is only necessary to compare interval numbers in the final result because, in the reordering step of the aggregation, this problem is solved by using inducing variables. In this case, we will also follow the same criterion as the one explained for the UIOWA operator.

By using a different manifestation in the weighting vector, we are able to develop a wide range of families of UIHA operators. For example, we could obtain the uncertain maximum, the uncertain minimum, the UA, the UWA, the UOWA, among others. Other families that could be studied are the step-UIHA, the window-UIHA, the median-UIHA, the olympic-UIHA, the EZ UIHA, the Gaussian UIHA, the nonmonotonic-UIHA, the centered-UIHA, and the S-UIHA, etc.

DEMPSTER-SHAFER THEORY OF EVIDENCE

The D–S theory of evidence (Dempster, 1967; Shafer, 1976) provides a unifying framework for representing uncertainty as it can include the situations of risk and ignorance as special cases. Note that the case of certainty is also included as it can be seen as a particular case of risk or ignorance. Since its appearance, the D–S theory has been applied in a wide range of applications (Reformat & Yager, 2008, Srivastava & Mock, 2002; Yager et al. 1994; Yager & Liu, 2008).

Definition 3. A D–S belief structure defined on a space X consists of a collection of n nonnull subsets of X , B_j for $j = 1, \dots, n$, called focal elements and a mapping m , called the basic probability assignment, defined as, $m: 2^X \rightarrow [0, 1]$ such that:

- (1) $m(B_j) \in [0, 1]$.
 - (2) $\sum_{j=1}^n m(B_j) = 1$.
 - (3) $m(A) = 0$, $\forall A \neq B_j$.
- (3)

Again, the cases of risk and ignorance are included as special cases of belief structure in the D–S framework. For the case of risk, a belief structure is called Bayesian belief structure if it consists of n focal elements such that $B_j = \{x_j\}$, where each focal element is a singleton. Then, we can see that we are in a situation of decision making under risk environment as $m(B_j) = P_j = \text{Prob} \{x_j\}$.

The case of ignorance is found when the belief structure consists in only one focal element B , where $m(B)$ essentially is the decision making under ignorance environment as this focal element comprises all the states of nature. Thus, $m(B) = 1$. Other special cases of belief structures such as the consonant belief structure or the simple support function are studied in (Shafer, 1976).

USING UIOWA OPERATORS IN DECISION MAKING WITH D–S THEORY

In Section 3, we describe the process to follow when using UIOWA operators in decision making with D–S theory. We divide it in three subsections. First, we comment the decision process to follow. Second, we analyze the aggregation used in the problem and we find a new aggregation operator: the BS-UIOWA operator. Third, we study different types of UIOWA operators that could be used in the aggregation.

DECISION MAKING APPROACH

A new approach for decision making with D–S theory is possible by using uncertain induced aggregation operators. The main advantages of using this type of aggregation are: the possibility of dealing with uncertain information, the possibility of using an aggregation that provides a parameterized family of aggregation operators between the maximum and the minimum, and the possibility of using a general formulation in the reordering of the arguments by using inducing variables. Note that, in this paper, we will focus on the UIOWA and the UIHA operators; however, it is possible to consider other types of uncertain induced aggregation operators by using generalized means and quasi-arithmetic means. The motivation for using interval numbers appear because sometimes, the available information is not clear and it is necessary to assess it with another approach such as the use of interval numbers. Although the information is uncertain and it is difficult to take decisions with it, at least we can represent the best and worst possible scenarios, and sometimes the most possible ones. Then, we can guarantee that the decision maker is considering the main situations that could happen in the future. The decision process can be summarized as follows.

Assume we have a decision problem in which we have a collection of alternatives $\{A_1, \dots, A_q\}$ with states of nature $\{S_1, \dots, S_n\}$. \tilde{a}_{ih} is the uncertain payoff, given in the form of interval numbers, to the decision maker if he selects alternative A_i and the state of nature is S_h . The knowledge of the state of nature is captured in terms of a belief structure m with focal elements B_1, \dots, B_r and associated with each of these focal elements is a weight $m(B_k)$. The objective of the problem is to select the alternative which gives the best result to the decision maker. To do this, we should use the following steps:

- Step 1. Calculate the uncertain payoff matrix.
- Step 2. Calculate the belief function m about the states of nature.
- Step 3. Calculate the collection of weights, w , to be used in the UIOWA aggregation for each different cardinality of focal elements. Note that it is possible to use different methods depending on the interests of the decision maker (Merigó, 2007; Yager, 1988; 1993; 2007; Yager and Filev, 1994).
- Step 4. Determine the uncertain payoff collection, M_{ik} , if we select alternative A_i and the focal element B_k occurs, for all the values of i and k . Hence $M_{ik} = \{a_{ih} \mid S_h \in B_k\}$.
- Step 5. Calculate the uncertain aggregated payoff, $V_{ik} = \text{UIOWA}(M_{ik})$, using Eq. (1), for all the values of i and k .
- Step 6. For each alternative, calculate the generalized expected value, C_i , where:

$$C_i = \sum_{r=1}^r V_{ik} m(B_k) \quad (4)$$

Step 7. Select the alternative with the largest C_i as the optimal.

UIOWA OPERATORS IN BELIEF STRUCTURES

Analyzing the aggregation in Steps 5 and 6 of the previous subsection, it is possible to formulate in one equation the whole aggregation process. We will call this process the belief structure—UIOWA (BS-UIOWA) aggregation. It can be defined as follows.

Definition 4. *A BS-UIOWA operator is defined by*

$$C_i = \sum_{k=1}^r \sum_{j_k=1}^{q_k} m(B_k) w_{j_k} b_{j_k} \quad (5)$$

where w_{j_k} is the weighting vector of the k th focal element such that $\sum_{j=1}^n w_{j_k} = 1$ and $w_{j_k} \in [0,1]$, b_{j_k} is the \tilde{a}_{i_k} value of the UIOWA pair $\langle \tilde{a}_{i_k}, \tilde{a}_{i_k} \rangle$ having the j_k th largest u_{i_k} , u_{i_k} is the order inducing variable and the \tilde{a}_{i_k} are interval numbers, and $m(B_k)$ is the basic probability assignment.

Note that q_k refers to the cardinality of each focal element and r is the total number of focal elements. The BS-UIOWA operator is monotonic, commutative, bounded and idempotent.

From a generalized perspective of the reordering step, it is possible to distinguish between descending and ascending orders by using $w_j = w_{n-j+1}^*$, where w_j is the j th weight of the BS-DUIOWA and w_{n-j+1}^* the j th weight of the BS-AUIOWA operator. Then, we obtain the BS-DUIOWA and the BS-AUIOWA operators.

FAMILIES OF BS-UIOWA OPERATORS

By choosing a different manifestation in the weighting vector of the UIOWA operator, we are able to develop different families of UIOWA and BS-UIOWA operators. As it can be seen in definition 4, each focal element uses a different weighting vector in the aggregation step with the UIOWA operator. Therefore, the analysis needs to be done individually.

For example, it is possible to obtain the uncertain maximum, the uncertain minimum, the UA and the UWA. The uncertain maximum is found if $w_p = 1$ and $w_j = 0$, for all $j \neq p$, and $u_p = \text{Max}\{a_i\}$. The uncertain minimum is obtained if $w_p = 1$ and $w_j = 0$, for all $j \neq p$, and $u_p = \text{Min}\{u_i\}$. The UA is found when $w_j = 1/n$, for all \tilde{a}_i and the UWA is obtained if $u_i > u_{i+1}$, for all a_i .

Other families of UIOWA operators could be used in the BS-UIOWA operator such as the step-UIOWA, the S-UIOWA, the olympic-UIOWA, the window-UIOWA and the centered-UIOWA operator, among others. Note that recently, it is appearing a wide range of papers dealing with the problem of determining OWA weights. In this subsection, we simply give a general overview commenting some basic cases that are applicable in the UIOWA operator.

The step-UIOWA operator is found when $w_k = 1$ and $w_j = 0$, for all $j \neq k$ and the window-UIOWA when $w_j = 1/m$ for $k \leq j \leq k + m - 1$ and $w_j = 0$ for $j > k + m$ and $j < k$. Note that k and m must be positive integers such that $k + m - 1 \leq n$.

For the median-UIOWA, we distinguish between two cases. If n is odd we assign $w_{(n+1)/2} = 1$ and $w_j = 0$ for all others, and this affects the argument \tilde{a}_i with the $[(n+1)/2]$ th largest u_i . If n is even we assign, for example, $w_{n/2} = w_{(n/2)+1} = 0.5$, and this affects the arguments with the $(n/2)$ th and $[(n/2)+1]$ th largest u_i .

For the weighted median-UIOWA we select the argument \tilde{a}_i that has the k th largest inducing variable u_i , such that the sum of the weights from 1 to k is equal or higher than 0.5 and the sum of the weights from 1 to $k-1$ is less than 0.5.

The olympic-UIOWA operator is found if $w_1 = w_n = 0$, and for all others $w_j = 1/(n-2)$. Note that the olympic-UIOWA is transformed in the olympic-UOWA if $w_p = w_q = 0$, such that $u_p = \text{Max}\{\tilde{a}_i\}$ and $u_q = \text{Min}\{\tilde{a}_i\}$, and for all others $w_j = 1/(n-2)$.

A further family is the centered-UIOWA operator. This type of aggregation operator is symmetric, strongly decaying and inclusive. It is symmetric if $w_j = w_{j+n-1}$. It is strongly decaying when $i < j \leq (n+1)/2$, then $w_i < w_j$ and when $i > j \geq (n+1)/2$ then $w_i < w_j$. It is inclusive if $w_j > 0$. Note that it is possible to consider a softening of the second condition by using $w_i \leq w_j$ instead of $w_i < w_j$ which is known as softly decaying centered-UIOWA operator. Note also the possibility of removing the third condition. Then, we shall refer to this type of aggregation as noninclusive centered-UIOWA operator.

A further interesting family is the S-UIOWA operator. In this case, we can distinguish between three types: the “orlike,” the “andlike,” and the “generalized” S-UIOWA operator. The orlike S-UIOWA operator is found when $w_p = (1/n)(1 - \alpha) + \alpha$, $u_p = \text{Max}\{\tilde{a}_i\}$, and $w_j = (1/n)(1 - \alpha)$ for all $j \neq p$ with $\alpha \in [0, 1]$. Note that if $\alpha = 0$, we get the UA and if $\alpha = 1$, we get the uncertain maximum. The andlike S-UIOWA operator is found when $w_q = (1/n)(1 - \beta) + \beta$, $u_q = \text{Min}\{\tilde{a}_i\}$, and $w_j = (1/n)(1 - \beta)$ for all $j \neq q$ with $\beta \in [0, 1]$. Note that if $\beta = 0$ we get the UA and if $\beta = 1$, the uncertain minimum. Finally, the generalized S-UIOWA operator is obtained when $w_p = (1/n)(1 - (\alpha + \beta)) + \alpha$, with $u_p = \text{Max}\{\tilde{a}_i\}$; $w_q = (1/n)(1 - (\alpha + \beta)) + \beta$, with $u_q = \text{Min}\{\tilde{a}_i\}$; and $w_j = (1/n)(1 - (\alpha + \beta))$ for all $j \neq p, q$ where $\alpha, \beta \in [0, 1]$ and $\alpha + \beta \leq 1$. Note that if $\alpha = 0$, we get the andlike S-UIOWA and if $\beta = 0$, the orlike S-UIOWA.

Another type of UIOWA operator that we could mention is the EZ-UIOWA weights. In this case, we should distinguish between two classes. In the first class, we assign $w_j = (1/k)$ for $j = 1$ to k and $w_j = 0$ for $j > k$, and in the second class, we assign $w_j = 0$ for $j = 1$ to $n - k$ and $w_j = (1/k)$ for $j = n - k + 1$ to n .

Further families of UIOWA operators that could be used include those that depend on the aggregated objects. For example, we could develop the BADD-UIOWA operator as follows.

$$w_j = \frac{b_j^\alpha}{\sum_{j=1}^n b_j^\alpha} \quad (6)$$

where $\alpha \in (-\infty, \infty)$, and b_j is the \tilde{a}_i value of the UIOWA pair $\langle u_i, \tilde{a}_i \rangle$ having the j th largest u_i .

Note that the sum of the weights is 1 and $w_j \in [0,1]$. Also note that if $\alpha = 0$, we get the UA and if $\alpha = \infty$, we get the uncertain maximum. In this operator, it appears the problem of how to deal with interval numbers. For simplicity, we recommend to use the average of the interval as the value \tilde{a}_i to be used in the calculation of the weights.

Other families of UIOWA operators that depend on the aggregated objects could be developed by using $(1 - b_j)^\alpha$, $(1/ b_j)^\alpha$, etc., instead of b_j^α . Note that these families were developed for the OWA operator in (Yager, 1993).

A further useful method for obtaining the weighting vector is the functional method known as basic interval monotonic function (BUM) (Yager, 1996). Let f be a function $f: [0, 1] \rightarrow [0, 1]$ such that $f(0) = f(1)$ and $f(x) \geq f(y)$ for $x > y$. Using this BUM function, we obtain the UIOWA weights w_j for $j = 1$ to n as

$$w_j = f\left(\frac{j}{n}\right) - f\left(\frac{j-1}{n}\right) \quad (7)$$

It is easy to see that the weights w_j satisfy that the sum of the weights is 1 and $w_j \in [0,1]$.

Finally, if we assume that all the focal elements use the same weighting vector, we can refer to these families as the BS-uncertain maximum, the BS-uncertain minimum, the BS-UA, the BS-UWA, the BS-step-UIOWA, the BS-S-UIOWA, the BS-olympic-UIOWA, and the BS-centered-UIOWA.

USING UIHA OPERATORS IN THE D–S THEORY

In some situations, the decision maker could prefer to use another type of uncertain aggregation operator such as the UIHA operator. The main advantage of this operator is that it uses the characteristics of the UWA and the UIOWA in the same aggregation. Then, if we introduce this operator in decision making with D–S theory, we are able to develop a unifying framework that includes in the same formulation probabilities, UWAs and UIOWAs.

To use this type of aggregation in the D–S framework, we should consider that now, in Step 3, when calculating the collection of weights to be used in the aggregation, we are using two weighting vectors because we are mixing in the same problem the UWA and the UIOWA.

In Step 5, when calculating the uncertain aggregated payoff, we should use the UIHA operator instead of the UIOWA operator by using Equation (2).

In this case, it is also possible to formulate in one equation the whole aggregation process. We will call it the BS-UIHA operator.

Definition 5. A BS-UIHA operator is defined by

$$C_i = \sum_{k=1}^r \sum_{j_k=1}^{q_k} m(B_k) w_{j_k} b_{j_k} \quad (8)$$

where w_{j_k} is the weighting vector of the k th focal element such that $\sum_{j_k=1}^{q_k} w_{j_k} = 1$ and $w_{j_k} \in$

$[0,1]$, b_{j_k} is the \hat{a}_i ($\hat{a}_i = n\omega_i\tilde{a}_i$, $i = 1,2,\dots,n$) value of the UIHA pair $\langle u_{i_k}, \tilde{a}_{i_k} \rangle$ having the j_k th largest u_{i_k} , u_{i_k} is the order inducing variable $\omega = (\omega_1, \omega_2, \dots, \omega_n)^T$ is the weighting vector of the \tilde{a}_i , with $\omega_i \in [0, 1]$ and the sum of the weights is 1, and the \tilde{a}_{i_k} are interval numbers, and $m(B_k)$ is the basic probability assignment.

As can be seen, the focal weights are aggregating the results obtained by using the UIHA operator. Note that if $\omega_i = 1/n$ for all i , then, Eq. (8) is transformed in Equation (5).

In this case, we could also study different properties and particular cases of the BS-UIHA operator, in a similar way as it has been explained for the BS-UIOWA operator such as the distinction between descending (BS-DUIHA) and ascending (BS-AUIHA) orders.

When aggregating the collection of uncertain payoffs of each focal element, it is also possible to consider a wide range of families of UIHA operators. For example, we could mention the uncertain hybrid maximum, the uncertain hybrid minimum, the uncertain Hurwicz hybrid criteria, the UA, the UWA, and the UIOWA operator. These operators are obtained in a similar way as it has been explained in Subsection 3.3 excepting for the UWA and the UIOWA. Note that the UWA is found when $w_j = 1/n$, for all j , and the UIOWA operator when $\omega_i = 1/n$, for all i , respectively.

Other families of UIHA operators that could be used are the step-UIHA operator, the window-UIHA, the olympic-UIHA, the S-UIHA, the EZ-UIHA, the median-UIHA, the centered-UIHA, and the BADD-UIHA. Note that these families follow a similar methodology as it has been explained for the UIOWA operator.

Finally, if we use the same family of UIHA operator for all the focal elements, we can refer to the aggregation as the BS-uncertain hybrid maximum, the BS-uncertain hybrid minimum, the Hurwicz BS-uncertain hybrid criteria, the BS-step-UIHA, the BS-window-UIHA, the BS-olympic-UIHA, the BS-S-UIHA, and the BS-centered-UIHA.

APPLICATION IN FINANCIAL DECISION MAKING

In the following, we are going to develop an application of the new approach in a decision making problem. We will develop an application in the selection of financial strategies. Note that other decision-making applications could be developed such as selecting investments, financial products, human resources, and assets.

We will develop the example considering a wide range of uncertain induced aggregation operators such as the UA, the UWA, the UOWA, the UIOWA, and the UIHA operator.

Assume a company is planning its financial strategy for the next year and they consider 4 possible financial strategies to follow.

- $A_1 =$ Financial strategy 1
- $A_2 =$ Financial strategy 2
- $A_3 =$ Financial strategy 3
- $A_4 =$ Financial strategy 4

To evaluate these financial strategies, the company uses a group of experts. They consider

that the key factor is the economic situation of the company for the next year. After careful analysis, the experts have summarized the uncertain environment in five possible situations that could happen in the future: $S_1 = \text{Very bad}$, $S_2 = \text{Bad}$, $S_3 = \text{Normal}$, $S_4 = \text{Good}$, $S_5 = \text{Very good}$.

Depending on the uncertain situations that could happen in the future, the experts establish the uncertain payoff matrix. As the available information about the future benefits of the company is very imprecise, the experts use interval numbers to assess the information. The results are shown in Table 1.

TABLE 1. UNCERTAIN PAYOFF MATRIX

	S_1	S_2	S_3	S_4	S_5
A_1	(10,20,30)	(40,50,60)	(70,80,90)	(40,50,60)	(50,60,70)
A_2	(50,60,70)	(30,40,50)	(20,30,40)	(60,70,80)	(40,50,60)
A_3	(70,80,90)	(40,50,60)	(30,40,50)	(30,40,50)	(40,50,60)
A_4	(30,40,50)	(50,60,70)	(20,30,40)	(50,60,70)	(60,70,80)

After careful analysis of the information, the experts have obtained some probabilistic information about which state of nature will happen in the future. Although the available information is very uncertain, they can represent it with the following belief structure about the states of nature.

$$\begin{aligned} & \text{Focal element} \\ & B_1 = \{S_2, S_3, S_4\} = 0.3 \\ & B_2 = \{S_1, S_2, S_5\} = 0.3 \\ & B_3 = \{S_1, S_2, S_3, S_4\} = 0.4 \end{aligned}$$

The attitudinal character of the company is very complex because it involves the opinion of different members of the board of directors. Therefore, the experts use order inducing variables for analysing the attitudinal character of the enterprise. The results are shown in Table 2.

TABLE 2. ORDER INDUCING VARIABLES

	S_1	S_2	S_3	S_4	S_5
A_1	30	22	16	35	26
A_2	12	18	24	20	30
A_3	16	11	21	33	25
A_4	30	26	12	18	24

The experts establish the following weighting vectors for both the UWA and the UIOWA operator.

$$\begin{aligned} & \text{Weighting vector} \\ & W_3 = (0.3, 0.3, 0.4) \\ & W_4 = (0.2, 0.2, 0.3, 0.3) \\ & W_5 = (0.1, 0.2, 0.2, 0.2, 0.3) \end{aligned}$$

With this information, we can obtain the uncertain aggregated payoffs. The results are shown in Table 3.

TABLE 3. UNCERTAIN AGGREGATED PAYOFFS

	<i>UA</i>	<i>UWA</i>	<i>UOWA</i>	<i>UIOWA</i>	<i>UIHA</i>
V_{11}	(50,60,70)	(49,59,69)	(49,59,69)	(52,62,72)	(52,62,72)
V_{12}	(33.3,43.3,53.3)	(35,45,55)	(31,41,51)	(34,44,54)	(40,50,60)
V_{13}	(40,50,60)	(43,53,63)	(37,47,57)	(37,47,57)	(42,51,60)
V_{21}	(36.6,46.6,56.6)	(39,49,59)	(35,45,55)	(36,46,56)	(36,46,56)
V_{22}	(40,50,60)	(40,50,60)	(39,49,59)	(41,51,61)	(37,46.5,56)
V_{23}	(40,50,60)	(40,50,60)	(37,47,57)	(37,47,57)	(32.5,41,49.5)
V_{31}	(33.3,43.3,53.3)	(33,43,53)	(33,43,53)	(34,44,54)	(34,44,54)
V_{32}	(50,60,70)	(49,59,69)	(49,59,69)	(49,59,69)	(44.5,54.5,64.5)
V_{33}	(42.5,52.5,62.5)	(40,50,60)	(40,50,60)	(40,50,60)	(34.5,43,51.5)
V_{41}	(40,50,60)	(41,51,61)	(38,48,58)	(38,48,58)	(38,48,58)
V_{42}	(46.6,56.6,66.6)	(48,58,68)	(45,55,65)	(48,58,68)	(55.5,66,76.5)
V_{43}	(37.5,47.5,57.5)	(37,47,57)	(35,45,55)	(35,45,55)	(34,43,52)

Once we have the aggregated results, we have to calculate the uncertain generalized expected value. The results are shown in Table 4.

TABLE 4. UNCERTAIN GENERALIZED EXPECTED VALUE

	<i>UA</i>	<i>UWA</i>	<i>UOWA</i>	<i>UIOWA</i>	<i>UIHA</i>
A_1	(41,51,61)	(42.4,52.4,62.4)	(38.8,48.8,58.8)	(40.6,50.6,60.6)	(44.4,54,63.6)
A_2	(39,49,59)	(39.7,49.7,59.7)	(37,47,57)	(37.9,47.9,57.9)	(34.9,44.15,53.4)
A_3	(42,52,62)	(40.6,50.6,60.6)	(40.6,50.6,60.6)	(40.9,50.9,60.9)	(37.35,46.75,56.15)
A_4	(41,51,61)	(41.5,51.5,61.5)	(38.9,48.9,58.9)	(39.8,49.8,59.8)	(41.65,51.4,61.15)

As we can see, depending on the uncertain aggregation operator used, the results and decisions may be different. A further interesting issue is to establish an ordering of the financial strategies. Note that this is very useful when the decision maker wants to consider more than one alternative. The results are shown in Table 5.

TABLE 5. ORDERING OF THE FINANCIAL STRATEGIES

	<i>Ordering</i>		<i>Ordering</i>
<i>UA</i>	$A_3 \succ A_1 = A_4 \succ A_2$	<i>UIOWA</i>	$A_3 \succ A_1 \succ A_4 \succ A_2$
<i>UWA</i>	$A_1 \succ A_4 \succ A_3 \succ A_2$	<i>UIHA</i>	$A_1 \succ A_4 \succ A_3 \succ A_2$
<i>UOWA</i>	$A_3 \succ A_4 \succ A_1 \succ A_2$		

As we can see, depending on the aggregation operator used, the results and the decisions may be different. With the UA, the UOWA, and the UIOWA the optimal choice is A_3 . And with the UWA and the UIHA, the best result is A_1 .

CONCLUSIONS

We have studied the D–S theory of evidence in decision making with uncertain information assessed with interval numbers. By using interval numbers, we can represent uncertain situations where the results are not clear, but where it is possible to consider the best and worst possible scenarios and the most possible ones. We have also used uncertain induced aggregation operators because it gives more flexibility in the attitudinal character of the decision maker to assess complex situations such as the decisions taken by the board of directors of an enterprise. Mainly, we have focussed on the UIOWA and the UIHA operators. Then, we have obtained two new aggregation operators: the BS-UIOWA and the BS-UIHA operator. We have analysed some of the main properties and different particular cases.

We have also developed an application of the new approach in a business decision making problem about selection of financial strategies. We have seen the usefulness of this approach about using probabilities, UWAs and UIOWAs in the same problem. We have also seen that depending on the aggregation operator used, the results and decisions may be different.

In future research, we expect to develop further extensions to this approach by adding new characteristics in the problem and applying it to other decision making problems.

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LEADERS AND THEIR IMPORTANCE IN GLOBAL ASSIGNMENTS

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ABSTRACT

The key to successfully competing in the global marketplace might be staffing key expatriate positions with accomplished and skilled leaders. Previous research has focused on preparing managers to expatriate successfully to foreign assignments and to repatriate back to the United States. The high failure rate and general lack of effectiveness of many expatriate managers might be attributed to a cultural mismatch between the assignment and the leadership style of the expatriate. This paper explains the complex issues associated with multicultural leadership and proposes a diagnostic leadership matrix using internal and external cultural constraints.

INTRODUCTION

If management today wants a winning organization, the leadership must set a standard of excellence, and be more knowledgeable and competent in directing a diverse group of people throughout the world (Rapaport, 1993). Leadership should provide the energy or “spark” to excel beyond the mere accomplishment of tasks. Corporate management faces a current environment that often appears to be unpredictable, uncertain, and largely uncontrollable. Nowhere is this more the case than in international markets. Therefore, the issue of managerial leadership becomes of paramount importance when addressing the ambiguity present in these complex international markets.

Global business leaders must rise above their local and national origins and adapt to the environments where they are to provide their employees with energy and motivation to meet the goals of the organization (Barnum & Carter, 1991). Because leaders in a global context are significant, how can organizations involved in the global marketplace develop leaders? Although some research has been conducted on leadership during international assignments, the topic has not received adequate attention, given its strategic importance to the growing field of global business. Very little research has explored the leader–subordinate relationship in which leaders

are from one culture and subordinates from another (Haire, Ghiselli & Porter, 1966). The role that culture plays in the leadership process might provide critical insight into how to develop leaders for multinational corporations (MNCs) that compete in a multitude of different cultural settings.

The purpose of this paper is to identify key issues associated with leadership and the adaptation of these concepts into an international context. The development of a model of leadership using the multicultural dimensions of global business is presented. In addition, the researchers developed a managerial plan for a different international environment that demonstrates leadership patterns that would be most appropriate for various foreign environments and organizational structures.

CRITICAL DIMENSIONS OF INTERNATIONAL LEADERSHIP

Leadership has been defined as individual traits, leader behavior, leader–subordinate interaction patterns, role relationships, follower perceptions, influence over followers, influence on tasks and goals, and influence on organizational culture (Yukl, 1989b). Some researchers have concluded after decades of research in leadership, that what had been produced was a bewildering mass of findings. The endless accumulation of empirical data had not produced an integrated understanding of leadership (Stogdill, 1974). Therefore, rather than adding to the confusion surrounding leadership, this study identifies critical dimensions of leadership that are of particular significance to developing international leaders. These central issues are (a) the leader versus the manager, (b) leadership perspectives, (c) values, needs, and the well-being of leaders, (d) leader power versus influence, and (e) the impact of leadership on individual and organizational performance.

THE LEADER VERSUS THE MANAGER

We tend to believe that training managers for international assignments is dissimilar from developing leaders for international positions. Traditionally, the primary focus of international human resource departments has been the effective managerial training of expatriates prior to and after relocation to foreign assignments (Tung, 1981). Significantly, less attention has been paid to developing leadership qualities in managers who were relocated overseas.

One line of reasoning draws a sharp distinction between leadership and management. It considers leadership to be the discretionary activities and processes that are beyond the manager's role requirements as mandated by rules, regulations, and procedures (Bass, 1990). Leader–managers when contrasted to the routine managers think long-term, consider organizational issues beyond their immediate supervision, can reach and influence others, make people feel significant, support learning and individual competence, and provide a stimulating work environment (Bennis & Nanus, 1985). These researchers also hypothesize that leaders and managers differ in personality, attitude toward goals, conception of work, relations with others and sense of self. If training for leadership is different from training for routine management, international resource management professionals must select individuals with innate leadership qualities and train them in the leadership characteristics of the international culture to which they are being

internationally transferred.

LEADERSHIP PERSPECTIVES

When analyzing leadership, it is important to determine the frame-of-reference of the analysis. According to Fujii (1977), leaders can be evaluated from five viewpoints when assessing their performance (see also Figure 1):

1. Their superior's perspective – the home supervisor or the domestic hierarchy's expectations in executing the organization's strategies in the foreign market.
2. Their peer's perspectives – their cultural heritage and expectations.
3. Their subordinate's perspective – the composition of the supervised employees influences performance and expectations of the leader might vary due to cultural diversity.
4. Their organization's perspective – the composite expectations of peers, subordinates, and superiors comprise the organizational climate and culture, which might differ from the individual perspectives of the members of the group.
5. Their leader's perspective – leader expectations and performance is important because international assignments constrain the leadership environment.

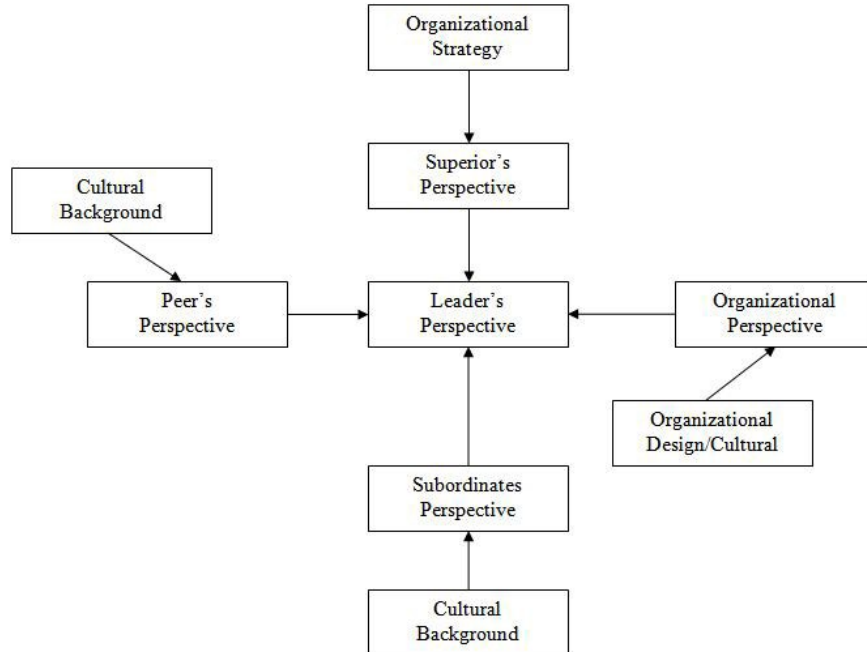


FIGURE 1. LEADERSHIP PERSPECTIVES

International leadership must be considered from many viewpoints and performance assessment must incorporate the expectations of multiple groups. The difference in international settings is

the cultural variety found among the groups. Each of these groups might be composed of expatriates, host country members, and third country nationals, all with differing expectations of leaders (Hofstede, 1980). Key elements of leaders' personal values are

1. Their cognitive and learning style – how leaders think and learn is influenced by their cultural heritage.
2. Their personal considerations – how leaders assess their own backgrounds and how culture influences their values.
3. Their societal expectations – what individuals and organizations expect of leaders, and the societal perspectives that directly affect their personal values.
4. Their societal perceptions – what leaders believe about the value of others and how their own performance influences their personal values.
5. How they value risk taking – the motivation to assume risk and the commensurate level of rewards for the risk highlights the willingness to lead.

The personal values (i.e., what leaders believe is right, wrong, important, and valued), the need for achievement, affiliation, cooperativeness versus competitiveness, and a sense of accomplishment are critical ingredients of leadership. The issue of leadership in an international context becomes extremely important when the leaders' "values" are consistent or inconsistent with those of their subordinates, peers, and superiors. When the international work force is culturally heterogeneous, a higher probability of differences in perspective can be expected toward the leader's personal values, which can decrease the leader's effectiveness.

DEVELOPMENT OF A MODEL OF INTERNATIONAL LEADERSHIP

If the leader is the one who stimulates subordinates to perform and to reach organizational goals in the international marketplace, how can multinationals develop leaders for their global operations? Figure 2 depicts a process for analyzing key issues in international leadership. To understand how to train leaders, individual characteristics, organizational issues, environmental constraints, and behavioral outcomes must be examined. To identify issues that affect leaders in foreign assignments, each of the four fields will be discussed.

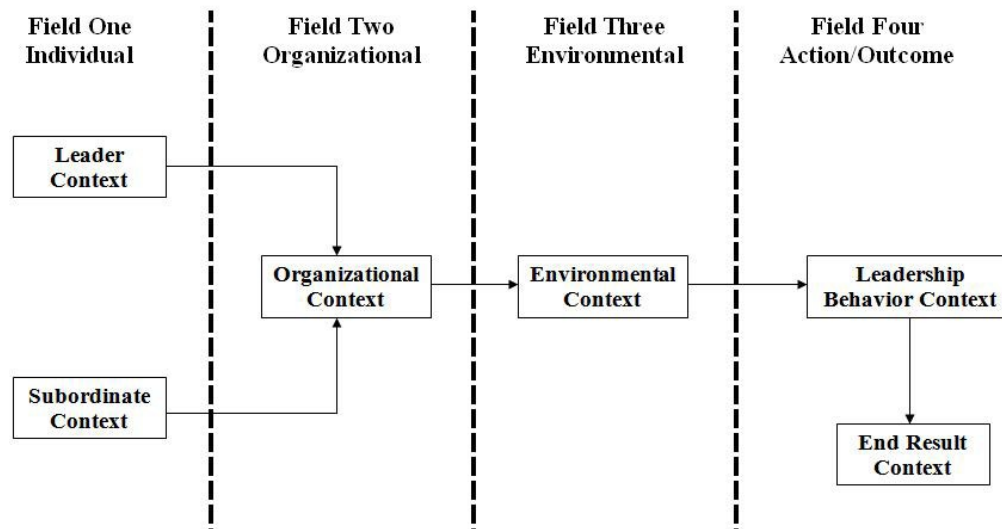


FIGURE 2. THE INTERNATIONAL LEADERSHIP PROCESS

FIELD 1: THE LEADER CONTEXT

The leaders' personal characteristics, cultural heritage, and experience directly affect their ability to lead others. Early researchers identified a myriad of personal characteristics and traits that were thought to be important to becoming a leader. A partial listing of these traits includes (a) task motivation; (b) supportive of group task; (c) social nearness and friendliness; (d) social and interpersonal skills; (e) high energy level; (f) desire and motivation to lead; (g) reputation and track record; (h) position, industrial, and organizational knowledge; (i) inner motivation; (j) intelligence; and (k) emotional balance and control (Kotter, 1988).

The issues of personal characteristics and traits become critical when examining leadership in various cultures. What traits are valued and how does a leader influence others in different cultural settings? The composition of personal characteristics necessary to lead should be carefully designed before sending a successfully proven leader from one culture to another (Hofstede, 1980). In addition, leadership training should be aligned with the host country's culture to help insure effective leadership.

Intercultural communication capability becomes a prominent personal skill that leaders need in international assignments. According to Hall (1991), an effective cross-cultural communicator should have the following skills:

1. Sets communication objectives – realistic objectives timed relative to the culture.
2. Selects a communication style – telling, selling, consulting, and participate or interactive styles to varying degrees in difficult cultures depending on cultural attitudes toward authority and the level of collectiveness in the culture.
3. Assesses and enhances credibility – rank in the organization, personal goodwill, expertise,

image and attractiveness, and values and standards should all influence cross-cultural communications.

4. Selects and motivates audiences – assesses the composition of the group to whom he or she speaks and adjusts cultural integrity and size.
5. Selects a message strategy – decides on the appropriate communication structure (i.e., informal, formal) and on the appropriate management channel (i.e., face-to-face, written, electronic mail).
6. Overcomes language difficulties – decides on language, use of second language, rate of speech, and attention to local language customs.
7. Uses effective nonverbal communication behaviors – body language, degree of personal space, greeting behaviors, and general demeanor communicate a message to the audience.

International leaders also must have the ability to adapt to cultural settings effectively and to adjust to their host country. The ability to adjust to the cultural setting of the host country might be a function of the managers' willingness to relocate and their training in cultural flexibility (Ondmack, 1985). If expatriates lack the motivation to relocate, their ability to lead will be substantially reduced.

The rate of cultural adjustment of expatriate leaders might also influence their managers' ability to provide effective leadership in the international assignment. Effective intercultural performance is contingent upon "fitting" leader backgrounds and the assigned culture together to provide a mental road map for leading host country nationals. According to Black and Gregersen (1991a, 1991b), managers must make three levels of cultural adjustment to become effective leaders:

1. Adjustment to nonwork environments – the external economic and cultural setting and providing support and assistance to spouses and families.
2. Adjustment to interacting with host-country nationals – in the job context (e.g., subordinates, peers, and superiors) and in public (e.g., regulators, bankers, suppliers, and customers).
3. Adjustment to the assigned position – learning new requirements of the job, particularly if the position represents a promotion, and adapting to the organizational climate, infrastructure, and physical settings.

The cosmopolitan nature of the manager might be enhanced by a manager's cultural flexibility, intercultural communications capabilities, self-confidence, and self-perception, all of which might have been enhanced because of past relocation experiences. The willingness to relocate and the experience of having relocated to a different culture might be important factors in the rate of adjustment and the level of self-confidence to lead once relocated. The experience of an expatriate affects the in-country adjustment rate of the leader. All three levels of individual

adjustment (i.e., self-oriented factors, relational factors, and perceptually oriented factors) can be influenced by experience (Black, Gregersen, & Mendenhall, 1992).

The characteristics of an individual are pivotal in successfully fulfilling a leadership role in a multicultural setting. These qualities might vary from what is expected of a leader in their home country. Beyond the mental and physical attributes necessary to lead in a foreign assignment is the ability to communicate across cultural boundaries and to adjust to the new cultural setting. Flexibility, the organizational context, and the demands of the external environment necessitate a very self-confident individual. Without this positive self-image of confidence in adjustment to cultural demands, the would-be leader becomes mired in self-doubt, lack of understanding, and culture shock that will reduce the individual's leadership capabilities.

FIELD 1: SUBORDINATE CONTEXT

The success of any leader is somewhat contingent upon those under his or her command. Without an adequate number of qualified subordinates, the best leader is restricted to a performance level that will not meet organizational goals. The role of the subordinate in an international assignment becomes critical because of a several interrelated issues. The potential heterogeneity of the subordinates in an international assignment might be greater than in a domestic organization. Subordinates in foreign organizations might be expatriates, host nationals, or third country nationals, all of which present a potential cultural concern to a newly appointed manager. Sorting through the complex web of differences and how to handle effectively a multicultural group of subordinates might be very time consuming. The amount of time to address cultural diversity might be extended because of the manager's adjustment to the overseas assignment.

The number of subordinates might also be greater during the international assignment because supervision on-location might be less direct. The increase of span-of-control with a more diverse set of subordinates complicates the problem for the would-be leader. The cultural distance between the expatriate and local or third country nationals must also be factored into the leadership equation. The dissimilarity of basic tenets of one culture to another increases the probability of missed communications, cultural misunderstandings, and role ambiguities for both leader and subordinates (Anderson, 1983). The more cultures that are represented in the work group, the more arduous the task of the leader to find a leadership style to lead the group effectively. The similarity between leaders and their subordinates correlates with manager appraisal of the subordinates and their assessment of the manager. If the group and the leader do not have compatible or shared norms, values, attitudes, and role expectations, the probability of a successful leadership experience is diminished (Wexley, Alexander, Greenwalt, & Couch, 1980).

The concept of idiosyncrasy credit (i.e., past compliance, consistency with group norms, and competence in accomplishing group goals) helps to establish a leader within a group. Without the consistency that might come through common cultures and experiences, the expatriate manager might have difficulty in establishing credibility with a large, heterogeneous set of subordinates. To be successful, leaders must conform to their subordinates' cultural norms and values. Problems occur when leaders are sent to a foreign assignment to radically change it and

to make the subordinates change the leader's norms, rules, and behavior (Litzinger & Schaufel, 1982). Only after the group has achieved greater success will the followers adapt their relationship to the new norms of subordinate and leader behavior. One area in which leadership is challenged in multicultural work groups is the level of participation allowed to subordinates (Crossan & Mazotis, 2008). Participative management has become a normative management style in the United States. The successful expatriate leader might not experience the same level of success in many cultures because he or she might lack participation in decision making.

FIELD 2: ORGANIZATIONAL CONTEXT

Situational theorists agree that a subordinate's performance is contingent on four key constraints: (a) ability to work with others, (b) task motivation, (c) clear and appropriate roles and superior and subordinate relationships, and (d) the presence or absence of environmental constraints. To address constraints in the work environment, effective leaders might reorganize the work, modify the technology, provide additional resources, and remove physical constraints (Wofford, 1982). The difference in international assignments is that the internal environment; the organizational context might be significantly different from the internal environment to which the leader is accustomed in the United States.

The congruence of "fit" between domestic and international operations is the degree to which the needs, demands, goals, objectives, and structure of one component is consistent with the needs, demands, goals, objectives, and structure of the other. Congruence theory predicts that the greater the degree of "fit" between the internal environments, the more likely success of the good leaders from one organization to another (Yukl, 1989a). A consistent field-of-play in which leaders can work allows them to focus their attention on the task and the subordinates, and less on the internal organization environment. The human resource management infrastructure "fit" becomes their supporting mechanism.

A second dimension of internal environmental concern relates to the extent of integration and consistency between the various marketing tasks and functions performed by expatriates and leaders. Consistency among these marketing functions creates a constant for them and, therefore, they need not adapt to or learn a "new system." Subordinates of the foreign operation should be consistent with their counterparts in domestic operations. A difference in key human resource functions might occur between domestic and international operations because of the organizational life cycle of each operating unit. The length of time that a foreign division or subsidiary has been operating might influence the complexity and sophistication of their human resource functions. Researchers today believe that, in a rapidly emerging global economy, the necessary time to move through all four phases (i.e., domestic, international, multinational, and global) of the company life cycle could occur as rapidly as 3–5 years (Von Glinow & Mohrman, 1990).

Additional topics that define the internal environment and how the culture affects a leader are (a) the structure of international operations, (b) the headquarters' international orientation, (c) competitive strategy consistency among units, and (d) the experience of the management's international operations. Each of these internal organizational parameters impinges on leader

autonomy while they manage in a foreign assignment. These constraints center on interunit linkages and the degree of integration of the foreign operation unit into the domestic organization. The goal for human resource department is to maintain a degree of consistency between the culture of the organization's headquarters and its foreign subsidiary. Concurrently, it must maintain a fit with the local environment and the strategies of the foreign unit (Schuler & Jackson, 1987).

The differences between domestic and international operating units that could influence the success of leaders have been identified by other researchers to be the degree of organizational formalization, inflexibility of rules, cohesiveness of the work group, level of staff and advisory support, organizational rewards not controlled by them, and spatial distance between leaders and subordinates (Kerr & Jermier, 1978). The internal operations directly influence the ability of leaders to direct subordinates. The greater the incongruity to the domestic frame-of-reference, the less likely it is that leaders will succeed in directing subordinates in international affiliates.

FIELD 3: ENVIRONMENTAL CONTEXT

As the external environment has an impact on leaders, so does the internal organizational culture environment. The key external environmental issues are (a) level of economic development, (b) the population's cultural distance from that of the domestic country, (c) the level of development of infrastructure and economic institutions, (d) the host industry structure and the magnitude of difference to the home country, (e) the level of government intervention into personnel related issues, and (f) the strategic attractiveness and importance of the host economy to the strategic plans of the organization (Schuler, Fulkerson, & Dowling, 1991). The more diverse the environment of the host country compared to the organization's home country, the greater the impact on the leader's probability of success. For example, the greater the manager's adjustment to the cultural and economic setting, the longer the necessary time before the leader will be able to enact leadership qualities in the foreign assignment (Davidson, 1984). Logically, adjustment and acculturation to the host environment will take longer; therefore, the assessment of the leader must be modified to account for the adjustment period.

The exogenous factors that influence the internal operations of the business can be more specific than general macroeconomic issues. The structure of the industry is often different in the host country and the array of competitors is unique. The relationship between the host government and the local competitors favors the competitive posture and resulting strategy used by the international competitor. These external environmental constraints directly influence leader behavior and to an extent their success while managing in a host country.

The political, legal, and social cultural dimensions of the host country could influence the amount of time the leader has to interface with the local environment. The more intrusive these elements are in conducting business, the more leadership effort will be needed to fulfill requirements of the external environment. Other factors such as industry maturity, historic positioning and strategies of indigenous competitors, extent of unionization, level of nationalism, and existence of a national industrial policy have been identified as constraints on the management of a foreign company (Porter, 1990).

FIELD 4: LEADERSHIP BEHAVIOR CONTEXT

The behavior of leaders is composed of the overt and covert activities in attempting to influence others and to accomplish the goals of the organization (Montgomery, 2008). This behavior is somewhat contingent upon the amount of time and effort leaders exert to the various dimensions of their roles. These requirements vary by task, the type or number of subordinates, the organizational structure, the leaders' levels in the organizational structure, and the time they have available to accomplish the organization's goals. Their behavior has task, social, and emotional dimensions that are important when attempting to get individuals to follow directive or often to do something they are disinclined to do (Riki, Shay, & Jiatol, 2008). Figure 3 depicts the task and social dimensions of a leader. These activities might not be performed simultaneously, but they are fundamental to accomplishing the organization's goals and to the leader's success. The following activities comprise what is typically expected of a leader: (a) supporting, (b) consulting, (c) delegating, (d) recognizing problems and opportunities, (e) rewarding, (f) motivating, (g) managing conflict, (h) team building, (i) developing internal and external support, (j) clarifying, (k) planning and organizing, (l) problem solving, (m) informing, (n) monitoring, (o) representing, and (p) networking and interfacing (Yukl, 1989b). The time allocated to these activities varies considerably and can differ between cultures because of the difficulties of leading a heterogeneous work force during a foreign assignment.

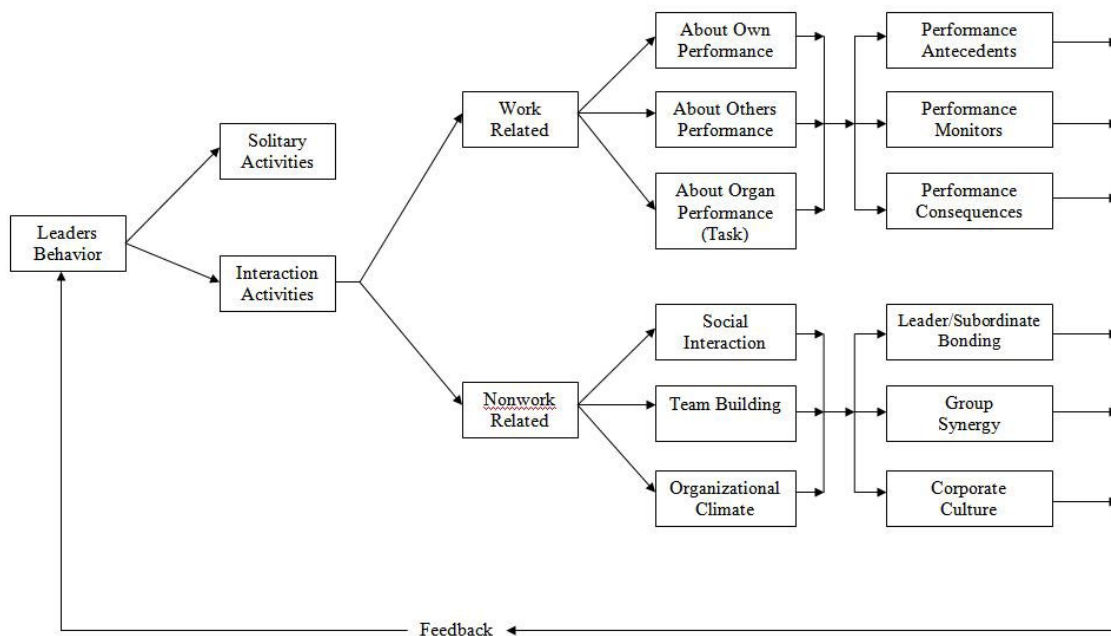


FIGURE THREE. TAXONOMY OF A LEADER'S BEHAVIOR

When considering leadership in multicultural settings, it is critical to examine the leadership style (i.e., the overt manner in which a leader attempts to exert his or her power to accomplish organizational or personal goals). Each leader will develop his or her own style of leading; however, leadership styles can be classified into four basic categories: (a) authoritarian versus democratic, (b) directive versus participative, (c) task versus relation orientation, and (d) laissez-faire versus motivation to change leadership (Bass, 1990).

Authoritarian Versus Democratic Leadership Styles

In the most fundamental context of leadership, the leader alters either the subordinates' information, understanding, or ability to cope with the task at hand or the subordinates' level of motivation to accomplish the task. In some situations, directive authoritarian leadership accomplishes the task and outperforms other leadership styles. The exercise of the leader's power to make decisions can be more successful when the leader has more knowledge of what to do and more explicit and implicit control of the necessary resources to accomplish the task. An army is an example of authoritarian leadership that has a high success rate.

Democratic leadership involves cooperative behavior, group loyalty, teamwork, freedom from individual punishment, and a loose informal structure. The need for collective participation in meeting task requirements over a long time favors democratic decision making. Democratic leaders foster subordinate development, commitment, loyalty, and involvement in decision making.

Democratic Versus Participative Leadership Styles

The directive leader plays an active role in problem solving and decision making, and expects group members to be guided by the leader's decisions. Directiveness is a distinct style of leadership in which the leader decides and announces his decisions without consulting subordinates. The directive leader's decision might or might not provide explanation or rationale for the decision. Directiveness also informs the decisions that are communicated to subordinates. The leader might manipulate, sell, persuade, negotiate, or even bargain in lieu of giving orders to subordinates (Berlew & Heller, 1983).

Participative leaders attempt to share power with their subordinates by sharing the final decision making with them (i.e., consensus is sought). The focus of the Degrees of participative leadership is on the amount of shared decision making through consulting subordinates and the leader's degree of delegated responsibility for decision making to subordinates.

Participative leaders remain active in the decision-making process, but they increase the degree of subordinate autonomy, power sharing, information sharing, and due process. One of the key outcomes of participative management and leadership is that the style promotes a greater acceptance of decisions and agreements than does directive leadership. Participative leadership is important when subordinates' acceptance, satisfaction, and commitment are important.

Task Versus Relations-Oriented Leadership Style

The task-oriented leadership style has an over-arching principle that the task drives decision making. The role of the leader and subordinates is built on the leader's assumptions about how to reach most effectively and efficiently the assigned goal, how to get the work done. This style of leader will be psychologically distant, have difficulty in trusting subordinates, and exhibit close, controlling supervision. These leaders develop and rely upon well-defined patterns of organization, channels of communication, and lines of authority to determine the means to

accomplish their goals.

Relations-oriented leaders attempt to get more out of subordinates by being their friend and by building personal relations with subordinates and the work group. They focus on group synergy to accomplish tasks and to maintain the group long-term. They are supportive of emotional and social ties within the similar group of subordinates. Many researchers have concluded that successful leaders must moderate the orientation of their tasks and relationships depending on a variety of situational considerations.

Laissez-Faire Versus Motivation-to-Change Leadership Style

The laissez-faire leader should not be confused with the democratic, relations-oriented, participative leader. The laissez-faire leaders avoid attempting to influence their subordinates and shirk their supervisory roles and duties. They lack confidence in their ability to lead; therefore, they generally occupy themselves with the routine paperwork of their position while shunning relationships with subordinates. They allow tasks to “drift,” leave too much responsibility to subordinates, set no clear goals, and do not help their group to make decisions (Bass, 1990). They practice management by exception and are considered leaders only because of their formal organizational position.

The motivation-to-change leader is one who is motivated by power, the absence of the need for affiliation, and the need to succeed in the organization by upward mobility and by receiving recognition. These leaders are motivated to maintain good relations with superiors, to compete for advancement, to be active and assertive, to enjoy exercising their power, to be visibly different from subordinates, and to accept responsibility for administrative details. The activity level and interest in being the leader is hallmark of the motivation-to-change leadership style.

Figure 4 illustrates the various dimensions of leadership style. Leadership style should be viewed as a continuum of activities and decisions that the leader must make, not as a dichotomous situation. The decision to adopt one style over another is strongly influenced by the situational variables present in the subordinates and in the environment, two diverse and critical issues when viewed in an international context.

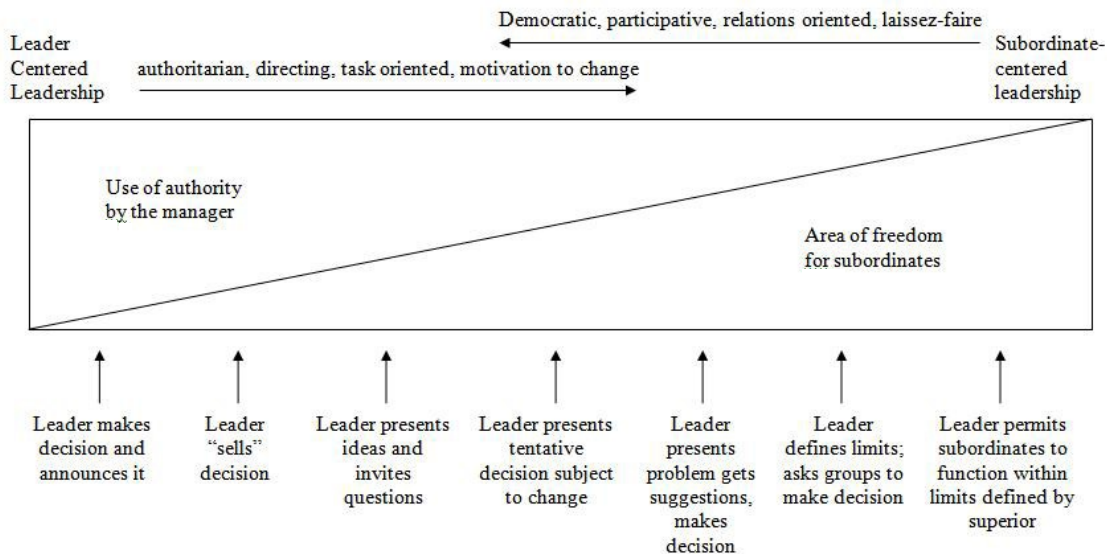


FIGURE 4. CONTINUING LEADERSHIP BEHAVIOR AND RESULTING LEADERSHIP STYLE

SELECTING LEADERS FOR INTERNATIONAL ASSIGNMENTS

A leader in one cultural setting might not be an effective leader in another country. Because of the variety of cultures, human resource managers must be proactive when selecting managers for international assignments. The underlying assumption is that leadership has a contextual dimension such that, for leaders to be most effective, their style must be compatible with the culture to which they are assigned. The issue is how to ensure compatibility between the two dimensions when making an international assignment.

Figure 5 is a graphic representation of two key dimensions of fitting a leadership style to the cultural context of foreign assignment. The first set of cultural considerations is derived from Hofstede's (1980) study of the work related attitudes across a broad range of cultures (p. 10). This comparison of cultures uses four independent dimensions:

1. Power distance – the distance between individuals at different levels of a hierarchy (e.g., the "pecking order" within a society or organization).
2. Uncertainty avoidance – the ability of a culture to deal with uncertainty about the future.
3. Individualism versus collectivism – the relation between the individual and others in the society (i.e., the degree of individual decision making that is accepted in a society).
4. Masculinity versus femininity – the division of roles and values in a society.

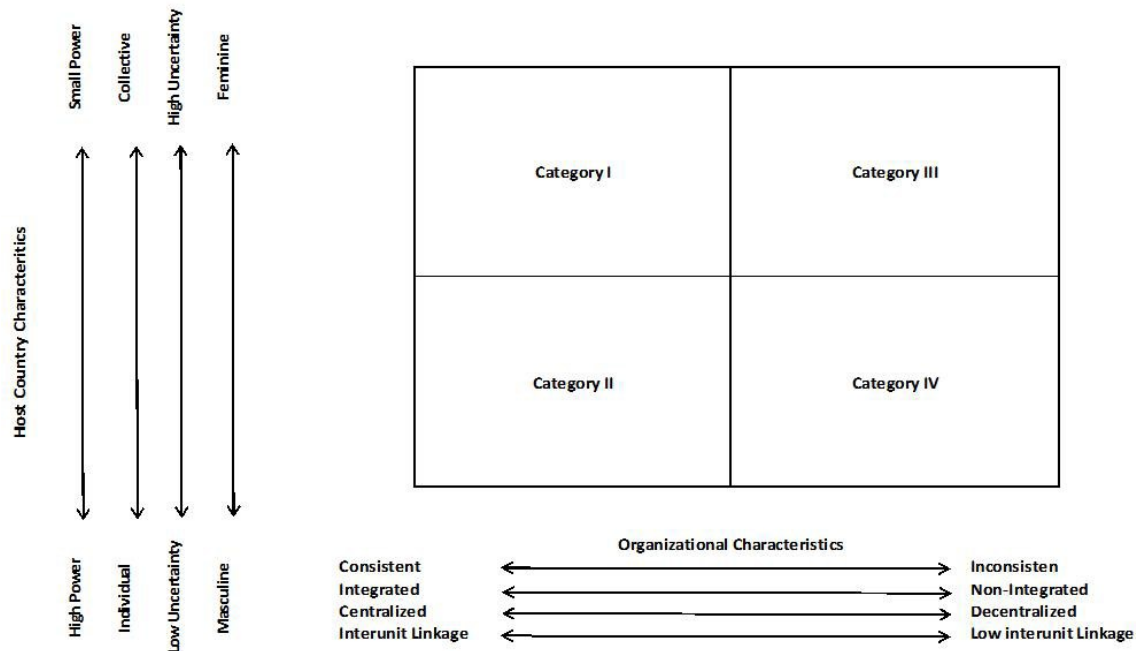


FIGURE 5. CONSISTENCY BETWEEN LEADERSHIP STYLE AND ENVIRONMENT

The second dimension of the cultural context of a foreign assignment is the crucial internal cultural characteristics of the foreign organization. The internal environment also has a direct affect on the success of the expatriate leader assigned to an overseas position. The comparison of internal organizational cultures reveals four elements:

1. Consistency – the level of continuity between the domestic and foreign organizations on fundamental policies, procedures, and administrative issues (i.e., the higher the degree of consistency, the more transferable the leader to the foreign environment).
2. Integration – the degree to which the operations of domestic and foreign units are using the same strategies to accomplish the goals of the organization.
3. Centralization – the level of autonomy given to the international unit to make decisions consistent with the local environment.
4. Interunit linkage – the tie to other international subunits and to the domestic operations.

THE FOUR-CELL MATRIX

The resulting four-cell matrix illustrates that leaders must be matched to both the internal and external cultures to be effective. Each of the four categories will be explained to better understand what type of leader would have a higher probability of success in each cultural situation.

Category 1

External Environment. Narrow power distance among members of a society; collective, loyalty, attachment to the company, group decision making, sharing of rewards, high tolerance for uncertainty and ambiguity; feminine role orientation with little differentiation between males and females.

Internal Environment. Consistent policies and procedures between domestic and international organizations; integrated human resource management infrastructure; centralized decision making, and inter-unit linkage between foreign operations.

The host cultures that are depicted by the external environment described would differ significantly from that of the United States. The collective decision making orientation and sharing of rewards within the group are characteristic of a number of cultures: Japan, Costa Rica, Korea, Thailand, Taiwan, and China. Although no single culture embraces all the characteristics used in the external environment analysis, they tend to be more like the description given above. To lead effectively in this environment, the expatriate would need a style that would be democratic, participative, emotionally supportive, and more laissez-faire than many successful leaders found in the United States.

The international organization being consistent with the domestic policy would necessitate less adjustment on the part of the relocated manager. An important dimension of the leader's position while on international assignment would be to reinforce headquarters' policies and procedures.

Frequently the operating policies of international subsidiaries are allowed to be localized to the organizational "customs" of the country. The relocated leader might have to spend time bringing the operation into alignment with the expectations of headquarters' management. An additional issue that would require the leader's attention would be coordinating the organization's efforts with other international operations. Inter-unit linkage implies coordination of individual subsidiaries located in the international marketplace. The problem of coordination stems from the perception that international subsidiaries are competitors for scarce resources allocated from their domestic headquarters. Therefore, subsidiary managers perceive their role as a competitor with other subsidiaries, reducing the tendency to coordinate their efforts, thereby attenuating unit linkage. The leader must instill the motivation among other international operating units to cooperate and create the international synergy that is expected by the headquarters.

Category 2

Internal Culture. Consistent policies and procedures between domestic and international organizations; integrated human resource management infrastructure; centralized decision making; and inter-unit lineage between foreign operations.

External Environment. High power, directive leadership; individualistic orientation, low acceptance for ambiguity; and sharply delimited and traditional cultural roles.

The external environment facing the leader in this category is one in which the culture and the subordinates expect to be directed by the leader. The formal hierarchy and the role of the leader should be well delimited and task and goals must be clearly identified for those under the direction of the leader. Hofstede (1980) has identified a set of countries that would be consistent with this orientation to leadership: Germany, Switzerland, Sweden, Finland, Norway, Denmark, Ireland, Austria, and Israel. Hofstede also includes the United States in this category; therefore, a manager who has successfully become a domestic leader could be transferred to one of these countries and “fit” or be consistent with the cultural expectations of his or her subordinates. It would be expected that the leader–subordinate relationship would be similar and that the adjustment time to the new position would not be extensive. The individual leadership style that would have a high probability of acceptance would be more directive, task oriented, and “motivation to change” style.

To complete the analysis of the leader who might be transferred overseas, the human resource managers would also need to assess the internal organizational culture. A high degree of continuity between the domestic and international organizations would indicate that the leader would not need to adapt to differences in operating procedures or policies. This situation is considerably influenced by the domestic organization and follows in the same tradition of human resource management. One might conclude that a less experienced and younger leader could be relocated to this assignment because the internally required skills would be compatible with his or her experience.

Category 3

External Environment. Small power differences among organizational hierarchy; collective orientation to decision making; low risk-taking behavior; less sharply delineated roles within the organization.

Internal Environment. Inconsistent policies and procedures when compared to domestic headquarters; contextual human resource management; decentralized decision making; and little international unit coordination of functional efforts.

The external environment that the leader would face in this category would be significantly different than the individualistic, entrepreneurial self-directed orientation of the United States’ cultural base. As was illustrated in Category 1, collective decision making and shared rewards require a democratic, participative leader style. The difficulty for the leader is that, unlike the Category 1 situation, little connection is made to domestic and other international operating units. The stand-alone subsidiary must be contextualized to the cultural requirements of the host country. Operating and human resource policies and procedures evolve into unique management practices.

The new operating infrastructure must reflect the cultural expectations of the host country. This context will require leaders who are comfortable in multicultural settings and sensitive to how they adapt their culturally bound behavior to lead effectively in this collective culture. The key difference between this leader and the Category 1 leader is the willingness to develop an

operating format different from the familiar domestic organization. In a number of cultures, collective, participative, democratic decision making among peers is a culturally predetermined and accepted management and leadership style. In addition to the countries mentioned in Category 1, countries with this cultural context include Singapore, Indonesia, Hong Kong, and the east African countries of Kenya, Ethiopia, and Zambia. To be effective in this category a leader must be experienced and adaptive.

Category IV

External Environment. High power differentiation in the culture; individual orientation; the ability to accept risk and ambiguity; traditional, well-delineated roles in the society.

Internal Environment. Inconsistent policies when compared to domestic operations; nonintegrated human resource policies; no coordination among international units.

The leader in this environmental context would find an external culture that rewards behavior similar to that in the United States. In addition, the domestic organization would allow or encourage the leader to develop an international unit independent to that of the domestic organization. The leadership profile in this category would be entrepreneurial. A very directive and, in some cases, authoritarian leadership style that is task-oriented and motivated to build an international organization in their own image.

While this combination of internal and external environments might be appealing to a number of candidates, it would require personal leadership style beyond the experience of many managers in large MNCs. Frequently the requirements to become successful in the hierarchical structure of a MNC are the antitheses of the requirements of acting as an entrepreneur. Identifying leaders with entrepreneurial qualities might prove to be a difficult task for human resource managers. These individuals are often not successful and either leave the company or are not considered to have overseas leadership potential and so not sent. Seldom does human resource management want to recommend a “maverick” for a key international leadership position.

SUMMARY AND CONCLUSIONS

A manager is not necessarily a leader. To direct effectively the international marketing activities of a MNC, human resource managers must identify leaders who will be successful in a variety of different cultures. In the past, marketing managers and other types of managers were selected for overseas assignments because of their technical competence. The resulting high failure rate of expatriates from the United States highlights the problems associated with this lack of understanding of how to lead successfully in multicultural settings.

The profiles of leaders who were discussed in this paper are “ideal” style descriptions and most candidates will not exhibit all the desired dimensions. The value of the leadership decision matrix is to avoid sending leaders to an environment where their style is in obvious conflict with the cultural requirements of a society. In addition, the matrix can be used to allow managers to modify their leadership style to better fit the requirements of their international assignment. The

leadership assessment process provides leaders with a better understanding of how to succeed in their international assignment.

Expatriate managers could face other potential environments that are delineated in these four categories; however, these four categories do illustrate how a leader can match his or her style to a potential foreign assignment. Additional issues must be considered to refine the selection process. Some of these issues include (a) the personal attributes of the leader and how these attributes are viewed in the culture where he or she will be assigned, (b) whether an assessment reveals that the potential candidate's decision-making process is different from his or her leadership style, (c) the cultural heritage of the potential leader, and the cultural distance between his or her home country and that of the assigned host country, and (d) the leader's interest and willingness to accept the new international assignment.

Leadership is a vexing problem that has intrigued human resource management for decades. However, these same human resource management experts select individuals to relocate overseas, yet base their decisions on how the managers have succeeded in a culture that has nothing in common with the countries to which they are transferred. The impact of culture on the ability to lead is a vital and integral component in developing international managers.

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**THE STRATEGIC AND ORGANIZATIONAL IMPACT
OF ELECTRONIC BUSINESS ON LARGE FIRMS**

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ABSTRACT

This research examines the impact of and the benefits derived from e-business integration in large manufacturing and service organizations in Sweden. Business managers are increasingly under pressure to improve the financial performance and the profitability of their companies. The Internet-based electronic business can provide opportunities for business to improve the efficiency and the effectiveness of their business operations, to form partnership with suppliers, improve customer service, and to manage better their supply chain. The results show that large Swedish firms are benefiting from e-business implementation in many key areas of their business.

INTRODUCTION

Intense international competition and globalization of markets have pressured corporations to look continually to improve their competitive position in the marketplace. Over the years, organizations have incorporated new technology into their business activities to achieve both effectiveness (customer satisfaction) and efficiency (lower costs) in their operations.

In recent years, the convergences of information and communications technologies and technological innovations have made it possible for large and small organizations to implement Internet-based electronic business models. The implementation of e-business enables the firm to reduce transaction costs of the business and to improve productivity and profitability. According to eMarketer (2008), about one billion people worldwide are linked to the Internet, which makes it possible for companies to offer a variety of goods and services to customers around the globe.

There are many benefits to e-business when properly implemented. Cost savings is an obvious one. In addition, organizations can extend the reach of their business, bypass traditional channels, establish partnerships with other businesses, and improve their service capabilities.

Overall, there are three primary areas of economic and competitive opportunity provided by e-business: costs, customers, and supply-chains/distribution-channels (Winsor et al., 2001). However, high costs of developing and implementing an e-business system as well as security concerns and customer protection issues such as cyber fraud and privacy concerns are important factors that must be considered before implementing e-business.

The full benefits of Internet-based e-business are realized when e-business implementation is examined from two perspectives: assessing e-business capabilities and limitations; and formulating and implementing an e-business strategy. The strategic view of e-business implementation allows the organization to exploit any strategic opportunities offered by e-business to enhance the competitive advantage of the firm and ensuring that e-business is supporting the company's business strategy (Earl, 2000; Venkatraman, 2000; Hooft & Stegwee, 2001; Porter, 2001).

In addition to the development of an e-business strategy, managers must be willing to make changes to their business processes when required. Successful implementation of an e-business system requires commitment and support from top management, effective project management, user training, and involvement of key employees in areas such as purchasing, inventory, customer service, and marketing and sales. E-business goes beyond the boundaries of the firm. Participation by suppliers, distributors, and key customers, during both the strategy development and implementation of e-business, can contribute to the successful use of e-business.

Businesses can use various Internet-based electronic business models; however, the majority of firms use business-to-customer (B2C) and business-to-business (B2B) models with B2B being the dominant of the two models. The B2C model is an electronically driven commercial activity between a business and the consumer. B2B models are designed to streamline the supply chain, to reduce procurement costs, and to increase operating efficiencies; they require an information and communications technology infrastructure capable of supporting complicated tasks such as inventory control management systems, procurement, pricing, and logistics.

These models rely on the Internet, intranets, and/or extranets to link the firm to customers and other businesses in order to conduct business activities on line. In recent years, with the advent of wireless telecommunication networks, mobile commerce or m-commerce is gaining popularity in the business community allowing business transactions to be carried out via wireless technology.

RESEARCH OBJECTIVES AND METHODOLOGY

The main objective of this study is to assess the use of electronic business in large companies in Sweden. Major research objectives are to determine the degree of electronic business integration and applications, the impact of electronic business on the supply chain, the improvement made on various performance areas after e-business implementation, and the overall impact of e-business on different areas of the organization.

Sweden is considered an advanced industrial nation and a leader among the European nations in Internet access and has a population that is well educated in Internet usage (Asfaw et al., 2001). In fact, The Internet usage in Sweden grew by 68% between 2000 and 2005 and about 77% of

the Swedes use the Internet (Internet World Stats, 2007). In addition, Swedish firms are considering e-business as a strategic and long-term business decision and about 55% of these firms have integrated e-business strategy in their organizations (Dudley, 2002).

In this study, we adopted the European Commission's definition of large firms; that is, any firm that has 250 or more employees is considered large. The *Swedish Statistical Centre* was used to randomly select 500 large corporations without regard to their location or industry for analysis. A survey questionnaire was developed and pretested using Swedish practitioners and academicians in e-business. The revised questionnaire was mailed with a cover letter explaining the objectives of the study and a return envelope to the chief information officer of these organizations. Mailing to the selected firms provided 105 responses of which 19 responses were not usable due to missing data or lack of internal validity in the responses. Thus, 86 usable responses (17.2%) furnished data for analysis.

RESULTS

Data provided by the responding firms showed that 48% were service and 52% manufacturing. The average service respondents were larger in number of employees (2756) than the manufacturing respondents (2036). This is not surprising because service organizations are more labor-intensive than are manufacturing firms. The majority of the service companies (59%) use a business to customer (B2C) model and 41% use both B2B and B2C models. The significant majority of manufacturing respondents (89%) use B2B and 11% use both B2B and B2C models. More service firms (54%) had implemented or upgraded their e-business system in the last 5 years than manufacturing (41%).

THE NEED FOR E-BUSINESS STRATEGY

Few would argue with the notion that electronic business or e-business has potential benefits for improving financial performance. From managing customer volume, to managing supply chain logistics, to improving revenue cycles, to improving knowledge management within firms, core processes are being better facilitated and streamlined to enhance performance (Malcolm, 2001). In fact, one could make a case that e-business is revolutionizing how companies do business. Lee and Kim (2007) argue that e-business integration constitutes a paradigm shift on how businesses compete in markets and interact with their customers. However, McGrath and Heiens (2003) warn that companies should be wary of getting caught up in going digital at the expense of not having a sound e-business strategy. If organizations are to build an effective e-business strategy, they must consider the basic strategic and operating decisions that apply to their e-business initiatives.

Malcolm (2001) reported that 71% of survey respondents in the healthcare industry felt that developing an e-business strategy is their top IS management issue. The more alarming fact reported was that only 38% of the respondents had an e-business strategy in place. Conducting business electronically transcends organization and country boundaries; it has worldwide significance and implications. For example, in 1998, Canada's Department of Industry established an Electronic Commerce Task Force to forge partnerships and develop an electronic commerce strategy (Wood, 2001). In this study on Swedish firms, survey respondents were asked

whether the decision to integrate e-business was based on e-business strategy. Both manufacturing (88%) and service (79%) indicated they had developed an e-business strategy before integration. Clearly, top executives in large Swedish firms exhibit awareness with regard to the importance of e-strategy.

Montealegre (2002) suggests that some specific process lessons can be learned from the e-business strategy developed at an Ecuadorian stock exchange. The study makes the case that by beginning to understand the process used for implementing a successful e-business strategy, companies can adopt a similar process model for building the necessary organizational capabilities for launching a successful e-business initiative. Therefore, an effective process can and should support the firm's strategy formulation and implementation. The three key capabilities developed in support of the e-business strategy included the capability to strategize, the capability to be flexible, and the capability to integrate and endanger trust. Moreover, the study emphasizes the need for managers to integrate their e-business strategy with the organizational processes while using their resources and capabilities.

A study of e-business implementation in China (Zhao, Huang, & Zhu, 2008) states the potential pitfalls of not using an e-business strategy with implementation efforts. They report that over 70% of such e-business initiatives have failed to turn resources adequately into valuable capabilities. In addition, the study found support for the causal links from e-business strategy to integrative use of IT related resources, which in turn aided in generating distinctive e-business capabilities. Likewise, the adoption and acceptance of e-business integration in Korean organizations lends insights into successful implementation (Lee & Kim, 2007). Their research suggests that the full benefits of e-business are achieved when it is integrated with internal applications and used by many customers. Senior management support is necessary for overcoming suspicions, reducing resistance, and promoting trust by both customers and internal stakeholders. In addition, the researchers believe that an e-business strategy would be prudent to include the organizational contexts of compatibility, relative advantage, top management support, IS infrastructure, and IS expertise because of their identified positive associations with implementation success. Thus, e-business implementation is not merely adopting new software to do business, but a new way of thinking about and conducting business that requires strategic oversight.

The planning effort for the development, implementation, and maintenance of an e-business system is a tremendous undertaking and for this reason an organization may decide to outsource all or part of the project to a third party. Henceforth, participation of functional area representatives in the development of e-business strategy makes it easier to decide whether the company should develop and implement an e-business system in-house or form a strategic alliance with an outside agency to carry out e-business integration in the organization. The decision to outsource is generally based on economics and does not diminish the strategic value of e-business to the firm. In fact, Zhao et al. (2008) reported that in China, strategic alliance is especially critical for local firms with regard to their e-business success. Thus, outsourcing in certain organizational contexts might be necessary to add strategic value with e-business integration.

Outsourcing allows the organization to convert fixed costs to variable costs by shifting the cost of developing, maintaining, and upgrading the system to an outside agency. However, because

the corporate data is maintained at the third party's site, outsourcing requires a great deal of trust and stringent controls and security measures should be negotiated with the service provider in order to ensure data integrity and to prevent unauthorized access. The majority of the manufacturing organizations (54%) outsourced the development and implementation of their e-business whereas the majority of the service firms (51%) chose the in-house development and implementation option. However, once the e-business is implemented, the majority of respondents in both sectors took over control of their e-business and opted for in-house management and technical support. Table 1 shows the outsourcing decision with regard to e-business by the responding companies.

TABLE 1. E-BUSINESS DEVELOPMENT AND SUPPORT

E-business	Manufacturing		Service	
	In-house (%)	Outsourced (%)	In-house (%)	Outsourced (%)
Development and implementation	46	54	51	49
Managed and maintained	82	18	85	15
Technical support	64	36	62	38

ORGANIZATIONAL CHANGE

The integration of e-business often requires organizational change by streamlining and automating business processes, reducing layers of management and staff. E-business can be a valuable tool for top management to improve operational and financial performance of the firm and to react to market conditions quickly.

The majority of firms in both sectors reported that no major changes were made to their organizational structure. Considering that the information and communications technologies have been around for a relatively long time, that most large organizations have integrated and upgraded these technologies over time, and that Electronic Data Interchange (EDI) was the start of B2B electronic business, it is safe to assume that many of the surveyed organizations had made structural changes during EDI implementation and did not find it necessary to make major structural adjustments. Table 2 shows these changes. However, more service organizations (41%) than manufacturing firms (21%) had to make structural changes to their organizations because of e-business integration.

TABLE 2. THE IMPACT OF E-BUSINESS ON THE ORGANIZATIONS

Change	Manufacturing (%)	Service (%)
Structural change	21	44
Reduction in management	09	08
Increase in management	05	03

Although it is expected that the new technology reduce the layers of management in most companies, there are instances in which the organization needs additional managers and

employees. The highest percentage of reduction in the number of managers working for the responding groups was reported by manufacturing firms (9%) followed by service companies (8%). It is interesting to note that more manufacturing corporations found it necessary to add more managers (5%) than the service group (3%).

The service sector accounts for a large portion of the employment in the U.S. However, in the service sector, e-business benefits can be more difficult to measure than in traditional manufacturing. Organizations often gain an increased ability to expand their market shares with economies of scope that allow a firm to offer a larger range of services or bundles of services better tailored to customer's needs (Carayannis, Alexander, & Geraghty, 2001). Other e-business investments may be even more difficult to measure the tangible effects in terms of worker productivity, but tracking credit card fraud, linking airline bags with customers, and reducing unnecessary risk when providing insurance policies all have significant benefit factors.

Carayannis et al. (2001) offer four areas where e-business strategy can help improve business processes in service sector firms. First, the strategy can focus on refining existing competences. Second, it can focus on developing new competences. Third, it can expand reach by identifying and building new business relationships. Lastly, a firm's e-business strategy can focus on integration by leveraging existing business relationships. Therefore, adopting this four-pronged business model approach to a firm's e-business strategy gives organizations a new means to evaluate and determine successful e-business initiatives along these four dimensions.

Many strategic and tactical issues have to be determined before a company decides to have an online presence and to do business electronically. Top management and representatives from key functional areas of the organization should participate in the development of e-business strategy and integrate it throughout the firm. Top management's participation provides the necessary linkage between corporate objectives and a firm's e-business plan. Effective implementation of e-business integration dictates the need for an e-business strategy that understands underlying competitive forces and links the firms' Internet initiatives with the traditional business strategy (McGrath & Heiens, 2003). Thus, companies must know where they are going and what they want to achieve with their e-business strategy.

IMPLEMENTATION TIME AND BUDGET

Technology based projects such as e-business systems are costly and slow to implement. It requires skillful planning and hard, dedicated work in executing the plan. In order to ensure satisfactory implementation, top management must be involved in the development of an implementation plan, be the driving force behind every phase of the implementation, and resolve any problems encountered to secure the desired outcome.

In addition, a budget to cover the costs of implementation and a detailed schedule of activities associated with e-business functions from the start of implementation to the end should be developed. Factors such as inadequate technology planning and infrastructure, user involvement and training, budget, and schedule overruns, and availability of adequate skills are considered reasons for dissatisfaction with e-business implementation or failures (Epstein, 2005; Radovisky & Hedge, 2004; Begin & Boisvert, 2002).

The questionnaire sought information about the time, budget, and satisfaction with e-business implementation. Table 3 depicts the results. The majority of the manufacturing firms (68%) and service companies (59%) who reported satisfactory implementation of e-business models finished the project on time and within budget (81% of manufacturing and 74% of service firms).

TABLE 3. E-BUSINESS IMPLEMENTATION TIME AND BUDGET

Time and budget	Satisfactory		Unsatisfactory	
	Manufacturing (%)	Service (%)	Manufacturing (%)	Service (%)
Ahead of schedule	9	3	0	0
On-time	68	59	21	36
Behind schedule	23	38	79	64
Under budget	5	7	0	0
Within budget	81	74	38	32
Over budget	14	19	62	68

However, the majority of dissatisfied manufacturing (79%) and service (64%) organizations were behind schedule on e-business implementation and experienced cost overruns (62% and 68% of manufacturing and service firms respectively). When developing an e-business strategy, provisions for delay of completion time and extra project costs due to unforeseeable events should be made.

THE IMPACT OF E-BUSINESS ON THE SUPPLY CHAIN

For both manufacturing and service firms, supply-chain costs often comprise a considerable proportion of revenue. The Internet based e-business enables buyers and sellers to manage better their supply chain management system by establishing electronic linkages, improve communications, monitor the flow of goods and services in real time, eliminate paper work, and conduct business electronically. In addition, it can lower the amount of on-hand inventory and expand the range of prospective suppliers. Overall, managing supply chain electronically can reduce organizational costs, increase operational efficiency, expand market prospects, increase profit margins, and strengthen the competitive position of the firm in the long run (Chen & Siems, 2001; Folinas, Manthou, Sigala, & Vlachopoulou, 2004; Handfield & Nichols, 2002).

The survey asked respondents to score the impact of e-business integration on several key supply chain activities shown in Table 4. Scores ranged from 1 (no impact) to 5 (highest impact). Supply chain costs reduction scored the highest impact (4.17 by manufacturing and 4.05 by service firms) of all the activities in both sectors. This indicates good coordination between buyers and suppliers in identifying activities in the supply chain that can benefit the most by using electronic business.

Managing inventory is considered one of the most important areas of supply chain management (Ganeshan, 1999; Fisher, 1997; Presutti, 2003). The use of the electronic business provides opportunities for improving this costly aspect of doing business. The Internet allows suppliers to monitor stock levels for inventory planning and communicate stock-outs to customers, to avoid backorders, and to enable effective coordination of just-in-time (JIT) supply programs (Lancioni,

Smith, & Schau, 2003). Survey participants in both sectors reported improvement in their inventory management with scores well above the median of 2.5.

TABLE 4. THE IMPACT OF E-BUSINESS ON THE SUPPLY CHAIN

Improvement	Manufacturing (Mean)	Service(Mean)
Reduced supply chain cost	4.17	4.05
Inventory management	3.94	3.21
Information sharing	3.84	4.02
Supplier collaboration	4.19	3.63
Order taking	3.98	3.66
Order fulfillment	3.17	3.34
Collaborative planning	3.94	2.89
Collaborative design	3.45	2.03
Collaborative forecasting	3.63	2.47
Supplier competition	3.02	3.32

In today's cost sensitive marketplace, buyers and suppliers collaboration is critical to maintaining the costs of products and services offered as low as possible. Both manufacturing (4.19) and service organizations (3.63) in the survey have recognized the importance of collaboration between the buyer and supplier.

One of the advantages of the Internet-based e-business is that it provides a platform for business partners to share and view information across the supply chain and manage the chain effectively. However, it is important to address and to agree on security issues such as type of information, accuracy, and frequency of exchange, data formatting, and integrity prior to sharing information with business partners. The data in Table 4 show that the integration of e-business improved information sharing among participants, which in turn can help to manage better the supply chain.

Collaborative planning allows business partners to develop and to agree on a range of activities that will be conducted among the partners. Collaborative demand forecasting helps to smooth out demand uncertainty and the availability of goods and services from the supplier to customer in a timely fashion. Collaboration on design of a product or service between suppliers and manufacturing/service firms can reduce the overall cost of the final product especially when product variety and customization are concerned. Not surprising manufacturing firms scored higher than did service companies in collaborative planning, demand forecasting, and design.

Successful integration of e-business with order-taking and fulfillment processes can ensure on-time delivery of goods to customers. This success depends on a well-thought-out and well-focused business model and strategy. It should be noted that order fulfillment is both expensive and critical for both manufacturing and service enterprises. E-business can reduce this cost and offer the company an edge by providing reasonable priced products in acceptable time.

Manufacturing and service companies scored higher in the area of order taking than order fulfillment as shown in Table 4. This is not surprising because order taking is an easier task than fulfilling it.

The Internet enables buyers to search and collect information about a product or service and its cost on line and choose the least expensive one. This ability has significantly changed the nature of the competition in the electronic markets. The data show that e-business has affected the supplier competition with an average rating of 3.02 and 3.32 in manufacturing and the service firms, respectively.

E-BUSINESS IMPLEMENTATION AND PERFORMANCE

Successful companies use measurements that are derived from their strategy to evaluate performance in key areas such as customer service, operational processes, and profitability. A set of indicators linked to customer and company expectations can provide a foundation for statistical analysis resulting in critical information with regard to company performance and benchmarking efforts.

The most important success factor for any company is commitment to exceptional customer satisfaction and service. The customer is satisfied when a company provides goods or services that meet or exceed the customer's expectations. To decide how the organization is fulfilling customer needs, service standards leading to customer satisfaction and processes for providing feedback to employees must be established. Management should communicate these standards and feedback mechanism to all customer service representatives through rigorous training.

Customers in the digital age expect their suppliers to have accurate, current data in real time and available at their instant call. The focus of effective e-business integration should be on internal and external customers. The Internet-based e-business has made customer service a major competitive tool by reducing the paperwork of ordering, ensuring timely delivery, automatic billing and fund transfers, and accurate shipment data.

Emphasis on the processes that yield higher levels of customer service can enhance several features such as, order taking and processing, order status, after-sale information, 24/7 access to information, searchable online catalogs, technical information and after purchase warranties. Creating and maintaining an updated Web site that is attractive, easy to use, and friendly to the customer is critical to the development of good customer relationships.

Survey participants were asked to rate the impact of e-business integration in eight different performance goals on a scale ranging from 1 (no impact) to 5 (highest impact). The highest impact of e-business in manufacturing (4.26) and service (4.20) firms were reported to be customer service as shown in Table 5.

Quality products and services, as well as superior customer service will result in customer loyalty and retention. Customer retention is another area that e-business has improved in the surveyed companies with an average rating of 3.52 and 3.34 in manufacturing and the service organizations, respectively. The results show clearly that e-business integration can be most

beneficial with respect to improving customer service performance and retention in both sectors.

**TABLE 5. PERFORMANCE IMPROVED BY E-BUSINESS IMPLEMENTATION – AVERAGE RATING
1 LOW TO 5 HIGH)**

Performance Area	Manufacturing (Mean)	Service (Mean)
Product promotion	2.78	4.04
Product/service customization	3.88	3.43
Customer service	4.26	4.20
Customer retention	3.52	3.34
Productivity	3.93	3.84
Advertising on the Web	2.24	3.95
Marketing Strategy	2.52	3.41
Pricing Strategy	3.12	3.71

Companies use the Internet and run promotions such as rebate, discount, or coupons to increase sales of their products and services and attract new customers. Data indicate that manufacturing firms are not using this aspect of their e-business as much as service organizations do. The second highest rating was given to promotion by service companies (4.04).

In today's global business, managers are increasingly under pressure to improve the financial performance and the profitability of their organization. One method of improving profitability is to focus on a strategy that improves productivity by reducing costs of business activities in the firm. Over the years, corporations have adopted new technology to integrate business activities in order to achieve efficiency in their operational activities. Proper implementation of e-business should result in improving productivity by reducing the costs of business processes and by upgrading an organization's ability to generate timely and accurate information throughout the enterprise and its supply chain.

Productivity is considered a measure of efficiency of a worker, a business unit, or a company. E-business integration improved productivity of companies in both sectors with manufacturing reporting slightly higher impact (3.93) than service (3.84). This suggests that e-business is used as a tool for improving productivity and functional efficiency, and to strengthen the organization's competitive position.

E-business allows customers to use the manufacturer or service provider's Web site to customize a product or service based on their needs. Many companies use this feature today as a tool for companies to boost sales and to create a competitive advantage in the marketplace. Both manufacturing and service respondents seem to be using customization effectively.

Availability of the search engines on the Internet enable businesses and consumers to compare prices for various products and services on line and find the best price offered. A majority of the firms have both on line and off line presence, for these companies, pricing strategy for off line as well as on line goods and services becomes critical. Lee and Gosain (2002) found pricing strategies differed between off line and online retailers. Off line locations lowered their prices for popular products at first, but then increased prices by as much 18%, whereas on line retailers

increased prices by about 4% at first and then decreased prices over time. It appears that service (3.71) and manufacturing (3.12) companies in the study have realized the importance of on line pricing and are taking advantage of this aspect of e-business.

E-business integration requires corporations to revise and replace their traditional marketing channels to reduce costs. In addition, many companies advertise on the Web to attract customers to their Web site to increase sales. In both instances, service organizations reported a higher impact on advertising and marketing on line than manufacturing firms (3.95 and 3.41 vs. 2.24 and 2.52, respectively).

E-BUSINESS TRANSFORMATION

E-business transformation requires management to consider and to focus on the impact of e-business on the internal processes as well as the external processes that include customers and business partners. E-business can be a valuable tool for managers to improve operational and financial performance of the firm. Long-term financial gains can be realized only when a company delivers increased customer value while simultaneously lowering the cost of delivering that value.

Commitment by top management to process improvement and change management is the key to a successful e-business transformation. This commitment needs to be incorporated into the business culture and employee population through training programs, team building and continuous improvement efforts, and recognition of each success. E-business integration should be based on a value chain view of the business where functional departments coordinate their work, focus on value-adding activities, and eliminate redundancy.

TABLE 6. THE OVERALL IMPACT OF E-BUSINESS ON THE ORGANIZATION – AVERAGE RATING (1 *LOW* TO 5 *HIGH*)

Area	Manufacturing (Mean)	Service (Mean)
Changed the nature of work	3.63	3.95
Changed business model	3.34	3.41
Improved corporate agility	3.65	3.71
Reduced facility costs	3.74	3.72
Organizational communications	3.40	3.52
Increased market share	3.21	3.54
Improved business processes	3.25	3.81
Customer relationship management	3.64	3.49
Improved business profitability	3.57	3.81
Keep up with competition	3.59	3.87
Composite Index	3.50	3.68

The benefits derived from e-business system implementation vary from one company to another. However, all companies can receive some common benefits from the e-business transformation. Table 6 presents the ratings on the overall impact of e-business in 10 different areas.

The scores for reduced facility costs in Table 6 are almost identical for the two sectors (3.74 and 3.72 for manufacturing and service, respectively), but there are major differences in several key areas. On the one hand, manufacturing firms reported a higher score in the area of customer relationship management. On the other hand, service companies scored higher in eight different areas than their manufacturing counterpart.

An item of interest is the relatively low scores given to increased market share and improved business processes by manufacturing respondents. In the areas investigated for the impact of e-business, the composite score for the overall impact showed a slightly higher score for the service than manufacturing companies. Earlier start with technology implementation and process improvement in the manufacturing sector may have caused the integration of e-business to have a lower overall impact on manufacturing firms rather than service firms.

CONCLUSIONS

In recent years, one of the most significant opportunities offered by new computing technology is electronic business. E-business is a way for companies to become more efficient and to promote operational flexibility. In addition, responsiveness to consumer needs and supplier relations can be improved.

The Internet-based e-business has provided business opportunities for both small and large firms. Large companies are finding e-business to be a competitive advantage and a powerful management tool for their complex supply chains. E-business implementation allows businesses to share information with suppliers, buyers and partners, and to plan and to manage supply and demand. Companies can use e-business to conduct business at anytime, day or night, and to reach potential, Web-connected buyers regardless of their location. In addition, they can present better customer service and reduce the costs of production and distribution of products and services.

Manufacturing and service organizations, although structurally different, are benefiting from e-business in many areas the same way. Identifying organizational goals and objectives during e-business development and examining those goals to determine where e-business can help a company gain a competitive edge. Once these goals have been established and appropriate benefits are identified, the next step is to develop an implementation plan for e-business integration. Managers must decide whether e-business development and implementation should be in-house or outsourced. Providing technical support and maintaining e-business can also be done in-house or outsourced.

This paper provides analyses and insights into the practical implications of e-business integration in large Swedish manufacturing and service firms. Management of firms that participated in the survey seems to have recognized the importance of e-business strategy when considering e-business implementation. The results discussed in this research should provide useful information about the importance of e-business to practitioners and provide a framework for future research in the role of electronic business in operational efficiency and effectiveness as well as competitiveness in a rapidly changing business environment.

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**GLOBAL CORPORATE PUBLIC RELATIONS AND SPORT'S CULTURE:
A CIVIL RELIGION APPROACH TO NATION-BUILDING**

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ABSTRACT

This paper suggests a covenantal model of public relations used in sport communication strategies. The aim of the article is to present a civil religion perspective on the cultural nation-building through a study of soccer's dynamics in Catalonia, and specifically of Football Club Barcelona (FC Barcelona) national reality and its public relations efforts. We believe that FC Barcelona can be seen as a form of national culture that uses a communication model that sets forth, upholds, and reinforces relations with supporters. This communication process is a covenantal public relations model.

INTRODUCTION

As Tilson and Venkateswaran (2006) pointed out, Botan (1992) argued that public relations is an age-old concept dating from early Egyptian and Mesopotamian civilization used in different ways by governments and religions. In this sense, pyramids, statues, temples, tombs, paintings are examples of public relations-like practice, because they reflect early efforts at persuasion, and the Epistles written by St. Paul to encourage membership growth and to boost the morale of the early Christian churches were really part of a public relations campaign (Newsom, Turk, & Kruckeberg, 2000).

As Randall (2000) noted, religion and public relations go way back. Moses pioneered the concept of the top 10 list (a staple of press releases and late night TV). Even the Islamic prophet Muhammad's *suras* (verses), which collectively became the Qur'an, could be considered an early example of a public relation best seller (Newsom, Turk, & Kruckeberg, 2000). Such early efforts at communication—whether internally or externally focused—require religious faith communities, according to Tilson and Venkateswaran (2006), to establish good relationships with their public audiences if they are to have the trust that is essential to their well-being and success.

By definition, public relations uses communication to facilitate relationships and understanding between an organization and its many publics (McElreath, 1997), and it is the responsibility of public relations practitioners to establish and maintain goodwill by being sensitive to the needs and concerns of their publics and communicating with them in a timely and effective manner (Seitel, 1987).

Tilson and Venkateswaran (2006) contended that it might be more appropriate for public relations professionals to speak of fostering relationships rather than just merely facilitating them because the word “foster” denotes “promoting the growth or development of” (p. 113) and incorporates elements that are essential to relationships— notions of nurturance, feeding, and growth.

Tilson and Venkateswaran (2006) suggested a covenantal model for public relations based on

(a) practitioner–client trust, (b) dedication to a particular human good or need—in the case of PR, the need for vital relationships (just as medicine devotes itself to health, and the clergy to the client’s spiritual well-being), and (c) a public pledge to serve this need (which does not sacrifice the good of others for the good of the client) to firmly establish the discipline as a profession, much like law, medicine, or the clergy, by virtue of its covenantal base. (p. 124)

In operationalizing a covenantal view of public relations, practitioners would tend to employ the two-way symmetric model of public relations as it values mutual trust and communication.

In so doing, practitioners can not only foster good client relations, but also, more importantly, build good community relations that are essential to an organization’s success, as resource dependency and social exchange theorists argue. They maintain that, because no individual or organization is entirely self-sufficient, each party relies on the goodwill or the resources of others, that there is a need for organizations and their stakeholders to commit the time, energy, and resources necessary to build and maintain relationships (Guth & Marsh, 2005).

This article demonstrates that, in Catalonia, FC Barcelona is a type of national symbol and civil religion, and that the role of public relations is to establish and, above all, uphold this symbolism by using a devotional-promotional communication model.

As Salvador noted (2004), if a group of ethnologists were sent from an alien planet to study Catalan culture and customs, once they had done their observation, read the press, watched the television, strolled through its cities, admired the work of architect Gaudí and artists such as Picasso, Miró and Dalí, listened in on conversations, looked at young people’s idols and games, and identified the primary symbols of identity, they would conclude that it is not Catalonia’s politics, economy, culture, family life, art, or religion that consume most of its people’s mental and physical spaces, but FC Barcelona—popularly known as Barça—that chiefly captures and monopolizes definitions of Catalan identity. This not only enters into every area of the lives of many people, but also into every area of society, and the fact that members, supporters, and fans are aware of this is what gave rise to the maxim that best conveys what Barça is to them: “More than a club.”

Of all sports bodies FC Barcelona has the most members and the highest number of sporting activities in the world. To be precise, it has some 130,000 members (as of January 14, 2005) and 1,638 official Barça supporters clubs (as of September 26, 2005). However, the social masses who would call themselves Barça fans with varying degrees of devotion is incalculable, and an array of indicators and data point to the scale being this large (FC Barcelona, 2007).

Data on the scale of the phenomenon not only refers to its presence in the media. The club's budget for 2006 was over €240 million, far surpassing the total budget for Catalonia's second-largest city, Tarragona, which stood at €123 million for the same year, for instance. Celebrations for its biggest victories literally brought the region to a standstill. When Barça won the Champions League on May 17, 2006, more than one and a half million people took to the streets in various cities throughout Catalonia. Barça is the hottest topic of conversation for countless people in bars, offices, family get-togethers, with friends and so on. Supporters are passionate and devote much of their time to preseason matches, league games, championships (for days before and after the event) and to keeping abreast of new signings. The Barça brand means big business for everything it involves and that revolves around it.

This article aims to demonstrate that FC Barcelona can be seen as a type of civil religion and the role of public relations in establishing and above all upholding this symbolism by using a devotional-promotional communication model. According to Mickey (1997), a critical view of the signs and symbols of a culture allow one to see the allocation of power and the dominant ideology. From this standpoint, this essay offers a critical approach to public relations theory and practice.

CIVIL RELIGION, DEVOTIONAL-PROMOTIONAL COMMUNICATION, AND NATION BUILDING

The term "civil religion" was coined by Jean-Jacques Rousseau (1968) in chapter 8, book 4 of *The Social Contract*, to describe what he regarded as the moral and spiritual foundation essential for any modern society. For Rousseau, civil religion was intended simply as a form of social cement, helping to unify the state by providing it with sacred authority. In the sociology of religion, civil religion is the folk religion of a nation or a political culture. Civil religion stands somewhat above folk religion in its social and political status because, by definition, it suffuses an entire society and is often practiced by leaders within that society.

One of the most widely quoted texts as the basis of contemporary interest in the issue, first addressed by Rousseau, is Bellah's essay *Civil Religion in America* (1967). Bellah highlighted the repeated presence of solemn pronouncements and public documents on God, supernatural future life, and other matters present in Rousseau's work. As Giner (1993) pointed out, the worship of America is not static. It has developed throughout history, although it is reincarnated in identical or similar rituals: funerals at the national cemetery, federal festivals, the annual presidential address, the taking up of public posts, military parades, and public cults. Thus, it is a religion that cannot be identified with any one religious organization.

Notwithstanding, Bellah's work (1967) failed to resolve several issues that were significant for the sociology of religions until Giner (1993) took up the matter and defined it as a process comprising an array of popular devotions, political liturgies and public rituals geared towards defining and uniting a community by making certain mundane features of its life sacred and by classing some of its historical events as epic.

Civil religion manifests itself as a series of myths, civil pieties, and public exorcisms that uphold the political, but are also upheld by politicians and politics. What is most common is that the political or parapolitical agents themselves (e.g., the representatives of a soccer club) strive to make the political order to which they belong, and from which they benefit through civil religion, sacred. The mass media play a key role in this process because they echo the

actions of specialists in promoting mythogenic efforts, iconographically glorifying heroes and events, devising strategies to consolidate rituals and ceremonies, producing the ideology and biased interpretations of social reality, and in the clerical administration of symbolic content (Rothenbuhler, 1998). Such specialists are politicians, media agents, ideologists, secular and ecclesiastical clerics, and their occasional allies.

Civil religion in our time cannot be understood outside the framework of mass communication processes. We should not consider the nature of civil religion without placing it at the very heart of the technical methods of producing symbols, myths, moral values and charisma (Giner, 2003). Civil religion entails participation and cannot be boiled down to passive reception of televised images of mega-events. For this reason, pilgrimages to fairground “temples,” soccer stadiums, pavilions where the atmosphere is created using technical means and audiovisual broadcasts of a mythical history are also essential and constitute the primary task for the inventors of a wholly media-fuelled civil religion. Thus, civil religion is the product of mediated communication and media democracy (Giner, 1993): like electoral campaigns, soccer matches must be given live or reported coverage in the mass media, particularly on television.

Media production of the transcendent, which also affects supernatural religion, has entered into the field of civil cults. The Olympic Games, which Giner (1993) consider a transnational and specialized civil religion, are essentially, rather than incidentally, a media event. The role of public relations is clear because public relations work is inextricably linked to the notion of events in popular culture (L’Etang, 2006b).

However, the public relations approach to civil religion surpasses the role of the mass media in building macro-events. It is intrinsic to civil religion, at least from a symbolic interactionist perspective. From this standpoint, Zhang (2006) concludes that public relations and symbolic politics are both a meaning-construction process through use of symbols, interactions, and interpretations.

Another of the features of civil religion is that it is usually national or nationalist. The community in which a civil religion takes root is usually the national community, though this phenomenon cannot be limited to nations alone because there are also regional and local variations. Local varieties may acquire highly distinctive characteristics without jeopardizing the overall fabric of the civil religion, as is the case in Spain with the cult to Saint James (Santiago), a supernatural candidate to becoming part of a Hispanic civil religion promoted by some traditional political groups (Giner, 1993). With regard to the very cult of Saint James, Tilson (2006) has analyzed devotional-promotional communication as a form of promotional communication used by individuals and political or religious organizations to attract loyal and faithful followers, and has demonstrated the presence of this type of communication in public relations campaign of the Catholic Church and the government of Spain to establish and sustain the identity of and allegiance to Saint James domestically and internationally (Tilson, 2006).

In addition, Tilson (2006) pointed out the linkages between devotional-promotional communication and the nation-building process, and noted that the nation-building process is similar to the approach taken to establish corporate identity. On the other hand, various studies have focused on the public relations approach to nation building, most recently Taylor and Kent (2006). A public relations approach to nation building utilizes a more elaborate model of communication that focuses on how meanings such as national identity, national

unity, and the nation state are socially constructed (Taylor & Kent, 2006).

Neither gods nor nations are natural realities. They are social constructs that can be classed as religious in the sense that they bind people, bringing one and all together and immersing them in a cosmivision that explains and helps to make sense of a given means of social organization of the many that are possible and of their relation with the individual (Salvador, 2004). One of the etymological senses of the word “religion” comes from the Latin verb “religare” which means “to bind,” “to unite,” or “to group,” in short, to relate. The public relations approach to nation-building and devotional-promotional communication reveal the symbolic dimension of these processes and the significant role of public relations in the communicative construction of entities like the nation-state (Tilson, 2006) and civil religion.

THE RELIGIOUS DIMENSION OF FC BARCELONA

When, on November 29, 1899, Hans Gamper founded FC Barcelona, along with 11 other enthusiasts of “foot-ball,” a game that was still largely unknown in this part of the world, nobody could have imagined the magnitude into which that initiative would eventually develop. Over more than 100 years, FC Barcelona has grown spectacularly and is now so much more than a mere sports club.

Salvador (2004) has shown how the dictatorships of Miguel Primo de Rivera and Francisco Franco are two key periods for any historical explanation of the growth of the Barça phenomenon and its emergence as a symbol of and metonym for Catalonia. The Spanish suppression of all Catalonia’s official symbols during both of these regimes gave rise to a symbolic substitution. Thus, while Franco was in power the FC Barcelona stadium was one of the few public places where people could express themselves freely and the club became the greatest ambassador for Catalonia outside its borders. It was at this time that Barça was said to be “more than a club” because of its symbolism (Santacana, 2005).

Because of this complex historical process, Barça has become the symbol of the defeated Catalonia and for many Catalans membership of the club is a form of Catalan nationalism. Barça is the only elliptical means of expressing a sentiment and the epic sublimation of Catalonia (Artells, 1972).

Therefore, Barça has evolved into a symbolic and ritual system by which it contributes to constructing, upholding, reproducing, and expressing Catalan national or ethnic identity (Salvador, 2004). Seen in this light, ethnic or national symbols and rituals are vital for the members of a given human group to be able to affirm their awareness of belonging and self-identification in a way that is clear to others (Prats, 1996). In addition, for this belonging, loyalty to a given identity is required. Catalonia is no exception. Like any other nation, it has a need for self-presentation that is expressed in an entire symbolic repertoire similar to that of other ethnic groups or states (Bourdieu, 1995). In any symbol, the association between the reference point and the content is random, merely being the product of a historical and human construct (Manis & Meltzer, 1978). In these terms, the symbolic value attached to FC Barcelona today is extremely high and at least on a par with the Catalan flag or the National Day of Catalonia.

For Turner (1970), groups rally around symbols, celebrate their cults before them, perform other symbolic acts near them, and frequently set up compound sanctuaries, adding other symbolic objects to them. Therefore, Salvador (2004) suggests that Barça is in itself a

dominant symbol that it acts as one of Catalonia's main metonyms and as the benchmark for Catalan national reality in drawing together complex notions and vital experiences such as Catalonia itself, Catalan nationalism, its national sentiment, its common past, its shared grievances, its family tradition, and its festive celebrations. Thus, it synthesizes a panoply of meanings that have snowballed in the club's century-old history and in the history of the "imagined community" (Anderson, 1991), Catalonia. As a metaphor for this imagined nation, FC Barcelona has been a defeated club, something of a victim. Hence, those who have led it to sporting glories have become national legends in the region for reinstating collective pride through the communicative and, therefore, media-related hero worship and deification accorded them.

The array of rituals and devotions generated by Barça creates or recreates the national community, strengthens its cohesion, and bestows on it a transcendental facet, while also helping to make sacred the identification and mythological symbols of the imagined Catalan community and everything it signifies.

The devotion shown by Barça fans fulfils the same social functions as religion in a not too distant past (and present in other cultures) by (a) helping to bring meaning to an ever unfinished society with all its fears and contradictions, building a humanly meaningful world (Berger, 1967); (b) bestowing a social energy upon the group that allows them to create the bonds needed to carry forward collective projects; (c) meeting the need for community belonging that is apparently present in all individuals today; and (d) concurrently, satisfying the minimum demand for emotional unity that all nation-states also need to exist today (Salvador, 2004). These converging interests are found more than anywhere else today in national identity reference points such as FC Barcelona.

Thus, Barça supporters become "believers" in a symbolic system brimming with religious meaning, believers in the sense noted by Salvador (2004), which is that thousands of supporters are not only passionate about Barça, but also see experience as a symbol to which they attribute transcendental meanings and truths. Thus, for a multitude of people, all of the ritual devices that spring up around the club transcend the merely sporting (i.e., it is "more than a club") to become both a show of sport and a wealth of ethnic-national ritual devices geared towards creating and binding together a national community that is crying out for social cohesion by virtue of the historically fragile Catalan community.

GLOBAL BARÇA

To add coherence to an institution to get such messages across, communication departments need certain organization. As the soccer business has expanded, sports organizations have come to function more closely related to the managing business. Corporate communication has become an essential element for clubs to project their identity and reinforce their image into local, national, and global markets. Currently, the international expansion of an organization must be part of the strategy and often a vital element to grow economically (Nieto & Llamazares, 1995). Communication, however, is not applied equally in all Professional Soccer League clubs. Large clubs have structured their organization through a very wide concept of communication that resembles Van Riel's definition. FC Barcelona and Real Madrid are global clubs, and being a global club implies the possibility to expand the image of the organization overseas. Expanding across borders demands high marketing expenses and makes organizations attractive to stellar international players, who may later seek—and gain—individual recognition through their affiliation to these institutions.

For global, high-revenue clubs such as FC Barcelona, the management of communication is at the same level of sports management, financial management, and marketing management. FC Barcelona's director of communication, Jordi Badia, and the general director, Anna Xicoy, are highly needed at corporate meetings. As social affairs vice president Alfons Godall states, "Xicoy needs to be there in order to know the lines of work, and Badia needs to be there to know the situation of the club in order to manage it the best way possible (interview with Alfons Godall)." For soccer clubs, marketing is also on the top of the list. Large Spanish soccer clubs such as Real Madrid, FC Barcelona, or Sevilla FC, can afford exclusive marketing departments because their financial possibilities allow it.

FC Barcelona is the third, top, European sports club in terms of revenues; it accounted for 290 million euros during the 2006-2007 season. Barça's Vice president Marc Ingla said, "Barça has around 160 million followers all over the world" (FC Barcelona, 2007). This data reflects the way FC Barcelona is positioned internationally as one of the most respected—and better paid—clubs in the world. To conduct institutional relations with fans, administration, and commercial and sports organizations better, FC Barcelona has created its own media, allowing for the organization to speak "the voice of the club" directly to the public. Since Joan Laporta became president in 2003, TV and the Internet could play an essential role in the process of diffusion, in generating new resources, and in transmitting the Barça feeling (Murillo & Murillo, 2005) all over the world. As Murillo and Murillo (2005) stated, managing FC Barcelona's own media relies not only on the communications department, but also on an interdepartmental strategy that helps consolidate one of President Joan Laporta's most ambitious projects, the creation of a multimedia club that positions FC Barcelona as "more than just a club" all over the world (Joan Laporta's speech, July 18, 2004). Both the marketing department, led by Marc Ingla, and the communications department expand and promote the product (the team) locally and globally.

Online communications have also become a vital tool to project the club's image. The club's Web site (www.fcbarcelona.cat), inaugurated in September 2003, is meant to become the main information source for a majority of teenage fans who demand fresh information (Murillo & Murillo, 2005) and for professionals who continuously seek updated information. About the Web, Eduard Pujol stated it "should be a communication source for the rest of the media" (Eduard Pujol [Barça TV director] personal conversation, November 12 2006). It is the most successful way to expand globally, as its content is available in Catalan, Spanish, English, Japanese, and Chinese. The club's members can also get online monthly bulletins, and children; the Júnior FC Bulletin. Barça's Web site has also become an indicator of the club's development: overall, the number of visits to the Web site varies depending on the success of sport events. In June 2007, the Web site was visited 38,000,000 times (FC Barcelona, 2007) and, according to the latest memory of the club, the average usage time on the Web site has increased 20% since 2006 (FC Barcelona, 2007). Of the visitors, 40% use the Spanish version, 40% use the English version, and 20% use the Catalan version.

The integration of TV and online communications wouldn't take place until April 2007 with the launch of Barça TV online, an exclusive subscription product of Servecast. Offered in Catalan, Spanish, and English, it has subscribers in more than 50 countries (FC Barcelona, 2007). The Web site (<http://www.fcbonline.tv/default.aspx?uil=ca>) contains a wide range of sections from press conferences to historical matches and products such as live interviews. For this purpose, Barça TV Online has added an independent editorial newsroom made of audiovisual and online services. Barça TV Director Eduard Pujol defines it as a "content factory both for the TV and the Website." FC Barcelona's timeliness in responding to today's

global sports media complex is also reflected through its linkage with one of the hot spots of online services. Youtube is home to one of FC Barcelona's own portals of audiovisual content since 2007. The site has already received more than 200,000 visits (FC Barcelona, 2007), and the international versions of the Web site in Japan, China, and the Middle East were introduced last season, as a joint venture between the leading portals of each market (Rakuten, SportsCN and LinkDotNet; FC Barcelona, 2007). A new service, Ràdio Barça, was launched in August 2007 with the purpose of retransmitting full matches online in Catalan, Spanish, and English.

Another Barça-owned type of media is a text messaging service that offers items such as logo's downloads, melodies, tunes, or screen walls (FC Barcelona, 2007). Most short message services (SMS) are targeted to the club's members as a way to reinforce their loyalty. Three years ago, FC Barcelona already offered an SMS service with stories on matches, players' postcards, anthems, or games' schedules. The increasing cost of this practice reflects its growing success; while in 2003 receiving an SMS would cost 0.15 euros, in 2005 it rose to 0.60 per unit. The gains during the 2004–2005 season accounted for 1.785 million euros, while the previous season had accounted for 1.17 million. According to Swedish Senseit AB, the technical partner for this service, 83,000 Barcelona fans were tuned in through mobile phone communication in 2007, and the club sends around a million SMS each month.

BARÇA'S PUBLIC RELATIONS EFFORTS

Relationships create social integration and collective consciousness that leads national integration (Taylor, 2000). Then, from a relationship management view, public relations can be considered a social and identity cohesion function. FC Barcelona is fuelled by this religious and national inheritance, which explains why all things Barça are shrouded in a magnificence that is upheld thanks to its publicity and event management efforts, two areas through which public relations can support elite sports (L'Etang, 2006a). Although this author showed that public relations can offer more to both these areas in practice, we have focused these three areas because they are demonstrative of the central role played by FC Barcelona's public relations function can be split into two main groups: press and international tours (managed by the Press Department), and visits and nonsports events to and using the club's facilities (managed by the PR Department).

PUBLICITY AND PROMOTIONAL TOURS

As a mass phenomenon, FC Barcelona's activity becomes a *sumum* of events given full coverage in the press, making Barça the main news player in Catalonia, more so than its regional government. Barça is the region's primary information subsidy and almost all of its acts are treated as macro-events.

Taking the amount of information about FC Barcelona on Catalonia's four public television channels alone reveals that no other area of news media is covered more than the day-to-day life of FC Barcelona. Of the news items concerning the Catalan community on the Spanish national television channels, Barça takes first place with 21.8% coverage followed by the city of Barcelona (19.7%), and the president of Catalan government and regional government itself (8.4%; Bañeres, 2000).

Between September 13, 2004 and October 7, 2006, the Barça press department managed

2,851 media interviews, not including press conferences (Barça press department, October 5, 2006). This phenomenon, which cannot be viewed in isolation from the Catalan sport media dynamic as a whole—two newspapers (*Sport* and *El Mundo Deportivo*) featuring 23 pages on the club every day and 20 sports programs a day on the radio devoted chiefly to Barça—generates singular source-media relationships, similar to the relationship between the news media and politics, on which both sides are almost entirely dependent (Bourgeois, 1995). In Catalonia, as Jones and Baró (1996) concluded, Catalan sports journalism is highly bound up with the sports event that has helped to create it and that fuels it every day.

Relationship between FC Barcelona and the sports press is the paradigm for this. The sports media breathe life into Barça but increasingly they also feed off it, to the extent that an analysis of the items published each day on FC Barcelona are closer to the criteria for a newsletter rather than a newspaper (Xifra, 2006). This is the upshot of the identity function of Catalan sports journalism. Sports journalists tend to be partisans of a specific team so that supporters can identify with the information (Ortiz, 2005). This situation also illustrates the theory that the media frequently adopt a “priestly” role when it comes to media events (Dayan & Katz, 1992; Wardle & West, 2004).

Apart from its source-media relationships, the club has three of its own news media: the monthly *Revista Barça* newsletter, *Diari del Partit* (*Newspaper of the Match*), distributed to the public at every match, and the satellite television channel Barça TV that has over 50,000 subscribers. *Revista Barça* has a circulation of 130,000 copies and, therefore, has the largest circulation of all press written in Catalan, surpassing all the Catalan daily papers (Barça press department, October 5, 2006).

Taylor and Kent (2006) have analyzed the phenomenon of national identity building from a public relations perspective. L’Etang (2006a) included national identity within the tourism domains for discussion and pointed out as teaching and research opportunities the role of public relations in building national identity through success in elite sport. In August 2006, FC Barcelona began a tour of the United States and Mexico during which in addition to playing against various teams in these countries it presented the “Catalunya” brand (“Catalonia” in the Catalan language) to over 250 tour operators and journalists in both countries. The aim of this campaign, a joint venture with the Catalan governmental tourism promotion body, Turisme de Catalunya (Tourism of Catalonia), was to confirm Catalonia’s place as one of America’s chief tourist destinations because more than half of those who choose to vacation in Spain opt for Catalonia (Catalan Ministry for Commerce, Tourism and Consumption, 2004, July 21).

This not only reveals the huge media machine that is FC Barcelona, necessary to create the symbology of a civil religion, but also confirms L’Etang’s public relations and sports media model focused on the importance of construction and interpretation of discourse and rhetoric as a key aspect of mediated sport (L’Etang, 2006a).

EVENT MANAGEMENT

Close observation of Barça’s primary scenarios and ritual celebrations suggests a high degree of similarity with the ways in which civil religion manifests itself. From an event management approach and leaving events of a purely sporting nature such as Barça’s weekly matches to one side, we would like to draw attention to its Open House Day, the Barçamania trade fair and the World Fan Club Meetings.

Open house days are one of the most frequent community relations two-way tactics used by organizations in Spain, particularly public institutions (Xifra, 2006). During the school Christmas holidays FC Barcelona has open house days in which visitors are given a guided tour around all of the club's facilities. This has a special value for supporters because they are allowed to visit, touch, and feel spaces that only the players, coaches, managers, and employees can usually access. For just one day, they can see the changing rooms, the chapel, the pressroom, and other areas and feel the sacredness (Salvador, 2004). Families are the most common visitors on these days. Fathers or parents and children continue a process of socialization in blue and red (the colors of Barça symbols), an education in sentiment that begins at birth and has its rite of passage at this time, which is many children's first visit to the stadium and its sacred places, at all other times closed to the simple devotee.

As Salvador pointed out (2004), the neophytes enter the sanctuary and come into contact with the tribe's sacred objects. Barça worship is passed down to children in the same way as their mother tongue. Usually this learning curve is lifelong, with the exception of possible desertions or "conversions" to the rival team that can often be attributed to the generation gap or the individual's desire to distance themselves from the family group of origin, behavior that is frequently seen during so-called adolescence.

Soccer stadiums are the twentieth century's answer to glorious cathedrals and as such are places of worship and pilgrimage for followers and *aficionados* in general. On any day of the year, the FC Barcelona grounds may be packed with tourists, schoolchildren, and supporters who come to see Barça's facilities and particularly the FC Barcelona Museum (FC Barcelona Museum, 2006), which is also part of the visitor and open house day itinerary. Year after year, the museum has increased its number of visitors and become an ever more important tool for spreading the name of the club far and wide. Not only is it the best soccer museum in the world, it is also the most popular museum of any kind in Catalonia, regularly receiving more than 1,200,000 pilgrims a year, and is a reference point for many other such museums around the world.

The FC Barcelona Museum contains a large collection of works by leading Catalan artists (e.g., Miró, and Dalí) but is chiefly a sacred world (Salvador, 2004) containing pictures of former heroes, cups and trophies, shirts worn by the players, photos, souvenirs of epic events, armbands worn by former captains, "magic" football boots, gifts given by civil society to Barça, and many other items that recreate and evoke the Barcelona FC mythology. It is a desire to take part in and evoke these myths that draws supporters to the museum, in pursuit of direct contact with the images and relics. These are relics that they would like to see in their own homes, but that belong to the club. It is also true that some visitors go merely as tourists, especially fans of other teams, which is comparable, as Salvador (2004) noted, to nonbelievers visiting cathedrals for a host of reasons including the architectural value or simply to say they have been there.

In addition, the museum offers the chance truly to get to know the stadium by taking the Camp Nou Stadium tour through the installations, which takes visitors into the opposition changing rooms, down the tunnel and onto the pitch area. Fans and visitors can see the new dugouts and look out across the magnificent stadium. The chapel, the TV studio, the pressrooms, and the directors' area virtually complete the tour, with the one final surprise of a chance to enjoy a panoramic view of all FC Barcelona facilities.

In his study on devotional-promotional approach to public relations campaign for Saint James

in Spain, Tilson (2006) argues that this Catholic Church-type campaigning can be considered “covenantal relationship-building” because the Church calls its various publics into a positive relationship with St. James, the Church, and, ultimately, with God. The analogy with FC Barcelona is clear since its own public relations efforts are also geared towards a broad public (members, supporters, nonmembers, non-supporters, non-football fans and so on) with the aim of striking up a positive relationship with Barça and Catalonia.

This devotional-promotional communication process has been bolstered by the growth of new areas such as sports marketing-public relations and integrated communications. As a global phenomenon of the soccer economy, Barça sits amidst a huge merchandising enterprise of which the team colors and the club shield are the core theme. To this end, every year FC Barcelona stages a macro-event: Barçamania, the Barça trade fair where hundreds of club merchandise retailers exhibit and sell to thousands of visitor/buyers. All of the products on offer carry the Barça colors or shield: liqueur, encyclopedias, watches, pens, figurines, underpants, wine, key rings, aprons, blankets, potato chips, candy, lighters, mattresses, umbrellas, whistles and so on. Indeed, the market for Barça cult objects is vast. Any good supporter has a little shrine at home for their collection of newspaper clippings, photos, scarves, flags, etc., and the weirdest and most wonderful objects one can imagine (Salvador, 2004).

However, this is a more organized form of pilgrimage. Regarding Manchester United, Boyle and Haynes (2006) pointed out that global clubs view innovations such as the recently set up Manchester’s Fans Forum as relationships building fields. FC Barcelona has been a pioneer in such event management efforts having run a World Fan Club Congress every year since 1977. This daylong event enables an array of activities to be carried out, making them important arenas allowing them to build long-term relationships and enabling fans to give feedback to the club (Boyle & Haynes, 2006).

CONCLUSIONS

This study shows how FC Barcelona constitutes and constructs a new form of religiousness by means of various communicative tactics with the aim of creating and upholding long-term relationships with its publics. Thus, Barça provides a unity that is sought after by extremely heterogeneous publics. It is in this environment that each of the powerful myths, rituals, and symbolic devices that revolve around FC Barcelona give rise to concepts pertaining to the semantic and expressive field of religion.

Traditionally, myths and rituals have shaped religiousness and built what we consider sacred. Unarguably, therefore, Barça is highly similar in form to other religious social events where, for Llobera (1996), the key lies not so much in the presence or absence of supernatural beings as the compulsory nature of beliefs for all members of the group. The notion of civil religion allows us to observe whether this relationship goes beyond the evident analogy. From this perspective, in Catalonia, Barça has a symbolic representation function that in many cultures and eras we would not hesitate to class as civil religion” (Salvador, 2004). Taking this concept of civil religion, FC Barcelona engenders a host of rituals and devotions that create or recreate the national community, strengthen its cohesion and bestow a transcendental facet upon it, while also helping to make the identity and mythological symbols of the imagined Catalan community and their meanings sacred.

Whereas, before the French Revolution and the Industrial Revolution, the loyalties that drew

society together were aroused in particular by a belief in God through the Church or a belief in the king, the changes brought about by the new era—especially the process of secularization—has meant that the loyalties that bound and structured societies and individuals are now chiefly aroused by the national community (nation), either directly or through related identity references, as is the case of FC Barcelona. This phenomenon can be observed as a devotional-promotional communication of soccer actors, such as FC Barcelona. This communicational process involves a covenantal relationship building between the “faithful” (supporters and fans) and their god (Barça as an institution and, ultimately, Catalonia as a nation) through the “intercession” of their “clergy” (i.e., Barça, as a soccer team and a group of celebrities).

FC Barcelona takes on the role of national ambassador for Catalonia, more influential in the creation of identity and reputation than the Catalan government and its regional diplomacy efforts. L’Etang (2006a) included national identity within the tourism domains for discussion and pointed out as teaching and research opportunities the role of public relations in building national identity through success in elite sport. Taylor and Kent (2006) have also underlined the public diplomacy efforts among the different public relations strategies in the processes of identity and nation building. The efforts made by the government of Catalonia through Barça confirm these assertions.

From a relationship building perspective, because public relations focuses on how communication efforts are used to build, maintain, or change relationships between organizations and publics—primarily mass publics (Taylor & Kent, 2006)—public relations is an approach to the study of civil religion.

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EXAMINING THE INFLUENCE OF THE DELIVERY OF STRATEGIC ONLINE CONTENT

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ABSTRACT

This article describes the development and strategic application of online quizzes to enhance student performance and overall course experience. Although research has increased in the field of technological delivery of educational content, there is yet a dearth of studies when compared to the quantity of activity in practice. The experimental situation that this study presents is generalizable to any regional, public business school with no major in operations management. These schools tend to use operations management as an integral part of its core curriculum. Students are required to take only one required operations course in their program; thus, it becomes challenging to cover all the appropriate subjects. Faced with low student performance and below average student satisfaction with the course, this study details the effect of delivering content using online quizzes. Based on a before–after comparison, quizzes were found to be a very effective and efficient way to overcome these challenges and have proved a very successful method of content delivery for both the students and the instructor.

INTRODUCTION

Over the past 20 years, online and distance learning usage in higher education has gone from interesting novelty to necessary teaching tool. It has been employed to not only deliver content more effectively, but to deliver that content to numerous end-users spread across infinite destination possibilities. This technological imperative has spawned many online universities and degree programs, catering to the changing nature of the student population (Sloan-C, 2004).

The digital age has bought a sea of change in the nature of college students. Students are more technology savvy and bring technology into the classroom (Vilano, 2007; Wood, 2004). Using tools such as Web sites and learning management systems, instructors have been able to encourage online learning outside the classrooms. The digital era has also enabled nontraditional students, who need greater time and space flexibility, to gain access to education that was

difficult to attain earlier. Thus, technology tools have found their way inside and outside the classroom, creating a “digital surround” aimed at facilitating student learning. Today over 80% of all institutions of higher education offer some form of distance learning or online education (Sloan-C, 2004). Universities are continuing to realize that this untapped student learning opportunity will not only increase their reputation and goodwill, but will also provide generous revenue streams and enrollment growth into the foreseeable future.

Unfortunately, these achievements and advancements in technology have not come without their share of issues (Sasidharan & Santhanam, 2006; Hannafin et al., 2004). Professors who deliver online content have been criticized for being generic, lax in security, and ignoring the human needs of the end-user (Kim, 2002). These same instructors have also complained of excessive workloads, technological limitations, high student failure rates, and poor student evaluations. Additionally, critics of online education have continued to posit that distance learning “looks great on paper” with numerous positive outcomes, but poor execution has led to a significant effectiveness gap in actual practice. This lack of quality control has actually led to calls to go back to traditional content delivery and abandon distance and on-line learning altogether (Kovalchick & Dawson, 2004).

For distance learning and online delivery to thrive as viable pedagogy and to deliver on its promised potential, studies must explore how this technology can be best employed to not only increase the effectiveness and efficiency of the content delivery method, but also the quality control of the final product (Gupta et al., 2008). The strategic use of this distinct pedagogy, taking into consideration its unique strengths and benefits, should be the application method of choice. Unfortunately, in the past, online content delivery has been employed in a wholesale manner without any thought or consideration to its numerous weaknesses, pitfalls, or drawbacks. The strategic application of this pedagogy to address specific issues within determined contextual constraints is the major research thrust of this manuscript.

This paper seeks to address and assess the impact of the strategic application of online technology in a particular course. It attempts to illustrate how technology improves learning and influences the educational outcome variables, as in Bloom’s taxonomy (1956), variables that are typically associated with student learning. The first objective of this paper is to illustrate and explain Bloom’s taxonomy, describe the nature of the typical operations management course, and clarify the difference between traditional quizzes and on-line quizzes. After reviewing these concepts, this manuscript details an outcome comparison that contrasts online content delivery (online quizzes) to traditional quizzes and determines the improvement of the educational experience of operations management students. In other words, the presented study compares the learning effectiveness of detailed online quizzes with traditional quizzes and examines the influence of this content delivery method on student learning, and student satisfaction with the course content and the professor. Finally, the results and the implications of those results for educators teaching quantitative business courses are discussed.

LEARNING OUTCOMES BASED ON BLOOM’S TAXONOMY OF LEARNING

Bloom’s taxonomy (1956) of educational objectives (Figure 1) provides a good theoretical foundation for understanding the learning outcomes. It is the standard upon which educational

learning objectives are created and student learning is measured. Many study guides and test banks actually chronicle each question or concept and explain which one of Bloom's educational objectives it is actually fulfilling. To this end, the current authors feel very comfortable applying this taxonomy to the current study.

The lowest, most basic level of learning is gaining knowledge. This involves the recall of basic theories and other important information. Comprehension signifies the ability to grasp meaning and interpret given information, translate knowledge into a new context, predict consequences, and so on. Application refers to the ability of using the methods, concepts, and theories in new situations; and solving problems using acquired skills and knowledge. Analysis involves seeing patterns, recognizing hidden meanings, and breaking down the material into component parts to understand the organization structure of a given situation. Synthesis is the ability to use old ideas to generate new ones, to generalize from given facts, and to predict and draw conclusions. Finally, evaluation means to compare and discriminate between ideas, recognize subjectivity, and make choices based on reasoned arguments.



FIGURE 1: BLOOM'S TAXONOMY OF EDUCATIONAL OBJECTIVES

Any course should at least be able to achieve the lower levels in the hierarchy. Because, for most of the students, this is their only exposure to formal training in operations management (very few business programs have a major in operations management), it is desirable that the course also achieves the higher level learning objectives. To the extent that the exams are designed to assess the various levels of learning, average student GPA should be a good objective indicator of learning outcomes. In addition, the end of the semester student course evaluation and feedback (referred to here as the Instruction Satisfaction Questionnaire [ISQs]) should serve as an excellent subjective measure to assess the level and the extent of learning outcomes achieved in the course.

OPERATIONS MANAGEMENT: A TYPICAL QUANTITATIVE BUSINESS COURSE

Across the various courses that make up the curriculum of business programs, quantitative courses (statistics, economics, finance, marketing research, and operations research) are perceived by students to be among the most difficult (e.g., Paulos, 1988; Burlingame, Lebsack, Luthans, & Palmer, 2002). This might be explained by the well-documented student weakness with mathematics in general (e.g., Morris, Kellaway, & Smith, 1978; Levitt & Hutton, 1984). This perceived difficulty is also reflected in lower student satisfaction from the course. In

addition, students' grades in quantitative business courses tend to be lower when compared to nonquantitative courses and that might, in turn, signify lower levels of student learning and retention. As a result, instructors face a constant challenge of getting the students excited about the course while making sure that they learn the needed concepts.

Operations management is the design, operation, and improvement of systems that create a firm's primary products and/or services. Major topics typically covered in an operations course are demand forecasting, production planning, materials requirements planning, inventory management, and quality management. Almost all business programs have at least one course in operations management, in their core curriculum, that every student is required to take. Mathematical tools are part of almost all the topics typically covered in the course. To be successful in this class, students must first master the mathematical tools and then be able to apply these tools to address business decision-making situations. The course is very similar in nature to most other quantitative business courses.

The nature and structure of a successful operations management course is one that can be successfully related and applied to real-life scenarios. For instance, inventories might be related to the students as "the products in a typical store when you visit the store to purchase an item." From this visualization, the professor can branch off and talk about appropriate levels of inventory, just-in-time inventory, and opportunity costs from having too much inventory or revenue losses from not having enough inventory. This "real world" example can now be explained within the context of the appropriate concepts and theories of inventory management. Mathematical problems are assigned and solved in class to further address the quantitative side of the issue. Additional problems are assigned as homework so students can practice the techniques further. Student homework issues are addressed and quizzes are then given to test the students' knowledge, retention, and ability to apply the delineated concepts. Typically, 10 quizzes are given in any semester with the cumulative impact on their grade at about 5–10%. Exams, which are based almost wholly from these quizzes, make up the other 90–95% of the students' grade.

TRADITIONAL QUIZZES VERSUS DETAILED ON-LINE QUIZZES

Traditional quizzes have been used by professors for years to deliver concepts and test students' on various types of academic subject matter. Usually quizzes are employed because the subject matter is very narrow, important, and will probably appear on a more global test. Quizzes are also good tools to track students and assist with very specific subject problems as they happen instead of waiting for a midterm. Finally, quizzes also serve as a motivational factor for students to keep up with the material instead of leaving it to the last minute before a test, where they will also be required to demonstrate mastery of many new concepts. In sum, traditional classroom quizzes serve numerous purposes, all of which are beneficial to the students.

Detailed online quizzes are online quizzes that are typically offered through a learning content management system (LCMS), like Blackboard, WebCT or Moodle. A characteristic of online quizzes is the flexibility of time that they provide. These quizzes allow students to take the quiz at their own choice of time. They also do not take time away from classroom. Thus, the students have greater duration of time available to work through the quiz. Next, apart from being online,

the major characteristic of a detailed online quiz is the fact that the arrangement of questions takes the students from lower to higher levels of learning on Bloom's taxonomy (1956). The following narrative is an example of a context used for a detailed on-line quiz on the topic of inventory management:

A restaurant uses 5,000 quart bottles of ketchup each year. The ketchup costs \$3.00 per bottle and is served only in whole bottles because its taste quickly deteriorates. The restaurant figures that it costs \$10.00 each time an order is placed, and holding costs are 20 percent of the purchase price. It takes 3 weeks for an order to arrive. The restaurant operates 50 weeks per year. The restaurant would like to use an inventory system that minimizes inventory cost.

Based on the information given above, students would have to answer several questions on finding inventory levels to take care of uncertainties in transportation, supply times, customer demands, various levels of customer service, and so on. This forms an intensive, 3–4-hour self-study session facilitated by the quiz. According to Pelz (2004), making students work on most of the aspects of the mathematical tools on a self-study basis forms one of the three principles of effective online pedagogy.

When compared to traditional quizzes, detailed online quizzes offered the following advantages:

1. Students had enormous flexibility in terms of when they can take the quizzes.
2. Since it was graded, students would be more willing and less hesitant to discuss their difficulties in the classroom
3. Even if a student was absent, he could still attempt the quizzes.
4. Since the quizzes were online, it could be for a longer duration (typically 3–4 hours).
5. As the quizzes would be open notes, open books, students would give their best shot at taking the quizzes and thus were very well prepared to discuss the quizzes in-class.
6. Quizzes were highly time efficient. Class time freed up because of not having the usual in-class quizzes could be used for other value adding class discussions.

Thus, the author expected detailed online quizzes to enhance significantly the learning effectiveness of the students. Additionally, it was expected that the students' overall view of the course and the instructor would also increase.

THE COMPARISON STUDY

As stated above, quizzes (online or in-class) are common tools, used in various contexts to aid learning. Martyn (2003) describes the use of online quizzes in a hybrid course to help students stay current with their reading assignments. Peng (2007) used online quizzes in a finance course to free up in-class time. Naslund (2005) describes the successful implementation of an online assessment testing students similar to an in-class exam. Traditionally, quizzes are short problem solving exercises based on a single most recently covered mathematical technique to test student understanding of the given technique and to give them a feeling of exam type questions before an actual in-class exam. Traditional quizzes were used in operations classes taught by the instructor until fall 2006.

Detailed on-line quizzes were implemented in Spring 2007. This was the only aspect that changed from the previous semesters (exams, grade distribution, syllabus and everything else stayed the same). Again, the only aspect of the classes that were different was that the in-class quizzes were substituted by detailed on-line quizzes. Students could take the quiz on blackboard any time during a 4-day time-window and they only had one attempt to take the quiz. Taking a quiz involved solving a problem, arriving at a solution, and then selecting the best choice. The total number of quizzes stayed the same after the implementation of on-line quizzes. Demographics of the students also remained the same, making the sample comparable.

RESULTS AND INTERPRETATION

The columns labeled Fall 2006 in Table 1, represent the end-of-semester student feedback for the course (or ISQs) and the instructor, and the average student grade in the course. Responses to all the questions are on a 5-point scale with 5 being the best and 1 the worst rating. Average GPA is arrived at by assigning A = 4, B = 3, C = 2, D = 1, and F = 0 and then averaging the number for all students. Overall, Table 1 clearly illustrates the challenges faced by the students and the instructor in this course. Based on discussions with other faculty members, this experience is typical of other quantitative business courses, such as quantitative methods of business and marketing research. The columns labeled Spring 2007 in Table 1, represent the learning outcomes measured after the implementation of the detailed online quizzes.

First, the average student GPA in Spring 2007 is substantially better than that of Fall 2006. Similar observations can be made regarding the student satisfaction as reflected in the ISQ's. This is a clear indication that the on-line quizzes helped students do better on their exams. This is reflected in the ISQs as well (ISQ question "lectures were organized and provided framework for learning" shows a dramatic increase in scores). Interestingly, when referring to the question "I found this class to be challenging" on the ISQs, students still viewed the course as challenging as before, if not more. Based on this evidence, one might reasonably conclude that the online quizzes helped achieve the first, basic element in Bloom's taxonomy (1956): gaining knowledge.

Detailed on-line quizzes made students contemplate the mathematical concepts and spend more time thinking about the various issues outside of class time. It also helped them identify their problem areas and be better prepared to discuss them in class. As a result, class sessions became much livelier as the students were better prepared and knew what to ask ("involves students in class activities," and "uses class time well" in Table 1).

As students spent significant time in solving the on-line quizzes, they got comfortable with the mathematics of the techniques and were able to appreciate better the practical aspects and applications during class discussion. The improvement on the ISQ question "relates course material to current examples" provides evidence for this argument.

Student interest in the course was greatly enhanced ("stimulation of interest in course," Table 1). In fact, one student even wrote "... it is a shame that there is no degree program for quality and other topics in operations (in the university)."

The on-line quizzes helped create extra time (in the form of time saved on in-class quizzes) and a

favorable environment conducive to student learning (in terms of student preparedness). This facilitated student comprehension and understanding. There was also an obvious appreciation of the mathematical and “real world” applications of the course material which only further confirmed that the higher level objectives in Bloom’s taxonomy (1956) for (student) learning were being met (Figure 1).

TABLE 1. INSTRUCTIONAL SATISFACTION QUESTIONNAIRE AND AVERAGE STUDENT GRADE

Questionnaire items	Before (Fall 2006)		After (Spring 2007)		
	Communicates effectively with students	3.24	3.76	4.28	4.12
Enthusiasm for course material and teaching	3.76	3.71	4.67	4.60	4.43
Mastery of the course content	4.00	4.14	4.68	4.52	4.78
Relates course material to current examples	3.43	3.76	4.26	4.36	4.22
Clearly explains complex concepts and ideas	3.19	3.24	4.42	4.16	4.30
Lectures organized and provide framework for learning	3.48	3.86	4.53	4.4	4.57
Course syllabus accurately described the course	3.95	4.29	4.47	4.36	4.48
Course instructional materials used effectively	3.57	3.90	4.47	4.24	4.61
Involves students in class activities	3.33	3.62	4.56	4.12	4.33
Uses class time well	3.81	4.05	4.56	4.44	4.68
Fosters environment conducive to critical thinking	3.68	3.86	4.61	4.44	4.50
Treats all students in a consistent manner	4.14	4.48	4.65	4.68	4.52
Exams reflect the material covered	3.29	3.95	4.67	4.48	4.61
Willingly assists students outside of class	4.00	4.29	4.71	4.36	4.59
I found this class to be challenging	4.14	4.48	4.48	4.40	4.57
Description of course objectives and assignments	3.19	3.85	4.47	4.19	4.32
Communication of ideas and information	2.90	3.25	4.50	4.14	3.95
Expression of expectations for this class	3.25	3.71	4.56	4.20	4.13
Availability to assist students in or out of class	3.68	3.74	4.63	4.35	4.52
Respect and concern for students	3.71	3.76	4.76	4.36	4.26
Stimulation of interest in course	3.14	3.05	4.47	4.12	4.30
Facilitation of learning	3.14	3.5	4.53	4.16	4.26
Overall rating of instructor	2.90	3.35	4.63	4.24	4.30
Sample	36	33	33	34	32
GPA	2.22	1.94	2.70	2.56	2.62

Overall, the single change of on-line quizzes enriched the student-teacher communication substantially (e.g., better scores on “communicates effectively with students” and “communication of ideas and information” in Table 1). In addition, there were other unintended and highly desirable consequences as well (please refer to the objective comparisons in Table 1). If one puts the outcomes of student evaluation in words, the instructor generally came across as a respectful, caring, knowledgeable, challenging, and enthusiastic teacher.

PRACTICAL IMPLICATIONS

If the desired outcome of this experiment was to improve student learning as well as the overall views of the course and the instructor, then the study must be considered highly successful. This is just one of the practical implications of this experiment for educators. Although the employment of online content delivery methods is not without its drawbacks, there are more than enough positive results to justify its application. In sum, this technology should be used as a method to enhance the student-professor relationship, not replace it.

Determining the level of questions that can be covered in an online quiz versus a traditional quiz is another practical implication of this study. Since the students are given more time to take the quiz and more in-depth questions can be asked, higher levels of Bloom’s taxonomy (1956) can be attained, even at the quiz level. This presents numerous opportunities and implications for concept coverage, subject inclusion, and rigor maintenance. In fact, the nature of this dichotomy can be illustrated in a 2x2 Table, indicating the question depth and the types of quizzes (Figure 2).

Type of questions and depth of learning	Type of quiz	
	Traditional	Online
Tier 1: Surface learning	<i>Very High Facilitation</i>	<i>Low-High Facilitation</i>
Tier 2: Deep learning	<i>Very Low Facilitation</i>	<i>Very High Facilitation</i>

FIGURE 2. QUIZ – LEARNING COMPARISON CHART

Tier 1 can be considered the bottom three objectives of Bloom’s taxonomy (1956): knowledge; understanding; and application. Tier 2 can be considered the top three levels of Bloom’s taxonomy: analysis; synthesis; and evaluation. Figure 2 illustrates that for surface learning issues (i.e., memorization or very basic application) or the attainment of Tier 1 objectives; traditional quizzes facilitate the learning process much better than online quizzes. For these surface level questions, the opportunity to cheat could be much greater level than the potential for impropriety with the quizzes done under instructor supervision. However, with emerging technology, more quiz delivery tools are looking at solutions to curb this problem. Thus, we label this box as having low-high facilitation depending on the quality and implementation of the quiz.

On the other hand, online quizzes are great at facilitating the learning process with the deeper learning questions that emphasize the Tier 2 objectives of Bloom’s taxonomy (1956). Therefore, if a course can gain from having in-depth quizzes as a part of its grading method then online quizzes would be the more effective tool of choice. The higher level of learning combined with

the time crunch that the unprepared student experiences due to the depth of the questions, make cheating a tougher proposition. Again, these questions can be formulated in such a way that cheating can be eliminated, easily discovered, or discouraged. One hopes that there will be many other studies in addition to the current study that explores or mentions the security issue of online quizzes, so that its benefits are not mitigated by student cheating. This is the final practical implication of this study.

CONCLUSION

Quantitative business courses are integral parts of any quality business program. Unfortunately, students have continuously faced significant challenges in these courses to achieve higher levels of learning. Although there are various tools that an instructor might have at his disposal to facilitate student learning, technology might provide an effective means to address and resolve this specific situation. The strategic application of technology used in the study, indicates that there is no “one remedy cures all” approach. However, modern management theorists have determined that a contingency approach to management is more applicable and generalizable to organizational practice.

The study provides evidence on how contemporary students are open to new and innovative ways of presenting content. It also demonstrates the effectiveness of on-line quizzes to turn what is perceived to be a challenging and difficult course into a very satisfying and rewarding experience for the students and the instructor. This truly created a win-win scenario for both parties involved. This is the major contribution of the current paper.

Instructors in similar contexts might find this experience very useful in their efforts to improve student learning and satisfaction without sacrificing any academic rigor. In fact, academic rigor might actually increase as professors get acclimated and begin to feel comfortable with this type of technology. Interested educators might very easily replicate this in other quantitative business courses using commonly used online learning management systems such as blackboard, WebCT, Moodle. In summary, the current authors hope that, over time, this will only be one in a field of future studies that strategically look at online content delivery, and its true influence on students and instructors.

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EVALUATING THE EFFECTIVENESS OF AN INTERNATIONAL EXECUTIVE DEVELOPMENT PROGRAM FOR DEVELOPING GLOBAL MANAGERS

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ABSTRACT

This is a proposed research in three stages of management development—needs analysis, program design, and evaluation. For the purposes of this study, the first stage of the research dealing with the needs assessment of global managers was completed first. In the second stage, the correlates of learning styles and training needs effectiveness were found. In the final stages of design, delivery, and evaluation, the program was designed with the background variables and leadership profiles of global managers that were correlated with the training needs of these managers and an executive development program was delivered to nominated executives around the world. Evaluation at the lowest two levels—Reaction and Learning—have been summarized to portray the effectiveness of the weeklong executive development program. The post study of executive behavior and results accruing due to the program itself will be reported when the post study is completed.

INTRODUCTION

Needs Assessment of international managers and executives was studied with respect to the scope of the study suggested in the abstract. In this paper, the design and delivery of the executive training program and its candid or detailed evaluation results are presented in the Reaction and Learning levels (Kirkpatrick's four levels). The 3-month and 6-month post-training evaluations to determine the change in executive behavior and the results that accrue on the job due to transfer of training have not yet been concluded.

International executive development programs are few and far, but the evaluation of such training programs is even rare. Literature is not replete with evaluation of executive program evaluation although there is much interest in spending millions of dollars annually for exposing executives to learn new skills of decision making and impart them with tools for organizational competitiveness.

The purpose of this study is to look into the existing literature and examine how an international executive development program will be conceptualized, designed, delivered, and evaluated. To give a complete treatise to this research, a literature review has been done, a training needs assessment has been conducted, the detailed training program has been designed, detailed evaluations of the outcomes have been assessed, findings have been discussed, and a

benchmarked course has been earmarked to determine the overall effectiveness of the training program. A composite program evaluation to determine the administrative effectiveness has also been summarized.

TRAINING NEEDS ASSESSMENT

Needs analysis of executives with respect to the difference in importance and competence revealed the following results:

TABLE 1. EXECUTIVE PARTICIPANTS' DISTRIBUTION

Function	Percent	Job Level	Percent	Education	Percent
General Management	29.65%	Upper management	13.75%	Engineering	58.27%
Manufacturing Engineering	10.47%	Middle management	48.42%	Sciences	13.12%
General Engineering	45.64%	Supervisor	18.05%	Business	15.22%
Sales and Marketing	2.03%	Technical	17.48%	Technical	8.40%
Other	12.21%	Other	2.29%	Other	4.99%

TABLE 2. CAREER DEMOGRAPHICS

Career in years	Percent	Employees	Percent
0-3 yrs.	2.32%	Less than 100	10.00%
4-5 yrs.	6.09%	100-1000	26.57%
6-10 yrs.	21.16%	1000-5000	29.14%
11-15 yrs.	26.38%	5000-10000	5.71%
Over 15 yrs.	44.06%	10000-50000	18.86%
		50000-100000	5.43%
		Over 100000	4.29%

answer options		(LOW)				(HIGH)	N/A	Rating Average
		1	2	3	4	5		
1. Technology management for global issues:	Importance	3.6% (1)	7.1% (2)	7.1% (2)	32.1% (9)	39.3% (11)	10.7% (3)	4.08
	Competence	7.1% (2)	7.1% (2)	28.6% (8)	32.1% (9)	14.3% (4)	10.7% (3)	3.44
2. Career management of self and subordinate:	Importance	0.0% (0)	0.0% (0)	10.7% (3)	32.1% (9)	57.1% (16)	0.0% (0)	4.46
	Competence	0.0% (0)	3.6% (1)	17.9% (5)	50.0% (14)	28.6% (8)	0.0% (0)	4.04
3. Design and management for manufacturability:	Importance	0.0% (0)	3.7% (1)	18.5% (5)	44.4% (12)	22.2% (6)	11.1% (3)	3.96
	Competence	0.0% (0)	7.4% (2)	40.7% (11)	29.6% (8)	11.1% (3)	11.1% (3)	3.5
4. Techniques of negotiation and dispute resolution:	Importance	0.0% (0)	0.0% (0)	7.4% (2)	25.9% (7)	63.0% (17)	3.7% (1)	4.58
	Competence	0.0% (0)	3.7% (1)	7.4% (2)	59.3% (16)	25.9% (7)	3.7% (1)	4.12
5. Human resource management:	Importance	0.0% (0)	0.0% (0)	11.1% (3)	25.9% (7)	55.6% (15)	7.4% (2)	4.48
	Competence	0.0% (0)	3.7% (1)	18.5% (5)	37.0% (10)	33.3% (9)	7.4% (2)	4.08
6. Decision analysis:	Importance	0.0% (0)	0.0% (0)	0.0% (0)	29.6% (8)	66.7% (18)	3.7% (1)	4.69
	Competence	0.0% (0)	3.7% (1)	11.1% (3)	51.9% (14)	29.6% (8)	3.7% (1)	4.12
7. Creative process:	Importance	0.0% (0)	0.0% (0)	14.8% (4)	40.7% (11)	40.7% (11)	3.7% (1)	4.27
	Competence	0.0% (0)	3.8% (1)	30.8% (8)	46.2% (12)	15.4% (4)	3.8% (1)	3.76
8. Managerial accounting and financial analysis:	Importance	0.0% (0)	3.7% (1)	18.5% (5)	37.0% (10)	37.0% (10)	3.7% (1)	4.12
	Competence	0.0% (0)	11.1% (3)	29.6% (8)	40.7% (11)	14.8% (4)	3.7% (1)	3.62
9. Tools and techniques for managing change:	Importance	0.0% (0)	0.0% (0)	0.0% (0)	29.6% (8)	66.7% (18)	3.7% (1)	4.69
	Competence	0.0% (0)	3.7% (1)	11.1% (3)	48.1% (13)	33.3% (9)	3.7% (1)	4.15
10. Human factors and ergonomics:	Importance	0.0% (0)	0.0% (0)	14.8% (4)	44.4% (12)	37.0% (10)	3.7% (1)	4.23
	Competence	0.0% (0)	0.0% (0)	33.3% (9)	55.6% (15)	7.4% (2)	3.7% (1)	3.73
11. Marketing management for competitive advantage:	Importance	0.0% (0)	3.7% (1)	14.8% (4)	25.9% (7)	37.0% (10)	18.5% (5)	4.18
	Competence	0.0% (0)	7.4% (2)	48.1% (13)	18.5% (5)	11.1% (3)	14.8% (4)	3.39
12. Designing organizations for team management:	Importance	0.0% (0)	3.7% (1)	14.8% (4)	51.9% (14)	25.9% (7)	3.7% (1)	4.04
	Competence	0.0% (0)	3.7% (1)	37.0% (10)	44.4% (12)	11.1% (3)	3.7% (1)	3.65
13. Managing the capital investment decision:	Importance	0.0% (0)	0.0% (0)	14.8% (4)	44.4% (12)	37.0% (10)	3.7% (1)	4.23
	Competence	3.7% (1)	11.1% (3)	37.0% (10)	29.6% (8)	14.8% (4)	3.7% (1)	3.42
14. Optimizing organizational capabilities for competitive advantage:	Importance	0.0% (0)	0.0% (0)	7.4% (2)	25.9% (7)	63.0% (17)	3.7% (1)	4.58
	Competence	3.7% (1)	7.4% (2)	29.6% (8)	37.0% (10)	18.5% (5)	3.7% (1)	3.62
15. Skill building for professional speaking:	Importance	0.0% (0)	0.0% (0)	18.5% (5)	37.0% (10)	44.4% (12)	0.0% (0)	4.26
	Competence	0.0% (0)	7.4% (2)	37.0% (10)	18.5% (5)	37.0% (10)	0.0% (0)	3.85
16. Effective managerial communications--oral and written:	Importance	0.0% (0)	0.0% (0)	3.7% (1)	25.9% (7)	66.7% (18)	3.7% (1)	4.65
	Competence	0.0% (0)	0.0% (0)	22.2% (6)	44.4% (12)	29.6% (8)	3.7% (1)	4.08
17. Identifying strategic initiatives:	Importance	0.0% (0)	0.0% (0)	7.4% (2)	25.9% (7)	66.7% (18)	0.0% (0)	4.59
	Competence	0.0% (0)	7.4% (2)	29.6% (8)	40.7% (11)	22.2% (6)	0.0% (0)	3.78
18. Ability to focus on productivity:	Importance	0.0% (0)	0.0% (0)	0.0% (0)	33.3% (9)	63.0% (17)	3.7% (1)	4.65
	Competence	0.0% (0)	0.0% (0)	14.8% (4)	48.1% (13)	33.3% (9)	3.7% (1)	4.19
19. Clearly applying appropriate leadership:	Importance	0.0% (0)	0.0% (0)	0.0% (0)	25.9% (7)	70.4% (19)	3.7% (1)	4.73
	Competence	0.0% (0)	3.8% (1)	3.8% (1)	61.5% (16)	26.9% (7)	3.8% (1)	4.16
20. Initiating projects for global competition:	Importance	0.0% (0)	7.4% (2)	33.3% (9)	29.6% (8)	22.2% (6)	7.4% (2)	3.72
	Competence	0.0% (0)	22.2% (6)	44.4% (12)	7.4% (2)	18.5% (5)	7.4% (2)	3.24

FIGURE 1. TRAINING NEEDS ASSESSMENT RESULTS

METHODOLOGY

The Executive Development Associates survey reported that management-training programs were being more focused on strategy, productivity, leadership, and global competition. The merit of this report has prompted many management development programs at universities to be tailored to the above expressed needs of the managers. The university's executive program also was designed and focused on these dimensions. Four primary areas of management development was substantiated as shown below—this led to participant's developing depth and impacting upon knowledge, skills, attitude, and behavior.

The executive development program consisted of four tracks running in parallel with 16 faculty members. These four main tracks were Strategy, Productivity, Leadership, and Global Competition. Each track had four relevant modules as shown below. Each module and its instructor were evaluated extensively for the desirable outcomes of the training program in Kirkpatrick's four levels of outcome: Reaction, Learning, Behavior, and Results of the training program.

PROGRAM DESIGN

From the above EDA study a clear strategy of the executive development program emerged and was presented in four tracks as summarized below.

- Track 1 – Strategy: Negotiation and dispute resolution, competitive advantage, change management, human resource management
- Track 2 – Productivity: Design for manufacturability, human factors and ergonomics, career management, decision analysis
- Track 3 – Leadership: Managerial communication, designing organizations for teams, creative process, presentational speaking
- Track 4 – Global Competition: Global technology management, managing investment decisions, marketing for technical managers, accounting and finance

TABLE 3. FIVE-DAY INTERNATIONAL EXECUTIVE DEVELOPMENT PROGRAM

Time block	Strategy track	Productivity track	Leadership track	Global competition track
8:00-9:30 AM	Negotiation and dispute resolution	Design for manufacturability	Managerial communication	Global technology management
9:30-10:00 AM	Break	Break	Break	Break
10:00 -11:30 AM	Competitive advantage	Human factors and ergonomics	Designing organizations for teams	Managing investment decisions
11:30-12:30 PM	Lunch	Lunch	Lunch	Lunch

Time block	Strategy track	Productivity track	Leadership track	Global competition track
12:30-2:00 PM	Change management	Career management	Creative process	Marketing for technical managers
2:00-2:30 PM	Break	Break	Break	Break
2:30-4:30 PM	Human resource management	Decision analysis	Presentational speaking	Accounting and finance

MANAGEMENT DEVELOPMENT PROGRAM EVALUATION

Fifteen questions regarding the effectiveness of teaching for each of the 16 professors were answered by participants using a Likert Scale of 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

Evaluative Questions – Quantitative Format

- Q1. My instructor displays a clear understanding of the course topics.
- Q2. My instructor has an effective presentations style.
- Q3. My instructor seems well prepared for class.
- Q4. My instructor stimulates interest in the class.
- Q5. The objectives of the course were clearly explained to me.
- Q6. This course contributes significantly to my professional development.
- Q7. My instructor develops classroom discussions skillfully.
- Q8. One real strength of this course is the classroom discussion.
- Q9. Assigned readings significantly contributed to this course.
- Q10. I highly recommend this course.
- Q11. My instructor motivates me to do my best work.
- Q12. My instructor explains difficult material clearly.
- Q13. Course assignments are interesting and stimulating.
- Q14. Overall this course is among the best I have ever taken.
- Q15. Overall this instructor is among the best I have ever known.

The results of each trainer’s evaluation were combined and tabulated. Each instructor’s evaluation is highlighted with mean score and standard deviation within a range from low to a high, with an intermediate medium score. The overall scores for all the questions are highlighted in the last column.

Thus, teaching and course effectiveness could be compared and strategic decisions regarding the most liked courses and least liked courses could be made for the next program offering. The menu of course offerings can be successfully targeted to future audience with this comparative matrix evaluation and review.

DETAILED TRAINING MODULES EVALUATION

TABLE 4. YOU NEED A TITLE FOR THIS TABLE.

Training modules	Questions														
Design for manufacture	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.24	4.06	4.29	3.82	3.88	3.65	3.76	4.18	3.06	3.71	3.65	3.76	4.12	3.18	3.35
Standard deviation	0.56	0.75	0.47	0.88	0.70	0.79	0.90	0.64	0.66	0.85	0.79	0.83	0.70	1.13	1.06
HRM for engineers	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.72	4.62	4.59	4.55	4.17	4.03	4.45	4.59	3.86	4.34	3.90	4.17	4.21	3.97	4.14
Standard deviation	0.45	0.49	0.50	0.69	0.76	0.82	0.69	0.50	0.88	0.72	0.86	0.71	0.68	0.82	0.79
Human factors and ergonomics	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.14	3.71	3.71	4.14	4.14	4.00	3.71	3.86	3.29	4.14	3.50	4.50	4.14	3.50	3.50
Standard deviation	0.38	0.95	0.95	0.90	0.90	1.00	0.95	0.69	0.95	0.90	1.00	0.58	0.38	1.29	1.29
Designing organizational teams	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.32	4.00	3.97	3.88	3.59	3.71	3.97	3.97	3.06	3.41	3.38	3.88	3.25	2.75	3.19
Standard deviation	0.60	0.76	0.74	0.83	0.71	0.86	0.78	0.66	0.80	0.91	0.87	0.61	0.95	0.92	0.86
Managing change	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.88	4.56	4.68	4.52	4.36	3.96	4.44	4.20	4.16	4.32	4.08	4.25	4.28	4.00	4.21
Standard deviation	0.33	0.51	0.48	0.51	0.57	0.61	0.58	0.65	0.62	0.56	0.58	0.61	0.54	0.83	0.78
Decision analysis	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.94	4.68	4.74	4.55	4.45	3.87	4.13	3.23	3.84	4.39	3.97	4.65	4.06	3.81	4.10
Standard deviation	0.25	0.48	0.44	0.62	0.62	0.81	0.76	0.99	0.86	0.84	0.87	0.49	0.73	0.98	0.76
Marketing for technical managers	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.64	4.00	4.36	3.86	4.21	4.07	4.00	3.71	3.86	4.00	3.64	4.00	3.71	3.29	3.54
Standard deviation	0.50	0.68	0.50	0.77	0.58	0.92	0.68	0.91	0.86	0.78	0.50	0.55	0.73	0.91	0.97
Manager accounting and financial analysis	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.33	3.20	3.47	3.13	3.20	3.07	2.93	2.87	3.20	2.80	2.80	2.80	3.07	2.27	2.60

Training modules	Questions														
Standard deviation	0.82	1.21	1.41	1.30	1.01	0.96	0.96	0.92	1.08	1.08	1.15	1.15	0.80	0.96	1.06
Capital investment decisions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.82	4.64	4.82	4.73	4.27	4.18	4.36	3.82	4.27	4.55	4.60	4.70	4.09	4.10	4.50
Standard deviation	0.40	0.50	0.40	0.47	0.65	0.75	0.67	0.75	0.47	0.82	0.70	0.48	0.54	1.10	0.71
Career management	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.82	4.64	4.82	4.73	4.27	4.18	4.36	3.82	4.27	4.55	4.60	4.70	4.09	4.10	4.50
Standard deviation	0.40	0.50	0.40	0.47	0.65	0.75	0.67	0.75	0.47	0.82	0.70	0.48	0.54	1.10	0.71
Managerial communication	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.53	4.53	4.58	4.68	3.89	4.00	4.37	4.47	4.05	4.47	4.11	4.26	4.00	3.95	4.16
Standard deviation	0.51	0.61	0.51	0.48	0.81	0.88	0.60	0.51	0.62	0.70	0.66	0.45	0.58	0.71	0.76
Professional speaking	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.85	4.77	4.62	4.62	4.23	4.08	4.69	3.92	3.38	4.08	3.77	4.08	3.62	3.54	4.08
Standard deviation	0.38	0.44	0.51	0.51	0.73	1.12	0.48	1.19	0.96	1.19	0.93	0.28	1.12	1.20	0.76
Competitive advantage	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.86	4.76	4.71	4.76	4.33	4.24	4.67	4.38	4.38	4.52	4.45	4.60	4.38	4.50	4.80
Standard deviation	0.36	0.54	0.56	0.54	0.58	0.70	0.48	0.59	0.59	0.60	0.60	0.50	0.67	0.69	0.41
Managing change	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.46	4.18	4.37	4.32	3.92	3.76	4.32	4.39	4.26	3.87	3.76	4.00	4.08	3.59	3.81
Standard deviation	0.51	0.92	0.72	0.66	0.73	0.79	0.91	0.77	0.64	1.00	0.84	0.68	0.69	1.02	0.97
Technology management	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.40	3.56	4.36	3.48	3.64	3.32	3.48	3.36	3.96	3.32	3.35	3.70	3.20	3.09	3.17
Standard deviation	0.65	1.08	0.64	1.00	0.95	1.31	1.00	1.29	1.02	1.35	1.03	0.82	1.29	1.28	1.23
Creative process	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.20	4.07	3.87	4.13	3.53	3.27	3.73	3.40	2.93	3.27	3.47	3.80	3.64	2.60	3.27
Standard deviation	0.56	0.46	0.92	0.74	0.92	0.80	0.88	0.99	0.96	1.03	0.74	0.77	0.63	0.91	0.88

PARTICIPANT INTERVIEW PROTOCOL – SUMMARY

Following are the questions and summary of responses to the questions regarding the effectiveness of the program. Written answers were given by the participants in place of interview, as the program administrators felt that interviews might consume too much of the participants' time.

QUESTION 1. WHAT ARE ONE OR TWO OF THE IMPORTANT PURPOSES OF THE EXECUTIVE PROGRAM?

Five of the responses from 18 participants reported that sharing concerns and ideas was important. Five of the respondents stated that just the interactions were important. Developing new skills was named twice. Developing confidence and developing leadership were each mentioned once.

QUESTION 2. IN YOUR EXPERIENCE, WHAT ARE SOME OF THE MOST POWERFUL WAYS TO STIMULATE LEADERSHIP IN YOUR SUBORDINATES?

Four respondents of the 18 stated that one way to stimulate leadership in subordinates was to give subordinates responsibilities. Teaching, challenging and coaching were each suggested three times as ways of stimulating leadership. Setting examples and using motivation were mentioned twice.

QUESTION 3. WHAT ARE ONE OR TWO CONTRIBUTIONS WILL YOU MAKE IN YOUR POSITION AFTER THE EXECUTIVE PROGRAM?

Six respondents to this question were concerned with contribution to team development and empowerment. Two respondents emphasized that they would try to improve communications and group dynamics. Two respondents thought that program taught them creativity and change principles. Two responses were concerned with motivation of employees, leadership, and management process.

QUESTION 4. THE TRAINING USES THE FOLLOWING LEARNING ACTIVITIES FOR PROFESSIONAL DEVELOPMENT: FORMAL CLASSES, CASES, READINGS AND ASSIGNMENTS, DISCUSSION GROUPS, OD AND SENSITIVITY TRAINING EXERCISES, AND INFORMAL SMALL GROUP ACTIVITIES.

a. What activities did have most desirable learning impact?

Almost all the respondents unequivocally stated that case studies and small discussion groups provided the most desirable learning effect.

b. Why do you think they were the most appropriate effective?

Five respondents said that they shared concerns, interactions, and viewpoints. Four said they learned from real life situations of case studies and group activities. Three said that by doing, the level of retention was increased and because they were tangible. The remaining did not answer.

c. How will you benefit from these activities?

Four respondents said they learned new techniques. Three said that program broadened perspectives. Three said they saw new group and team involvement from program.

QUESTION 5. HOW DID THE PROGRAM OPERATE TO FULFILL ITS OBJECTIVES?

Most of the respondents said that the program fulfilled the objectives. Two said that the program gave variety of methods and options in dealing with situations. Two reported that the program was intensive with high learning expectations.

QUESTION 6. HOW IS THE PROGRAM LINKED TO THE OVERALL LEADERSHIP DEVELOPMENT FOR YOUR COMPANY?

Three said that the program was not linked to corporate strategy. Three said that the program exposed the department heads first to change and implement competitive advantage. Two said that their companies have been sending participants because the program was good.

QUESTION 7

a. Describe your role in your company implementing some of the goals of Executive Program.

Three said that they would lead in implementing within their jurisdiction. Two said they would assume responsibility. Two said they would use change methods learned. One said he or she would continue team-building efforts.

b. Please give an example of ways your goals have changed recently to adjust to changes occurring in your area of work.

Four respondents said that their company's goals have changed to "empowered teams" and customer service. Two said that such programs enhanced effectiveness and enabled to value programs.

QUESTION 8

a. What do you think are the strengths of the program?

Most respondents said that interaction was the main strength. Other strengths were varieties in classes, topics, ideas, critical thinking, faculty, and convenient and open format.

b. What criteria did you use just now, as you identified the strengths?

Criteria were personal learning, opinion, observation, environment, participant backgrounds, and rewards of the program.

c. What do you judge are the limitations of the program?

Most respondents suggested that limitations were time, and not enough course offerings, concerted focus—no reflection in action, frequency of programming, and lack of integration in lectures.

d. What changes would reduce or eliminate the limitations?

Some respondents said that the program should be practical, with increased teaching time for breadth, precise learning objectives, increased class size, should stretch over longer periods and be more frequent.

e. What changes could turn them to strengths?

Two said more classes and instructors must be added. Some suggested split pattern of class with work-learn-work. Others did not know.

QUESTION 9. PLEASE GIVE AN EXAMPLE OF “INFORMAL” LEARNING SITUATIONS IN WHICH E/MP PARTICIPANTS LIKE YOU ACQUIRED NEW LEADERSHIP SKILLS.

Almost unanimously, the response was cases and group discussions.

QUESTION 10. WHAT ARE YOUR GOALS FOR IMPLEMENTING THE PROGRAM BENEFITS AS THEY RELATE TO YOUR LEADERSHIP?

Most respondents stated that they would take leadership roles with more responsibilities and use the knowledge gained. One said develop team communications.

QUESTION 11. BRIEFLY, HOW DID THE PROGRAM ADDRESS TO YOUR SKILLS, DECISION STYLES, LEARNING STYLES, AND BACKGROUND PROFILE FOR EFFECTIVENESS?

Each of the seven responses reporting ways the program addressed their management skills were unique. Of the six positive responses, four were strongly positive. One response was somewhat neutral and one response was negative.

QUESTION 12. LITTLE HAS BEEN WRITTEN ABOUT MIDDLE MANAGERS IN INDUSTRIES.

a. What leadership skills are most important for them?

Most of the responses emphasized importance of communications and human relations, shared vision, and coaching and motivation. Others were focused on managerial versatility, directing change and problem solving and understanding the customer. Communication skills and human relations skills.

b. In what ways are their roles changing?

Most reported broadening of responsibilities, yet moving from boss to coach. One said they are getting more technical and one said they are reduced or eliminated as the organizations flatten. However, most agree the roles have been tougher.

Two said roles were changing from information agent to dealing with and articulating problems rather than avoidance. Two said roles were changing to be more competitive. Three said roles were changing to have both technical and managerial responsibilities at an early age. One said roles were changing from coach to controller. The two said roles were changing because many are losing jobs due to middle manager squeeze—have to prove worth to keep a job.

QUESTION 14. ARE THERE FURTHER COMMENTS YOU WOULD LIKE TO MAKE ABOUT THE EXECUTIVE PROGRAM?

Four said that it was unique in many respects; its reputation is national (even international). Two said that it drew on some of the best faculty, available at an international research institution and from the business community. One said that it was a good program meeting the needs of our national constituency.

Some suggested that weekly class time be extended and Saturday class eliminated. Some suggested the program must have new offerings and needed change.

FACULTY INTERVIEW PROTOCOL – SUMMARY

Following are the questions and summary of responses to the questions regarding the effectiveness of the program. Written answers were given by the faculty in place of interview as the program administrators felt that interviews may consume too much of the faculty's time.

QUESTION 1. WHAT ARE ONE OR TWO OF THE IMPORTANT PURPOSES OF THE EXECUTIVE DEV PROGRAM?

Five of the respondents believed the program fostered cross-fertilization between Engineering and Management for the attendees. Three said the program exposed participants to variety of possible new issues, approaches, and practices. Involved them heavily in their own learning. Three said that the program allowed for networking of participants and update or learn new skills.

QUESTION 2. IN YOUR EXPERIENCE, WHAT ARE SOME OF THE MOST POWERFUL WAYS TO STIMULATE LEADERSHIP IN YOUR STUDENTS?

Five respondents stated that participants were given the knowledge, skills and tools and techniques for applications on their jobs. Six respondents believed that group discussions, real world situations, team projects, and role-playing gave participants leadership confidence.

QUESTION 3. WHAT ARE ONE OR TWO CONTRIBUTIONS DO YOU MAKE TO THE EXECUTIVE PROGRAM?

Four respondents believed they contributed to the program by offering “strategic thinking,” and “objective thinking.” Two thought that they are bridging the gap between theory and practical applications. Others thought that they were helping participants improve discipline specific skills in which they were interested.

QUESTION 4. THE EXECUTIVE PROGRAM USES THE FOLLOWING LEARNING ACTIVITIES FOR PROFESSIONAL DEVELOPMENT: FORMAL CLASSES, CASES, READINGS AND ASSIGNMENTS, DISCUSSION GROUPS, OD AND SENSITIVITY TRAINING EXERCISES, AND INFORMAL SMALL GROUP ACTIVITIES.

a. What activities do you use for most desirable learning impact?

Case discussion: Six of the faculty members thought that cases, group discussions, practical exercises had most desirable impact. Four faculty members thought that role-playing, video exercises were the most desirable. One member thought readings and lecture were most effective.

b. Why do you think these are the most appropriate activities?

Unequivocally, the faculty members agreed that these case studies and discussions generate high involvement, active learning, understanding, interaction, and reinforcement.

c. How will the participants benefit from these activities?

Unequivocally again, the faculty said that participation, learning from others, repetition and reinforcements, reflective thinking, share expertise, and doing something gave the participants most benefits.

QUESTION 5. HOW DOES THE PROGRAM OPERATE AND WHY?

Seven responses were about justifications of course offerings for an efficient and effective model. Three said that the participants gave valuable new contacts to tailor programs for the future. One thought that the question was rather vague.

QUESTION 6. SUCCINCTLY, HOW IS YOUR COURSE LINKED TO THE OVERALL LEADERSHIP DEVELOPMENT AND PROGRAM OBJECTIVE?

Five responses were development of strategic thinking, managerial perspective, effective communication, and teamwork. Five emphasized discipline specific knowledge and skills development. One responder was not very sure how his topic was related to overall leadership development.

QUESTION 7

a. Describe your role in developing the goals of Executive Program.

Four responses said that they were responsible for the development of the goals of the program. Other four said they were teaching their part. Two saw limited link to the program goals. One responder was not very sure of the linkage.

b. Please give an example of ways the goals have changed recently to adjust to changes occurring in executive development programs.

Five faculty members have read constantly and extensively in their areas and have implemented changes. Three respondents said that discipline specific courses have also increased emphasis, whereas two respondents emphasized general management skills development. One respondent was not aware of how goals have changed.

QUESTION 8

a. What do you think are the strengths of the program?

Four respondents said that the broad menu of courses was the main strength of the program, whereas four said that the participants' interaction was the most positive strength. Three respondents thought that the faculty was the strength of the program.

b. What criteria did you use just now, as you identified the strengths?

Three respondents thought it was "customer satisfaction," whereas two stated that it was a "tailored" program for each participant. Two respondents thought that it was the learning environment of the program. The remaining four said it was the participants' evaluation that was the strength of the program.

c. What do you judge are the limitations of the program?

Four respondents said that there was too little time. Two respondents said that some classes have too high enrollments and some have too low enrollments. Three respondents said it was the background of the participants' preparation and training. One wondered if there was enough innovation and cross-course integration.

d. What changes would reduce or eliminate the limitations?

Two respondents suggested disallowing class enrollment limits and send course packets out by mail to all students. Two suggested focus—either make whole program more general or more specific. Two suggested data collection on application. Remaining ones suggested changes administrative rescheduling, change of class structure, careful planning, and integration across classes.

e. What changes could turn them to strengths?

One faculty suggested that the program offer more “sections” of a given course (that seems to be so popular). Another suggestion was to set and adhere strictly to an enrollment deadline to prepare and mail out, in advance, study packets for all students in all courses. Two respondents were not sure.

QUESTION 9. EXECUTIVE PROGRAM PARTICIPANTS ACQUIRE NEW LEADERSHIP SKILLS.

Six of the respondents said it was informal coffee discussions, spontaneous interactions and discussions at meals, breaks, and hospitality suite. Two said that it was interaction with participants at team building exercise. Two respondents said that it was relating to cases, small group assignments, and introspective review of role-playing.

QUESTION 10. GIVEN THE OVERALL MISSION OF THE PROGRAM, WHAT ARE YOUR GOALS FOR YOUR PART? HOW DO THESE RELATE TO LEADERSHIP?

Three respondents said their goal was quality instruction—tailored material. Two respondents said that their goal was to help each participant better understand how to be a more effective communicator. One said that it was to give participants academically sound information they can programmatically apply back on the job. Two said that they used involvement and commitment approach to management and leadership. One said that his discipline specific course material was suitable for leadership development. One respondent was not aware of the mission of program—“just dealing with my part.”

QUESTION 11. HOW DO YOU DESIGN AND IMPLEMENT YOUR “TRAINING STRATEGY FOR EFFECTIVENESS” TO ADDRESS SKILLS, DECISION STYLES, LEARNING STYLES, AND BACKGROUND PROFILES OF EXECUTIVE PROGRAM PARTICIPANTS.

Two said that they use survey to determine participants’ needs and background. Four said that they tailor some discussion based on informal feedback. One faculty said that, given their technical bent he provided thought-provoking, intellectually stimulating information. One faculty with 25 years of experience in wide variety of settings as manager in industry and academe tries hard to keep up with new training designs. Two stated that they adapt material to their present needs and those of foreseeable future.

QUESTION 12. LITTLE HAS BEEN WRITTEN ABOUT MIDDLE MANAGERS IN INDUSTRIES.

a. What leadership skills are most important for them?

Four respondents said it was teamwork, communication (verbal and written), coaching, delegating and empowerment. Two respondents said that it was the ability to translate abstract goals into specific initiatives, actions, and objectives. One said it was building vertical and horizontal network. One said that it was their need to have dual focus—strategic eye toward top and bottom communications. In addition, one said that it was dealing with and articulating problems rather than avoidance.

BENCHMARKING

For continuous improvement purpose, the executive program best practices were followed in evaluating the best course and the best instructor and the underlying systemic reasons. The participants unanimously voted Competitive Advantage and Organizational Capabilities (CAOC) as the best course. Its results are shown below. The mean satisfaction level in reaction and learning are toward the highest end in the 15 criteria with very small standard deviations. These are highlighted in red for the CACC course in the overall cluster of 16 modules and 16 instructors. This course was considered as the best in six criteria of evaluation, the second best in four criteria and about third best in about five criteria. This benchmark uses the transfer of learning on the job in a 3-month and a 6-month post survey.

TABLE 5. EVIDENCE OF TRAINING EFFECTIVENESS-BENCHMARKED MODULE

Competitive advantage	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Mean score	4.86	4.76	4.71	4.76	4.33	4.24	4.67	4.38	4.38	4.52	4.45	4.60	4.38	4.50	4.80
Standard deviation	0.36	0.54	0.56	0.54	0.58	0.70	0.48	0.59	0.59	0.60	0.60	0.50	0.67	0.69	0.41

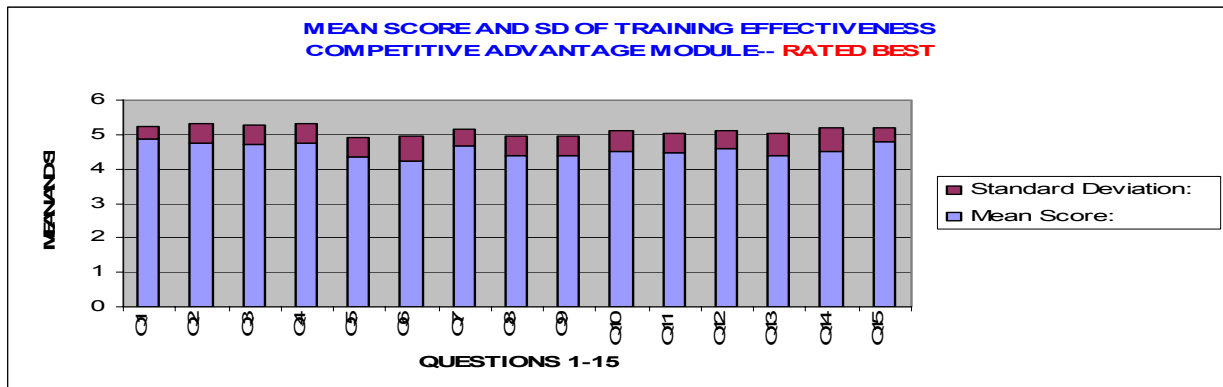


FIGURE 1. GRAPHICAL EVIDENCE OF TRAINING EFFECTIVENESS-BENCHMARKED MODULE

Continued... Instructor and Course Evaluation Page 2 of 2

Instructor: _____

Course: E/M 221: Sources of Competitive Advantage and Organizational Capabilities

Leadership Training Focus: Strategy

Management Skills Module: Organizational Leadership

Mean (Standard Deviation)

Scale: 1: Strongly Disagree, 2: Disagree, 3: Neither, 4: Agree, 5: Strongly Agree

Question	Medium					High	O'all		
1. My instructor displays a clear understanding of the course topics.	4.56 (0.51)	4.64 (0.50)	4.72 (0.45)	4.82 (0.40)	4.85 (0.38)	4.86 (0.36)	4.88 (0.33)	4.94 (0.25)	4.56 0.49
2. My instructor has an effective presentation style.	4.53 (0.61)	4.56 (0.63)	4.56 (0.51)	4.62 (0.49)	4.64 (0.50)	4.68 (0.48)	4.76 (0.54)	4.77 (0.44)	4.24 0.69
3. My instructor seems well prepared for class.	4.44 (0.51)	4.58 (0.51)	4.59 (0.50)	4.62 (0.51)	4.68 (0.48)	4.71 (0.56)	4.74 (0.44)	4.82 (0.40)	4.35 0.64
4. My instructor stimulates interest in the class.	4.52 (0.51)	4.55 (0.69)	4.55 (0.62)	4.56 (0.51)	4.62 (0.51)	4.68 (0.48)	4.73 (0.47)	4.76 (0.54)	4.23 0.71
5. The objective of this course were clearly explained to me.	4.14 (0.90)	4.17 (0.76)	4.21 (0.58)	4.23 (0.73)	4.27 (0.65)	4.33 (0.58)	4.36 (0.57)	4.45 (0.62)	3.99 0.75
6. This course contributes significantly to my professional development.	4.00 (1.00)	4.00 (0.88)	4.03 (0.82)	4.06 (0.77)	4.07 (0.92)	4.08 (1.12)	4.18 (0.75)	4.24 (0.70)	3.83 0.87
7. My instructor develops classroom discussions skillfully.	4.32 (0.91)	4.36 (0.67)	4.37 (0.60)	4.43 (0.58)	4.44 (0.51)	4.45 (0.69)	4.67 (0.48)	4.69 (0.48)	4.09 0.74
8. One real strength of this course is the classroom discussion.	3.97 (0.66)	4.00 (0.82)	4.18 (0.64)	4.20 (0.65)	4.38 (0.59)	4.39 (0.77)	4.47 (0.51)	4.59 (0.50)	3.90 0.80
9. Assigned readings significantly contributed to this course.	3.86 (0.86)	3.96 (1.02)	4.00 (0.63)	4.05 (0.62)	4.16 (0.62)	4.26 (0.64)	4.27 (0.47)	4.38 (0.59)	3.72 0.79
10. I highly recommend this course.	4.13 (0.62)	4.14 (0.60)	4.32 (0.56)	4.34 (0.72)	4.39 (0.84)	4.47 (0.70)	4.52 (0.80)	4.55 (0.82)	3.96 0.87
11. My instructor motivates me to do my best work.	3.77 (0.93)	3.90 (0.86)	3.97 (0.87)	4.00 (0.63)	4.08 (0.58)	4.11 (0.66)	4.45 (0.80)	4.60 (0.70)	3.78 0.80
12. My instructor explains difficult material clearly.	4.08 (0.28)	4.17 (0.71)	4.25 (0.61)	4.26 (0.45)	4.50 (0.58)	4.60 (0.50)	4.65 (0.49)	4.70 (0.48)	4.08 0.62
13. Course assignments are interesting and stimulating.	4.06 (0.73)	4.08 (0.69)	4.09 (0.54)	4.12 (0.70)	4.14 (0.38)	4.21 (0.68)	4.28 (0.54)	4.38 (0.67)	3.86 0.73
14. Overall, this course is among the best I've ever taken.	3.59 (1.02)	3.69 (0.87)	3.81 (0.98)	3.95 (0.71)	3.97 (0.82)	4.00 (0.83)	4.10 (1.10)	4.50 (0.69)	3.49 0.98
15. Overall, this instructor is among the best I've ever known.	4.06 (0.77)	4.08 (0.76)	4.10 (0.78)	4.14 (0.79)	4.16 (0.76)	4.21 (0.78)	4.50 (0.71)	4.80 (0.41)	3.78 0.88

FIGURE 2. POSITION OF THE BENCHMARKED MODULE IN EFFECTIVENESS GRID

TABLE 6. COMPOSITE PROGRAM EVALUATION

Question	Mean* (Standard Deviation)
1. Administration of my attendance was handled efficiently by KEEP.	4.70 (0.46)
2. Training Center facilities were conducive to my leaning.	4.67 (0.55)
3. Lodging at the Union was suitable.	4.33 (0.61)
4. Meals and refreshments were suitable.	4.50 (0.67)
5. Overall, I would rate this program as shown.	4.47 (0.61)

Note. Scale: 5 – Outstanding, 4 – Good, 3, – Average, 2 - Below Average, 1 - Poor

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THE LEADERSHIP STYLES OF FUTURE LEADERS

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ABSTRACT

Leadership is continually in short supply and businesses are concerned about where the next generation of leaders will come from. The coursework and activities in higher education help prepare students for the world of work. This study explores the leadership style of future leaders. The majority of respondents did not use any predominant leadership style. Those who did use a predominant style used a single style followed by a paired style. The human resources frame was the most used, followed by the structural frame. Conversely, the political frame was by far the weakest frame used. Slight statistically significant relations were found. The authors address implications and recommendations to enhance the skills of future leaders.

INTRODUCTION

Leadership is a vital component for any organization. To adapt, evolve, and successfully compete, the leader of an organization casts the vision, plots the course, and navigates the often-turbulent waters of change. Leadership is continually in short supply and businesses are concerned about where the next generation of leaders will come from. For example, in a national study of healthcare executives, it was found that hospitals have not done enough to prepare for top-level vacancies, train, and track future leaders (Evans, 2008). Similarly, many feel that it is incumbent on businesses to develop future leaders so that the enterprise can continue to operate. For example, Albaum and Peterson (2007) contend that future leaders are one of the businesses stakeholders and their development is of paramount performance. In fact, by identifying leaders early, firms are strategically selecting assignments that can augment their job experience and performance (Colvin, 2007).

Vogal (2007) contends there is a leadership void in corporate America and questions whether leaders either contemplate or comprehend their leadership style. This opinion is exasperated by a study (of over 5,000 hiring managers) that found that 46% of new hires failed, predominantly in interpersonal and leadership skills, within 18 months (Murphy, 2006).

Others feel that the preparation of future leaders is a primary responsibility of post secondary institutions. The future leaders in attendance, while lacking in education and experience, display

some nascent abilities that can be honed. Thus, universities are providing leadership experiences in the curriculum to meet the leadership vacuum.

In addition, there is no shortage of books on the topic of leadership. In fact, a recent search revealed over a quarter of one million books, 254,713 to be exact, just in Amazon.com's holdings (www.amazon.com).

But what factors determine leadership? Does age, gender, race, grade point average, work status, type of work, and level in the organization have an impact on leadership style? The purpose of this study is to determine whether the demographic factors such as age, gender race, grade point average, work status, type of work, and level in the organization have an impact on the leadership style of future leaders.

RESEARCH QUESTIONS

- H₀ There are no relationships between demographic variables and leadership style.
- H₁ There is a relationship between age and leadership style.
- H₂ There is a relationship between gender and leadership style.
- H₃ There is a relationship between race and leadership style.
- H₄ There is a relationship between grade point average and leadership style.
- H₅ There is a relationship between work status and leadership style.
- H₆ There is a relationship between the type of work performed and leadership style.
- H₇ There is a relationship between the level in the organization and leadership style.

RESEARCH INSTRUMENT

Dr. Lee Bolman granted the researchers permission to use the copyrighted Bolman and Deal (1990) *Leadership Orientation Instrument (Self)* questionnaire, which consists of 32 questions that seek responses on a Likert-like scale (Bolman & Deal, 1990). This instrument was tested on 1309 managers in business and education and has both validity and reliability as evidenced by a Spearman Brown Coefficient of .933 and a Guttman (Rulon) Coefficient of .933 (Bolman, 2008).

The Bolman and Deal (1990) model consists of four leadership styles: the no-style, single, paired, and multistyled. Leaders using a single style predominantly use one style. Similarly, leaders using a paired style predominately used two leadership styles and those using the multistyle use three or more leadership styles. Those leaders categorized as no style do not exhibit a preference for any of the four rated leadership styles (Bolman & Deal, 1994). Embedded within the style are the four leadership frames.

Frames open different windows of organizational reality and give leaders multiple strategies for addressing challenges. These four dimensions are (a) the structural frame, (b) the human resource frame, (c) the political frame, and (d) the symbolic frame. Bolman and Deal (1994) devised these frames as an extension of previous theories and research. The structural frame focuses on formal rules, hierarchy, and the goals of the organization. The human resource frame focuses on the needs of the people within the organization. The political frame views organizations as arenas where participants compete over resources, power, influence, and

interests. Finally, the symbolic frame focuses on the intangible aspects of the organization such as culture, myths, ceremony, and rituals. Leaders tend to favor certain frameworks over others, but a single framework style might limit their ability to address situations successfully.

This reframing will enable the leader to view, analyze, and develop solutions from one or more different perspectives. Bolman and Deal (1997) contend that effective leaders are multiframed, that is they use at least three of the four frames. This multiframe leadership provides the leader with more potential opportunities and solutions. The four-frame model developed by Bolman and Deal was used to identify which frames the participants of this study use.

Bolman and Deal’s (1990) model has been successfully used with both high reliability and validity in a variety of areas including College Presidents to Auburn University doctoral leadership program (Bentley, 2004). Especially in the area of education, Bolman and Deal (1994) contend that teachers who are able to reframe situations become more confident, feel less anxious and become more efficient and effective.

TABLE 1. CHARACTERISTICS OF THE BOLMAN AND DEAL FOUR-FRAME MODEL

Characteristics	Structural	Human Resource	Political	Symbolic
Metaphor	Machine	Family	Jungle	Carnival
Central concepts	Rules, roles, policies	Relationships, needs, skills	Power, conflict, competition	Culture, rituals
Decision making	Rational	Open-produce commitment	Gain or exercise power	Confirm values
Leader	Analyst, architect	Catalyst, servant	Advocate, negotiator	Prophet/poet
Process	Analysis, design	Support, empowerment	Advocacy, builds coalitions	Inspiration
Communication	Transmit facts	Exchange needs and feelings	Influence others	Tell stories
Motivation	Economic	Growth	Coercion	Symbols
Challenge	Attune structure to task	Align needs	Develop agenda/power base	Create meaning

LITERATURE REVIEW

Kolb (1984) asserts that leadership can be gained from experiential learning experiences, and contends that service learning, social welfare activities, learning communities, volunteering, internships, and other activities develop social consciousness and life-long learning. In addition, Connaughton, Lawrence, and Ruben (2003) contend leadership development is a fundamental responsibility of colleges and universities. By emphasizing students’ leadership competencies and experiences through theoretical and applied course work, internships, and interaction with leaders from business, education, health care, and government can both initiate and nurture leadership ability. Similarly, Grande and Srinivas (2001) assert that experiential learning is an essential component for the development of leadership skills. In addition, different frames for adult programs and services are needed to align with the frames of potential participants (Yopp, 1996). Furthermore, Thompson (2000) argues there are significant contributing college resource categories of internships/field experiences/off-campus study and athletics that represent programs that emulate leadership positions, provide opportunities to students, and translate into societal equivalencies.

Slater (1994) argues that leadership has a cultural context and, therefore, recommends that leaders identify cultural themes and values the followers can rally around. White (2004), while studying ministry students, found that they needed to engage their peers at the relational level. In addition, Arendt and Gregoire (1998) found that students identified the relationship between leadership and group projects. However, many barriers limited or prevented learning about leadership, and students realized the need to transfer this learned leadership to the workplace.

With the pressing need for leadership, it appears that future leaders are beginning their training earlier. Griffen-Bonnaire (2003) contends that high school students should be engaged in their education and should play an active role in becoming responsible citizens. In the same manner, the Native American tribal colleges also realize the necessity to train leaders for the future and are actively encouraging leadership training in their curriculum (Cherokee, 2002). However, LaFontaine (2002) found the average male involvement in secondary school student leadership opportunities was approximately 25% and dropping.

Guido-DiBrito, Noteboom, Nathan, and Fentry (1996) studied gender and leadership among midlevel student affairs professionals and found issues of gender and leadership intertwining and changing according to different situations, contexts, and personalities. Women predominantly use a cooperative leadership style, while men lead autocratically. Therefore, it is hoped that student affairs leaders recognize how cultural prescriptions, in addition to their own personal experiences, promote and hinder leadership.

In a study of 60 suburban high school students, Dobosz and Beaty (1999) found that athletes demonstrated significantly greater leadership ability than did nonathletes. Thus, this finding lead suggests that high schools must now play an integral part in the character development of their students, and that they must reinforce the values and morals instilled by the family. By implementing programs that identify and develop character traits crucial for effective student leaders, school personnel at Warren Central High School are providing the necessary anchors to survive tumultuous times and build a firm foundation for the leaders of the future.

Similarly, Posner (2004) contends that leadership development is now an integral part of the educational program of college students, with courses and activities scattered throughout the cocurricular experience, and postulates that leadership educators and other student affairs professionals can take comfort and even pride in knowing that leadership education programs and leadership classes are apparently influencing the leadership behaviors of students. In addition, Berson, Dan, and Yammarino (2006) found management students more readily recognized leadership ability in working in teams as opposed to individual work.

Raines (2003) contends the good higher education administrator is one who masters the knowledge and skills to perform necessary tasks with efficiency and effectiveness; the outstanding leader engages in reflective practice and continuous growth. Marques (2007) found that learning and leadership are positively related and provide a mutual benefit both learning and leadership. In addition, their progress increases the probability of future job success. In the process of their maturity, leadership identity was connected to the students changing view of themselves (Komives, Owen, Longersbeam, Maintella, & Osteen, 2005).

Komives, Lucas, and McMahon (1998) posited that leadership, like any other skill, needs to be practiced. Reese (2008) asserted that career and technical student organizations are places to learn leadership skills. In fact, participation in extracurricular activities can increase communication and leadership skills (Cuyjet, 2006). While many believe that reputable student organizations such as Student Government and the Society for the Advancement of Management are avenues for the development of leadership skills, others feel that Greek fraternities and sororities are nothing more than organized drinking clubs. However, Plucker (2004) found that there was not a significant relationship between binge drinking and Greek leadership positions

The issues of race and gender have been contentious in relation to leadership style. In a study of American and European business executives, Frauenheim (2007) contends that people automatically assume that leaders should be male. In fact, Tully (2007) asserts that women must become adept at both assertiveness and sociability to reach leadership positions. Further, in a study of nearly 3,000 undergraduate business students from universities across the country, Albaum and Peterson (2007) found that female survey participants were slightly but significantly more ethically inclined than male survey participants, and that survey participants who reported being very religious were slightly but significantly more ethically inclined than survey participants who were less religious. In addition, Lips (2001) found that women were more likely than men to anticipate relationship problems with powerful roles. Furthermore, young women do envision ambitious leadership possibilities for themselves; however, they struggle with how to make these visions a reality. Likewise, the college student's vision of power was moderated by gender, as women were significantly more likely than men to anticipate relationship problems associated with the political leader role. In addition, women did not see themselves becoming a person of power (Lips, 2000). However, Cress, Astin, Zimmerman-Oster, and Burkhardt (2001) did not find gender or race to be factors in leadership ability.

Leadership Styles

There have been many studies using the Bolman and Deal (1990) *Leadership Orientations* instrument. Monahan and Shah (2006) found that Master I presidents practice a multiframe leadership style. Russell (2000) observed that academic deans at community colleges predominantly used the multiple frame leadership style, and Turley (2002), who studied radiation therapy program directors, found that 44% of respondents espoused multiframe leadership.

On the other hand, Thompson (2000), in a study of 472 lower-management, middle management, and upper-management personnel in secondary and postsecondary leadership positions, found that the majority (51.1%) used either single or paired frames, 13.3% used three frames, and 35.6% employed all four frames.

In a study of campus safety directors at public 4-year institutions two-thirds used multiple-frame leadership (Wolf, 1998). Further, two-thirds of chief information officers used multiframe leadership (Becker, 1999).

Small (2002) examined the relationship between the perceived leadership style of nursing chairpersons and the organizational effectiveness of baccalaureate nursing programs. It was interesting to note that faculty members perceived chairs as using no frames the most, followed

by all four frames, single frame, multiframe, and paired frame. Rivers (1996) studied principal leadership in Florida and found more than one-half of the elementary principals used multiple frames and three-quarters of the high school principals used multiple frames

Messer (2002) also studied elementary principal leadership orientations in Florida public schools and found that 60% of the principals employed multiple frame leadership. Harlow (1994) studied 20 Washington State public school superintendents and found these superintendents rarely used more than two frames, but Flak (1998) examined female superintendents and found that multiframe leadership orientation was used.

Leadership Frames

In a study of directors of occupational therapy programs, Miller (1998) found that 40% used the four frames. The human resources frame was the most used, while the structural frame was the least used. Males were four-frame leaders significantly more than females, and years of experience were significantly correlated with use of the political and symbolic frames. Scott (1999) studied the 20 top college athletic departments and found that the political frame the least used, but there were no statistical differences due to gender. Bird (2004) surveyed student leaders from 12 protestant colleges and found that the human resource frame was the predominant frame used, followed by the structural, political, and symbolic frames.

RESULTS AND DISCUSSION

The survey was administered to 655 undergraduates and graduate students at a Masters I university located in Appalachia. The demographics of the respondents are displayed in Table 2. The respondents by gender were nearly evenly distributed 48% (female) to 52% (male). The vast majority (67%) was between 20–22 years of age, and nearly all 96% were single. Caucasians accounted for 79% of the respondents, followed by African Americans 14%. Business majors (54%) were the dominant area of study. The majority (56%) had a GPA of less than 3.0. Most (57%) were full-time undergraduates taking between 3–5 classes. Nearly half (45%) did not work at all and, of those who did work, only 9% held full-time jobs. Of those working, 30% were operatives.

TABLE 2. DEMOGRAPHICS OF THE RESPONDENTS

Demographic Factors	Percent
Gender	
Females	0.48
Males	0.52
Marital status	
Married respondents	0.04
Single respondents	0.96
Age in years	
Under 20 years	0.19

Demographic Factors	Percent
20–22 years	0.67
23–29 years	0.11
30–39 years	0.02
40–49 years	0.01
50–59 years	0.01
Over 60 years	—
Ethnicity	
African Americans	0.14
American Indians	0.01
Asians	0.02
Caucasians	0.79
Hispanics	0.02
Others	0.02
Work status	
Not working	0.45
Working < 10 hours per week	0.15
Working 11– 15 hours per week	0.11
Working 16–25 hours per week	0.13
Working 26–35 hours per week	0.07
Working > 35 hours per week	0.09
Industry where working	
Education	0.06
Finance	0.01
Healthcare	0.02
Hospitality	0.10
Manufacturing	0.01
Sales	0.09
Service	0.09
Other	0.19
Not applicable	0.42
Work level	
Upper management	0.03
Middle management	0.06
Supervisor	0.07
Operative	0.30
Not applicable	0.53

Demographic Factors	Percent
GPA	
2.00 – 2.49	0.16
2.50 – 2.99	0.28
3.00 – 3.25	0.18
3.26 – 3.49	0.15
3.50 – 3.75	0.10
3.76 – 4.00	0.10
Educational major	
Business	0.54
Education	0.13
Fine Arts	0.02
Liberal Arts	0.06
Physical Science	0.03
Social Science	0.04
Other	0.18
Level of courses taken	
Undergrad 1–2	0.20
Undergrad 3–5	0.57
Undergrad >5	0.14
Graduate 1–2	0.03
Graduate 3–4	0.03
Graduate >4	0.01

The majority of respondents did not use any predominant leadership style. Those who did use a predominant leadership style used a single style (24%) followed by a paired style (15%; see Table 3). As anticipated, the human resources frame was the most used (47%), followed by the structural frame (33%). Conversely, the political frame was by far the weakest frame used (40%) (see Table 4).

TABLE 3. LEADERSHIP STYLE USAGE

Style	Percent of use
No style	41
Single style	24
Paired style	15
Three style	9
Four style	11

TABLE 4. STRONGEST AND WEAKEST FRAMES USED

Frame	Strongest		Weakest	
Structural	33	(2)	29	(2)
Human resources	47	(4)	12	(4)
Political	8	(3)	40	(1)
Symbolic	12		19	(3)

With regard to gender, nearly half (48%) of males did not use any frame as compared to one-third (33%) of females. With the exception of the full four frames, females used each style more than males. In fact, a weak but statistically significant negative relationship existed (see Table 4). Concerning race, non-Caucasians (17%) used the full four-frame leadership style at twice the level of Caucasians (9%; see Table 4).

A slight statistically significant relationship, $r = .198$ at the .01 level, was found with respondents with GPA's greater than 3.0. These students generally exhibited more leadership styles than students with lower grades (see Table 7).

Respondents who worked used many more frames of leadership than respondents who did not work (see Table 7). Ironically, those who worked part-time generally used more leadership styles than those who worked full-time (see Table 8).

TABLE 5. LEADERSHIP STYLE AND GENDER

Style	Female	Male
No Frame	0.33	0.48
Single	0.27	0.21
Paired	0.16	0.14
Three Frame	0.13	0.06
Four Frame	0.11	0.11

Note. Pearson's $r = -.100$, $p < .01$; $\chi^2 = 21.86$, $df 4$, $p < .01$

TABLE 6. LEADERSHIP STYLE AND RACE

Style	Caucasian	Non-Caucasian
No frame	0.42	0.38
Single	0.26	0.19
Paired	0.15	0.16
Three frame	0.09	0.10
Four frame	0.09	0.17

Note. Pearson's $r = .092$; $p < .05$; $\chi^2 = 9.41$, $df 4$; $p < .05$.

TABLE 7. SUMMARY OF STATISTICALLY SIGNIFICANT RELATIONSHIPS

Statistically significant demographic factors	<i>r</i>	<i>p</i>	χ^2	<i>df</i>	<i>p</i>
Gender	-0.100	p < .01	21.86	4	p < .01
GPA > 3.0	0.198	p < .01	12.14	4	p < .05
Race	0.092	p < .05	9.41	4	p < .05
Level in workforce	0.095	p < .05			
Work status: not working or working	0.142	p < .01	18.42	4	p < .01
Working part-time or full-time	0.115	p < .01			
Working in services	0.155	p < .01			
Working in sales	0.148	p < .01			
Working in education	0.120	p < .01			

The strong use of the human resources and structural frames correspond to the student’s basic understanding of the dichotomy between the leader focusing on relationship and tasks. The very limited use of the political and symbolic frames might be due to the time and experience it takes to develop or the reluctance to stray from a style that appears to be working. Even when using a frame, the largest number of respondents used only one, the human resources frame.

Concerning gender, a slight statistical relationship occurred because the females used one, two, and three frames more than males. Similarly, regarding race, non-Caucasians used the four frames more than Caucasians.

Similarly, respondents with higher GPAs and those who worked tended to be more versatile in their use of leadership styles; however, those who worked part-time showed more leadership styles than those who worked full-time. Perhaps, intelligence is a factor in leadership. Another explanation might be that the students who were of a traditional age worked part-time and adults who had or did not have college degrees worked full-time. In addition, a statistical correlation existed with those respondents who worked in the services, sales, and education fields. This might be because the respondents needed to adapt to various types of customers and constituencies.

Because the majority of respondents did not have a particular style, the researchers posited that the uses of styles were the result of experience. Because so many college students did not work or worked only part-time, they might not have had opportunities to develop leadership styles. Their supervision of others might be rudimentary at best, and they probably had had limited situations in which to resolve conflict, work autonomously, and set goals. Monahan and Shah (2006) found that university presidents use the multiframe style. This might be due to their training, years of experience, and boundless opportunities to address conflict.

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Employing a higher GPA and working at a higher level all had weak but statistically significant relationships on leadership style. Surprisingly, business majors did not possess more leadership ability than their counterparts. This might be due to the respondents’ level of studies in their

major or the apparent conclusion that a major is not an indicator of leadership ability.

Additional research could focus on the leadership styles of freshman and seniors. In addition, longitudinal studies could assess whether leadership skills are gained during the college years and could compare the results to students who have been in the workforce for at least 5 years. The student findings could be compared with college presidents, deans, student affairs officers, faculty, medical, and legal practitioners.

However, the issue remains: What can universities do to improve the leadership skills of future leaders? Because multiframe leadership is the most effective, what measures can be taken to train and guide students into this pattern of leadership? First, a paradigm shift is needed. Students must be educated on the value of becoming involved; then they will be able to see situations from multiple perspectives. Perhaps, through encouraging and mentoring, students could be drawn into clubs such as the Society for the Advancement of Management (SAM); the Society for Human Resources (SHRM); other clubs in field such as marketing, economics, finance, accounting and entrepreneurship; or Delta Sigma Pi, the preeminent business fraternity. Furthermore, students could be inducted into honorary organizations such as Beta Gamma Sigma or such organizations could serve as springboards for leadership activities. Secondly, students should be steered toward classes that offer experiential learning activities. Third, classroom activities that promote group work, critical thinking, and discussion should be encouraged.

Additional activities have also been cited in the literature. For example, Thompson (2002) encouraged internships, field experiences, and off-campus study programs. Slater (1994) asserts that an understanding of culture and values might be of benefit to leaders. Even the much-maligned Greek organizations provide extracurricular leadership opportunities (Plucker, 2004).

Finally, research could also be extended to high school students. Although still younger, these students experience profound physiological and psychological changes. A plethora of activities and experiences such as drama clubs, mock trials, science competitions, athletics, student government, scouting, and cheerleading to name of few could help them break out of their shells and contribute to their communities. Perhaps, if these students could exert leadership in the company of the companions with whom they grew up, they might be more comfortable in continuing in leadership positions when they later attend college or enter the workforce. At the very least, a solid stage can be set by which their college development could continue.

In conclusion, leadership development is a major task and opportunity for institutions of higher education. Their efforts could help future leaders prepare for the challenges of tomorrow.

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**NEW PERSPECTIVES ON THE STRATEGIC LINKAGES BETWEEN
MARKETING FACTORS, R & D ACTIVITY, AND FIRM PERFORMANCE IN THE
U.S. PHARMACEUTICAL INDUSTRY**

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ABSTRACT

The purpose of this study is to explore the impact of various market structure elements in the pharmaceutical industry in the United States, such as research and development (R&D), advertising, capital intensity, inventory turnover, and firm size on the financial accounting performance measurements, return on equity (ROE), and return on assets (ROA). The results indicate that two elements of market structure, firm size and R&D intensity, are associated significantly and positively with the financial performance indicators (ROA and ROE), advertising intensity and capital intensity are significantly and positively associated with ROE, and inventory turnover is not statistically significant for both ROA and ROE. Because these variables are not correlated, they have not been as proven explanatory elements in the determination of the financial performance.

INTRODUCTION

Substantial empirical studies have been performed to analyze the variables that affect the financial success of the pharmaceutical industry. These studies have used various financial indices such as asset-to-net-worth, return on net profit, sales growth, and ROE (Trombetta, 2003). They have also tried to explain and measure the financial indices and independent variables such as brand power, sales per sales representative, and percentage of revenues from new products, gross sales, and product success rate. During the current study, we discovered that many of these studies used R&D and advertising expenses as independent variables.

A plethora studies was performed on the pharmaceutical industry for two reasons. First, the growth of the industry as a whole has been sizeable. The pharmaceutical industry in the United States grew 6.2% in revenue, compared with the average Fortune 500 growth of 1.2% (Trombetta, 2003). Market investors wanted to know the causes of this success and whether it

could be sustained. Studying the variables that might have caused the success would be key to forecasting future success and, therefore, would be key to deciding whether to invest in these companies.

Second, many studies have been performed because the pharmaceutical industry has consistently performed well regarding profits. Thus, it has been observed that several new rainmaker drugs contribute heavily to a drug manufacturer's overall success. This is true both for firms in which pharmaceutical production is the major source of operations and in which it is only a section of manufacturing operations, denoted other. The successful launch of a new drug can sustain a pharmaceutical company's profitability for many years; conversely, a failed new drug can cause significant financial difficulties. Because a vast number of new product candidates fail (Miller, 2006), a successful launch elevates a company to a higher echelon of profitability. This success is especially important considering the average of \$1.2 billion that biotech companies have spent to market a single new treatment (Prescott, 2006) and that fewer than 1 in 3 drugs that began human clinical trials ever reach the market.

Third, interest in the pharmaceutical industry is overwhelming because, although it has had sustained profitability, the determinants of its success are subject to volatility. A single determinant, such as R&D or advertising expense can cause drastic swings in profitability and company image. This volatility is reminiscent of the in the technology sector in the 1990s when, although the industry might appear to be continuously profitable, it was actually quite risky.

The purpose of this study was to identify the relative significance of six, selected market structure elements: research and development, advertising expense, capital intensity, inventory turnover, firm size, and industry type (drug manufacturer-major vs. drug manufacturer-other). It describes whether these elements explain the profitability of a pharmaceutical company in the United States, as determined by return on equity and return on assets. The analysis empirically examines whether relationships between these market structure elements, which have been established as traditional measures of the pharmaceutical industry and financial performance, are also specifically applied to selected companies in the pharmaceutical industry in the U.S.

LITERATURE REVIEW AND PROPOSED HYPOTHESES

Some empirical studies on industrial organizations have taken various elements of the market structure as given and other studies have related these elements to various aspects of financial accounting performance. Bowman, Navissi, Burgess (2000) analyzed the vulnerability of pharmaceutical companies with respect to regulatory requirements. Bowman et al. demonstrated that pharmaceutical companies with higher advertising expenses experience more negative, abnormal returns and those firms with higher R&D expenses experience less negative abnormal returns. Although our empirical study is not consistent with this finding, we understand how this hypothesis could hold true.

FIRM SIZE

Firm size is one of the most acknowledged determinants of a firm's profits affecting

competitive market power in a given industry (Beard & Dess, 1981). Large firm size affords companies several economic benefits because of their ability to exercise financial leverage in their respective markets. Economies of scale, raw material costs, and production strategy are a few of the benefits larger firms employ because their structure allows for the minimization of operational costs. For example, an international firm will generally setup a structure so that the suppliers of raw materials or plant equipment are in relatively close proximity to the manufacturing facilities and employ bulk discounts on the purchases of raw materials. Experts appear to be split in the opinion of the overall affect of firm size on a firm's profitability. With respect to the research presented above, we propose the following hypothesis:

Hypothesis 1: Firm size is significantly associated with accounting performance.

RESEARCH AND DEVELOPMENT

Our empirical study measured R&D-by-R&D expenses as a percentage of the company's gross sales. The most important expenditure in the profitability of a pharmaceutical firm is R&D expenditures. This is illustrated by the fact that "total spending on health-related R&D by the drug industry and the federal government has tripled since 1990 in real terms" (Austin, 2006:4). R&D investment in United States grew 5.2 times whilst it also grew 3.3 times in Europe between 1990 and 2007 (European Federation of Pharmaceutical Industry Association [EFPIA], 2008). The U.S. federal government spent more than \$25 billion on health-related R&D even in 2005 (Congressional Budget Office, 2006). The concept of the role of R&D in individual firms has also played a major role in the firm's ability to attain or sustain profitability. The role of R&D in larger firms is usually to expand upon the usefulness or effectiveness of the current market products and not investigate new molecular entities (Austin, 2006). Another major focus of R&D studies is cost reduction initiatives to prevent and to detect failures sooner by "finding technologies that can identify toxicity and efficacy problems during the discovery and preclinical stages" (Miller, 2006, p. 6).

One might also be concerned that the profitability of the firms in the pharmaceutical industry could be significantly overstated because the R&D expenditure is generally omitted from a firm's asset base. This omission might overstate profitability using typical indicators by as much as two or three times, when the industry actually remains above the average for profitability in the United States. Even though conventional accounting measures (such as annual approvals of new drug applications or either in total or per dollar of R&D spending) overstate the financial profitability, a strong growth in R&D spending in the pharmaceutical industry implicitly indicates that the returns on pharmaceutical R&D has been attractive (Congressional Budget Office, 2006). As we previously proposed that the firm size was related positively to a company's profitability, R&D expenditure in the pharmaceutical industry would also be positively related to firm profitability.

In the empirical study on the relationships between R&D expenditure and financial profitability in the pharmaceutical industry, Joos (2000) demonstrates that (a) Pioneering drug manufacturers have a higher coefficient on ROE and lower coefficient on R&D than generic drug firms, (b) firms with more patents per dollar R&D investment have a high valuation multiple on a scaled R&D, (c) higher growth in R&D positively affects the ROE valuation coefficient and does not affect the R&D multiple. These supporting findings explain

the differences of the effect of R&D as it relates to new products versus generic, market share, patents and increased R&D expenditures. The pharmaceutical industry is not only one of the most research-intensive industries (e.g., pharmaceutical firms invest as much as five times more in R&D, relative to their sales, than the average U.S. manufacturing firms), but also has consistently ranked as one of the most profitable industries in the United States. (Congressional Budget Office, 2006). With respect to the research presented above, we proposed the following hypothesis:

Hypothesis 2: R&D Intensity is significantly associated with accounting performance

ADVERTISING EXPENSES

Our empirical study measured advertising intensity in terms of advertising expense as a percentage of the company's gross sales. With respect to the social image of consumer drug advertising, Abboud (2005) analyzed whether lobbying efforts by pharmaceutical companies affected their public image and advertising expense. Like the tobacco industry and other chemical industry lobbyists, pharmaceutical industry lobbyists are aware that, although achieving their desired legislation is important, their public image is just as vital. If the public perception were that the pharmaceutical industry is only interested in making money, a poor public image would result. This study also revealed that advertising drugs on television emphasizing their safety and that pharmaceutical companies consciously balance in their advertising the risks and benefits of drugs.

If the public perception of the pharmaceutical industry is important, the perception of the regulatory agencies of the industry is equally important. For example, the Vioxx failure exposed many flaws in the FDA's drug approval process (Prescott, 2006). Therefore, additional time and money will be spent to create safeguards for the pharmaceutical market. Pharmaceutical companies have also expanded the role that their procurement departments play in awarding contracts to advertising agencies (Walter, 2004). This expansion is further evidence that the pharmaceutical companies together concentrate on the importance of advertising expense, which includes striking a balance between its cost and its benefit. With respect to the research presented above, we proposed the following hypothesis:

Hypothesis 3: Advertising Intensity is significantly associated with accounting performance.

CAPITAL INTENSITY

Our empirical study measured capital intensity by capital expenditures as a percentage of the company's capital expenditures as a percentage of the gross sales. The results the study show that capital intensity was not statistically significant, as it relates to the ROE of pharmaceutical companies. This concept also holds true in an empirical study on Compustat firms. The study showed that capital intensity was not a strong predictor of future ROE and that it actually negatively affects unrecognized net assets (Joos, 2000). With respect to the research presented above, we proposed the following hypothesis:

Hypothesis 4: Capital Intensity is significantly associated with accounting Performance.

INVENTORY TURNOVER

Our empirical study used inventory turnover as a variable to explain a pharmaceutical company's ROE. Inventory turnover was calculated using cost of goods sold as a percentage of the company's ending or average inventory. An empirical study of the Indian pharmaceutical industry attempted to compare its performance with that of selected multinational corporations (Sankaran, 2002). In this study, the inventory turnover of the multinational companies was shown to be less than the pharmaceutical industry average due to strong brand equity and distribution network. One could conclude from this result that established companies benefit from their brand equity and that the volatility in the pharmaceutical industry might result in weakened brand equity. This is consistent with the fact that the unpredictable success of new products in the pharmaceutical industry decreases the likelihood of establishing brand equity. The pharmaceutical industry in the United States could use this study to improve brand equity. With respect to the research presented above, we proposed the following hypothesis:

Hypothesis 5: Inventory Turnover is significantly associated with accounting performance.

RESEARCH METHODS

Conventional economic theory, including those proven with empirical research studies, conclude that key economic indicators of a company, are significantly related with some corresponding performance measurements. This study was designed predominantly to examine the appropriateness of applying various previous studies and empirical research to the pharmaceutical industry in the U.S. The results of the empirical study are presented through an analysis of the pharmaceutical industry in the United States via the relationship of six selected variables to two financial performance indicators.

SAMPLE AND DATA COLLECTION

Using SIC 2834 a systematic sample, 332 pharmaceutical firms were selected. The initial sample was comprised of 365 firms listed in Disclosure, Inc. (2006). The data for advertising expenditure was additionally extracted from the research insight and matched with the initial data for other variables. Some firms were eliminated because data on them was lacking. Only firms for which complete data were available were included in the study. Each of the variables used in the study were calculated as a simple average of the 5-year period of 2001–2005.

A 5-year period was chosen to avoid any issues that might be associated with 1-year fluctuations. We decided to use 5-year averages because previous research studies in the strategy literature had been accepted as valid long-term measures (Bettis, 1981; Bettis & Hall, 1982; Bettis & Mahajan, 1985). By using averages, we could minimize the effects of any outliers or idiosyncratic variations and, thereby, more accurately assess the effects of the variables being studied.

EMPIRICAL MODEL AND VARIABLE SPECIFICATIONS

An empirical model that captures the essence of the relationships hypothesized above can be stated as follows:

Profitability = f (firm size, R&D intensity, advertising intensity, capital intensity, inventory turnover).

Firm size is an algebraic expression of the natural log value of the firm's total sales.

Research and development intensity is a ratio of the R&D expense to the total sales.

Advertising intensity is a ratio advertising expense to the total sales volume.

Capital intensity is the ratio of total sales to the total sales volume.

Inventory turnover is a ratio of the average Inventory volume to the total sales volume.

EMPIRICAL RESULTS AND STATISTICAL ANALYSIS

Table 1 reports the correlation matrix with the means and standard deviations of the six independent variables as related to the dependent variables of ROE and ROA. This is a brief illustration of a large collection of data using a few key statistical parameters. The mean, or average, and the standard deviation express the values that are calculated given the data applied. It is necessary to remember that many of these data points are expressed as ratios that lead to lower numerical values.

The correlation matrix shows the relationship between the independent and dependent variables with respect to ROA and ROE. As presented in Table 1, firm size and R&D intensity are positively correlated with ROA and ROE, but other strategic market factor such as advertising intensity and capital intensity are significantly and negatively correlated with ROE at 0.001 level. One obstacle that presents difficulty in proving the hypotheses above is the existence of multicollinearity. The standard statistical method for testing data for multicollinearity is analyzing the individual variance inflation factors (see Table 2). There is no existence of multicollinearity.

TABLE 1. CORRELATION MATRIX

Variables	1	2	3	4	5	6	7
ROA							
ROE	.189***						
Firm size	.456***	.128					
R&D intensity	.233***	.332***	.118*				
Advertising intensity	-.054	-.321***	.049				
Capital intensity	-.047	-.453***	.304***	.401***			
Inventory turnover	.121	.055	-.057	-.038	-.042	.119*	
Mean	2.432	3.046	1.099	1.222	0.178	1.245	0.132
Standard deviation	1.027	1.283	2.712	0.598	0.568	2.140	0.301

Note. $N = 332$. + $P < 0.1$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

To consider the impact of each independent variable on the dependent variables, multiple regression was used to provide information about the degree of explained variation of predicted values from the predicted trend-line. Table 2 shows the result of the multiple regression analysis.

The first piece of information derived from the multiple regression data is that only one of the five major marketing strategic variables tested demonstrates statistical significance. The only variable that influences the profitability of a pharmaceutical firm in the United States is firm size and R&D intensity. These results are problematic and unfortunate because the above hypotheses were designed to demonstrate the statistical significance of R&D intensity on the profitability of pharmaceutical firms. Firm size and R&D intensity are statistically significant at the 0.01 level and positively associated with both ROA and ROE. More importantly, the result shows that two other strategic variables (advertising intensity and capital intensity) are also highly significant at 0.001 level, but are negatively associated with ROE.

TABLE 2. OLS MULTIPLE REGRESSION ANALYSIS

Variables	ROA	V.I.F.	ROE	V.I.F.
Constant	-1.883 (.207)***		-4.778 (1.28)**	
Firm size (in sales)	0.136 (.017)***	1.029	0.658 (.268)**	1.029
R&D intensity	0.011 (.003)***	1.544	0.588 (.041)***	1.544
Advertising intensity	-0.044 (.024)+	2.235	-2.042 (.043)***	2.235
Capital intensity	0.004 (.001)*	1.950	-0.469 (.024)***	1.950
Inventory turnover	0.001 (.002)	1.009	0.008 (.025)	1.009
Adjusted <i>r</i> -square	0.3842		0.4013	
<i>f</i> -ratio	29.3851***		18.5326***	

Note. *N* = 332. Values indicate unstandardized regression coefficients and within parentheses indicate standard error. V.I.F. indicates variance inflation factor used to check multicollinearity.

* *P* < 0.05; ** *P* < 0.01; *** *P* < 0.001.

Contrary to other strategic variables, inventory turnover does not relate to all financial accounting performance.

CONCLUSION AND IMPLICATIONS

The purpose of this report was to illustrate what expenditures, common to the pharmaceutical industry, affect a firm's accounting profitability with respect to ROE and ROA. Using the selected strategic variables employed in this study, firm size and R&D intensity were uniformly and positively associated with all accounting financial performance related to ROA and ROE in the pharmaceutical industry in the United States. However, advertising intensity and capital intensity were shown to contribute significantly to a firm's profitability. Nevertheless, inventory turnover did not show a strategic relationship with any accounting profitability measures.

The purpose of this report was to show the statistical significance of a company's commitment to continual expansion, with specific attention to R&D expense. Many technical documents have used similar statistical analysis and have proven that R&D is indeed statistically significant in expressing a firm's profitability. However, our results were not consistent with the other empirical studies in the literature. In this case, R&D was positively and significantly associated with ROE and ROA.

With respect to firm size, our empirical research shows a positive relationship between firm size, ROE, and ROA. This result was consistent with previous research showing that larger firms should be more profitable and reap other economic benefits because they have more employees to perform the work. Intuitively, this relationship makes conceptual sense because firms with more available financial resources would be expected to invest more heavily in research and development expenditures, and in the other variables analyzed. The presence of the statistical significance of this relationship further supports the theory for developing the hypotheses for the analysis.

One interesting result from the statistical analysis is that advertising intensity was found to not be statistically significant with respect to both ROA, yet was found to be statistically significant with respect to ROE at the 0.01 level. With conflicting evidence both empirically and in research, Hypothesis 5 must also be accepted because the analysis has failed to prove the existence of a relationship between inventory turnover and ROE or ROA. Authors of studies conducted on similar subject matter differ in their opinions regarding whether this variable is a predictor of a firm's profitability.

The references used to support our empirical study obviously used different sample data sets. Many of these references did not focus on firms that have pharmaceutical operations, yet they are not the main focal point of their manufacturing operations. The majority of our data was obtained from approximately 67% of this section of the industry. The source of the data in many of the references was also obtained by a different methodology. These differences have greatly affected the ability of the presented regression analysis to prove the initial hypotheses.

Therefore, the resulting application of our hypotheses to the pharmaceutical industry in the United States is not advised or prudent. Several assumptions have been made throughout the analysis and data retrieval so that the results obtained in references would be reproducible. These referenced results indicate completely different findings, are more applicable to the industry, and represent a higher confidence level of the findings. Investigation of the reference material provided further reinforces the concepts that were hypothesized and indicate that a relationship should be found that is significant if different data were examined.

In this highly competitive industry, further exploration must be performed on this regression analysis to determine why relationships were found to be insignificant. The pharmaceutical market in the United States is very large and a vast amount of financial gain in the industry should be possible. The exact measure of a firm's profitability might better be illustrated with another dependent variable.

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**THE CONCEPT OF IMPLEMENTING EFFECTIVE CRITERIA FOR LEARNING
ASSESSMENTS IN A VIRTUAL ENVIRONMENT**

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ABSTRACT

How can educators incorporate the discoveries of cognitive science and its multifaceted exploration of how the mind works, of brain-based learning, and of the concepts of connectivity of mind, body, and soul into virtual learning in a virtual environment? Can professors implant the excitement of learning through virtual means? Students and professors make no eye-to-eye contact, have no face-to-face communication; nevertheless, good people skills and good communication are essential characteristics in today's global business world.

How can professors develop an e-learning assessment model for learning experiences in a virtual world? In some ways, e-learning assessments might be more honest because they do not incorporate gender, race, nationality, or class constructs. They do not assess attitude or socioeconomic climate. They assess ability, communication, and complex multidimensional participation of students. They allow students to share and learn without reservation (Tham & Werner, 2005). Let us explore the concept of implementing effective learning assessment criteria for a virtual environment and set forth a framework for assessment.

INTRODUCTION

Virtual learning in a virtual environment did not occur spontaneously, but grew over time out of traditional education; therefore, past educational practices hamper it from developing fully. University students today in the Western world are technologically advanced, having used computers since elementary school. They are used to the fast pace of video games, text messaging friends between or during conversations, and listening to their iPods—all at the same time. Students walk, talk, listen, process, analyze, store, and use all parts of their brain and body in multiple capacities in most life experiences. Educators must capture that vibrancy and provide virtual learning in a virtual environment.

We know from the writings of Alan S. Blinder (2006), who is the Gordon S. Rentschler memorial professor of economics and public affairs at Princeton University, that the future

...will require vast and unsettling adjustments in the way Americans and residents of other developed countries work, live, and educate their children. (p. 117)

Education will break down into face-to-face contact for elementary through high school classes and tradable [moving offshore] for university level classes. (p. 119)

Simply providing more education is probably a good thing on balance, especially if a more educated labor force is a more flexible labor force that can cope more readily with non-routine tasks and occupational change. (p. 125)

According to Friedman (2006), for most corporations in this new millennium, the most important ability of students is to learn how to learn, to be able to constantly absorb and teach themselves new ways of living. In this day of global competition and as more and more work is digitized or automated, most jobs (or at least part of them) are going to be outsourced or offshored; therefore, industry will need a flexible workforce.

Garten (1997), then dean of the School of Management at Yale University, spoke of giving graduating students a card for life so they could return every year to update their education because education is no longer complete at graduation. What one learns at university will quickly become old and obsolete. One must continuously expand one's knowledge. The Internet affords that opportunity.

All of these leaders state the same message, the need for flexibility in this ever-changing world. Because we no longer know what tomorrow will bring and, if we will educate students for the future and not the past, we educators must open our eyes and ears, and absorb what is happening in the world. Our students will be thrown into the world with billions of graduates from China and India. They must measure up to a larger-than-ever workforce and to educational facilities of the new millennium, not historical archives. This new age of education will have no eye-to-eye contact, no face-to-face communication except via telecommuting. Virtual learning in a virtual world must be developed outside of traditional educational techniques. It must be fresh and new, taking the best of today's competencies and incorporating them into vibrant new ways of learning. The excitement of learning is what professors can implant in students. Educational opportunities must be limitless. An educator must instill curiosity and passion for learning.

According to Pink, "In a world upended by outsourcing, deluged with data, and choked with choices, the abilities that matter most are now closer in spirit to the specialties of the right hemisphere – artistry, empathy, seeing the big picture, and pursuing the transcendent" (in Friedman, 2006, p. 306–307). Virtual learning must incorporate brain-based learning and the experiences and patterns of life.

INCORPORATING BRAIN-BASED LEARNING INTO VIRTUAL LEARNING

Hart (1983) stated, "The future of teaching and learning lies in the study of the brain. Only in this strange world of nerve cell and synapse will we someday untangle the mysteries of how people learn" (p. ix). A core principle of brain-based learning is that learning should engage the whole physiology, that the brain is physiologically different every morning because it has assimilated one's experiences from the day before. Bennett, Diamond, Krech, and Rosenzweig (1964) state that the brain actually grows physiologically if stimulated through interaction with its environment. The brain can process many things well simultaneously, in whole and in parts.

The brain searches for common patterns and relationships in the moment-to-moment experiences of everyday life to make sense of them. According to how this natural knowledge is acquired, the number and quality of interconnections in the brain increases; therefore, as one increases one's level of knowledge, one builds and adds to this natural category of knowledge. Knowledge is then stored in a knowledge base and can be called upon at will. As knowledge increases, one expands and builds whole categories of patterns that are perceived and mapped by the brain in locale memory, in turn becoming perceptions of one's innate knowledge.

Caine and Caine (1997) found that

Brain-based learning...rests on the fact that the various disciplines relate to each other and share common information that the brain can recognize and organize....Because the learner is constantly searching for connections on many levels, educators need to *orchestrate the experiences* from which learners extract understanding. (p. 4–5)

Educators must use this information to create virtual learning environments that immerse students in an educational experience.

VIRTUAL TEAMS IN BUSINESS

Virtual teams are small groups of people who collaboratively work together by electronic communication rather than face-to-face. E-mail, Instant Messaging (IM), and groupware are ways to conduct electronic communication and meetings without the necessity of team members being present in the same location. Using groupware, several members of a team can edit a document at the same time or in sequence. Videoconferencing is another technology that facilitates virtual team meetings. Cisco's TelePresence combines rich audio, hi-definition video and interactive elements to deliver unique in-person experience over the global Internet Protocol (IP) network.

Electronic brainstorming is another way for virtual teams to enter spontaneous suggestions simultaneously for a tentative solution to a problem without discouragement or control. Although group members are not present to talk to one another, each member is allowed to build his or her idea or to combine it with others on the team. A company might also have a project Web site that is dedicated to a shared project. Members can update each other or post messages daily regarding the status of the project to the virtual workspace. According to Majchrzak, Malhotra, Stamps, & Lipnack (2004), the virtual workspace at Shell Chemicals was shown to be more effective than sending hundreds of emails back and forth between the team members.

Cross-cultural teams from geographically dispersed units of a firm increase the need for various applications of virtual teams. Strategic alliances with geographically dispersed companies working closely with one another depend on virtual teams to work hand in hand to communicate a cohesive whole to clients. Electronic meetings can be held with counterparts in South Africa, China, India, Mexico, and the United States all virtually present, greatly reducing the expense of bringing all team members together in one physical location. Companies, like IBM, have taken advantage of this new form of business by creating information technology systems that allow team members to interact easily with each other.

Virtual teams are also an answer to possible hiring situations where essential skills of workers are necessary, but workers do not want to relocate to a new area. Virtual teams can be created with members interacting with each other from various locations in the same virtual workspace. This technique is also prevalent after mergers. One of the crucial components of virtual teams is trust; the trust of managers that people under their management are working without direct supervision, and the trust of team members in coworkers who they do not meet on a face-to-face basis. Managers must assemble self-managed work teams of self-reliant and talented employees albeit not having the opportunity to meet team members personally. Getting team members to feel that they are a part of a team is another challenge of virtual teams that can sometimes be remedied by one or two in-person meetings in the course of a year.

E-learning in the corporate university is seen as one of the most significant business inventions in the past two decades. According to Nixon and Helms (2002), over 2,400 corporate and public organizations existed throughout the world in 2002. The figure was expected to increase to approximately 37,000 corporate and public universities by 2010. Because of the growing influence and respect that these universities have gleaned, the UK government is considering granting award-bearing powers to those that can demonstrate high standards in education (Prince, 2003). McDonald's was one of the earliest corporations to set up its own corporate university in 1961. It was to ensure operation of business at a consistent level to deliver consistent restaurants across the world (Dalton, 1999). The management values being taught were focused at the strategic management level in accordance with the culture of the organization, its focus on standards, and perpetuation of its business strategy (Macpherson, Homan, & Wilkinson, 2005). Motorola focused its corporate university as an agent of change. Management training programs provided "personnel with the skills and knowledge necessary to welcome, seek and implement change, and thus afford the organization a competitive advantage" (Macpherson et al., 2005, p. 34). The culture change attached to this training required senior management to accept education as an investment (Fulmer & Gibbs, 1998). Other corporations have formed links with formal educational institutions to provide career development programs. UK BAE Systems offers management and technical training with various universities and provides courses through their own "virtual university," which is open to all employees. "BAE Systems' stated objective is to provide leadership training for its future directors, and it is therefore looking to use the corporate university learning process to drive and shape the future organizational goals and structures" (Macpherson et al., 2005, p. 34).

Sora (2001) refers to e-learning as a force for "profit and efficiency." Although his comments were specific to traditional universities, the cost advantages in travel and time away from the job, and the ability of many people being able to learn in an e-learning situation worldwide with little additional cost (Schriver & Giles, 1999; Warner, 1999; Koprowski, 2000) has not been lost on corporate leaders. The downside of these new corporate universities is threefold: (a) using e-learning to deliver generic "off the shelf" solutions, (b) lack of assessment of learner's experience, and (c) corporate culture may play a significant part in acceptance or not of e-learning. According to Macpherson et al. (2005), "given that the aim of the sophisticated corporate university is to achieve a strategic and cultural contribution to competitiveness, evaluation of the adoption of e-learning needs to be more sophisticated and to attend to the learners' experience and behavioral outcomes" (p. 45).

VIRTUAL TEAMS IN EDUCATION

To form a cohesive team in education, many of the same components used to form virtual teams in virtual workspaces must be incorporated into virtual classrooms. E-mail and software packages such as WebCT, Vista, and Blackboard are used in place of groupware. While videoconferencing is available in the graduate courses at MIT and perhaps some other Ivy-league schools, at the present time these forms of conferencing between professor and student are not cost-effective enough to be readily available. Some universities are experimenting with visual overlays of professors orally communicating with students over case studies or videos that enhance the required textbook readings.

Electronic brainstorming is available in the form of a blog, where students can post messages and spontaneously respond to each other or carry on a “conversation” with the professor. If all share these blogs, they will be relevant to them; however, if the blogs are specific between student and professor, like discussion boards, they lose their effectiveness. Unlike spontaneous suggestions in an electronic brainstorming situation, blogs are not always without discouragement or control. In some situations, being anonymous allows people to say things that they would never say in person; therefore, their responses might be more race-specific or gender-specific than they otherwise might be in person.

A project Web site might actually make a virtual classroom work more effectively. Students can easily interact with each other; however, because no common thread holds all of the components together, the “team” is more individualistic to each student and each professor in the network. Virtual teams in a work situation are motivated by common goals and career advancement. The end game in education is different for each student, especially in pure online courses where the prevalence of online cheating and plagiarism was reported by faculty and administrators engaged in online instruction (McAlister, Rivera, & Hallam, 2001; Olt, 2002), the outcome or assessment becomes even more difficult. In online courses, new perspectives may have to be adapted when planning and administering evaluations for online courses.

Although at this point most universities are not promoting cross-cultural teams between universities, this might be a concept for future growth and integration of programs in a cognitive science type of format with university strengths complimenting each other worldwide. Because most university departments do not work together and interchange ideas even on the same campus, they could develop a growth model for future development. Currently, professors can take comfort in traditional formats in education and proprietary control of students.

The final point, trust of team members who do not meet on a face-to-face basis, is also similar to and different from education in the work place. It is important for students to trust that the professor will be available when they have questions, but they must realize that professors are not usually available 24/7. In addition, a level of trust must be built between the instructor, the university-provided technology, the student, and the university-supported technology. For both students and professors, it is extremely frustrating when they try to post to the college Web site only to find that the system is down or that they cannot download work in a timely manner. Students must trust professors to provide them with quality education online; professors must trust students not to plagiarize or cheat on papers and exams. Because professors do not know

whether the actual student taking the course is posting, a huge level of trust must be built between the players. Self-managed teams of self-reliant and talented students are as necessary in the work place as they are in education.

In business settings and educational settings, ground rules must be defined and strictly adhered to in virtual teams. Assessment and evaluation of outcomes is more difficult in education than in the workplace. The “bottom line” is different. The concepts and outcomes in education are more abstract and less delineated or provable. However, the online experience of a virtual student in a virtual classroom can prepare a student for a virtual team in a future business situation, or for future corporate university experiences. With corporate universities competing with traditional universities for competency training in the field of management, universities will have to form alliances to attract corporate sponsorship and endorsement of their e-learning programs.

ASSESSMENT VERSUS EVALUATION

Although sometimes used interchangeably, assessment and evaluation are two different concepts. Assessment determines a student’s knowledge and defines what a student can do. It effects student advancement, placement, and grades, and is useful in setting forth instructional strategies and curriculum (Dietel, Herman & Knuth, 1991). Evaluation determines the value of a course or program and oftentimes incorporates assessment data along with additional information to make decisions about revising or rejecting a course or program. Fisher and Twing (2006), point to the fact that no single definition of “value-added” exists in education. It sometimes “means monitoring individual student growth in academic skills from year to year. The gains are aggregated for individual schools and districts (and sometimes, by teacher) with the intent of determining which school or district (or teacher) is or is not producing gains in student achievement” (Hoover Institution, 2002, in Fisher and Twing, 2006, p. 3). Therefore, teachers, individual schools, and school districts hesitate to participate fully in the process of assessment and evaluation because repercussions can take place in the future. Therefore, the first step in improvising a process of assessment is to differentiate fully assessment and evaluation.

If the true definition of assessment were to determine a student’s knowledge and define what a student could do, there would be no repercussions for individual teachers, schools, or districts. There would be much more involvement of all the stakeholders to determine these parameters. Such a process could help to set forth instructional strategies and curriculums that benefit students and define “value-added” in education. However, before that can occur, clear delineations must be set in place to distinguish between assessment and evaluation with reprisals for poor performance, which must be removed from assessment and clearly placed within the scope of evaluation. Poor performance evaluations can set in place technological training and improved educational programs to bring educator performance up to the level of expectations. Fisher and Twing (2006) advocate a “growth-centric assessment model” that includes a standard measure of performance. The median score on a nationally normed achievement test, an overall average score on a statewide assessment test, or an average score in a district assessment test; however, these methods are not innovative brain-based concepts that incorporate connectivity of mind, body, and soul into virtual learning in a virtual environment. These traditional methods have failed repeatedly; in fact, they keep the confusion of assessment and evaluation criteria alive.

At Southern Connecticut State University (SCSU), where I am currently a professor, assessment standards are just now being set in place to come into compliance with the upcoming reaccreditation process. A similar assessment program has already been set in place at the International School of Management (ISM) in Paris, France, through pre-assessment and post-assessment papers. However, although professors at SCSU have been told that assessment is specifically being introduced to measure student learning outcomes, many professors believe that assessment of student outcomes today can turn into a witch hunt mentality. Many professors state that they have seen this happen in the past, where a process was instituted to improve student learning that later became a series of reprisals for professors who did not meet the criteria set for student outcome specifications. There is resistance. Again, it should be made clear that assessment and evaluation are differentiated by definition. The two should not be considered interchangeable.

FRAMEWORK FOR ASSESSMENT

True assessment must begin with the end in mind. To design a model for quality assessment, one must begin by outlining goals and objectives, then determine the type of learning outcomes that those goals and objectives represent. A university must analyze its own unique learning situation and student base and then devise tests based on the desired learning outcomes. The learning situation must be analyzed and broken down into the micro process of a specific course goal using instructional and prerequisite steps. The outcome of this process should be a well-defined set of objectives and expectations for students. The basis for creating assessment items should be the culminating objectives.

Goal writing is the first step in the process. Unfortunately, goals are oftentimes vague and abstract. A vague goal could be clarified by listing indicator behaviors for the goal. For Management 460, International Business, the goal is for students to learn about foreign policy and international business. By listing indicator behaviors for the goal (e.g., the student will read the text and media articles and write 1–2 page papers weekly to support or dispute the readings; the student will present his or her 1–2 page paper weekly to become comfortable with critical thinking methods and presentation in front of a group), the goal can be clarified. By stating explicit behaviors, a more concrete goal could be written: Students will read multiple texts and articles, write and present comprehensive papers on foreign policy and international business, and become citizens who can take action and make responsible decisions.

The goal can now be placed within a domain of learning: psychomotor skills, attitudes, verbal information, intellectual skills (four subtypes: discriminations, concepts, rules, problem solving), and cognitive strategies (Dick & Carey, 1990). For international business, intellectual skills (e.g., concepts about cultural differences and similarities) and cognitive strategies (e.g., learning strategic processes to manage one's own learning processes) represent the cognitive learning outcomes that fit within the goal.

The next step in the process would be to list or diagram all of the steps required to achieve the goal (i.e., instructional analysis). For intellectual skills, a hierarchical analysis could be completed identifying the outcome and the prerequisite skills for each subtask. Within the cognitive strategies domain, students could complete an expert analysis by interviewing,

observing, or listening to experts in international business and foreign policy.

Once the prerequisite steps have been defined, the professor could compare what the students already know against the steps identified to complete the goal. This knowledge gap could be discerned by distribution of pretests or gathering background information through discussion. The hierarchical analysis could be delineated by a dotted line to dissect knowledge mastered by the students from knowledge that has to be disseminated. Everything below the line would be understood; everything above would need to be taught.

The final step in the process is writing specific behavioral objectives for each instructional step identified or for a related group of steps. For example, given information provided by Czinkota, Ronkainen, & Moffett (2004), *Fundamentals of International Business*, and *Great Decisions*, the student will be able to recognize the interdependency of international business and foreign policy.

This framework for assessment should remain applicable for e-learning and traditional classroom assessment if the basis for assessment begins with the end in mind and the basis for creating assessment items is the culminating objective.

E-LEARNING ASSESSMENT

Ridley and Husband (1998) compared grade point averages (GPAs) of students in traditional learning situations with those enrolled in online courses to delineate whether academic integrity was being maintained. The premise was that, if students were cheating in online courses, they would maintain higher GPAs; however, Ridley and Husband's findings indicated that students in online courses actually maintained lower GPAs than students in traditional courses; therefore, they surmised that educator concern over the academic integrity of students was either exaggerated or unfounded. Educators did not concur with this supposition because there were uncontrolled variables in the study. Instructors could base the GPA results on different courses taken by students, or different testing techniques. The higher GPA results could also be based on the superior quality of professorial instruction; therefore, the study was deemed unconvincing.

According to Ormrod (2003), in traditional classrooms, evaluation is used for promoting learning, guiding instructional decision-making, diagnosing learning and performance problems, and determining what students have learned. According to the definitions of assessment versus evaluation, these dictates of evaluation muddy the waters of what is evaluation and what is assessment. By definition, these should be listed as student assessment if they serve the function of determining what students have learned.

According to Tallent-Runnels, Cooper, Lan, Thomas, & Busby (2005), "The formats of assessment [used] in traditional instruction, such as term papers and multiple-choice questions, may not provide valid and comprehensive information on students' learning" (p. 24) in an online situation. By using software that tracks correspondence of instructors and students during the instruction and learning process of online courses, educators can analyze the depth of a student's cognitive process in learning and assess learning outcomes. Students' online discussions could be divided into two distinct categories: substantive (related to topics and contents) and

nonsubstantive (nonrelated to topics and contents) to determine whether student time was used effectively (Davidson-Shivers, Tanner, & Muilenburg, 2000). The depth of online interaction of students from the most shallow, sharing of information, to the deepest process of explicitly phrasing agreements, statements and applications of new knowledge make up five levels of online student assessment (Kanuka & Anderson, 1998). According to this body of research, most online students processed information at the shallow levels and online interactions did not help them to construct new knowledge. Clark (1983) states, “Media are mere vehicles that deliver instruction, but do not influence student achievement any more than a truck that delivers our groceries causes changes in our nutrition” (p. 445).

Richards and Ridley (1997) researched learning outcomes in the affective domain: student attitudes, satisfaction, and perceptions of online courses. University students in this study showed positive perceptions of learning outcomes and environments. Bee and Usip (1998) and Mortensen and Young (2000) delved into how learning satisfaction related to learner characteristics and to features of online instruction. No actual assessment of learning outcomes was gathered from these studies.

Overall, determination of student learning online is not usually collected from tests, examinations, or homework assignments. Enriched information from questionnaires administered online and correspondences between students and instructors and students and students were most often used to capture not only what students learn, but also how they learn it. A unique format of assessing online courses is content analysis of students’ online correspondences (Kanuka & Anderson, 1998; Muilenberg, 2000).

CLASS SIZE ON EFFECTIVENESS OF ONLINE COURSES

Drago and Peltier (2004), studied the effect of class size on the evaluation of teaching effectiveness for on-line courses using a standard student evaluation survey instrument. Their study analyzed dependent variables of global course effectiveness and summated indices representing “building blocks” of on-line effectiveness that included: course content, instructor support, course structure, student-to-student interaction and instructor-to-student interaction. They determined that there was no significant relationship between class size and global course effectiveness. However, they do state that “more students are more work; more students require more organizing; more instructor-student interaction, more grading and...more time” (p. 37). Unfortunately, because the college in this study provides incentives for instructors to take on more students in their online courses, the study was biased from its inception and, therefore, was somewhat useless in determining factually whether class size did or did not hinder effectiveness of online courses. In addition, the authors pointed out that only 53.0% of online students returned usable questionnaires and that students who dropped the course were not observed or incorporated into the study, although they might have held strong opinions about the quality and effectiveness of the course.

Professors who teach on-line courses at universities in Connecticut support the fact that course content and course structure would not change with enlarged class size; however, they believe that student-to-student interactions would definitely change because so many postings would become unwieldy and time consuming for students and instructors. Currently, students posting to

on-line courses believe that professors will be at their disposal 24/7. Professors note that students who post at 7:00 a.m. wonder why there are no additional postings from other students at that time of the morning. Students who email professors at midnight expect a response immediately upon waking in the morning. Rather than being professors of multiple students in a multiple class forum, they have become individual tutors to as many students as the class size allows. However, even in this new online or hybrid forum, universities that teach undergraduate courses in the U.S. are still using the traditional set-up of having students working online courses within the traditional semester timeline. Because online courses have not yet fully developed a life of their own, traditional modes of education are still being applied to the new technologies restricting them from becoming multifaceted explorations or brain-based endeavors that incorporate mind, body, and soul. According to Drago and Peltier, "Online education is at its birth. We have much to learn to maximize this form of educational delivery" (2004: 38).

MODEL CHECKING

According to Sinharay, Almond, and Yan (2004),

Model checking is a crucial part of any statistical analysis. As educators tie models for testing to cognitive theory of the domains, there is a natural tendency to represent participant proficiencies with latent variables representing the presence or absence of the knowledge, skills, and proficiencies to be tested (Mislevy, Almond, Yan, & Steinberg, 2001). Model checking for these models is not straightforward, mainly because traditional χ^2 -type tests do not apply except for assessments with a small number of items. Williamson, Mislevy, & Almond (2000) note a lack of published diagnostic tools for these models. (p. 1)

In educational testing, model checking presents special challenges because a segment of the model that describes proficiency of students almost always consists of latent variables. Presently, the majority of the material is based on unidimensional item response theory (IRT) models with a single continuous latent trait (e.g. van der Linden & Hambleton, 1997).

Sinharay, Almond, and Yan's (2004) paper explored various approaches to assess the fit of models with student proficiency, which consisted of discrete variables; particularly in the distribution of the proficiency variables described using a Bayesian network. Sinharay et al., are using the basis of the identified problems with the model used by Mislevy (1995) to hypothesize an improved model with a better fit for assessing the feasibility of models with discrete proficiency variables in educational assessment. They observe that Bayesian residual plots and an analog of the item characteristic curve (ICC) plots, and an χ^2 -type statistics model based on the ICC plots show some promise; however, the authors concluded that more work would be required before assessment models could be proven.

This model for assessment and absence of model checking is specific to the traditional classroom setting even though communication is face-to-face and contact is eye-to-eye. Checking the validity of e-learning assessment models would be even more difficult albeit collection of data is somewhat easier.

TRIANGULATION

While investigating the qualitative versus quantitative research methodology, a third option was proposed, triangulation. Triangulation is the combination of both qualitative and quantitative research methods to form a third method that combines the best of each method into a new more complete methodology. According to Edwards and Fritz (1997),

Research over the past 70 years has generally concluded that there are no significant differences between learning delivered face-to-face and that delivered by alternative media.... Research to date has not shown complete support for either approach alone. Therefore, a reasonable optimum must be somewhere in the 'middle' or somewhere in combination of the new and the traditional approach. (p. 2)

According to this research, it is not a question of using mediated materials versus traditional human intervention, but how much of which will create the best learning situation.

De Chardin (1973) predicted that a web of communication technology would first grow up beside, then surround, and be organically assimilated into human consciousness (p. 36). Indeed, it has. O'Donnell (1995) states,

My experience these last years has been that the new technologies of networked information are indeed liberating, to real teachers and real students. It's not as though we couldn't use some help. There are plenty of frustrations for teachers, plenty of obstacles yet to surmount, plenty of barriers separating us from the students we want to reach. The best way to view information technology is to let it address the problems we already know we have. (p. 10)

CONCLUSION

Universities are challenged by the demands of students who need life-long learning and retraining to meet the new demands of business. They have responded by being open to new and alternative delivery systems for education. Hybrid classes that combine traditional classroom experience with alternating online classes seem to be most popular and successful. The most enthusiastic proponents of these new educational opportunities are students themselves. As consumers, they are demanding and willing to pay for education and learning experiences that are delivered at the time and place that is most convenient and relevant to their lifestyle (Edwards & Fritz, 1997).

Corporate universities are also looming on the horizon. For most of these new universities, e-learning is a way of flexibly delivering consistent learning experiences, independent of time and location, to their employees. These new universities are contributing to the competitive edge of an organization and raising expectations of return on investment (ROI) within a smaller pay back period. Eighty percent of *Fortune 500* companies are using, or intending to use e-learning, and expect a significant ROI (Hammond, 2001). If corporate universities want to receive award-bearing powers, assessment will become more important in order to prove high standards of education. Corporate universities will then become university competitors.

Overall, it appears that traditional and online education will be offered to students at universities worldwide. A quiet triangulation of teaching methodology has occurred. At some point, perhaps universities will follow in the footsteps of cognitive science and collaborate to make education even more beneficial and exciting for students and the education process itself will become stronger. As cognitive science delves further into the brain and the concept of how we learn, and brain-based learning techniques are incorporated into classrooms, traditional or virtual, education will evolve in ever new and exciting directions.

If assessment is discussed openly, within and among universities, iterative accounts gathered from measures of student learning can improve undergraduate education by making it more transparent (Bok, 2006). It can lead university administrations to examine features of its curriculum that might initiate change in students between matriculation and graduation, and within the assessment, a university might find a “value-added” effect.

Assessment will be difficult to delineate, although measures are being set in place and expanded. For the most part, educators seem to prefer assessment abstraction. True assessment will not be possible unless all stakeholders are willing to participate in the process without fear of reprisals.

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**THE EVOLVING ROLE OF ‘GOOD GOVERNANCE’ IN UNIVERSITY PROGRAMME
MARKETING SINCE SARBANES-OXLEY 2002**

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ABSTRACT

All universities are in business because they must attract students to survive. Although some prefer publicly to minimise the business aspects of education, others are untroubled by the association. A sudden arrival on the agendas of all universities was the business-focused Sarbanes-Oxley (SOX) Act in the United States in 2002. The educational purist and the worldly pragmatist alike had to look at this cuckoo-in-the-nest and work out what to do with a United States (U.S.) Act of Congress that was never intended for not-for-profit enterprises worldwide. Could “good governance,” as defined by this business-related Act, be an external marketing issue for universities?

CONTEXT

So, what has been the effect of the SOX (2002) on the university-public interface internationally? What are the issues and in what ways might universities everywhere react and adapt? External observers like John Mattie (2004), were swift to comment on the financial and regulatory aspects of SOX as it could be applied to universities, but the observer comments were confined to management structures and accounting procedures rather than broadened to the interface between universities and students. In investigating this wider context, two main areas of concern arose in verifying the linkage between SOX and the marketing of universities. First, did academia recognize the evidence for the relevance of SOX to its domain? Second, what were the key elements of SOX that were causing concern? Once the extent of this concern had been established, a resulting model could be overlaid on the widely-used system in which universities consider themselves to have three broad categories of marketing audience: internal, external, and “the wider community.” The researcher determined that, by looking at a range of marketing communications as they apply to different pre-SOX and post-SOX audiences, the effects of the SOX would become clearer. This research, in turn, would lead to a model that could be used for planning university marketing communications strategies.

EARLY UNIVERSITY REACTIONS

Evidence that academic bodies recognised SOX (2002) as an issue was plentiful. Early reactions to SOX in the U.S. were swift and included guidance notes issued by the influential U.S. National Association of College and University Business Officers (NACUBO) in 2003. Some

universities went so far as to publish their own position vis-à-vis both SOX and NACUBO (Purdue University, 2003). In the U.K., in anticipation of the SOX, the University of Cambridge published its consultation paper on governance reform, which showed that the effects were not confined to the U.S. (Cambridge University, 2002). Any action by a single university is likely to affect other institutions through the demands that are made on accrediting bodies, external examiners, and employment contracts (many academics work in more than one institution). Positions for or against SOX approaches could not remain internal and the effects began to be seen in public communications from universities themselves and also in guidelines from external academic bodies. For example, the U.K.'s Higher Education Funding Council for England (HEFCE) suggested that for efficiency and effectiveness, university governing bodies should be "of no more than 25 members" (Higher Education Funding Council for England, Point 9, p. 16). This was in stark contrast to the practice in some institutions (e.g., Oxford University) where the entire congregation of 1,700 academics is entitled to vote on key issues, although it is rarely called upon to so vote (Oxford University, 2006). The tensions that can arise when it is called to vote have been closely followed in newspapers (cf. Macleod, 2006).

KEY DIFFICULTIES

Three key sections of the SOX (2002) requirements ensured that, even while SOX was being debated as a high-level, mostly internal, governance issue for universities, some aspects would spill over into the operational levels and into the public (market) domain.

The first of these concerned the accountability for financial reporting in academic institutions where membership of the governing council was usually drawn from academic, rather than purely managerial ranks. Were the council members now supposed to comply with Section 302 and be capable of certifying the accuracy of financial reports? Cambridge, then recovering from the costly CAPSA information system mistakes (Finkelstein & Shattock, 2001), certainly anticipated this (Cambridge University, 2002).

Second, under Section 404 of SOX (2002), financial reports must assess the quality of the management of internal controls; however, in academic institutions, could one satisfactorily separate the financial and the academic to enable this to take place? In 2002, credit transfer (Excelsior College) and nonresearch institutions (e.g., Phoenix) had less of a problem with this division than did more traditional establishments; however, because higher education has evolved rapidly in the last 5 years with newer institutions undertaking more teaching and research (Excelsior College, Edinburgh Business School) and older institutions allowing more off-campus and accreditation of prior experience and learning (e.g., University of Versailles - Saint-Quentin, University of Delhi), the issue has become applicable to almost all universities. As "long" ago as 2004, the question was being reposed: Is it even necessary to create such a division of the financial and the academic (Shattock, 2004)?

Third, and more straightforward, SOX (2002) section 802 mandates criminal penalties for altering documents and requires keeping full records. In theory, this appears reasonable; however, in practice and if applied to nonfinancial areas of academic life that nevertheless have financial implications (e.g., programme design, quality assurance), it runs counter to the widespread practice of vigorous discussions in academic committee meetings that are then

summarised in brief minutes whose wording is often agreed upon later and outside of the meeting ostensibly to preserve and promote a collegial harmony through a “gentlemanly” burying of discussions that commercial contexts would classify as disputes with budgetary effects.

Therefore, if SOX (2002) were to be applied within academic life, should (or could) it only be in areas of finance, or should it be adapted to the context and the principles spread to all areas of operation, including the purely academic? For one, the University of Vermont decided that it was a case of inclusive institutional ethics because it works to “...transition from a traditional compliance-management program to an articulation of workplace behaviors and cultural norms that reflect core values” (Johnson & Jefferis, 2007).

SURVEY BASE

For a preliminary study, a number of institutions or semi-independent institutional businesses with a high proportion of distance education students (e.g., Edinburgh Business School) were selected because these were most likely to be reliant on widely accessible media for their marketing communications. Also selected were five universities in the U.S., Europe, and India that, although primarily residential, were generally considered academically excellent and whose respective governments and national press could be relied upon to take a close interest so that changes in market presentation would be more easily detected. Where the university operated a college system (e.g., Oxford, Cambridge, and London), one college plus the general university information was selected (e.g., London City).

The researcher decided to use only publicly available documentation, whether it appeared on the Internet or in newspapers and university brochures because the purpose of the study was to determine how good governance affects marketing to the public. This was decided because according to SOX (2002) good governance requires transparency and the focus of the study was on the outcomes, not the processes that led to them. This analysis could not be exhaustive of all the relevant communications that were posted in the public domain since January 2002; therefore, a search was conducted for items posted during 2002 and 2007 precisely that would address the survey questions.

The researcher assumed that all the subject institutions existing pre-SOX operated with three distinct, formal or informal, hierarchically ranked areas of institutional interactions:

1. Internal (mostly academic).
2. External (mostly money-related and regulation, but including prospective students).
3. Community and citizenship (potential employers, neighbours, casual learners, global academic groups).

The public and private nature of the chosen institutions was ignored for two reasons. First, it was not easy to separate equitably state from private interests across jurisdictions. Second, in a global academic market the academic and social reputation, rather than the legal-financial status of the institution, is of interest to prospective students, parents, and employers.

SOX AND COMMUNITIES HYPOTHESIS

Because public marketing documents were unlikely to refer directly to good governance or to SOX (2002), a framework for evaluating the evidence needed to be established. The key principles of SOX are six-fold: accountability, transparency, efficiency, equity, participation, and effectiveness. By adding the SOX principles to the three layers of interaction, the basic model of the governance task to be carried out became:

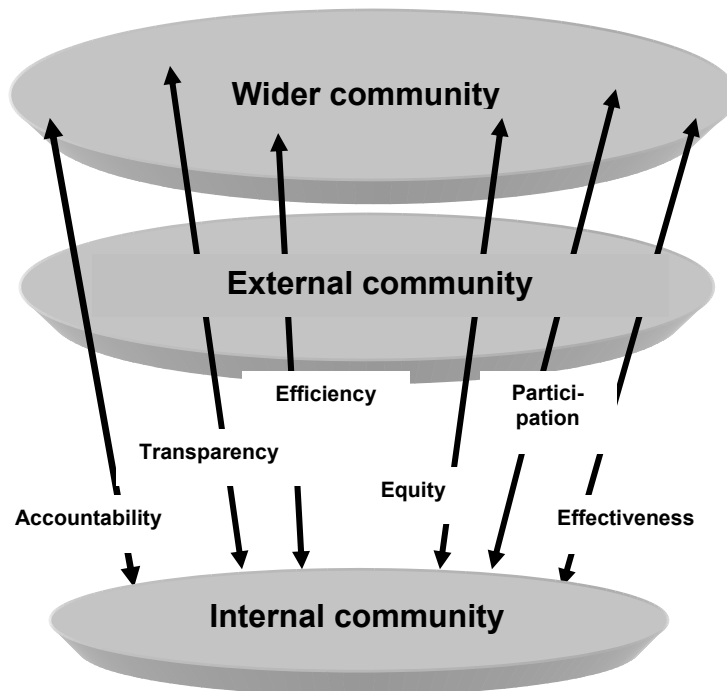


FIGURE 1. SIMPLIFIED PRINCIPLES AND COMMUNITIES MODEL

This simplified approach suggested that academic matters were no longer the domain of faculty, but of the community. This approach, although sometimes lauded and practised (e.g., some corporations help to define syllabi to increase graduate employability), nevertheless, has raised considerable concerns about the practicalities even within one layer, as was famously explained by Jean-Robert Pitte, when he was president of the Collège de Sorbonne, Paris. He robustly denied the validity of the university allowing dubiously representative student-bodies contribute to course design, stating that such was the role of professors and professionals, not first year students (Pitte, 2006). This view was even more important when a sample of the various stakeholder groups was added to each layer as in Figure 2:

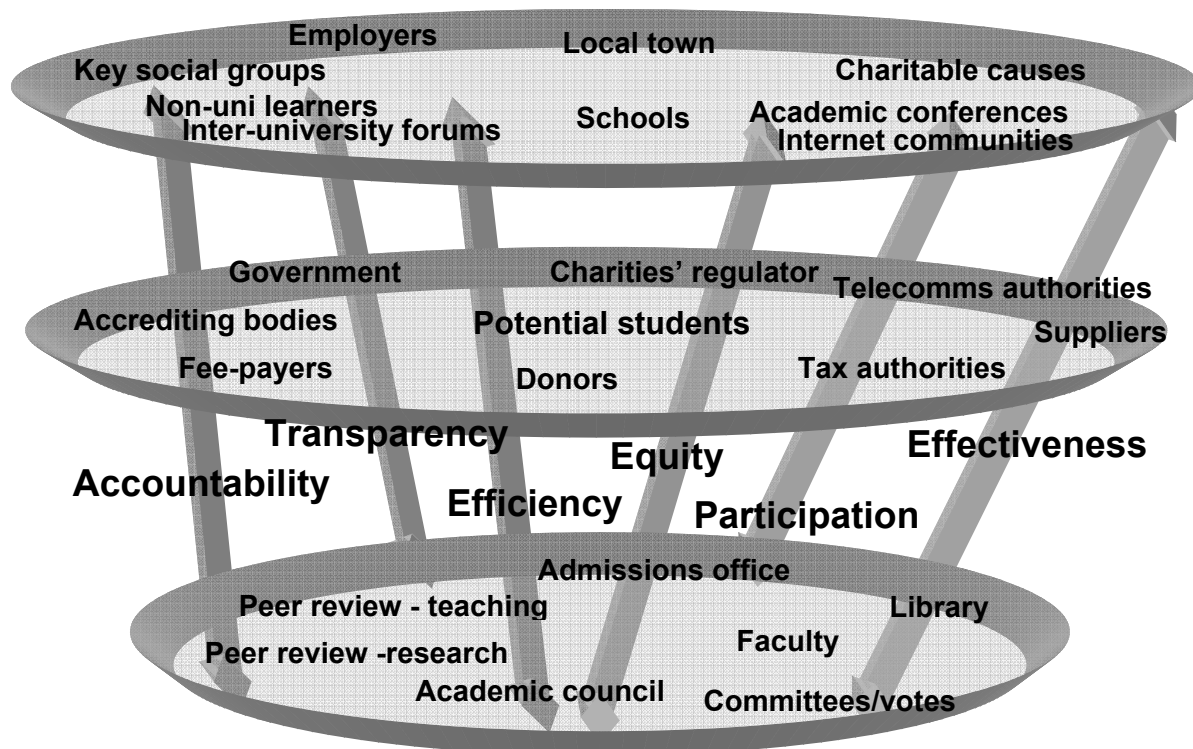


FIGURE 2: ILLUSTRATIVE PRINCIPLES AND COMMUNITIES MODEL

Figure 2 is a variation of the model: although the stakeholders in each level will vary according to the institution, the queries remain constant. Nevertheless, questions remain. Just how far should one spread participation, transparency, and accountability? Could one really have equity across all interested groups in subjects that, by the very nature of universities, were often complex and specialized? When would inclusion inhibit effectiveness and efficiency?

SURVEY QUESTIONS

In viewing what was happening in practice, a wide range of questions relevant to potential students (external level of the model) were considered:

1. What accreditations did the institution have?
2. Did the institution explain what these accreditations meant?
3. Was it clear for what the fees or grants paid?
4. Who were the faculty?
5. What authority, if any, did non-academics have in the curriculum?
6. What were the graduate employment statistics?
7. What was the curriculum?
8. What study choices had to be made and when?
9. What or who were the key investors in the institution who might affect academic direction?
10. What was the visibility of the answers to the above questions?

The intention was to determine whether clear governance was linked through the three levels of the model. Given that the financial basis of the student-university transaction was that students would purchase (with personal money+time or time) a qualification for a tradable benefit such that, if the model were applied, there would be transparency, equity, efficiency, and effectiveness in communicating to potential students in the external community internal issues, especially as they would relate to accreditation, commercial stakeholders and use of fees. There would also be some sign of a two-way dialogue (i.e. participation) and clear accountability for both parties. Simple comparison of the positives in 2002 and in 2007 would give some indication of the transparency levels such that attention to the remaining SOX principles could be inferred from where and how the information was found.

KEY FINDINGS

The table below summarises the findings, including the total number of institutions that provided information about each topic that was aimed at the potential student and the wider community. In all cases where an institution scored a “yes” in 2002, it also scored a “yes” in 2007.

TABLE 1. QUANTITATIVE RESULTS SUMMARY

Question	Yes 2002	Yes 2007
What accreditations does the institution have?	15	15
Is it explained what these accreditations mean?	0	9
Is it clear what fees (or grants) pay for?	1	12*
Who are the faculty?	5	10*
Who are the president, vice-chancellor, and chief?	11*	15
What say, if any, do non-academics have in the curriculum?	0	0
What are the graduate employment statistics?	3	7
What is the curriculum?	1*	2
What study choices have to be made when?	1	4
What or who are the key investors in the institution who might affect academic direction?	0	3

Note. * Further discussion follows.

The final question was qualitative: How visible were the answers to the above questions? In all cases the amount, accessibility, and quality of information available to prospective students had increased since 2002. The delivery mechanisms had also become more efficient (e.g., greater use of the Internet and fewer layers to reach answers) and participative (e.g., greater use of the Internet and “contact us” buttons). Equity of access to communication can reasonably be assumed to have increased as the costs and difficulties of traditional mail (e.g., postage and effects of asynchronicity) and of telephone (e.g., call fees, possibly language, and “hold” time) are reduced or negated by the use of the Internet that has itself become more widely accessible over the period in question.

COMMENTS ON RESULTS

Not surprisingly, all institutions listed their accreditations in their prospectuses in both 2002 and 2007, but only in the 2007 online material did nine of the institutions attempt to explain what each relevant accreditation meant for national or professional recognition. This shows a move toward more effective transparency in communication, for the prospective students were no longer held responsible for finding the information on their own and universities were clearly held accountable for their contextual accuracy.

Of the 15 universities surveyed, in 2002, 4 (all in the U.K.) did not name their “chief executive” in pre-enrolment literature, although the names were in graduation literature and were available through articles in the national press or, with persistence, online. By 2007, all institutions were, in common with the transparency required in standard business practice, prepared to own their leaders.

In 2002, only five of the institutions apparently listed their full faculty in promotional media. This could be attributed in part to the medium (i.e., print) mostly in use and the large number of faculty involved; however, where institutions issued partial faculty lists, these were of faculty in their administrative roles (e.g., head of school) rather than as subject experts (e.g., University of Delhi). By 2007, 10 of the survey group named their faculty, although accessing that information often required some Internet persistence and, when found, the significance was often unclear e.g., Edinburgh Business School (EBS); Excelsior College (Edinburgh Business School, 2008; Excelsior College, 2008). So, the transparency had increased, but efficiency and effectiveness values were judged not to be the same. It was possible to guess why faculty lists were not kept complete and up-to-date; it was also possible to guess why named faculty were so rarely presented in pre-enrolment communications as being responsible (from the student perspective) for specific aspects of the curriculum. Be that as it may, for basic application of SOX (2002) principles, a significant quantitative increase was apparent in material related to the question asked.

In 2002, none of this survey group, apart from the Open University (U.K.), made freely available public links to detailed course syllabi or programme outlines that were full enough for either the student or their advisor to decide whether or not the programme was appropriate. However, at that time and later in 2007, most universities (e.g., the Sorbonne) made clear to the students what the course headings and time allocations would be (Collège de Sorbonne, 2007). By 2007, EBS had all its course outlines online. Other solutions to this problem of making the product-offer transparent were demonstrated by asking prospective students (also in 2002) to contact the relevant faculty office (e.g., at Oxford, Cambridge, or Harvard) to ask it to put samples of the courseware on the Internet (cf. University of Delhi, 2008). All three of these solutions for making the product offer more transparent required the participation of both parties (i.e., the student and university), but the accountability was less explicit. It could be assumed from wider knowledge of the application process that prospective students who wished to attend Oxford or Cambridge would not be successful if they did not contact the relevant office for further programme information; however, the main Web site did not state this message. At EBS and the University of Delhi, checking the programme content was completely optional.

Determining financial influences and accountabilities across the group in a like-for-like manner became impossible, for funding rules had changed in the United Kingdom (U.K.) and the need to distinguish between international and national students varied according to institution and country. The U.S. institutions consistently showed clear links to funding information and prices, whereas the Sorbonne provided clear links to social funding for national students, but enquiries had to be made about costs for international students.

COMPLICATIONS AND CAVEATS

A complicating factor in this study was the rise in the use of the Internet since SOX (2002) came into force; however, this could be considered neutralised or heavily tempered by universities adjusting to their target markets for delivery of information. Because all the universities surveyed were successfully attracting students at rates that had not caused alarm, a significant difference was likely not caused by the choice of information delivery medium. The researchers assumed that the universities provided the information that they believed their markets required, regardless of delivery medium, and assumed that universities were aware of their competitors' marketing efforts.

What was not certain was whether, in an internally co-ordinated manner, the universities actively chose to follow the SOX (2002) outlines in creating greater transparency about their qualification products. Nor is it proven in this study that the greater push to transparency was more effective through increasing retention rates.

A further complication was the role of accrediting authorities in driving or facilitating the changes in institutional communications with prospective students. Although the market-recognition of the qualification led to successful students gaining financial payback, that issue was largely ignored in this overview. The switch to learning outcomes that was largely driven by the accrediting bodies, combined with increasing membership of multiple accrediting bodies, caused several of the institutions to expend more time and energy in recording and externalising their academic requirements. Thus, it was easier for the institutions to later represent the information for marketing purposes. The effects of SOX (2002), might also be felt directly by the accrediting bodies, which would then affect what they would require of their member institutions.

This study concentrated on the first two communities (internal and external) of the three-community model, including the third, wider community by implication only. However, potential students do garner their information from newspapers and other public sites that are usually considered "wider community." Many well-publicised instances of the wider community affect the internal academic landscape; for example, George Washington University's has discussed which students can live in which residences and what the campus architecture should be (Trachtenberg, 2008), and Leeds University ran a public campaign in 2004-2005 to retain well-attended and socially-valued continuing education courses.

All aspects of the institutional and public education landscape were subject to a wide range of interrelated factors such that naming any one event or constituency as the definitive driver for a shift in behaviour was not possible. What could be shown was that a model appeared to have

some empirical validity; therefore, it might be of use in similar circumstances.

CONCLUSIONS

Although the transparency of marketing communication increased over the period 2002-2007 at the institutions in question and although this appears to have increased performance for all five of the other SOX (2002) principles, no proof existed that SOX principles were being applied systematically. If they had been applied systematically, a greater consistency between the levels of attempts at transparency and addressing the other principles would have been apparent. For example, complete equity between home and international students would have been apparent when assessing ease of finding information on what fees and grants covered (Collège de Sorbonne). Also, if institutions were to carry through on the SOX principles, they could increase their effectiveness and efficiency by clarifying the accountability for pre-enrolment understanding of the course outlines. If they were to publish the outlines online (as did EBS and the University of Delhi) and were they to make these an interactive element of the application process, the student could be made clearly accountable for understanding what the programme entailed while the institution would be held very clearly accountable for delivering a programme as “sold.”

Thus, one can infer that the Principles and Communities Model is a useful tool in analysing market communications to ensure that the various elements that constitute the realm of higher education work together for mutual gain. For example, if university admissions departments were to ask themselves, “Have we published a clear fees table?” use of the model might prompt the response, “Yes, but it does not cover all our markets.” The equity principle might then be addressed before students begin to complain. Similarly, if, as is increasingly likely in today’s economy- and government-driven wider community, potential students are employed and have family commitments, they could be added as a distinct stakeholder group within the model so their needs would be fed back through the participation line to the internal community such that effective communication for course scheduling would then be not only hours per term or per semester, but also show compulsory day and hour attendance blocks—whether for in-class or online courses. The remainder of the student’s commitments could then be scheduled to fit. The principle behind this plan accords with many situations and stakeholder groups. Rather than focusing on potential students, the plan could focus on the needs of the university library or of a particular external employer.

Further academic studies should apply the SOX (2002) principles in this model to different communities and they should preferably integrate a series of studies within a single institution, taking into account how the institution’s internal, financial reporting procedures and management structures align with the SOX guidelines.

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