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MEASURING BUSINESS RELATED ETHICALITY GLOBALLY: CULTURAL EMIC OR ETIC?

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ABSTRACT

When conducting or evaluating cross-cultural/cross-national research studies a critical question must be asked about the measurements: are they culturally an emic or etic? That is, is the research methodology culturally bound or culture free? The research described in this paper shows how etic and emic properties may be explored by using the Ethicality Scale developed by Albaum and Peterson (2006) and demonstrates that it is at best an imposed etic scale. In doing so, this research confirms Adler's (1991) view that similarity across cultures should be proven rather than assumed. It also raises questions about the frequent assumption of implied or imposed etic validity in cross-cultural/cross-national research.

JEL: M14, M16, M30

KEYWORDS: Equivalency, Ethics, Ethicality Scale, Emic vs. Etic, Cross-cultural Research

INTRODUCTION

Cross-cultural/cross national studies are increasing in number and viewed as providing valuable insight for researchers, classroom teaching, and business practice; yet serious concerns about methodology exist that must be overcome if the studies are to make useful contributions (Hult et al., 2008). Watkins (2010) notes that many researchers make assumptions that "the values measured are 'universal,' exhaustive and applicable to every culture" (p. 702) and often assume validity without establishing it. Thus, when interpreting the results of cross-cultural/cross-national research it is necessary to carefully consider if the measurements are emic or etic.

Among the many issues in cross-cultural/cross-national research (Adler, 1983; Chan & Rossiter, 2003; Sekaran, 1983), perhaps the most important is that of data equivalence (J.W. Berry, 1980; Craig & Douglas, 2000; Kumar, 2000; Mullen, 1995; Salzberger, Sinkovics, & Schlegelmilch, 1999). Studies reviewing international business literature, including international studies in general marketing and buyer behavior have determined that many cross cultural studies do not examine equivalence of data (He, Merz, & Alden, 2008; Hult, et al., 2008; Watkins, 2010). Explanations given for the lack of data equivalence measurement were: data not viewed as conducive to data equivalence measurements; analysis not viewed as necessary; and researchers not familiar with the methodology (He, et al., 2008). Despite numerous calls for improved analysis of data equivalence measures, Hult, et al. (2008) show no statistically significant improvement in data equivalence analysis from 1995-2005, and Watkins (2010) reports such tests are not often presented. Of the researchers in the He, et al. sample not reporting data equivalence measures, 72% indicate that the need for such analysis was not mentioned by either reviewers or editors.

The study reported here involves assessing the validity of the Ethicality Scale, a measurement scale of business-related ethicality developed in the United States by Albaum and Peterson (2006), by measuring business ethics-related attitudes of respondents in 13 countries. The purpose of this assessment is to demonstrate how to test for etic and emic properties by using measures of data equivalence. To do so, the analysis extends guidelines suggested by Hult, et al. (2008) for assessing data equivalence. For the sake of simplicity, the terms "culture" and "nation" are used interchangeably to define the domain of concern.

However, it must be remembered that culture does not always equal nation so that much research that is labeled "cross-cultural" is more appropriately "cross-national."

Below, the concepts of emic and etic research methodology are reviewed followed by a discussion of data equivalence and how equivalence may be measured. The methodology of data collection, measurement, standardization and analysis is then reviewed. Finally, the results of the analysis are discussed and questions for future research are presented.

LITERATURE REVIEW

The Emic/Etic Issue

An aspect of research methodology is an emic when it is culture-bound. That is, it behaves in a specified way in one culture and one culture only. More formally, "Emic validity is established when correct predictions of behavior in a culture are made on the basis of the investigator's understanding of that culture's own conceptual system" (J.W. Berry, 1980 p. 19). When it operates similarly in many cultures, it is considered to be culture-free and is an etic (J.W. Berry, 1980). As noted by Berry (1989), Pike's work on etic and emic behavioral descriptions demonstrates value to the etic approach. An etic study may be a point of entry that provides experience in recognizing similarities and difference, may be a practical way of meeting financial or time limitations in research (Pike, 1967), and may be useful for exploratory research (Cadogan, 2010). Further, Pike notes that etic and emic are not a dichotomy, but two different perspectives that, used jointly, may add richness to the analysis.

However, not all research is exploratory and evidence of cross-cultural validity must be established if thoughtful analysis is to be done in international research. As noted by Vandenberg and Lance (2000) failure to establish between group equivalence can "can render interpretation of between group comparisons on the nonequivalent measures highly suspect" (p. 9). But, by examining methodology in more than one culture, an aspect of validity can be assessed. In doing so, imposed etic validity is established by correctly predicting an outcome in a culture by using a research methodology imported from another culture (J.W. Berry, 1980). That is, "imposed etic validity is established by correctly predicting an outcome in culture B on the basis of a theory, construct, or test imposed from culture A" (Berry, 1980, p. 19).

When emic and imposed etic validities have been "proved," imposed etic validity can be established. Berry (1980, p. 19) argues that this is appropriate for valid cross-cultural comparisons and that imposed etic validity must be based on known validity in two or more cultural systems. Viewed this way, imposed etic validity must be established one culture at a time. In an applied sense, methodologically, this could lead to complications for, say, a business firm that wants to study its corporate reputation in its multiple foreign markets, or even in a small subset of its markets. What if the imposed etic of a methodology held only for some cultures but not others? Then, an overall derived etic validity is unobtainable. That this matter is of current interest to some methodological researchers is illustrated by a recent study of applying a country personality scale developed in a Western country to a Chinese social context to position 11 different countries, including China, on six personality dimensions (d'Astous & Li, 2009). The adapted scale had good psychometric properties in this application.

From a cultural anthropological perspective, the present study can be viewed as a type of hologeistic study of research methodology. A hologeistic or whole earth study is one that uses data from worldwide samples of entire societies or cultures. These samples are intended as representative samples of all known human cultures, or of a defined subset of that universe (Naroll, Michik, & Naroll, 1980). Specifically, it is a holonational study since it uses a sample selected from a population of nation states. According to

Naroll, Michik and Naroll (1980, p. 483), culture presumably varies within the sample as much as usual, other things are presumed equal, and irrelevant factors are presumed to vary randomly.

Equivalence

As discussed above, for imposed etic validity to exist there must be equivalence in effects of research methodology between the nation where the methodology was developed and refined and the nation where it is applied. Equivalence has been defined by Craig and Douglas (2000) as "data that have, as far as possible, the same meaning or interpretation, and the same level of accuracy, precision of measurement or reliability in all countries and cultures." Concern with data equivalence requires "taking steps to ensure that any differences found between cultures truly reflect the phenomena of interest, and are not simply a reflection of issues such as scale use tendencies and differences in contract conceptualizations" (Hult, et al., 2008, p. 1028). One approach to equivalence, used in this study, is the psychometric approach in which the characteristics of parameters in measurement models are tested for invariance across countries (van Herk, Poortinga, & Verhallen, 2004). As noted by Steenkamp and Baumgartner (1998), if certain conditions of invariance are satisfied, including configural, metric, scalar, factor covariance, and error variance, then comparisons may be considered valid.

Invariance is established when populations from different cultures that are otherwise identical score identically on a measurement (Schmitt & Kuljanin, 2008). The essence of concern for equivalence in cross-cultural research has been noted in Salzberger (1997), who defined five major dimensions where equivalence is of concern: (1) research methods, (2) research topics, (3) research units, (4) research administration, and (5) data handling.

The dimension of most concern in the present research is that of research methods, an essential aspect of which is concern with equivalence in measurement. This relates to developing so-called scales of measurement for constructs. Researchers have tackled this "problem" (For example, see d'Astous & Li, 2009; Donoho, Herche, & Swenson, 2001; Lages, Silva, Styles, & Pereira, 2009; Mullen, 1995; Parameswaran & Yaprak, 1987; Richins, 1986; Singh, 1995; Steenkamp & Baumgartner, 1998). However, Hult, et al. (2008) recently reviewed 167 studies involving cross-cultural data published in five leading international business journals. A key finding is that researchers report insufficient information regarding data equivalence issues. Following is a brief discussion of the three broad categories of concern for data equivalence, construct, measurement, and data collection equivalence. Interested researchers may see Hult, at al. (2008) for a complete review of technique development.

A demonstration of construct equivalence shows that a concept has the same meaning and functions in the same manner across multiple cultures and entails establishing function, conceptual, and category equivalence before data collection. This means observed behavior must relate to similar problems, or functions (Frijda & Jahoda, 1966); concepts within differing systems of cognition are similar across cultures (McArthur, 2007); and similar groupings, or categorizations, of phenomena occur across cultures (Douglas & Craig, 1983; Kumar, 2000). Pre-data collection construct equivalence may be established through literature reviews, use of existing scales, qualitative fieldwork, and pilot studies. Post-data collection construct equivalence may be established through a variety of statistical analyses including, but not limited to, exploratory and confirmatory factor analysis, Cronbach's alpha, Coefficient Theta, and calculations of composite reliability and average variance extracted, and item total correlation (Anderson & Gerbing, 1988; Bagozzi & Heatherton, 1994; Everitt & Skrondal, 2002; Hult, et al., 2008). Because the focus of the current research was to evaluate an established scale, the results focus on post-data collection construct equivalence issues.

Measurement equivalence, "comparability of the wording, scaling, and scoring of constructs across cultures" (Hult, et al., 2008, p. 1028) has subcategories of calibration, translation, and metric equivalence.

Calibration equivalence entails ensuring measurement units for objective data are comparable; while translation equivalence occurs when identical meaning is delivered across cultures. Finally, metric equivalence exists when "data exhibits similarities of structure within cultures close enough to allow researchers to reasonably assign the majority of the remaining variance to inter-cultural differences" (McArthur, 2007, p. 30). Since the Ethicality Scale under study used perceptual measures, concern for calibration equivalence is not as strong as with research studies using objective measures. However, as discussed below, standardization of data can address calibration issues. Hult, et al. (2008) suggests the use of confirmatory factor analysis for metric equivalence and back translation, translation by committee, or statistical testing for form and meaning equivalence to test translation equivalence.

Finally, data collection equivalence must be established. "Data collection equivalence refers to whether the sources of data, the methods of eliciting data and the resulting samples are comparable across cultures…" (Hult, et al., 2008, p. 1037). This involves sampling frame comparability--a parallel between groups sampled, similar data collection procedures, and a match of sampling methods by using equivalent sampling techniques.

DATA AND METHODOLOGY

The current study was done as part of a larger study measuring the level of business ethicality in multiple countries *(reference to be provided)*. The 13 countries selected from the larger data set for this analysis were those where sample size was at least 100.

Sample and Data Collection

To establish data collection equivalence, an attempt was made to obtain reasonably representative samples of undergraduate university business students as research respondents. These students are the future business and political leaders so it is meaningful to assess their ethical beliefs and attitudes. Given the major and widespread ethical and legal lapses that have occurred in the past few years, as illustrated by executives managing such companies as Enron, WorldCom, and Tyco, it is important to know the ethical perspectives of these future leaders. A recent study by Gilley, Robertson, and Mazur (2010) discusses the need for enhancing firm value creation by the development and executive championing of an effective code of ethics. Such "Ethics Code Commitment" affects a broad number of company stakeholders.

A two-stage sampling design was employed in data collection. The first stage consisted of identifying, judgmentally, representative samples of four-year colleges and universities in the countries where data was to be collected. That is, the samples were selected based on the judgment and expertise of the researchers. A judgment sample has potential advantages of developing suitable samples and can provide results as good as probability sampling; and, is the most common approach in these types of studies (Smith & Albaum, 2005). Moreover, the present study was designed to be a broad-based international study, rather than a small, focused study, which might be more accurate, but less generalizable.

The second stage consisted of obtaining a cluster sample of undergraduate business students in each of the stage-one colleges and universities selected. Specifically, to obtain geographically diverse cross-sections of business students, professors in business schools in each country were contacted and asked if their research or teaching assistant would administer the questionnaires to undergraduate business students. Table 1 contains a listing of the countries from which the samples were obtained, the number of colleges and universities sampled in each country, and the number of survey participants from each country. Professors who agreed to participate in the survey were either emailed a copy of the questionnaire or sent blank questionnaires and a preaddressed return envelope. Data collection was accomplished through an in-class setting to control for possible "noise" by having a common data collection environment. The

approach to data collection was chosen to take advantage of the personal relationships that existed between authors and colleagues in the countries where data were obtained. This allowed the investigation to be completed in a reasonable length of time, with a high response rate.

Table 1: Countries Included in Study

Country	Number of Colleges or Universities	Number of Respondents
Brazil	3	131
Canada	3	128
Colombia	3	149
France	2	150
Germany	2	242
Hong Kong	2	113
Morocco	2	109
Norway	2	183
Senegal	3	109
Singapore	2	117
Spain	2	174
Tunisia	3	212
United Kingdom	4	148

This table shows the countries from which data were collected. The second and third columns show the number of universities and number of students in the sample.

The final sample consisted of 1,965 survey participants. In total, there were 911 males and 1,037 females in the obtained sample. The average (mean) age was 23.0 years. The gender distribution and average age of respondents in each country are shown in Table 2. (Because some study respondents did not answer all demographic questions, the demographic group sizes do not sum to the final sample size.) Even though probability sampling was not employed, the samples were deemed to consist of sufficiently broad distributions of undergraduate business students to warrant confidence in the general inferences to be drawn.

Table 2: Demographic Characteristics of Samples

	Gender (percent distribution)			Mean Age
Country	Female	Male	N	(years)
Brazil	39.2%	60.8%	130	21.5
Canada	54.7%	45.3%	128	22.4
Colombia	54.4%	45.6%	147	23.8
France	58.4%	41.6%	149	22.9
Germany	48.1%	51.9%	239	22.8
Hong Kong	53.6%	46.4%	112	20.8
Morocco	52.3%	47.7%	109	21.1
Norway	44.1%	55.9%	179	24.1
Senegal	28.4%	71.6%	109	33.1
Singapore	67.5%	32.5%	117	21.3
Spain	52.7%	47.3%	169	23.1
Tunisia	71.7%	28.3%	212	21.9
United Kingdom	58.8%	41.2%	148	21.2
All Respondents	53.2%	46.8%	1,948	23.0

This table shows demographic characteristics for respondents by country.

Measurement

The Ethicality Scale measure consists of six items scaled as six-category numerical Likert scales, presented from 1 ("strongly agree") to 6 ("strongly disagree"), as shown in Table 3. Only the endpoints of the rating scale were labeled verbally. Thus, the format of the scale items was balanced and did not contain a neutral point. Such a scale assumes that a respondent has an ethics attitude and is able to indicate it. Four of the scale items were reverse-coded (see Albaum & Peterson, 2006) when computing

individual respondent ethicality scores. The range of possible scores was 6 to 36, with the larger the score the greater the degree of business-related ethicality.

In addition to the Ethicality Scale items, the questionnaire included four demographic questions (age, gender, employment status, country of citizenship), and three questions (academic classification, major field of study, and citizenship) used to screen potential survey participants to ensure that the sample was limited to only undergraduate business students from the respective countries.

Table 3: Items Included in Ethicality Scale

1.	If a manager in a company is discovered to have engaged in unethical behavior that results primarily in personal gain (rather than corporate gain), he or she should be terminated or fired (reverse coded).
2.	If a manager in a company is discovered to have engaged in unethical behavior that results primarily in corporate gain (rather than personal gain), he or she should be terminated or fired (reverse coded).
3.	Top business executives should state in no uncertain terms that unethical behaviors in their companies will not be tolerated (reverse coded).
4.	It is important that ethical considerations be taken into account when designing company policies (reverse coded).
5.	Within a business firm, the ends justify the means.
6.	Business behavior that is legal is ethical.

Source: Albaum and Peterson (2006).The items measured by the Ethicality Scale, originally developed by Albaum and Peterson, are shown in the table.

The questionnaire was originally developed in English and pilot-tested on a sample of American business students to obtain a qualitative evaluation of item understandability and assessment ease. It was subsequently translated into Chinese, French, German, and Spanish, usually by professors in the countries where data were collected. Because many of the survey participants were from English-speaking countries, were enrolled in educational institutions where English was the language of instruction, or spoke English or one or more of the languages into which the questionnaire was translated (e.g., Tunisians speak French), there was no need to translate the questionnaire into other languages.

Standardization of Data

In research methodology, the term standardization can be used to refer to the standardization of procedure, interpretations, or scores. Because the research described here involved using a scale across nations/cultures, there is concern with response bias. The most commonly discussed forms of response bias are acquiescence bias, a grouping of responses at one end of the scale, and extreme or modesty response, the selection or rejection of extreme responses (Baumgartner & Steenkamp, 2001; Fischer & Milfont, 2010; Hartgen, Stuart, Walcott, & Clay, 1990). Both forms of bias must be considered before analyzing data and interpreting results, particularly in cross cultural/national research. As noted in Fischer (1990), there is debate about whether differences in response patterns are methodological bias that should be controlled or cultural phenomena that should be studied. However, "cultural tendencies are likely to change the response of participants and make them incomparable across cultural groups" (Fischer, 2004, p. 264). The focus of this research was to examine etic and emic properties of an established scale; thus, we chose to standardize the data before conducting any analysis in to isolate and control for these biases. This allows for a clearer understanding of etic and emic properties.

The standardization of data, often based on mean and dispersion centering, may take several forms: within subject, within group, within culture, or double standardization. Interested readers should see Fischer and Milfont (2010) for a more in depth discussion of various techniques of data standardization. Depending on the focus of the research standardization could occur on numerous levels. We chose to use within-culture means and dispersion indices (Leung & Bond, 1989) where individual observations are standardized using the mean and dispersion, or standard deviation, for all observations from one country.

Thus, the standardized score, y', can be calculated based on the individual observation, x, using the following formula.

$$y' = \frac{x - mean_{culture}}{dispersion_{Culture}} \quad (1)$$

This type of standardization addresses acquiescent response bias (Fischer & Milfont, 2010). In conjunction reverse coding some of the scale items, it also addresses extreme response bias (Hartgen, et al., 1990).

RESULTS AND DISCUSSION

Initially, two additional, independent samples of undergraduate business students from France and Spain were used to evaluate temporal stability (test-retest reliability) of the Ethicality Scale. The median two-week and one month test-retest correlation measuring stability of the scale was an acceptable 0.62. This is comparable to the finding in the United States reported by Albaum and Peterson (2006).

To establish the existence of construct and measurement equivalence six analyses were done (Table 4). First, the variances of the six Ethicality Scale items were compared across 13 country samples. Although there were some minor differences, item variances were relatively similar, with most standard deviations falling in the range 1.0 to 1.4, suggesting response homogeneity in the context of the business-related ethicality. However, in three countries—Morocco, Senegal, and Tunisia—some standard deviations were as high as 1.7 and 1.8.

Table 4: Construct and Measurement Equivalence Analyses

Type of Equivalence	Method
Construct Equivalence	
Pre-data collection	
Function, conceptual, categorical equivalence	Used existing, validated Ethicality Scale
Post-data collection	
Unidimensionality	Factor Analysis Total Item Correlation
Reliability	Coefficient theta
Construct Validity	Comparison of item variance Composite reliability Average variance extracted
Measurement equivalence	
Calibration equivalence	Perceptual rather than objective measures used
Translation equivalence	Survey translated by native speakers
Metric equivalence	Factor analysis

This table shows how each type of data equivalence, construct and measurement, was tested in the analysis. Subcategories of each type of equivalence are shown for both construct and measurement equivalence.

The second analysis consisted of the six Ethicality Scale items being subjected to separate factor analyses conducted with the widely used Principle Components extraction and Varimax rotation within each of the 13 countries to determine similarities and differences and to see if structures emerged similar to that reported by Albaum and Peterson (2006) for the United States. In that study the first 4 scale items shown on Table 3 were assigned to the Behavioral Ethicality factor, the last two were assigned to the Philosophical Ethicality factor.

Similar to Albaum and Peterson (2006), two factors emerged –Behavior and Philosophy—in all countries but Senegal, where three factors emerged (see Table 5). Where three factors emerged, the third factor consisted of one scale item. The amount of explained variance ranged from 50.75% in Germany to 61.62% in Norway. Again, this is comparable to the 61.10% for the United States reported by Albaum

and Peterson (2006). Table 6 shows, for each country, on which factor each scale item loaded highest. The "rule of assignment" was a factor loading of at least .500 or, if less than this, a large difference in loadings between the two factors.

Table 5: Results of Factor Analyses of Ethicality Scale Items

Country	Number of Factors	Percent Variance Explained
Brazil	2	56.05%
Canada	2	61.62%
Colombia	2	55.01%
France	2	57.78%
Germany	2	50.75%
Hong Kong	2	55.04%
Morocco	2	50.82%
Norway	2	60.69%
Senegal	3	64.74%
Singapore	2	56.56%
Spain	2	54.63%
Tunisia	2	50.91%
United Kingdom	2	59.36%

This table shows the results of a Principle Components with Varimax rotations factor analysis done on the Ethicality Scale, for each country. . The first column shows the number of factors and the second shows the amount of variance explained by the factors.

Table 6: Factor Where Scale Item had Highest Loading, By Country

	Scale Item					
Country	**1**	**2**	**3**	**4**	**5**	**6**
Brazil	B	B	B	n	P	P
Canada	B	B	B	B	P	P
Colombia	B	B	B	B	P	P
France	B	B	B	B	P	P
Germany	B	B	B	B	P	P
Hong Kong	B	B	B	B	P	P
Morocco	P	P	B	B	n	P
Norway	B	B	B	B	P	P
Senegal	P	n	B	B	n	P
Singapore	B	B	B	n	P	P
Spain	B	B	B	P	P	P
Tunisia	B	P	P	n	n	P
United Kingdom	B	B	B	B	P	P

For each county in the study this table shows where each item of the Ethicality Scales loaded on the two main factors, Behavioral Ethicality or Philosophy Ethicality. B= Behavioral Ethicality; P=Philosophy Ethicality; n=neither. See Table 3 for description of scale items.

The third analysis was the calculation of coefficient theta, which is generally viewed as a special case of Cronbach's alpha coefficient. Theta is 'the alpha coefficient for a scale in which the weighting vector has been chosen so as to make alpha a maximum" (Anderson & Gerbing, 1988, p. 61). It is useful for analyzing a multi-dimensional scale with heterogeneous relationships among the scale items such as the Ethicality Scale (Dillon & Goldstein, 1984). The results are shown in Table 7. The majority are lower than Nunnally and Bernstein's (1994) suggested norm of 0.7 for coefficient alpha. Yet, the number of items in the scale is not large. Some researchers have shown that small numbers of items have small alphas. Or, to put it another way, as the number of items increase, Coefficient alpha also increases (Cortina, 1993; Duhachek, 2004; Spector, 1992). However, 2 of the 13 countries have thetas exceeding the norm for alpha, and another 8 countries are within 0.1 of the expected norm.

Next, we calculated both composite reliability and average variance extracted (AVE) for the overall scale and each factor as suggested by (Anderson & Gerbing, 1988). Composite reliability measures how the underlying factors contribute to the measurement of the construct. Average AVE assesses the amount of common variance among the underlying factors explained by the construct. An AVE of 0.5 or higher is generally viewed as an indication of construct validity (Bagozzi & Heatherton, 1994; Dillon & Goldstein,

1984). As shown in Table 8, Morocco, Senegal, and Tunisia all have composite reliabilities of less than 0.7 and an AVE of less than 0.5 indicating the Ethicality Scale should not be viewed as etic in those countries. However, all other countries, except Spain have composite reliabilities for both the overall scale and each factor of above or very close to 0.7. In addition each of these countries and Spain has AVE's above 0.5 providing evidence that the scale may be used and assumed etic except in Morocco, Senegal, and Tunisia.

Table 7: Coefficient Theta

Country	Theta	N
Brazil	0.677	131
Canada	0.682	128
Colombia	0.650	149
France	0.673	150
Germany	0.601	242
Hong Kong	0.600	113
Morocco	0.539	109
Norway	0.737	183
Senegal	0.485	109
Singapore	0.637	117
Spain	0.628	174
Tunisia	0.589	212
United Kingdom	0.727	148

This table shows the result of a coefficient theta calculation, a special case of Cronbach's alpha, and a means of testing for construct reliability.

Table 8: Composite Reliabilities and Average Variance Extracted

	Overall		Behavior Ethicality		Philosophy Ethicality		
Country	Composite Reliability	AVE	Composite Reliability	AVE	Composite Reliability	AVE	N
Brazil	0.738	0.664	0.719	0.620	0.774	0.745	131
Canada	0.785	0.770	0.746	0.683	0.861	0.906	128
Colombia	0.729	0.644	0.726	0.638	0.735	0.657	149
France	0.760	0.715	0.742	0.675	0.796	0.791	150
Germany	0.711	0.603	0.699	0.575	0.736	0.659	242
Hong Kong	0.756	0.706	0.735	0.657	0.798	0.796	113
Morocco	0.643	0.448	0.584	0.329	0.746	0.683	109
Norway	0.758	0.711	0.725	0.636	0.822	0.842	183
Senegal	0.419	0.115	0.536	0.250	-0.203	0.007	109
Singapore	0.733	0.654	0.705	0.587	0.789	0.777	117
Spain	0.703	0.584	0.677	0.523	0.753	0.698	174
Tunisia	0.565	0.297	0.578	0.320	0.533	0.245	212
United Kingdom	0.771	0.740	0.746	0.683	0.821	0.840	148

This table show the results of composite reliability and average variance extracted for the entire Ethicality Scale (overall), and for those items loading on the Behavior Ethicality factor or the Philosophy Ethicality factor. These measurements are used to test for construct validity.

Our sixth analysis was a calculation of item-total correlation. This analysis is used to evaluate if a single measure, in this case ethicality, can be used for comparison across a population. If correlations are below 0.2 or 0.3 it is generally accepted that the item doesn't fit well with other measures and should be deleted(Everitt & Skrondal, 2002; Field, 2005) . As shown in Table 9, all scale items except item 5, 'Within a business firm, the ends justify the means' had correlations above 0.2 and most were above 0.3. However, for item 5, 9 of the 13 countries in the sample had total-item correlations below 0.2. This indicates this item may not be an acceptable scale measure.

Perusal of the literature of cross-cultural/national studies, and studies within a culture/nation, relevant to many disciplines suggests imposed etic validity is assumed, without testing, as research methodologies developed and refined in one culture/nation are applied in other cultures/nations. In short, there are few attempts made to assess, empirically, etic properties even though it may be reasonable to assume that some aspects of methodology may better apply when treated as an emic. When a research methodology is "applied" there is an interaction between that methodology and the research respondents or subjects.

Since it is well known that people in different cultures/nations may differ in such basic characteristics as values (Hofstede, 2001; Kahle, Rose, & Shoham, 2000), it would be prudent to question at the outset the assumption of imposed etic validity for most aspects of method. This view is consistent with that proposed by Adler (1991), "assume difference until similarity is proven" (p. 67), and "it remains best to resist the temptation of assuming that any particular theory applies everywhere" (Adler, 2002, p. 165).

Table 9: Item Total Correlations

	Scale Item					
Country	**1**	**2**	**3**	**4**	**5**	**6**
Brazil	0.672	0.684	0.522	0.463	0.146	0.276
Canada	0.605	0.686	0.558	0.418	0.400	0.344
Colombia	0.636	0.687	0.628	0.485	0.157	0.567
France	0.624	0.694	0.593	0.449	0.168	0.453
Germany	0.650	0.514	0.580	0.491	0.174	0.382
Hong Kong	0.619	0.580	0.603	0.632	0.463	0.414
Morocco	0.609	0.596	0.477	0.505	0.298	0.584
Norway	0.525	0.599	0.583	0.407	0.139	0.375
Senegal	0.470	0.287	0.549	0.562	0.131	0.533
Singapore	0.576	0.594	0.633	0.430	0.262	0.339
Spain	0.646	0.543	0.593	0.367	0.100	0.465
Tunisia	0.527	0.559	0.678	0.408	0.060	0.483
United Kingdom	0.674	0.633	0.700	0.438	0.075	0.213

This table shows the results of the Item Total correlations used to test for unidimensionality. Each column corresponds to an item on the Ethicality Scale shown in Table 3. See Table 3 for description of scale items.

The results of the present study seem to support this notion. There is variation in coefficient theta scores indicating internal consistency reliability is not universal by any means. In contrast, the results of the factor analyses, composite reliability, and AVE generally support that the Ethicality Scale can be viewed as an etic, in some, but not all, countries. This is further supported by the item-total correlations that showed one of the scale items assigned to the Philosophical Ethicality factor not to warrant inclusion in the scale.

Thus, the underlying structure of this scale, and any measurement instrument, should be empirically examined in any cross-cultural or cross-national study. For example, take the case of the country Senegal. Coefficient theta of the overall Ethicality Scale was the lowest at 0.485. The factor analysis yielded three factors, not two. In forcing two factors, the amount of variance explained decreased from 64.74% to 47%, a decrease of more than 25 percent. Finally, composite reliability and AVE were also low at 0.419 and 0.115, respectively. Here, as well as in Tunisia and Morocco, it is only reasonable to consider the scale to be emic. However, the results also indicate scale items, with the exception of item 5, might be considered etic in the other countries. However, great care should be used if including the fifth scale item, 'Within a business firm, the ends justify the means'. These findings also correspond to Pike's (1967) view that the concepts of etic and emic are not dichotomous. Rather they may be more usefully interpreted as endpoints on a scale.

CONCLUDING COMMENTS

The goal of the work discussed here was to demonstrate how to examine etic and emic properties in cross-cultural research. Data was collected using the Ethicality Scale developed by Albaum and Peterson (2006). Analyses were conducted to test for construct and measurement equivalence. The results indicate the Ethicality Scale may be used in many but not all countries and confirmed the need to carefully test any measurement scale for etic/emic properties.

The present study clearly has some limitations that future studies would be well advised to avoid, if possible. First, the sizes of the samples within each country varied widely. Such variation makes

generalization difficult even with standardization of the data. Future research should use samples of approximately equal size, preferably larger samples. Second, it is difficult to make generalizations about any other scale of measurement on the basis of the findings from the present study. The present study does suggest, however, that researchers wanting to use a measurement scale that has not been shown to have imposed etic validity in a country different from the one where the scale was developed should at the very least do a pretest or exploratory study to assess its potential psychometric properties.

These results lead to broader questions: 1) Should a researcher have to test application of all aspects of a research methodology to be used for imposed etic validity properties? 2) Can researchers trust the results of other methodological studies, regardless of the culture being investigated? 3) Is it practical (i.e., economically feasible) to test etic properties for all cultures (nations) or can similarity be assumed, at least for nations having low psychic/psychological distance (Albaum & Duerr, 2011), as measured by culture, stage, of economic development, history, etc., between them? In short, can cultures (nations) be grouped in some meaningful way to ease the difficulty of testing for etic properties? 4) If one assumes there always will be some differences, is there an acceptable level of difference in method effects, and how much tolerance can academic and practitioner researchers accept?

Imposed etic validity can be empirically assessed, as has been done with the Ethicality Scale. As shown, the analyses to test for etic and emic properties are not difficult and should be conducted for all cross-cultural research. However, or, perhaps unfortunately, they may not lead to the clarity of results desired by researchers. While the investigated etic/emic properties of the Ethicality Scale show the scale cannot be assumed to be etic across all cultures/nations, it may be safe for some. But clearly, caution should be used when applying the scale all individual or multiple culture studies.

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EMBEDDEDNESS: THE NEXUS OF LEARNED NEEDS, CONSCIENTIOUSNESS, AND INFORMAL ACCOUNTABILITY FOR OTHERS

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ABSTRACT

This research examines the relationship between the dimensions of McClelland's Theory of needs (i.e., needs for power, achievement, and affiliation), conscientiousness, embeddedness, and informal accountability for others. This study's aim is to enhance organizational research by demonstrating the mediating effects of embeddedness, on the relationship between conscientiousness, learned needs, and informal accountability for others. The research tests hypotheses using data collected from 187 working adults in the Southeastern United States. Findings indicated that embeddedness mediates, at least in part, the relationship between conscientiousness, achievement, power and affiliation needs and informal accountability for others. The paper concludes with a discussion of managerial implications, the study's relevant strengths, limitations and directions for future research.

JEL: M12, M14

KEYWORDS: Theory of Needs, Personality, Embeddedness, Informal Accountability for Others

INTRODUCTION

Even a casual viewer of news broadcasts notices that high profile lapses of accountability abound. Most are aware of the things like the global crisis in real estate markets and the massive frauds perpetrated by former NASDAQ chief Bernard Madoff. Even the halls of well-respected academic institutions are not above reproach (e.g., the criminal charges and institutional penalties brought to bear on Penn State for a lack of reporting and accountability in its football program). Both in the public eye and among organizational scholars, there is growing concern about a perceived lack of accountability.

Research indicated that accountability is fundamental to both personal and organizational life (Tetlock, 1985, 1992). As such, it is also instrumental in the sustaining of social systems. Within organizations, lapses in accountability threaten firms' established and legitimate systems of checks and balances. Furthermore it also adversely affects performance (Yarnold, Muesur, & Lyons, 1988; Enzele & Anderson, 1993). Accountability is not necessarily an easily observable formal system or reporting.

Additionally, it sometimes forces individuals to feel pulled in different directions by competing constituencies (Cummings & Anton, 1990). Thus, accountability is both an objective and subjective condition and the level thereof is determined both by individuals and others (IAFO) (Hall, Royle, Brymer, Perrewé, Ferris, & Hochwarter, 2006). A growing body of research (e.g., Royle, Fox, & Hochwarter, 2009; Royle & Fox, 2011; Royle & Hall, 2012) contends that individuals believe they are answerable for the behaviors of others at work, even if they are not formal subordinates. This research seeks to examine further which conditions encourage informal accountability for others. In order to augment the literature, this work proposes a model that extends antecedent variables and mediating circumstances which promote IAFO. The hypothesized model of informal accountability for others in this work addresses these concerns. The model presented here includes McClelland's (1961) socially learned needs variables (i.e., needs for power, achievement, and affiliation), as well as conscientiousness (a personality dimension) as predictors of embeddedness. Previously, Royle and Hall (2012) found that learned needs promoted feelings of individual accountability and subsequently informal accountability for others

(IFAO). This paper examines the potential that in addition to promoting felt accountability, learned needs and conscientiousness predict individuals' fit and linkages in organizations, and then feelings of answerability for others.

From this point forward, the document will proceed as follows: a review of the topic-relevant literature, an overview of the data and mythology used to validate the study's hypotheses, a discussion of the findings, an explanation of the theoretical and practical contributions of the research including its strengths, limitations, and directions for future inquiry. It will conclude with a short synopsis of the study's major contributions and place in existing literature.

LITERATURE REVIEW

The following section discusses the major conceptualizations of accountability. It notes similarities and differences between the major theories of accountability as well as their applications to feelings of informal accountability for others. This review also explains the study's independent variables and their relationship to IAFO.

Established Models of Accountability

In the past several decades, many different distinct but compatible views of accountability appear in academic literature. Lerner and Tetlock (1999) defined accountability in terms of either implicit or explicit expectations related to individuals' beliefs that they may have to justify their feelings, attitudes, or actions to others. Frink and Klimoski (1998, 2004) added that in organizations, accountability involves this need to justify or defend a decisions and actions to an audience that has potential reward and sanctioning power, and these outcomes are determined by the degree to which individuals meet accountability conditions. Naturally, being deemed accountable in a negative sense takes place when a breach of conduct has occurred (Cummings & Anton, 1990), but it is possible that an individual can be accountable and rewarded for meeting valued expectations without doing anything wrong.

Accountability generally implies that those who do not offer proper rationale for their actions incur sanctions with consequences that vary from mild scorning to the potential loss of employment, to incarceration, or even to the loss of life (Stenning, 1995). On the other hand, if individuals proffer sufficient justification for their actions, they incur positive consequences ranging from the mitigation of punishment to reward. One of the most influential and often cited conceptualizations of accountability in extant literature is the phenomenological view of accountability. In other words, accountability as Philip Tetlock (1985, 1992) proposed is based on a model of social contingency. The major tenets of this view include several empirically distinguishable sub-components.

The first of these is the effect of social facilitation (i.e., the mere presence of others). Simply put, individuals behave differently when they know they are being watched (Zajonc, 1965; Zajonc & Sales 1966). Second, is the identifiability of an action. Actions that individuals believe will be linked to them personally are more compelling drivers of behavior than are anonymous or token gestures (Price, 1987; Zimbardo, 1970). The third component of the phenomenological view of accountability, involves the prospects of evaluation. Individuals expect that their performances will be assessed by others according to some normative framework with some implied consequences, good or bad, based on their behaviors (Geen, 1991). The final dimension involves reason giving. Individuals expect to give reasons or justifications for their attitudes or behaviors (Simonson & Nowlis, 2000).

Accountability as a Pyramid

Accountability, according to Barry Schlenker (1986), involves being answerable to audiences for performing up to certain prescribed standards. It connotes meeting specified obligations, duties, and expectations (Schlenker, 1986; Schlenker & Weigold, 1989; Schlenker, Weigold, & Doherty, 1991). The inherent structure of a pyramid makes Schlenker and colleagues' conceptualization of accountability more formal and objective than are phenomenological views, although they are not necessarily incompatible.

Schlenker et al. (1991) contended that employees, when accountable, answer for their attitudes or try to justify their conduct. Authority figures (e.g., supervisors), scrutinize, judge, sanction, and potentially reward their actions (Semin & Manstead, 1983; Tetlock, 1985, 1992). Influential individuals establish prescriptions for conduct, judge others' performances in relation to those standards, and distribute rewards and punishments based on these assessments.

The "evaluative reckonings" described by Schlenker and colleagues (e.g., Schlenker, 1986, Schlenker & Weigold, 1989; Schlenker et al., 1991) are value-laden assessments that evaluators make relative to three key elements when determining culpability (e.g., assigning blame or giving credit) . These elements are: (1) *prescriptions* exist and are understood by the actor that dictate conduct on the occasion, (2) the *event* in question is relevant to those prescriptions, and (3) a set of *identity images* exist that are relevant to the event and prescriptions and they describe the actor's roles, qualities, convictions, and aspirations.

The three elements, and the linkages among them, can be characterized as a triangle. Schlenker, Britt, Pennington, Murphy, and Doherty (1994) contended that the combination the three linkages determine how responsible an individual is judged to be. This is Schlenker and colleagues' "pyramid of responsibility". Essentially, individuals are only deemed responsible for a behavior or condition if: (a) a clear set of prescriptions is applicable to the event (prescription–event link); (b) the prescriptions are perceived to bind individuals due to their identities (prescription–identity link); and (c) the individuals are associated with the event, particularly if they are believed to have personal control over it, (identity–event link) (Schlenker et al, 1994). Responsibility is a social adhesive that binds individuals to events and to relevant governing prescriptions for behavior. Responsibility provides a basis for judgment and its associated outcomes (i.e., reward or punishment) (Schlenker et al., 1994). When evaluators "look down" and appraise the configuration of the elements and linkages, the image is that of a pyramid (Schlenker, 1986). Ultimately, the presence of other evaluating individuals and the individual's answerability them, moves one from being "responsible" to being "accountable".The present paper contends that IAFO too fits in terms of these linkages. For example, organizational culture may dictate that established members of a firm mentor new hires (prescription-event link). As established members in good standing, individuals thus feel obligated to engage and orient new members (prescription-identity link).

Seasoned employees know the "rule" that new members need their tutelage and have the ability to give of their time and knowledge (identity-event link). When these conditions are met, observed, and rewarded, by those with sanctioning power, individuals are deemed informally accountable for others. It is likely that established employees would choose to engage in these activities, thus becoming informally accountable for others, in order to maintain or increase their good standing within the organization, provided they are able to attend to their own duties. This study intends to demonstrate the role of conscientiousness and learned needs in promoting such behaviors by first channeling individuals into organizations and their positions within hierarchies (i.e., the fit and linkages of embeddedness) and then once established, fostering informal accountability for others.

Cummings and Anton's Conceptualization of Accountability

Cummings and Anton's (1990) conceptualization of responsibility is slightly different than those previously discussed. Based on theories of attribution (e.g., Heider, 1958; Weiner, 1979), they defined responsibility in terms of individuals' causal influence on situations. Accordingly, this conceptualization emphasizes actors' volition in an event. Individuals can affect the situations directly or indirectly, proximally or distally (Cummings & Anton, 1990). The relationship is straightforward, relational, and linear in terms of the individuals' responsibility. Therefore, any given occurrence attributed either directly or indirectly to individuals' influence, increases their perceived culpability.

Cummings and Anton (1990) also claimed that felt responsibility and accountability are subsequent and distinct outcomes of one's responsibility (as defined by his/her causal influence). Further, they argued that felt responsibility is an internal path whereas accountability is an external, public, and visible social process. It is the author's contention that IAFO may have both internal and external components but that it is the external, visible, dimension that individuals seek to enhance their reputations within organizations. Cummings and Anton (1990) proposed that three contingent conditions determine accountability. In order to be called accountable individuals must: 1) have the ability to behave rationally, 2) reasonably predict the outcome of chosen behaviors and 3) deviate from previously stated and understood notions of acceptable actions. Cummings and Anton (1990) diverged somewhat from other notions typically found in accountability theory. Specifically, they considered deviation from a standard to be a precondition of accountability whereas others posited that the accountability evaluations could detect either alignment or deviation. The author maintains that individuals understand what is required of them on the job and that they affect the behaviors of others because they believe they should.

Informal Accountability for Others

Informal accountability for others (IAFO) is a public demonstration that one is willing to answer for the attitudes and behaviors of individuals in an organization regardless of formal position within the firm, rank, or mandate by the organization (Royle et al., 2009: Royle & Fox, 2011; Royle & Hall, 2012).
The informal accountability construct reflects views previously theorized and demonstrated by others as well as budding research on the subject (e.g., Royle et al., 2008). For example, it borrows from the work of Morrison and Phelps (1999) who noted that individuals generally believe they are personally obligated to bring about constructive change, which either directly or indirectly affects (ostensibly benefits) all concerned. Another element of the construct comes from Lerner and Tetlock (1992) who contended that accountability is the implicit or explicit expectation that one may be called on to justify one's beliefs, feelings, or actions to others. Still other aspects come from Ferris, Mitchell, Canavan, Frink, and Hopper (1995), who considered accountability to be a function of how much a person is observed and evaluated by powerful others who have reward or sanctioning power, and the extent to which valued rewards (or feared sanctions) are consistent with these evaluations.

Embeddedness

Job embeddedness encompasses a broad constellation of influences on employee retention, performance, satisfaction, and organizational citizenship behaviors (Mitchell, Holtom, Lee, Sablynski, & Erez, 2001; Lee, Mitchell, Sablynski, Burton, & Holtom, 2004). Fundamentally, embeddedness is defined in terms of how tightly individuals feel they fit with a firm, the degree to which they are well placed within a social network, and how well this promotes the "life-space" they desire for themselves.

The embeddedness construct is theoretically driven and explained by extending both embedded figures and field and ground theory (Lewin, 1951). Embedded figures, used in psychological tests, are those that are blended and camouflaged by their backgrounds. Embeddedness theory predicts that transactions

between individuals create future expectations of trust and reciprocity (Uzzi & Gillespie, 2002). These expectations occur because the embeddedness of interpersonal transactions are learned and mutually understood through the process of socialization. Embeddedness provides the essential priming mechanism for initial offers of trust and mutual reliance that, if accepted and returned, are solidified through reciprocal investments and self-enforcement (Barney & Hansen, 1994; Uzzi, 1997).

Facets of job embeddedness that are of particular importance to this research include (1) the number of linkages that individuals have to other people and activities, (2) the extent to which they feel they belong in their firms, and (3) the ease with which these links can be broken and the negative expected consequences to individuals for doing so (Mitchell et al., 2001; Lee et al., 2004). The author considers these aspects germane because they constitute both position/hierarchy-based and attitudinal drivers of employee attitudes and behaviors. In addition, Lee et al. (2004) noted that the interrelatedness of these dimensions is important because many job factors affect individuals' desires to engage in their work, stay at their jobs, or withdraw. The two aspects of embeddedness theory (Mitchell et al., 2001; Lee et al., 2004) that are examined in detail and measured here are "links" and "fit." The other dimension, "sacrifice," relates to where individuals live and the attractiveness of their respective communities. Because many contemporary employees work in organizations and careers that make this choice for them (Baruch, 2003), the sacrifice aspect of embeddedness is not empirically examined in this research.

Links are defined as either formal or informal connections between people, their institutions or other individuals in an organization (Mitchell et al., 2001; Lee et al., 2004). As such, many links may connect employees with their work, friends, groups, and even the community in which they reside. The greater the number of links, the more individuals are bound to jobs and organizations, and intertwined in social networks (Mitchell, et al., 2001; Lee et al., 2004). This aspect of embeddedness theory represents an extension of March and Simon's (1958, p.72) claim that "families often have attitudes about what jobs are appropriate for their members… the integration of individuals into the community has frequently been urged by organizations because it offers advantages for public relations and reduces voluntary mobility." Thus, strong linkages reduce volatility, help limit the cost of turnover to organizations, and help make employee behaviors more predictable. The more tightly individuals are linked to others in the organization; the more likely it is that they feel informally accountable for those others. This is typically due to recurrent interaction and fewer opportunities or desires to break these ties. It should also be noted that breaking these links might also prove punitive. If individuals are visibly linked to influential others in the organization, it stands to reason that they will try to keep those links strong as a function of the potential benefits and the concurrent costs of losing those associations.

Prior research (Royle, et al., 2008) suggested that increasing numbers of links exacerbates the potential for individuals to seek conditions of informal accountability for others. Tightly linked individuals are often aware of the informal accountability demands placed upon them with respect to others and wish to keep the web in which they function strong by not breaking any of its strands. Individuals might embrace IAFO because they believe that behaving in that way helps ensure that other members help enhance their performance (Royle et al., 2008). Additionally, the ability to promote good performance in others augments organizational performance and may also strengthen the links themselves.

Fit is defined as employees' perceived compatibility or comfort with an organization and with their environment (Mitchell et al., 2001; Lee et al., 2004). According to embeddedness theory, individuals' personal values, career goals, and plans for the future should fit with values and culture of the organization as a whole and with elements of their job descriptions (e.g., knowledge, skills, and abilities) (Mitchell et al., 2001; Lee et al., 2004). Research shows that tighter fits increase the likelihood that individuals feel professionally and personally tied to an organization (Mitchell et al., 2001; Lee et al., 2004). Studies of voluntary turnover suggested that "misfits" terminate faster than "fits" (O'Reilly, Chatman, & Caldwell, 1991). Chatman (1991) also reported that when organizational entry produces

poor person-organization fit, employees are likely to leave. Similarly, Chan (1996) suggested that having one's personal attributes fit with one's job decreases turnover.

A tight fit indicates a shared sense of similarity and value congruence between individuals, other members, and the organization. Snyder and Ickes (1985) contended that individuals seek organizations and situations that affirm their self-concepts, attitudes, values and affinities. As such, it is likely that high levels of interpersonal affect exist between individuals who fit. Individuals who fit tightly usually interact more frequently with others, both formally and socially, in the organization. Royle et al. (2008) noted that under these conditions, individuals seek informal accountability for others because they may be friends with these people particularly when such a behavior is consistent with established informal organizational norms. Additionally, those who fit tightly may demonstrate their willingness to accept part of the blame for those close to them if those others fail in some aspect of work. Research suggested that individuals who fit tightly create predictable social environments, which then helps ensure behavioral consistency (Bowers, 1973; Ickes, Snyder, & Garcia, 1997). Thus, the strong social alliances enjoyed by tightly fitting individuals help reduce future uncertainty.

Mcclelland's Theory of Needs

The theory of (learned) needs is one of the most ubiquitous and pragmatic in personality and organizational scholarship. Developed by David McClelland (e.g., 1961, 1975, and 1985), needs theory contends that individuals are motivated by three basic drivers: achievement, affiliation, and power. Winter (1992) argued that these needs not only motivate individuals, but also include many of the most important human goals and concerns. This research attempts to demonstrate that each of these dimensions affects the level of accountability one feels for both himself/herself and others as well as helps channel individuals into places with organizations which help them fulfill these needs.

Achievement Needs: McClelland's (1961, 1975, 1985) need for achievement describes a person's drive to excel with respect to some established set of standards. Individuals' achievement needs are satisfied when they are able to actualize their own purposes relative to and regardless of the situations of others (Yamaguchi, 2003). Those high in achievement needs dislike succeeding by chance and seek personally identifiable sources for their success or failure rather than leaving the outcome to probability (Robbins, 2003; Weiner, 1979). Furthermore, individuals high in achievement needs experience joy or sadness contingent upon the identifiable outcomes of their efforts (McClelland & Koestner, 1992).

McClelland (1961, 1975, 1985) noted that individuals high in this dimension differentiate themselves from others by their desire to perform at a more advanced level than their peers. Although achievement could be measured in terms of mastery and competitiveness, it also reflects individuals' desires to excel relative to themselves (Heintz & Steele-Johnson, 2004). High achievement needs motivate individuals to seek relatively difficult vocations (McClelland & Koestner, 1992). Further, high achievement individuals are more satisfied in jobs that involve both high skill levels and difficult challenges (Eisenberger, Jones, Stinglhamber, Shanock, & Randall, 2005). Similarly, individuals high in achievement needs more frequently seek feedback en route to goal completion (McAdams, 1994; Emmons, 1997).

McClelland (1961, 1971, 1985) noted that high in achievement needs individuals seek situations in which they can obtain personal responsibility for finding novel solutions to problems. One underlying driver of such actions is partly the alleviation of concerns about the future in the organization. Such individuals tend to be very persistent with respect to solving problems (McClelland & Koestner, 1992). Research indicated that individuals with high achievement needs are, generally, more effective leaders (McNeese-Smith, 1999; Henderson, 1993, 1995). Unfortunately, however, the motivation to behave opportunistically while trying to satisfy this need has also been empirically validated (Treadway, Hochwarter, Kacmar, & Ferris, 2005). Brunstein and Maier (2005) noted that two separate but interacting

dimensions drive achievement needs: implicit and explicit motives. Implicit motives energize spontaneous impulses to act (e.g., effective task performance). The degree of effective task performance is, of course, related to the degree to which the individual behaves accountably in his/her position.

Explicit motives, on the other hand, are manifest by deliberate choice behaviors (e.g., explicitly stated preferences for difficult tasks). As such, high achievement needs map appropriately onto a drive to be informally accountable for others. Specifically, high achievement needs might drive individuals to seek informal accountability for others because the successful coordination of others' activities might translate directly into better job performance evaluations (both for them and for those for whom they are informally accountable). In addition, those who embrace IAFO and are effective in this capacity, appear to others as more proactive, appealing, employees. These virtues are some hallmarks of leadership (Bass & Avolio, 2004). Appearing to be an effective leader is, thus, an explicit motive (Brunstein & Maier 2005). This research contends that accountability relates to achievement needs such that those who want to maintain high marks and be considered credible leaders must feel answerable for their performances and that then seeking IAFO enhances the degree to which they can achieve.

Power Needs: The need for power denotes individuals' desires to be influential. This could manifest itself in attempts to make others behave, as one would like, or in a manner that they might not have otherwise (McClelland, 1961, 1975, 1985). In other words, individuals high in this need seek position power so that they can compel the actions of others. Those high in power needs prefer being in competitive, status-driven situations, and actively seek the trappings of status (Veroff, 1992). Additionally, they are concerned with ensuring that the methods they choose to influence others are within their control (Veroff, 1992; McAdams, 1994; Emmons, 1997). However, in order to maintain viable interdependent relationships with others, individuals with high power needs must often restrain these desires (Yamaguchi, 2003). Central to one's need for power is gaining influence over others (McClelland, 1961, 1975, 1985; Robbins, 2003; Yamaguchi, 2003). Individuals with influence can then parlay informal accountability for others into the accumulation of additional resources that serve to enhance their status. Prior research indicated that expression of power needs might have a mixed effect on how others are perceived. For example, direct subordinates often react negatively to leaders high in power needs whereas clients and others more distal in the organization view them more positively (McNeese-Smith, 1999; Henderson, 1993, 1995). However, despite these findings, interpersonal failings caused by excessive displays of power seeking tend to derail managers (Van Velsor & Leslie, 1995).

Based on the principles of role theory, when an individual becomes informally accountable for others, the target becomes cognizant of it (Kahn, Wolfe, Quinn, & Snoek, 1964; Royle & Fox, 2011). Given the norm of reciprocity (Gouldner, 1960; Meyer & Allen, 1997), targets believe that the accountable party has extended a benefit and reciprocate with actions that align with the attitudes or behaviors to repay their obligations (e.g., Royle et al., 2009). Individuals who are aware that another person has been helpful will reciprocate by ensuring that relevant mutual goals are met or corrective measures taken if perceived performance decrements exist. For one high in power needs, this suggests that others will often indirectly cede a portion of their autonomy to them. Consequently, it is plausible that positive changes to one' job might occur and satisfy implicit power motives. For example, by co-opting some portion of a coworker's efforts, an individual may gain more organizational prestige or be promoted to a job with a greater span of control. At a minimum, those known to be informally accountable for others may perceive a status differential that appeals to those who seek power. However, the extent to which those high in power needs behave in amoral, Machiavellian, fashions, would diminish levels of felt accountability and discourage IAFO if others perceive their actions to be disingenuous. Essentially, it is our contention that power needs to promote felt accountability and IAFO but only if the specific person high in power also feels an obligation to act morally (Spangler, House, & Palrecha, 2004).

Affiliation Needs: The need for affiliation reflects the desire to have close, friendly, relationships with others (McClelland, 1961, 1985; Robbins, 2003). Those high in this dimension tend to spend considerable time seeking interactions with others (McClelland & Koestner, 1992). Further, those with strong affiliation needs pursue team activities in which interdependence and cooperation with others are paramount (Yamaguchi, 2003). Affiliation needs have garnered relatively less critical scholarly attention than the other two of McClelland's needs theory (Robbins, 2003), but they still warrant discussion with respect to accountability. For those who value friendship and prefer cooperation over competition, demonstrating a willingness to meet stated standards of conduct, and to accept accountability for others might be taken as a sign of organizationally desired civility (McClelland, 1961, 1975, 1985). High levels of affiliation motivate individuals to be both sympathetic and accommodating toward others (McClelland & Koestner, 1992). Prior research noted the influence of affiliation on leadership. Specifically, McNeese-Smith (1999) demonstrated a positive relationship between high affiliation needs and enabling others to act in ways deemed desirable. McNeese-Smith (1999) further suggested those high in affiliation needs lead others in desirable directions and that in doing so, they feel answerable to the same ethical codes of conduct common to their peers. In the course of social interaction, individuals pass along important information about how to behave. The norm of reciprocity (Gouldner, 1960; Meyer & Allen, 1997) contends that people might exchange useful information because they sense a debt of obligation. An understanding of the expectations associated with informal accountability for others are well developed in those high in affiliation needs because such individuals are strongly motivated to foster social ties.

Building on this discussion it is likely that those high in affiliation needs will seek informal accountability. Although doing so can be risky (because sometimes a desired complicit reaction fails to occur), seeking informal accountability for others may be attractive to those with high affiliation needs because it offers the opportunity to build informal teams and "feel a part of something." Nevertheless, those attempting to signal IAFO must demonstrate their own competence. This could be done by feeling accountable for one's role obligations and living up to them. IAFO fosters strong interpersonal associations attractive to high affiliation types (McClelland, 1961, 1975, 1985) and helps reduce their fears of being ostracized (McClelland & Koestner, 1992). Creating strong interpersonal associations also acts as a resource in the future when maneuvering in threatening or uncertain settings.

Conscientiousness

Conscientiousness, has been described both as an ability to conform to socially prescribed notions of impulse control and as a strategic way to deal with others (Hogan & Ones, 1997). It is strategic in the sense that dutiful attention to detail and procedure might allow one to appear more attractive to leaders. Conscientiousness also refers to individuals' tendencies to apply themselves to their work (Barrick & Mount, 1993). Further, they typically work harder and more efficiently than others. Roberts, Chernyshenko, Stark and Goldberg (2005) noted that conscientiousness is associated with the maintenance of order, achievement, diligence, dependability, impulse control, and responsibility. In contrast, those low on the conscientiousness dimension are often remiss in their duties. They are unproductive and erode the economic well-being of the organization because they are not motivated to achieve, act responsibly, or be dependable (Hogan & Ones, 1997).

As expected, conscientiousness has been shown to predict task performance (Ones, Viswesvaran, & Schmidt, 1993), contextual performance (Hogan, Rybicki, Motowidlo, & Borman, 1998; Organ, 1994; Organ & Ryan, 1995), and other outcomes that help facilitate proper social and organizational functioning (Roberts et al., 2005). For example, conscientiousness has been associated with long-term career success (Judge, Higgins, Thoresen, & Barrick, 1999), university retention rates (Tross, Harper, Osher, & Kneidinger, 2000), marital stability (Kelly & Conley, 1987; Tucker, Kressin, Spiro, & Ruscio, 1998), healthy lifestyle choices (Roberts & Bogg, 2004), and one's physical longevity (Friedman, Tucker, Tomlinson-Keasey, Schwartz, Wingard, & Criqui, 1993). In sum, meta-analyses have shown modest, yet

significant, relations between conscientiousness and several indices of job performance (Barrick & Mount, 1993; Tett, Jackson, & Rothstein, 1991).

Hogan (1983) contended that individuals are motivated by a desire to achieve status or gain/maintain social standing. Though sharing some conceptual overlaps with McClelland's (1961) need for achievement, conscientiousness is different particularly with respect to the assumption that it evokes prescriptions for impulse control (Hogan & Ones, 1997). In other words, conscientiousness helps constrain unethical decision-making. On the other hand, McClelland (1961) does not contend that those high in achievement needs will necessarily constrain their behaviors to social ends. In this research, I characterize conscientiousness as a positive, socially beneficial aspect of organizational life. Specifically, conscientious individuals will engage in behaviors that show that they are informally accountable for others because they are concerned for the effective functioning of the organization, and realize that doing so reflects positively upon them. Conscientious individuals seek informal accountability for others because they feel responsible for individuals in the firm (Morrision & Phelps, 1999).

Similarly, the most dutiful and conscientious employees are often those who look for ways to improve both their own performance and the organization's functioning. In order to do this, they collect information from their environments (e.g., other employees or other firms). In their search for improvement, conscientious individuals obtain knowledge of both the expectations and potential rewards of being informally accountable for others. Further, McCrae and Costa (1987) noted that conscientious individuals are driven to promote order. Maintaining order necessarily restricts chaos and helps to reduce uncertainty by making interactions more predictable. Similarly, when members of an organization look out for others, they necessarily constrain some individualistic behaviors. The norm of reciprocity (Gouldner, 1960; Meyer & Allen, 1997; Blau 1964, 1977) demands that when one answers for another, that a like gesture be made in return. When many employees in a firm reciprocally answer for other employees, they may also restrain many exploitative, individual urges, thus promoting stability and order.

DATA AND METODOLOGY

This research proposes a mediated relationship between study variables. The analyses attempt to determine if the variance in a dependent variable (IAFO in this case) is caused independently by the predictor variables (learned needs and conscientiousness), or if these variables act together like links in a chain. Specifically, can the sample's variance in informal accountability for others bet attributed to conscientiousness and to needs for power, affiliation, and achievement only if they predict embeddedness?

Participants and Procedures

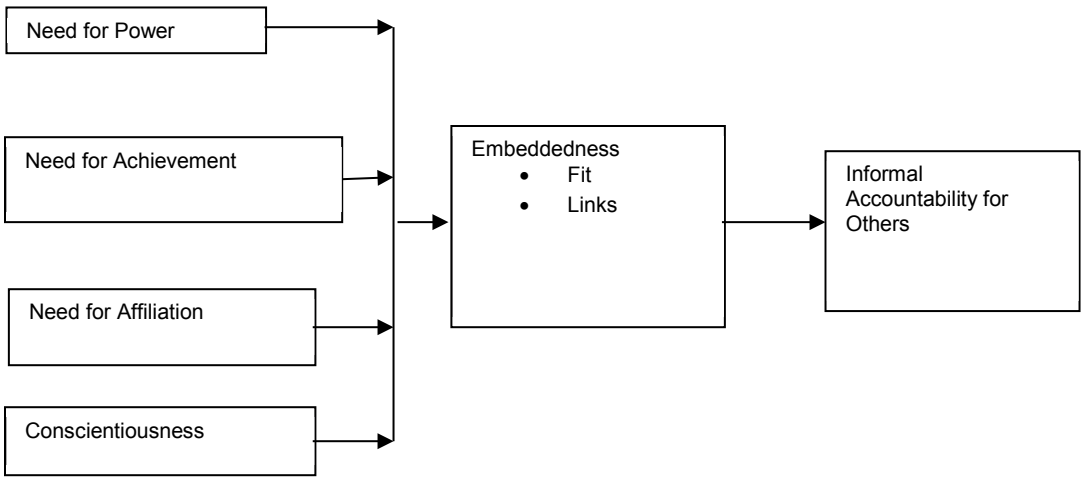
The sample consisted of self-reports from working adults around the world. Students involved in an extra credit assignment dispensed surveys to individuals they knew were full time employees in their respective organizations. A group of 75 students was allowed to give as many as five surveys per person for class extra credit. In many cases, respondents were parents or siblings of these students. A total of 375 surveys were available to students. Ultimately, 187 usable surveys were returned. This constitutes a response rate of 49%. Students either brought completed surveys back to class with them or informed respondents that they could contact the researcher directly and submit an electronic copy. The researchers collected, but did not disseminate, contact information on all respondents in order to ensure the legitimacy of their survey responses. To ensure the privacy of respondents, we never shared identifying information with any third party. However, we collected their telephone numbers and addresses in order to contact them if we suspected that students misrepresenting themselves to obtain class credit completed the surveys.

Respondent occupations in this sample included accountants, human resources administrators, sales professionals, marketing directors, and food service personnel. The average age of respondents was about 37 years old and the average organizational tenure was 7 years. The sample included 98 females (55%). These data were collected between 2006 and 2007. Respondent occupations included human resource professionals, small business owners, restaurant servers, and civil service employees.

Measures

Before reporting results based on this study's scales, even those well validated in existing research we conducted confirmatory factor analysis (CFA) to ascertain their dimensionality. The researchers used a principal component analysis with an orthogonal (Varimax) rotation. We subsequently applied Kaiser's Rule (retaining factors with eigenvalues over one), and examined the amount of variance extracted in the construct by the first factor relative to others (Pallant, 2004; Kaiser, 1974). The factor structures expected based on existing research emerged, thus, no items were deleted in any scales in the analyses. Table 1 notes the scales' calculated coefficient alpha values, the eigenvalues of the first extracted factor, and the proportion of cumulative variance in the construct described by that factor as extracted in this research. Additionally, it notes the measures' original authors and years of publication.

Figure 1: The Mediating Effects of Felt Accountability on the Relationship between Learned Needs and Informal Accountability for Others



This is the model of McClelland's Needs Theory and individuals' trait-like characteristic diligence, which predicts organizational placement and individuals' informal feelings of answerability for the attitudes and behaviors of others at work. The proposed model contends that this sense of informal answerability is driven by individuals' needs and characteristics but is mediated by the degree to which they are integrated structurally in the firm and fit with other members there.

McClelland's Individual Needs: This study measures, achievement, affiliation, and power needs using a ten-item scale created by Yamaguchi (2003). The scales employ a five-point response format (1 = *strongly disagree* to 5 = *strongly agree*). Four items measure affiliation needs. Three items each measure power, and achievement needs. Representative items include, "I enjoy influencing other people and getting my way, I want to be liked by others at work, and I enjoy difficult work challenges."

Informal accountability for others: In this research IAFO is measured using Royle et al.'s (2008) five-item scale. This scale was originally derived from Ivancevich and Matteson's (1980) "Responsibility for people" portion of their Stress Diagnostic Survey. The scale employs a five-point response format (1 = *strongly disagree* to 5 = *strongly agree*). Representative items include, "I am accountable at work for the

results or outcomes of others although it is not part of my formal job duties," and "I am accountable for counseling and consulting with peers and/or helping them solve their problems although I do not have to."

Table 1: Scales, Sources, Reliabilities, and Factor Analyses

Variable Name	Scale Author	Coefficient α	Eigenvalue of the 1st factor	Variance explained by 1st factor
Need for Power	Yamaguchi (2003)	0.71	2.55	0.42
Need for Achievement		0.80	2.53	0.63
Need for Affiliation		0.91	5.34	0.59
Conscientiousness	Goldberg (1999)	0.83	3.69	0.46
Embeddedness	Mitchell, Holtom, Lee,			
• Fit	Syblyski, & Erez (2001)	0.81	2.87	0.58
• Links		0.73	2.59	0.43
IAFO	Royle, Hochwarter, & Hall (2008)	0.85	3.12	0.63

This table contains information about the study's variables and the creators of the scales used to measure them. In addition, it reports the coefficient alpha values of each scale in both samples as well as the Eigenvalue of the first extracted factor and the amount of variance that it accounts for. All scales were measured with a five-point Likert-type response format anchored by "strongly disagree" and "strongly agree".

Embeddedness: The author measured embeddedness here using an 11-item amended scale developed by Mitchell et al. (2001). It focuses only on the fit and links dimensions of embeddedness. Sample items from each subset include, "I feel like I am a good match for this company." "I fit with the company's culture." "Many employees are dependent on me at work," and "I am on many teams in this organization." Five items measure fit and six measure links. The scale employs a five-point response format (1 = *strongly disagree* to 5 = *strongly agree*).

Conscientiousness: In this paper the author used a ten-item scale developed by Goldberg (1999) to measure conscientiousness. Sample items from this scale include, I show an underlying concern for doing things better and improving situations at work". "I exhibit confidence about my job and am willing to work hard and energetically," and "my work habits are excellent." A Likert scale was used ranging from 1 to 5 (1 = *strongly disagree* to 5 = *strongly agree*).

Control variables: Spurious effects are possible if researchers do not include control variables. Age, gender, race, and organizational tenure are, thus, included as control variables given their previously demonstrated influences (Sheridan & Vredenburgh, 1978). A brief listing of all the scale level variables' summary statistics is noted in the table below:

Table 2: Summary Statistics for Scale Variables

	N	Mean		Std. Deviation	Variance	Skewness	
	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error
IAFO	187	3.49	.06479	.88604	.785	-.316	.178
Conscientiousness	187	4.21	.03814	.52153	.272	-.673	.178
NPOW	187	3.42	.04758	.65065	.423	-.416	.178
NACH	187	4.21	.04112	.56233	.316	-.427	.178
NAFF	187	4.21	.04052	.55407	.307	-.193	.178
Embeddedness	187	3.75	.04068	.55623	.309	-.102	.178

RESULTS AND DISCUSSION

To test for mediation using regression, this research uses Baron and Kenny's (1986) three-step procedure. This method uses a step-wise process. The first step requires that the independent variable is significantly related to the mediator variable (i.e., embeddedness regressed on needs for power, achievement,

affiliation, conscientiousness, and the control variables). Second, the independent variable must be related to the dependent variable (i.e., IAFO regressed on the learned needs, conscientiousness, and control variables). Finally, in the third step, the mediating variable should be related to the dependent variable with the independent variable included in the equation (i.e., embeddedness added into the regression equation). Partial mediation exists if these three conditions exist. If the independent variable has a non-significant standardized beta weight in the third step but the mediator remains significant, a fully mediated model exits (Baron & Kenny, 1986). If the independent variable has a significant yet reduced standardized beta weight (particularly when the level of significance drops off) during the third step, but the mediator also remains significant, then a partially mediated model exists.

Table 2 presents the means, standard deviations, and correlations between this study's variables. The two largest correlations between variables in this sample are, unsurprisingly, between two control variables-age and organization tenure (r = .57, $p < .01$). In addition, two independent variables correlated strongly; learned needs and achievement needs (r = .60, $p < .01$). These correlations are suspect because they approach, but do not exceed, the threshold for multi-collinearity of .60 proposed by Cohen, Cohen, West and Aiken (2003). None of this study's control variables were significantly related to either embeddedness or IAFO.

Table 3: Means, Standard Deviations, and Correlations between Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Age	36.51	13.42	---									
2. Gender	---	---	-0.08	---								
3. Race	---	---	**-0.22**	0.12	---							
4. Tenure	7.37	8.02	**0.57**	-0.10	-0.14	---						
5. IAFO	2.46	0.82	0.05	-0.05	-0.11	0.04	---					
6. Conscientious	4.21	0.52	0.13	0.11	-0.10	0.06	**0.34**	---				
7. NACH	3.54	0.73	0.02	0.01	0.04	-0.08	**0.38**	**0.40**	---			
8. NAFF	1.77	0.69	0.09	0.01	**-0.15**	0.07	**0.38**	**0.44**	**0.60**	---		
9. NPOW	3.71	0.82	-0.04	**-0.15**	0.01	-0.05	**0.21**	0.06	**0.25**	**0.31**	---	
10. Embeddedness	3.62	0.64	0.11	-0.04	0.08	0.08	**0.37**	**0.28**	**0.38**	**0.31**	**0.34**	---

**All bolded correlations indicate significance levels of p < .05 or stronger N = 187*

As noted above, the researcher performed the three-step procedure proposed by Baron and Kenny (1986) to test for mediation. In each of the three steps, Sheridan and Vredenburgh's (1978) suggested standard demographic control variables (i.e., age, race, organizational tenure, and gender) were included. The researcher did this to help eliminate spurious effects they might create and to produce a more stringent test of the study's hypothesized relationships. The top panel in Table 3 provides the results for the first step indicating that the mediating variable, embeddedness, was significantly related to NPOW ($b = .38$, $p < .001$). As such, the researcher proceeded to step two.

The second panel provides the results for this step and shows that power needs are significantly related to the dependent variable (IAFO) ($b = .21$, $p < .01$). Needs for power explained 3% of the variance in IAFO and 14% for embeddedness. In the third step of Baron and Kenny's (1986) procedure, the mediating variable (i.e., embeddedness) must relate to the dependent variable (IAFO) with the independent and control variables included in the equation. The third panel in Table 3 provides the results of the final step. Results indicated that embeddedness was a significant predictor ($b = .47$, $p < .001$) of IAFO, and that the standardized beta weight for power needs failed to be significant ($b = .03$, $p <$ N/S). Because the standardized beta weight for power needs became insignificant in the third step, embeddedness fully mediates this relationship (Baron & Kenny, 1986). The following mediated regression equation is used to estimate the determinants of informal accountability for others in the final step:

$$IAFO = \beta_1 Age + \beta_2 Gender + \beta_3 Race + \beta_4 Tenure + \beta_5 NPOW + \beta_5 Embeddedness \qquad (1)$$

Table 4 provides the results for the study's second test hypothesis. Results indicated that the mediating variable, embeddedness, is significantly positively related to achievement needs (b = .53, p < .001). As such, the second step is required. The table's second panel shows that achievement needs significantly, positively, related to the dependent variable (IAFO) (b = .39, p < .001). Needs for achievement explained between 14% of the variance in IAFO and 24% in embeddedness.

Table 4: Mediation Results for Needs for Power

Step 1: Mediator Variable Regressed on the Independent Variable				
Variable	F	df	Adjusted R^2	β (standard)
Mediator: Embeddedness	7.17	5	0.14	
NPOW				0.38***
Step 2: Dependent Variable Regressed on Independent Variable				
Dep. Var.: IAFO	2.14†	5	0.03	
NPOW				0.21**
Step 3: Dependent Variable Regressed on Mediator (IAFO) with the Independent Variable Included				
Dep. Var.: IAFO	9.46***	6	0.21	
Embeddedness				0.47***
NPOW				0.03 N/S

*N=187 Significance levels are indicated as follows: †p<0.10, *p < 0.05, **p < 0.01, ***p < 0.001. All results include age, gender, tenure, and race as control variables. The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest that if the relationship between needs for power becomes statistically insignificant in the presence of embeddedness, full mediation occurs.*

The third panel in Table 4 notes the third step of Baron and Kenny's (1986) procedure. The mediating variable (i.e., embeddedness) was related to the dependent variable (IAFO) with the independent variables included in the equation. As noted, embeddedness was still a strong predictor (b = .39, p < .001) of IAFO, but achievement needs also still proved a significant antecedent (b = .19, p < .05). Baron and Kenny (1986) noted that if between the second and third steps the IV's standardized beta weight drops and/or the significance level drops, the relationship is partially mediated. Such is the case here. In this sample, embeddedness partially mediated the relationship between needs for achievement and IAFO. The following mediated regression equation is used to estimate the determinants of informal accountability for others in the final step:

$$IAFO = \beta_1 Age + \beta_2\, Gender + \beta_3\, Race + \beta_4\, Tenure + \beta_5\, NACH + \beta_5\, Embeddedness \qquad (2)$$

Table 5: Mediation Results for Needs for Achievement

Step 1: Mediator Variable Regressed on the Independent Variable				
Variable	F	df	Adjusted R^2	β (standard)
Mediator: Embeddedness	16.10***	5	0.29	
NACH				0.53***
Step 2: Dependent Variable Regressed on Independent Variable				
Dep. Var.: IAFO	6.89***	5	0.14	
NACH				0.39***
Step 3: Dependent Variable Regressed on Mediator (OBSE) with the Independent Variable Included				
Dep. Var.: IAFO	10.56***	6	0.24	
Embeddedness				0.39***
NACH				0.19*

*N=187 Significance levels are indicated as follows: †p<0.10, *p < 0.05, **p < 0.01, ***p < 0.001. All results include age, gender, tenure, and race as control variables. The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest that if the relationship weakens substantially in the presence of embeddedness, partial mediation occurs.*

Table 5 provides information like that mentioned above for the results for the study's third hypothesis. Results indicated that the mediating variable, embeddedness, is significantly positively related to affiliation needs (b = .57, p < .001). Moving to the second step, results noted in the table's second panel

indicated that affiliation needs also significantly, positively, related to the dependent variable (IAFO) (b = .37, p < .001). Needs for affiliation explained 13% of the variance in IAFO and 33% of embeddedness.

In the third step, the mediating variable (i.e., embeddedness) was still related to the dependent variable (IAFO) with the independent variables included in the equation. The third panel notes that embeddedness was a strong predictor (b = .40, p < .001) of IAFO, but affiliation needs still proved a significant antecedent to IAFO (b = .15, p < .05) even with embeddedness in the equation. Again, between the second and third steps, the independent variable's standardized beta weight drops along with its significance levels, thus, the relationship is partially mediated. In short, embeddedness partially mediated the relationship between needs for affiliation and informal accountability for others. The following mediated regression equation is used to estimate the determinants of informal accountability for others in the final step:

$$IAFO = \beta_1 Age + \beta_2\, Gender + \beta_3\, Race + \beta_4\, Tenure + \beta_5\, NAFF + \beta_5\, Embeddedness \qquad (3)$$

Table 6: Mediation Results for Needs for Affiliation

Step 1: Mediator Variable Regressed on the Independent Variable				
Variable	F	df	Adjusted R^2	β (standard)
Mediator: Embeddedness	19.07***	5	0.33	
NAFF				0.57***
Step 2: Dependent Variable Regressed on Independent Variable				
Dep. Var.: IAFO	6.34***	5	0.13	
NAFF				0.37***
Step 3: Dependent Variable Regressed on Mediator (OBSE) with the Independent Variable Included				
Dep. Var.: IAFO	10.15***	6	0.29	
Embeddedness				0.40***
NAFF				0.15*

*Significance levels are indicated as follows: †p<0.10, *p < 0.05, **p <0 .01, ***p < 0.001. All results include age, gender, tenure, and race as control variables.The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest that if the relationship weakens substantially in the presence of embeddedness, partial mediation occurs.*

Table 6 provides information like that mentioned above for the results for the study's fourth hypothesis. Results indicated that the mediating variable, embeddedness, is significantly positively related to conscientiousness (b = .42, p < .001). Moving to the second step, results noted in the table's second panel indicated that conscientiousness also significantly, positively, related to the dependent variable (IAFO) (b = .35, p < .001). Conscientiousness explained 11% of the variance in IAFO and 18% of the variance in embeddedness. In the third step, the mediating variable (i.e., embeddedness) was still related to the dependent variable (IAFO) with conscientiousness included in the equation. The third panel notes that embeddedness was a strong predictor (b = .41, p < .001) of IAFO, but conscientiousness still proved a significant antecedent to IAFO (b = .18, p < .05) even with embeddedness in the equation. Again, between the second and third steps, the standardized beta weight for conscientiousness drops along with its significance levels, thus, the relationship is partially mediated. In short, embeddedness partially mediated the relationship between conscientiousness and informal accountability for others. The following mediated regression equation is used to estimate the determinants of informal accountability for others in the final step:

$$IAFO = \beta_1 Age + \beta_2\, Gender + \beta_3\, Race + \beta_4\, Tenure + \beta_5\, Conscientiousness + \beta_5\, Embeddedness \qquad (4)$$

Table 7: Mediation Results for Conscientiousness

Step 1: Mediator Variable Regressed on the Independent Variable				
Variable	F	df	Adjusted R^2	β (standard)
Mediator: Embeddedness	9.09***	5	0.18	
Conscientiousness				0.42***
Step 2: Dependent Variable Regressed on Independent Variable				
Dep. Var.: IAFO	5.39***	5	0.11	
Conscientiousness				0.35***
Step 3: Dependent Variable Regressed on Mediator (OBSE) with the Independent Variable Included				
Dep. Var.: IAFO	10.15***	6	0.29	
Embeddedness				0.41***
Conscientiousness				0.18*

*Significance levels are indicated as follows: †p<0.10, *p < 0.05, **p <0.01, ***p < 0.001. All results include age, gender, tenure, and race as control variables. The panels of this table show the mediation steps suggested by Baron and Kenny (1986). The results suggest that if the relationship weakens substantially in the presence of embeddedness, partial mediation occurs.*

This research partially confirms the mediating effects of embeddedness on the relationship of learned needs and conscientiousness and informal accountability for others. These needs, for power, affiliation and achievement promoted better placement in organizations along with enhanced fit, which, in turn, enhanced informal answerability accountability for others. These findings help expand the state of organizational understanding in a number of ways. For example, further validating the notion that individuals learn needs which encourage them to answer for their behaviors and those of others enhances both the body of research in accountability, organizational politics, and human resource planning. It also, further supports the Tetlock's (1985, 1992) contention that both seek to understand situational context and causality as well as actively manage how they behave to accommodate that (i.e., they behave both as intuitive psychologists and politicians).

Currently only scant research has examined the extent to which individuals' learned needs impact the degree to which they feel answerable to others for their own attitudes and behaviors as well as those of their colleagues. Similarly, little has been written on the degree to which employee diligence relates to individuals' willingness to feel answerable to the actions of others. Consequently, this study extends accountability research by enhancing the field's understanding of the sequence of feelings of answerability. By a step-wise methodological examination of the links in a chain, it appears that dimensions of needs and personality relevant to enhanced employee fit and organizational linkages and IAFO are effectively measured in this research.

Contributions to Theory and Practice

McClelland's work on personality drivers and their subsequent influence on motivation helped define the social context that distinguishes would-be leaders from underperforming employees. This distinction is rooted in individuals' motives that drive, direct, and select their behaviors (Spangler et al., 2004; McClelland, 1980). The findings in this research help broaden the state of research by demonstrating the unique motivations inherent in power, achievement, and affiliation needs which promote fit, linkage, and accountability. These data suggested that all three (i.e., achievement, power, and affiliation) needs contributed to individuals' willingness to answer for their actions of others.

However, the degree to which these drives did so varied as did the degree to which IAFO was contingent upon fitting in with coworkers and being linked to them. The paper's data indicated that embeddedness partially mediated the relationship between needs for achievement and IAFO. This result helps bolster Spangler et al.'s (2004) contention that high achievement needs encourage employees to identify with task performance on a more personal level. Naturally, this makes it likely individuals dedicate themselves

to their work related tasks and, ultimately, to avoid counterproductive work behaviors and exhibit more civic virtue (Robinson & Bennett, 1995; Van Dyne & LePine, 1998). Spangler et al. (2004) claimed that individuals high in achievement needs are not inclined to delegate and are prone involving themselves with others. In one respect, the significant direct effects of needs for achievement on IAFO in the study's findings confirm this assumption. It appears that those high in achievement needs strive diligently to satisfy the expectations inherent in their own positions in order to enhance the prospect of promotion and recognition within their organizations (Cummings & Anton, 1990). Once they achieve positions of power (e.g., become linked with many others in the hierarchy), they influence, if not co-opt, the behaviors of others by signaling IAFO. Nevertheless, those target individuals must believe their apparently sincere motivations and/or respect the power afforded to them due to their linkages.

When less achievement oriented members comply with the directives of high N Ach individuals who signal IAFO, it will likely reduce their desired level of organizational uncertainty (Gouldner, 1960; Royle & Hall, 2012; Epstein, 1999). Another finding in this research relates to the direction and motives of individuals high in affiliation needs. Like achievement needs mentioned above, affiliation did predict both embeddedness and IAFO. Embeddedness partially mediated this relationship.

However, the most salient aspects of embeddedness for individuals high in affiliation needs are likely different than those with high achievement needs. As opposed to directly involving themselves in the efforts of others (i.e., high achievement needs), those with high needs for affiliation are more reluctant to directly involve themselves in the affairs of others (Spangler et al. 2004). Because these individuals are concerned with maintaining close personal relationships (e.g., McClelland, 1985), they seek IAFO as a means to further enhance the quality of their relationships with their colleagues. This describes the observed direct effects of affiliation needs on IAFO. However, the data also indicated the partial mediation of embeddedness on this relationship. The findings in this paper indicated that high affiliation needs are likely driving issues of self-selection in organizations. Embeddedness, by its nature, involves person-organization fit (Mitchell et al., 2001). Individuals select themselves into organizations, or at least avoid dismissal, based on the degree to which their personalities and values match that of an organization's culture (O'Reilly, Chatman, & Caldwell, 1991).

These authors, as well as Colquitt, Le Pine, and Wesson (2011, pp. 285-287), presented a number of indicators person-organization which both describe high levels of embeddedness and are likely drivers of behavior for those who are informally accountable for others. Accordingly, high affiliation needs make it more likely that individuals become embedded within their organizations because they are more likely to work in teams, be supportive of others, develop friends at work, and work collaboratively (O'Reilly, Chatman, & Caldwell, 1991; Colquitt et al, 2011). These data suggested that individuals with high affiliation mostly enhance their relationships with other by answering for them because they are friends, fit with them ethically, and interact routinely. McClelland (1985) noted that expression of power needs generally resulted in effective job performance, provided they behave in legal and/or ethical ways. They typically seek to obtain power and authority in their organizations (Winter, 1992).

If high power needs individuals both effectively perform their jobs as seek to enhance their prestige within organizations, it is likely that they will move up within organizational hierarchies. This will, thus, enhance their embeddedness within those firms. Furthermore, it is possible that this then promotes IAFO. High power individuals likely view IAFO as a method to exert their will, enhance their base salaries, and achieve better performance evaluations (Ivancevich, 2007; Royle & Hall, 2012). Ivancevich (2007) noted that both formal and informal systems of evaluation exist side by side in most organizations. A formal system of accountability objectively measures employee performance while, simultaneously, an informal system exists which operates on the subjective notion of how individuals and others think others are doing. If employees seem to be performing better because they answer for the actions of others in the firm, they enhance promotion and power gaining potential.

This study's findings help empirically link this assumption. High power need individuals (if acting morally) perform well, become centrally embedded in the power structure of a firm, and then lever the prestige of such high positions in order to influence future gains (e.g., gaining coworker accommodation for possible future promotion by signaling IAFO). The data in this research suggest that conscientiousness also plays a significant role in the promotion of embeddedness and IAFO. As noted by Barrick and Mount (1993), conscientiousness predicted job performance. As such, it is likely that good performance lends higher levels of embeddedness. In addition, conscientiousness positively related to self-directed employee behaviors (Stewart, Carson, & Cardy, 1996). Stewart et al., (1996) focused on employee self-direction of work activity. They defined such behaviors as those that demonstrate internally driven behaviors and which occur in the absence of external constraints or procedural controls (Manz & Sims, 1980; Manz, Mossholder, & Luthans, 1987). Self-direction is increasingly important in contemporary organizations that move away from hierarchical control toward employee driven systems comprised largely of jobs with high motivational potential (Manz & Sims, 1993; Hackman & Oldham, 1974). Furthermore, in these settings, behavior is driven more by individuals than by external leaders (Schutte, Kenrick, & Sadalla, 1985; Weiss & Adler, 1984). Having self-directed employees may be key to success for modern organizations (Manz & Sims, 1993). In this respect, conscientiousness behaviors might indicate that individuals do a good job and are appreciated, promoted, as well as liked for it. In addition, that might allow them discretionary use of their time and resources to seek informal accountability for others. The data in this paper appear to support that claim.

In addition to proposing theoretical extensions to the field, this research also seeks to add practitioner implications. There are several practical ideas which could be proffered. For example, Greenhaus, Callahan, and Godshalk (2010) contended that the most fluid, flexible, and adaptive contemporary careerists are those who do not merely possess adequate skills, but also extend their work involvement. This means they should engage others in order to enhance their reputations and develop supportive, if not symbiotic, relationships. Maintaining co-developmental associations that demonstrate informal accountability for others is an example of extending work involvement as well as a means of enhancing one's reputation. Doing so also enhances career mobility both within a firm and within its business environment (Royle & Hall, 2012).

Research indicated that the culture of an organization often reflects the personality and dispositional proclivities of those who founded it (Schein, 1983). As such, personality traits influence the evolution of firms through the sequence of attraction, selection, and attrition (Schneider, 1987). Testing individuals' dispositional dimensions during the phases of the human resource management process (e.g., recruitment, selection, and performance evaluation) could reduce the costs of mismatch (e.g., reduce employees' stress, levels of job satisfaction, and augment motivation) between organizations and individuals (O'Reilly, Chatman, & Caldwell, 1991). Furthermore, because individuals seek to develop work roles and/or careers around their personalities (Bell & Staw, 1989; Greenhaus, et al., 2010), it is important to know what those dispositional attributes are so that both employees and organizations are better aware of how to proactively deploy their skills.

Furthermore, understanding the inherent drives of employees is also important because, unfortunately, many firms are neither aware of nor can perform sophisticated job analysis (Roff & Watson, 1961). Finding the right match between tasks and those who perform them is important because, as described by Spangler et al., (2004), it increases the likelihood that positions will be filled by employees with essential skills and not potentially problematic personalities (e.g., placing individuals with high in power needs and low dispositions toward personal responsibility). Allowing this to occur could threaten the organization's performance and strategic positioning (Winter & Barenbaum, 1985; Butler, Ferris, & Napier, 1991).

Strengths and Limitations

In order to be balanced, both the strengths and limitations of this study's findings require discussion. Contemporary critiques of accountability research often involve derision of the methods of data collection and their subsequent claims. Unfortunately, researchers noted a lack of realism in some previous works which brings questions of the external validity to the findings (Frink & Klimoski, 2004). For example, some accountability research relied too heavily as opposed to studying real employees in actual organizational settings (Frink & Klimoski, 2004). This research helps obviate some of these problems because its information was drawn from a sample of working adults in a variety of occupations throughout the southeastern United States. This research employed common control variables such as organizational tenure, gender, age, and race (Sheridan & Vredenburgh, 1978). This study controlled for organizational tenure and age, due to their positive association with hierarchical level within the firm and, thus, higher levels of formal accountability and embedded linkages (Schlenker & Weigold, 1989; Schlenker et al., 1991; Mitchell et al., 2001). Controlling for these variables strengthens the study's conclusions that essential elements of embeddedness (not just hierarchical position but also fit) is tapped and that it promotes IAFO. Specifically, because this research controlled for age, the researcher feels more confident that although personality dimensions like McClelland's (1985) needs might change over time (Roberts, Walton, & Viechtbauer, 2006), in this case they have not.

There are also limitations that deserve attention. Specifically, the data in this study came from single source, self-report surveys. Such data collection techniques can allow for common method variance (CMV), a commonly lamented problem for self-report measures (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Spector, 2006). Although CMV increases the probability of falsely either accepting or rejecting the null hypothesis (Podsakoff et al. 2003), an examination of Table 2 did not indicate spuriously inflated relationships due to response bias. The researcher conducted a post-hoc Harman Single factor analysis. Harman (1976) claimed that method variance might exist if a single factor emerges from un-rotated factor solutions. In addition, CMV might be problem if the first factor explains the majority of the variance in the variables (Harman, 1976; Podsakoff & Organ, 1986). The results of this analysis did not indicate CMV. Of course, the researcher cannot completely rule out the possibility of artifacts generating some of the observed effects, but based on the magnitude of the correlations and post hoc analysis, data suggested that this study was likely not negatively affected by CMV.

Another limitation to this study involves the nature of the sample collected. Specifically, selection bias could be an issue, because individuals seeking extra credit might have relied too heavily on family members and friends as data sources. Students seeking extra credit might have selected individuals (e.g., friends and family) and pressured them to answer. Furthermore, they might have asked only those most willing to answer the survey. This might mean that respondents gave only a cursory treatment to the items in the survey as a means of appeasing those seeking their compliance.

The researcher must, thus, concede that this is a convenience sample and generalization of the results is tenuous. Additionally, non-response bias (i.e., the possibility that respondents differ in motivation and ability from non-respondents) cannot be entirely ruled out in this sample (Schwab, 1999). Although encouraging, because of the sample's response rate of 57%, (which exceeds the relatively low expected rate of only 30% common to organizational research, Dillman, 2000), the researcher cannot claim with certainty that respondents did not differ from non-respondents on the salient dimensions of this research. This study is subject to another limitation in that data are cross-sectional. Another common lament in organizational research is the difficulty of conducting longitudinal field studies.

Commonly, a lack of recurrent access to employees in organizations, turnover, and firm attrition continue to pose problems for researchers seeking longitudinal designs (Schwab, 1999). Cross-sectional studies diminish researchers' abilities to make definitive statements of causality (Schwab, 1999). Capturing a

view of a whole at only one point is tenuous. This notion is roughly analogous to trying to know the plot of a movie by seeing only one still shot.

Directions for Future Research

The first direction research might be guided address the above shortcoming. The field would benefit from longitudinal cohorts that better identify the effects of time on the observed relationship of needs, embeddedness and IAFO. Friedman and Schustack (1999) contended that high achievement needs could positively predict higher organizational levels provided that individuals were persistent and shrewd. These authors noted, however, over time individuals might feel less accountable as they rise within the organization's hierarchy particularly if diplomacy and cooperation diminish in importance (Friedman & Schustack, 1999). In that case, it might be that the perceived fit between high achievement needs individuals and their coworkers might be in decline and, thus, likely to negatively impact IAFO.

Another potential avenue of future interest to the researcher involves Hofstede's (1980, 2001) dimensions of culture. Hofstede's (1980; 2001) dimensions might set the boundary conditions that influence individuals' decisions to fit in organizations and seek informal accountability for others. For example, in cultures that are masculine and individualistic (i.e., those that have prescribed gender differences and value individual initiative, Hofstede, 1980, 2001) employees might not be as likely to seek fit-embeddedness due to culture norms promoting personal initiative, recognition, and assertiveness even if they have affiliation needs. Authoritarian cultures tend to promote the demonstration of assertive behaviors common to individuals high in power and achievement needs (Shankar, Ansari, & Saxena, 1999; Spangler et al., 2004). In this case, research would be well served to note if such cultures encourage the linkages of embeddedness and promote IAFO as a means of social influence.

Collectivistic and feminine cultures (Hofstede, 1980, 2001) value the well-being of the group, overall quality of life, and the promotion of harmonious interpersonal relationships. Shankar et al. (1999) noted that participative relationships are more desirable in collectivist societies. Furthermore, they claimed that under such circumstances ingratiation was more common between individuals. Future research could investigate if expressing affiliation needs in collectivistic and/or feminine cultures enhances fit and embeddedness which in turn promotes IAFO due to a sense of collegial altruism.

CONCLUDING COMMENTS

Staw (2004) concluded, from a review of research, that personality dimensions or "dispositional affect" (e.g., fundamental drivers of behavior like the needs examined here) can be a theoretically and empirically important drivers of work behaviors. Naturally, personality variables are not the only relevant predictors of job related attitudes or behaviors and they work in conjunction with the environment and may change over time (Roberts et al., 2006). Nevertheless they constitute key determinants (Staw, 2004). This research attempted to further link dispositional affect to relevant issues of organizational placement of employees and social their interaction (i.e., embeddedness and informal accountability for others).

This study set out to demonstrate the relationship between McClelland's (1961, 1975, 1985) needs, embeddedness, and informal accountability for others. It included a sample of working adults in the southeast United States. It hypothesized that these needs all differentially promoted individuals' fit and linkage to others at work, and subsequently caused them to feel answerable for them (even if they were not subordinates). The researcher tested these hypotheses using mediated regression (Baron & Kenny, 1986). The findings indicated that McClelland's needs (1961, 1975,1985) promoted embeddedness and that it partially mediated the relationship between needs and IAFO. Data suggested that of McClelland's (1961, 1975, 1985) needs, achievement motivation was the strongest predictor of IAFO followed by affiliation and power. Furthermore, conscientiousness was a significant predictor of IAFO of about the

same potency as affiliation needs. Of course, these findings are limited due to the use of a convenience sample of employees from different organizations and it employed a cross-sectional design. Future research would be well-served to analyze a sample of sufficient size in one organization and expand the list of boundary conditions related to IAFO.

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BIOGRAPHY

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AN EMPIRICAL STUDY OF THE DETERMINANTS OF SAFETY-NET HOSPITAL FAILURES

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ABSTRACT

Several safety-net hospitals have closed in the United States, but the scholarly literature does not adequately explain why. This study examines the relationship between the operational status (open or closed) of safety-net hospitals and unemployment, median household income, gross profit margin, efficiency ratio, operating margin, excess margin, and salary and benefit expenses per full-time equivalent. Study data were collected and analyzed by means of a logistic regression analysis. A significant relationship between hospital operational status and unemployment, operating margin, and salary and benefit expenses per full-time equivalent was indicated in this study. A safety-net hospital closure model was developed that showed that unemployment, operating margin, and salary and benefit expenses per full-time equivalent had a direct impact on hospital closures. Safety-net hospitals that experience upward trends in the unemployment rate in the areas they serve and have a poor operating margin and high salary and benefit expenses that make them more likely to close. This study provides supporting data to hospital administrators so decisions can be made to avoid future safety-net hospital closures. Information from this research can also provide legislators information and data as to why safety-net hospitals close and used as a tool for health care reform.

JEL: I14, I18, I28, I38

KEYWORDS: Charity Care, County Hospitals, Finance Ratios, Indigent, Indigent Health Care, Medically Indigent, Safety-net Hospital, Uncompensated Care, Underinsured, Undocumented Alien Health Care, Unemployment, and Uninsured

INTRODUCTION

There has been an evolution in health care in the United States. Safety-net hospitals have become the primary provider of care to the uninsured population (Hadley & Cunningham, 2004). For a variety of reasons, many safety-net hospitals have shut down and many have experienced challenges in a variety of ways (Cousineau & Tranquada, 2007). Bazzoli, Lindrooth, Kang, and Hasnain-Wynia (2006) stated that safety-net hospitals had a history of providing charity and discounted care to the uninsured population. DeLia (2006) reported that uninsured patients of all ages depend on uncompensated care from safety-net hospitals. As an indicator of uninsured patients, Weissman (2005) reported that hospitals in the United States spent $25 billion on uncompensated care (care to the uninsured) in 2005. The amount of the uncompensated care represents the commitment safety-net hospitals have for caring for the uninsured and population who lack access to health care. In the process of dealing with socioeconomic changes and a rise in the number of uninsured patients, hospital administrators have made decisions to meet the current demands of their institution. In making these decisions, they were faced with an increased uninsured population and changes in socioeconomic factors.

A review of the scholarly literature reveals there is a gap in the literature and perhaps a lack of understanding among hospital administrators and other decision-makers about the factors that influence the closure of safety-net hospitals. There is a lack of knowledge about which factors are common with safety-net hospital closures. Two gaps exist in the scholarly research of safety-net hospitals. The first gap is the effect of increased uninsured patients on safety-net hospitals. The second gap is the effect of

changing socioeconomic factors on safety-net hospitals. The purpose of this research was to address those gaps and provide some answers as to why safety hospitals close. In this quantitative study, we identified common factors found in California safety-net hospitals that closed from 2002 to 2009.

We examined the current literature related to safety-net hospitals along with data provided by the United States Census Bureau and other government agencies. We also explored the relationships between socioeconomic data, common safety-net hospital management and financial ratios, and hospital closures to determine the patterns that existed. The literature review is a review of the significant research related to the operation of safety-net hospital in the United States, with emphasis on California. The data and methodology section includes information on the design of the study that was performed in order to test the hypotheses. It also includes a description of the variables and how the data were collected. The results section is a summary of the findings and contains a hospital closure model. The concluding comments will include a reiteration of the goal of this article, discussion on the data and methodology used, summary of findings, limitations, and directions for future research.

LITERATURE REVIEW

The areas commonly discussed in the safety-net hospital concept are effectiveness, efficiency, financial stressors, and payer mix. Safety-net hospitals commonly make comparisons among effectiveness, efficiency, financial stressors, and payer mix to other safety-net and non- safety-net hospitals and the national average. These comparisons show safety-net hospitals how they are doing in comparison to others using financial indicators. Along with financial indicators, safety-net hospitals must contend with changing socioeconomic factors. Ehrlich, Flexner, Carruth, and Hawkins (1980) defined the term *effectiveness* as producing an effect, powerful in its effect or making a striking impression. In one point of view, Bennis (2009) reported that leadership would determine if an organization becomes sick or fails.

Bennis showed that leadership was the key that kept information flowing within the organization. When information flowed, effectiveness was achieved. In relation to safety-net hospitals, effectiveness was about setting the right targets such as quality of care, access of care, and medical education programs. Chin (2008) described effectiveness as quality of care. In another point of view, Hadley and Cunningham (2004) and Silverman (2008) reported that effectiveness was about the availability of care for uninsured people and expanding the insurance coverage area. Gourevitch, Malaspina, Weitzman, and Goldfrank (2008) showed that medical education programs played a critical role in the effectiveness of safety-net hospitals. Safety-net hospitals have been more effective when they provided quality care, had accessible care, and provided medical education programs.

The term *efficiency* means acting effectively, producing results with little waste of effort (Ehrlich et al., 1980). Much like effectiveness, Bennis (2009) believed that the leadership of an organization had control over the flow of information. The flow of information was vital to its success. Bennis added that followers who were lied to were never the same again. Bennis also believed that crises were always a result of leadership. When Bennis' leadership theory is followed, efficiency starts with leadership. For safety-net hospitals, efficiency is a way of providing better quality care while saving money. Hadley, Holahan, Coughlin, and Miller (2008) revealed that the current costs, sources of payment, and incremental costs of covering the uninsured are all factors of efficiency for safety-net providers. Hadley et al. concluded that efficiency provides savings for safety-net providers. Hadley et al. reported that one way in which safety-net providers achieves efficiency is through greater use of information technology. Additionally, Bazzoli et al. (2006) showed that efficiency is measured by the amount of labor, amount of supplies used, services provided, number of beds, and management of finances. Similarly, Weissman (2005) showed that safety-net hospitals needed to focus on efficiency as a method to contain costs versus

increasing the cost of services. Our review of the literature revealed that changes in operation, changes in services, and information technology were the three most common measures taken to improve efficiency.

Cousineau and Tranquada (2007) stated that county hospitals are constantly challenged with balancing public health and indigent care. As county hospitals were providing care to the indigent to meet the public health requirements, they were doing so with high costs. Along with normal costs of doing business, safety-net hospitals were also faced with financial stressors. The financial stressors were mainly linked to a high rate of uninsured patients (Coughlin, Bruen, & King, 2004). Several researchers have shown that the common financial stressors faced by safety-net hospitals included government regulations, Disproportionate Share Hospital (DSH) and Upper Payment Limit (UPL) Funding, uncompensated care, primary care programs, and charity care programs (Bazzoli, Kang, Hasnain-Wynia, & Lindrooth, 2005; Bazzoli et al., 2006; Bennett, Moore, & Probst, 2007; Coughlin et al., 2004; Coustasse, Lorden, Nemarugommula, & Singh, 2009; Cunningham, Hadley, Kenney, & Davidoff, 2007; DeLia, 2006; Hadley et al., 2008; Lindrooth, Bazzoli, Needleman, & Hasnain-Wynia, 2006; Weissman, 2005; Wolfskill, 2007). Safety-net hospitals must deal with accomplishing the public health demand while relying on enough reimbursement and revenue from others.

In the State of California, Office of Statewide Health Planning and Development (OSHPD) outlined five major payer groups. The five groups included Medicare, Medicaid, third party (primarily commercial insurance), county indigent, and other (Melnick & Fonkych, 2008). The "other" category includes self-paying patients, uninsured, and charity care patients treated at the hospital (Office of Statewide Health Planning and Development [OSHPD], 2010). OSHPD stated that any patient who received care and payment was received by the hospital from county indigent funds was required to report that patient as indigent. They were not considered self-pay because they did not have money to pay and qualify for under a county indigent program. The self-pay category includes high-income international patients who are seeking a specialist or a high-income patient who wish to pay out-of-pocket (Melnick & Fonkych, 2008). Melnick and Fonkych reported that self-pay patients were a small group of the uninsured population. In determining which classification a patient belongs, there are exceptions worth noting. The "other" category includes patients involved in car accidents covered under an auto insurance policy. Melnick and Fonkych (2008) reported that only 12% of those patients involved in an auto accident received coverage under an auto insurance policy or claim. In some cases, patients were admitted to the hospital and placed in the other category but found coverage after admission. Melnick and Fonkych stated that these patients were usually reclassified within 60 days of their discharge. Once a patient was reclassified, the payments were placed in the correct category for reporting purposes. However, initial measurement errors and inaccurate reporting can easily occur at the beginning of the admission.

When dealing with a payer mix, hospitals look for ways to increase the patient type that brought the most revenue. A payer mix ratio is determined by assigning a percentage to each category, when added together, equals the total patient population for a specific timeframe (OSHPD, 2010). The payer mix includes both outpatient and inpatient services but can be reported separately (Bennett et al, 2007). The best outcome for safety-net hospitals is possessing an equal payer mix that provides revenue with the least amount of uncompensated care in the "other" category (County of Kern, 2010). The payer mix for Kern Medical Center (safety-net hospital serving Kern County) on March 31, 2010 was Medicare 7.78%, Medicaid 52.79%, third party 8.82%, indigent 14.68%, and other 15.94% (County of Kern, 2010).

Financial indicators are used among safety-net hospitals to reviews trends, benchmark, and determine the financial well-being of the organization. Financial indicators can outline the profitability, liquidity, capital structure, revenue, costs, and utilization of a safety-net hospital (Pink, Holmes, D'Alpe, Strunk, McGee, & Slifkin, 2006). Effectiveness and efficiency are other terms that can be measured through financial indicators. Some of the most common financial indicators used by hospitals include gross profit margin, efficiency ratio, operating margin, excess margin, and salary and benefit expense per full-time equivalent

(FTE). Chernew, Gibson, Yu-Isenberg, Sokol, Rosen, and Fendrick (2008) showed that socioeconomic factors had significant effects on hospitals and other health care resources. Two common socioeconomic factors commonly reported by the United States Census Bureau (2010) are unemployment and median household income. Christ and Guell (2009) reported a sharp increase in unemployment over the past few years that had severely impacted health care and pharmaceutical companies. For household income, Chernew et al. reported that lower median household incomes had a negative effect on health care.

During the course of the literature review, we determined that there is a lack of research for three major areas. For example, further research is needed on the impact of the rising indigent population in the United States because the increase of indigent patients appears from the literature to have a direct impact on the operation of county hospitals and other safety-net hospitals. It was also apparent that a gap exists in hospital charity care and uncompensated care programs. We showed that in some cases charity care and uncompensated care programs were successful while others failed. Based on the successes and failures, we concluded that further studies were needed to determine if in fact charity care and uncompensated care programs were the answer to saving costs for safety-net hospitals. Another area where research was lacking was the impact of socioeconomic demographics on safety-net hospitals. Socioeconomic demographics could explain why some safety-net hospitals were profitable while others were not.

DATA AND METHODOLOGY

The purpose of this quantitative study was to address the gap in the understanding of the effects that increased uninsured population and socioeconomic factors have on safety-net hospital closures. We identified common factors found in California safety-net hospitals from 2002-2009. Based on Trochim and Donnelly's (2007) design descriptions, this study was similar to a non-experimental design. The non-experimental research design that was used in this study is a causal-comparative design or ex post facto design, as described by McMillan (2004). This design allowed us to understand a complex issue, enhanced the prior research, and explained the complex links. By using this design, relationships between the independent and dependent variables were determined through a logistic regression analysis (logic model). The statistical analysis and hypothesis testing employed a logistic regression analysis that included descriptive statistics of all variables, variable coefficients, z value, p values, odd ratios, analysis of variance (ANOVA), model prediction analysis, and logic formula using ex post facto archival data from California State Association of Counties (CSAC), OSHPD, United States Census Bureau, and United States Department of Labor. This approach (logistic regression) was chosen because (a) all the data were historical in nature and (b) the response variable (hospital status) was binary in nature.

A logistic regression analysis is an effective research method or tool for developing models when the output is categorical in nature (e.g., open/closed). This methodology also is used to determine if there are any interactions among the independent variables. At the completion of this analysis, a logistic model was developed and verified to be valid. In the process of developing a logistic regression model, Minitab 16 was used to analyze the data. The computed coefficients (β_0 and β_i) were calculated and the quality of the regression model was tested using four assessments. The computed coefficients were constant = β_0, unemployment = β_1, median household income = β_2, gross profit margin = β_3, efficiency ratio = β_4, operating margin = β_5, excess margin = β_6, and salary and benefit expenses per FTE = β_7. The four assessments used to evaluate the regression model were overall model evaluation, tests of individual predictors (the coefficients of the explanatory variables), goodness-of-fit test, and validation of the predicted probabilities. Once a logistic regression model was built using the postulated explanatory variables (x_1 = unemployment rate, x_2 = median household income, x_3 = gross profit margin, x_4 = efficiency ratio, x_5 = operating margin, x_6 = excess margin, and x_7 = salary and benefit expenses per FTE) and response variable (y = hospital operating status; closed = 0 and open = 1), it must be assessed to assure all

variables are a good fit and determine which coefficients were significant. The final result yielded the following logit model or hospital closure model:

$$P(y = 1) = \frac{e^{\beta 0 + \beta 1x1 + \beta 5x5 + \beta 7x7}}{1+e^{\beta 0 + \beta 1x1 + \beta 5x5 + \beta 7x7}} \quad (1)$$

This quantitative study was designed to test the following hypotheses:

H_0: There is no significant relationship between the dependent variable (hospital operational status) and independent variables (unemployment, median household income, gross profit margin, efficiency ratio, operating margin, excess margin, and salary and benefit expenses per FTE). All the coefficients (βi) equal zero.

H_1: There is a significant relationship between the dependent variable (hospital operational status) and at least one independent variable (unemployment, median household income, gross profit margin, efficiency ratio, operating margin, excess margin, and salary and benefit expenses per FTE). At least one coefficient (βi) does equal zero. In the process of developing a logistic regression model, Minitab 16 was used to analyze the data. The computed coefficients (β_0 and β_i) were calculated and the quality of the regression model was tested using four assessments. The computed coefficients were constant = β_0, unemployment = β_1, median household income = β_2, gross profit margin = β_3, efficiency ratio = β_4, operating margin = β_5, excess margin = β_6, and salary and benefit expenses per FTE = β_7. The four assessments used to evaluate the regression model were overall model evaluation, tests of individual predictors (the coefficients of the explanatory variables), goodness-of-fit test, and validation of the predicted probabilities.

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$$P(y = 1) = \frac{e^{\beta 0 + \beta 1x1 + \beta 5x5 + \beta 7x7}}{1+e^{\beta 0 + \beta 1x1 + \beta 5x5 + \beta 7x7}} \quad (2)$$

The criterion used for selecting the sample was based on an available data set and its relevance to the problem statement. The unit of analysis was California safety-net hospitals that operated at least 1 year during the 2002-2009 calendar years (January to December). Safety-net hospitals used in this study met the following criteria:

1. The hospital was classified as a general acute care and comparable hospital by OSHPD.

2. The hospital had a minimum of 3 years of operation prior to 2010.

3. The hospital had at least 1 year of operation from 2002-2009.

4. The number of total visits (outpatient and inpatient combined) by indigent patients, other indigent patients, and other patients, as outlined by OSHPD, equaled 5% or more of total hospital visits.

5. The hospital had an emergency department classified as open by OSHPD during its operational period.

The 1999 to 2009 OSHPD Hospital Annual Financial Data (HAFD) sets were used in determining which hospitals met the criteria. Based on these criteria, the sample size was 274 safety-net hospitals.

The data collection tools that were used in this study were American FactFinder, Local Area Unemployment Statistics (LAUS), and Automated Licensing Information and Report Tracking System (ALIRTS). All of the data were collected using these collection tools. All the collection tools were built by the government agencies responsible for the data collection. Each report generated by these tools included a key or legend, notations (data flags), and limitations (if applicable) on the bottom of each report, chart, and graph. The variables were divided by dependent and independent variables. Each variable is listed below along with a detailed description. The dependent variable was hospital operational status (open or closed). The independent variables were unemployment, median household income, gross profit margin, efficiency ratio, operating margin, excess margin, and salary and benefit expenses per FTE.

Data that were available for hospital operational status can be taken from the 2002 to 2009 OSHPD HAFD data sets. The HAFD data sets were located in ALIRTS on the OSHPD website. This variable was reported as open with a dummy variable of one and closed with an assigned dummy variable of zero. Each safety-net hospital was assigned a dummy variable based on the hospital's operational status at the end of the 2009 calendar year. OSHPD reported operational status as yes for open and no for closed.
Unemployment (3-year rate change) data were taken from LAUS. The formula used to calculate the unemployment 3-year rate change was:

$$Unemployment\ (3-year\ change) = (2009\ Unemployment\ Rate - 2007\ Unemployment\ Rate) \quad (3)$$

If the hospital operating status was reported as closed prior to the end of the 2009 calendar year, the third to the last year and final year of the operational years were used (Example: if the hospital closed in 2002, then the unemployment rates for 2000 and 2002, were used). Unemployment rate was reported as a percent. Median household income (3-year change) data originated from the United States Census Bureau, with support from other federal agencies. The formula used to calculate the median household income 3-year change was:

$$Median\ Household\ Income\ (3-year\ change) = (2009\ Median\ Household\ Income - 2007\ Median\ Household\ Income) \quad (4)$$

If the hospital operating status was reported as closed prior to the end of the 2009 calendar year, the third to the last year and final year of the operational years were used. Median household income was reported as a positive or negative number rounded to the nearest dollar. Median household income was also adjusted for inflation or normalized using the Consumer Price Index (CPI) Inflation Calculator provided by United States Department of Labor (2011). The data for gross profit margin were found on the OSHPD website using the ALIRTS system. The formula for gross profit margin was:

$$Gross\ Profit\ Margin = \frac{(Gross\ Patient\ Revenue - Total\ Operating\ Expense)}{Gross\ Patient\ Revenue} \quad (5)$$

For the purposes of this study, the gross profit margin was reported in terms of a 3-year average. The gross profit margin variable with a 3-year average was calculated by adding the gross profit margin from 2007-2009 and divided by 3 years. The formula used to calculate the gross profit margin 3-year average was:

$$Gross\ Profit\ Margin\ (3-year\ average) = \frac{(2007\ Gross\ Profit\ Margin + 2008\ Gross\ Profit\ Margin + 2009\ Gross\ Profit\ Margin)}{3\ years} \quad (6)$$

If the hospital operating status was reported as closed prior to the end of the 2009 calendar year, the last three operational years were used. Gross profit margin was reported as a positive or negative number rounded to the nearest thousandth.

The data for efficiency ratio were found on the OSHPD website using the ALIRTS system. The formula for efficiency ratio was:

$$Efficiency\ Ratio = \frac{(Total\ Operating\ Expenses - Interest\ Expenses)}{Gross\ Patient\ Revenue} \quad (7)$$

For the purposes of this study, the efficiency ratio was reported in terms of a 3-year average. The efficiency ratio variable with a 3-year average was calculated by adding the efficiency ratio from 2007-2009 and divided by 3 years. The formula used to calculate the efficiency ratio 3-year average was:

$$Efficiency\ Ratio\ (3 - year\ average) = \frac{(2007\ Efficiency\ Ratio + 2008\ Efficiency\ Ratio + 2009\ Efficiency\ Ratio)}{3\ years} \quad (8)$$

If the hospital operating status was reported as closed prior to the end of the 2009 calendar year, the last three operational years were used. Efficiency ratio was reported as a positive or negative number rounded to the nearest thousandth.

The data for operating margin were found on the OSHPD website using the ALIRTS system. The formula for operating margin was:

$$Operating\ Margin = \frac{(Total\ Operating\ Revenue - Total\ Operating\ Expense)}{Total\ Operating\ Revenue} \quad (9)$$

Operating margin is commonly reviewed over a length of time. For the purpose of this study, operating margin was calculated as a 3-year average. The formula for operating margin 3-year average was:

$$Operating\ Margin\ (3 - year\ average) = \frac{(2007\ Operating\ Margin + 2008\ Operating\ Margin + 2009\ Operating\ Margin)}{3\ years} \quad (10)$$

If the hospital operating status was reported as closed prior to the end of the 2009 calendar year, the last three operational years were used. Operating margin was reported as a positive or negative number rounded to the nearest thousandth.

The data for calculating the excess margin can be found on the OSHPD website in the ALIRTS system. The formula for calculating excess margin was:

$$Excess\ Margin = \frac{(Totaling\ Operating\ \ Revenue - Total\ Operating\ Expense + Nonoperating\ Revenue)}{(Total\ Operating\ Revenue - Nonoperating\ Revenue)} \quad (11)$$

The excess margin with a 3-year change was calculated by subtracting the 2007 excess margin from the 2009 excess margin. The formula used to calculate the excess margin 3-year change was:

$$\text{Excess Margin}\ (3 - \text{year change}) = (2009\ Excess\ Margin - 2007\ Excess\ Margin) \quad (12)$$

If the hospital operating status was reported as closed prior to the end of the 2009 calendar year, the third to the last year and final year of the operational years were used. Excess margin was reported as a positive or negative number rounded to the nearest thousandth.

Salary and benefit expense per FTE requires two variables: total expense: salary and benefits and number of FTEs allocated by the hospital. The data for this variable were found on the OSHPD website using the ALIRTS system. The formula for salary and benefit expense per FTE was

$$Salary\ and\ Benefit\ Expense\ per\ FTE = \frac{Total\ Expenses{:}Salary+Benefits}{Total\ Number\ of\ FTEs} \quad (13)$$

For the purpose of this study, salary and benefit expense per FTE was calculated as a 3-year average. The formula for salary and benefit expense per FTE 3-year average was

$$Salary\ and\ Benefit\ Expense\ per\ FTE\ (3-year\ average) = \frac{(2007\ Salary\ and\ Benefit\ Expense\ per\ FTE + 2008\ Salary\ and\ Benefit\ Expense\ per\ FTE + 2009\ Salary\ and\ Benefit\ Expense\ per\ FTE)}{3\ years} \quad (14)$$

If the hospital operating status was reported as closed prior to the end of the 2009 calendar year, the last three operational years were used. Salary and benefit expense per FTE was reported as a positive or negative amount rounded to the nearest dollar. Salary and benefit expense per FTE was also adjusted for inflation or normalized using the CPI Inflation Calculator provided by United States Department of Labor (2011).

RESULTS

The results of the log-likelihood test are shown in Table 1. The log-likelihood test showed that there was a significant probability that at least one coefficient (β_i), was not equal to zero (log likelihood, or G = χ^2 = 110.546, *df* = 7, N = 274, *p* = 0.000). Therefore, the null hypothesis (that all coefficients are equal to zero) was rejected. However, although the overall log likelihood *p* value equals zero, the individual *p* values do not indicate that any of the explanatory variables were significant (*p*>0.05 for all variables). That indicates a need for some model refinement.

Table 1: Logistic Regression Table: *y* versus x_1, x_2, x_3, x_4, x_5, x_6, and x_7

Predictor	Coefficient	*SE* Coefficient	*Z*	*P*	Odds ratio	95% *CI*, Lower	95% *CI*, Upper
Constant	130.69**	1,828.6**	0.07**	0.943**	—	—	—
x_1	1,583.8**	22,416**	0.07**	0.944**	+	0.00**	+
x_2	-0.0212**	0.3271**	-0.06**	0.948**	0.98**	0.52**	1.86**
x_3	6,834.1**	108,832**	0.06**	0.950**	+	0.00**	+
x_4	6,968.2**	110,651**	0.06**	0.950**	+	0.00**	+
x_5	189.52**	2,883.5**	0.07**	0.948**	<0.0001**	0.00**	+
x_6	91.286**	3,102.8**	0.03**	0.977**	<0.0001**	0.00**	+
x_7	0.0000**	0.0293**	0.01**	0.995**	1.00**	0.94**	1.06**

*This table shows the results of the logistic regression for y versus x_1, x_2, x_3, x_4, x_5, x_6, and x_7. The p values indicate that not all variables were significant. This indicates that model refinement is needed to establish a final model. SE = standard error; CI = confidence interval; + = Convergence has not been reached for the parameter estimates criterion; Log likelihood = -0.000; test that all slopes are 0: G = 110.546, DF = 7, P value = 0.000. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively.*

In an effort to build a valid logit model, the explanatory variables were analyzed in several different combinations using a stepwise regression approach until the remaining variables had a *p* value of less than 0.05. Using Minitab 16, every possible combination of explanatory variables were evaluated until three remained with *p* values less than 0.05. All other combinations yielded at least one *p* value greater than 0.05. Table 2 lists the results of the analysis conducted (logistic regression analysis of *y* versus x_1, x_5, and x_7). In this logistic regression analysis, there was a significant probability that unemployment (x_1), operating margin (x_5), and salary and benefit expenses per FTE (x_7) affect hospital operational status (χ^2 = 92.700, *df* = 3, N = 274, *p* = 0.000). Interactions were considered and assigned as explanatory variables (x_8 through x_{28}). All combinations of the interactions variable yielded *p* values greater than 0.05. The

interactions analysis included the testing of all variables (response and explanatory) individually and in different combinations. Based on the interactions analysis, no interaction explanatory variables or other response variables will be included in the logit model. Additionally, the p value of each explanatory variable (x_1, x_5, and x_7) left in the model was less than 0.05.

Table 2: Logistic Regression Table: y versus x_1, x_5, and x_7

Predictor	Coefficient	*SE* Coefficient	*Z*	*P*	Odds ratio	95% *CI*, Lower	95% *CI*, Upper
Constant	9.5466**	3.649**	2.62**	0.009**	—	—	—
x_1	109.08**	36.989**	2.95**	0.003**	<0.0001**	<0.0001**	<0.0001**
x_5	14.381**	7.107**	2.02**	0.043**	1,759,984**	1.580**	1.570**
x_7	0.0002**	0.0001**	2.14**	0.032**	1.000**	1.000**	1.000**

*This table reflects the results of a logistics regression analysis completed on y versus x_1, x_5, and x_7. Based on the results of the p values, all variables were significant. SE = standard error, CI = confidence interval; Log-Likelihood = -8.875; Test that all slopes are zero: G = 92.797, DF = 3, P-Value = 0.000. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively.*

An interactions analysis was completed among the three remaining explanatory variables (x_1, x_5, and x_7) and resulted in no valid interactions between any of the explanatory variables. Table 3 provides the results of the interaction analysis. For the interaction analysis three interactive independent variables were created and tested (x_8, x_9, and x_{10}). x_8 represented a possible interaction between x_1 and x_5, x_9 between x_1 and x_7, x_{10} between x_5 and x_7. The values for x_8, x_9, and x_{10} were calculated by multiplying the modified values of the two possible interacting independent variables. Based on the results of the logistic regression analysis in Table 3, variables x_8, x_9, and x_{10} will not be included in the logit model.

Table 3: Logistic Regression Table: y versus x_1, x_5, x_7, x_8, x_9, and x_{10}

Predictor	Coefficient	*SE* Coefficient	*Z*	*P*	Odds ratio	95% *CI*, Lower	95% *CI*, Upper
Constant	29.667**	3,044.4**	-0.01**	0.992**	—	—	—
x_1	402.66**	105,931**	0.00**	0.997**	<0.001**	0.00**	+
x_5	-17.798**	17,642**	0.00**	0.999**	0.00**	0.00**	+
x_7	-0.0000**	0.1810**	0.00**	1.000**	1.00**	0.70**	1.42**
x_8	-3,207.9**	1,115,610**	0.00**	0.998**	0.00**	0.00**	+
x_9	-0.0198**	8.569**	0.00**	0.998**	0.98**	0.00**	<0.0001**
x_{10}	0.0012**	0.8390**	0.00**	0.999**	1.00**	0.19**	5.18**

This table reflects the results of a logistics regression analysis completed on y versus x_1, x_5, x_7, x_8, x_9, and x_{10}. *Based on the results of the p values, x_8, x_9,* and x_{10} *will be rejected from the final model. SE = standard error; CI = confidence interval; + = Convergence has not been reached for the parameter estimates criterion; Log-Likelihood = -8.875; Test that all slopes are zero: G = 92.797, DF = 3, P-Value = 0.000. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively.*

The next step in a regression analysis is the assessment of the overall goodness-of-fit test. The goodness-of-fit uses the deviance or residual deviance. A good fit will reference a smaller deviance. Table 4 reflects the goodness-of-fit analysis. Pearson (p = 1.00), Deviance (p = 1.00) and Hosmer-Lemeshow (p = 1.00) measures confirmed that this logit model was an effective predictor of hospital operational status of goodness-of-fit. The overall result of the goodness-of-fit tests also supports the rejection of the null hypothesis.

Table 4: Goodness-of-Fit Tests for y versus x_1, x_5, and x_7

Method	Chi-Square	*DF*	*P*
Pearson	60.972**	270**	1.00**
Deviance	17.749**	270**	1.00**
Hosmer-Lemeshow	0.0868**	8**	1.00**

This table shows the results of the three goodness-of-fit tests completed for y versus x_1, x_5, and x_7. *The Pearson, Deviance, and Hosmer-Lemeshow tests indicate that x_1, x_5, and x_7 were effective predictors of hospital operational status. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively.*

The last assessment in the logistic regression model is validation of predicted probabilities. The probability model is expressed as:

$$P(y = 1) = \frac{e^{\beta 0 + \beta 1x1 + \beta 2x2 + \cdots + \beta ixi}}{1+e^{\beta 0 + \beta 1x1 + \beta 2x2 + \cdots + \beta ixi}} \quad (15)$$

By using the coefficients (β_0, β_1, β_5, and β_7) and explanatory variables (x_1, x_5, and x_7) in Table 3, a new logit model (hospital closure model) is developed and expressed as:

$$P(y = 1) = \frac{e^{\beta 0 + \beta 1x1 + \beta 5x5 + \beta 7x7}}{1+e^{\beta 0 + \beta 1x1 + \beta 5x5 + \beta 7x7}} \quad (16)$$

Where the coefficients are calculated as:

β_0 = 9.54663
β_1 = 109.081
β_5 = 14.3808
β_7 = 0.0001613.

To validate this model, we plugged in the values of the independent variables from the actual data to calculate y for each hospital in the sample. After plugging the data into the predictive model for the safety-net hospitals reported as open (y = 1), 259 out of 260 produced probabilities close to 1, indicating they were very likely to be open. The only exception was Mercy Medical Center Merced – Community Campus whose data yielded a probability of being open of 0.018 (indicating a high likelihood of being closed) but OSHPD (2010) reported the hospital as open in 2009. For safety-net hospitals that closed (y = 0), 13 of 14 hospitals had probability values indicating a high likelihood of being closed. As an exception, San Jose Medical Center had a probability value of 0.576; however, OSHPD (2010) showed the hospital to be closed in 2004. As an example of this validation of the model, Alameda County Medical Center had the following mean centered values for the independent variables

Unemployment (x_1) = 0.001
Operating Margin (x_5) = 0.112
Salary and Benefit Expenses per FTE (x_7) = 27,659.

When these values are placed into the hospital closure model we get the following result:

P = (e^(9.54663+(109.081*0.001)+(14.3808*0.112)+(0.0001613*27,659))) /
(1+((e^(9.54663+(109.081*0.001)+(14.3808*0.112)+(0.0001613*27,659))))) = 0.999.

Based on the results of the hospital closure model, the probability of the hospital being open is 99.9%. The operational status of Alameda County Medical Center at the end of the study was in fact, open (1). Another example that could be used is Orange County Community Hospital – Buena Park. The mean centered independent variables for Orange County Community Hospital – Buena Park were

Unemployment (x_1) = -0.049
Operating Margin (x_5) = -0.512
Salary and Benefit Expenses per FTE (x_7) = -37,701.

When these value were plugged into the hospital closure, the result was

P = (e^(9.54663+(109.081*-0.049)+(14.3808*-0.512)+(0.0001613*-37,701))) /
(1+((e^(9.54663+(109.081*-0.049)+(14.3808*-0.512)+(0.0001613*-37,701))))) = 0.000.

Using the hospital closure model we were able to determine that Orange County Community Hospital – Buena Park is closed (0). During the data collection process, it was noted that Orange County Community Hospital – Buena Park closed in 2003. Based on the results of the four assessments, it can be concluded that the hospital closure model contains significant coefficients. These coefficients (β_0, β_1, β_5, and β_7) can be used in the hospital closure model and give a good indication of the influence that the explanatory variables have on the response variable (y) or in other terms, the probability that y equals one. Using β_0, β_1, β_5, and β_7 in the hospital closure model enables a researcher to predict the probability of success for any combination of values for the explanatory variables (x_1, x_5, and x_7).

Each coefficient describes the size of the contribution of the independent (explanatory) variable. The unemployment coefficient, β_1, has a value of 109.081. This value indicates that this variable increases and strongly influences the probability of that outcome. The operating margin coefficient, β_5, has a value of 14.3808. This value indicates that this variable also increases and strongly influences the probability of that outcome. The salary and benefit expenses per FTE coefficient, β_7, had a value of 0.0001613, indicating that this variable increases and slightly influences the probability of that outcome.

CONCLUDING COMMENTS

The purpose of this research was to address two gaps and provide some answers as to why safety hospitals close. The first gap was the effect of increased uninsured patients on safety-net hospitals. The second gap was the effects of changing socioeconomic factors on safety-net hospitals. We were able to show the factors associated with safety-net hospitals closure, including unemployment. Although the uninsured population is growing, we did not find that it was a factor in safety-net hospital closures in California from 2002-2009. The hypotheses listed the following independent variables: unemployment, median household income, gross profit margin, efficiency ratio, operating margin, excess margin, and salary and benefit expenses per FTE. To develop a valid hospital model with the independent variables, a stepwise approach was used using MiniTab. As mentioned in chapter 4, every possible combination of explanatory variables was evaluated until three remained with p values less than 0.05.

All other combinations yielded at least one p value greater than 0.05. The stepwise model-building approach also looked at all factor interactions, and found none to be significant. The final hospital closure model includes unemployment, operating margin, and salary and benefit expenses per FTE based on the results of the stepwise approach. To validate the hospital closure model, the data for all 274 safety-net hospitals were plugged into the model. As noted in chapter 4, there were two exceptions between the actual operating status and hospital closure model probability result. In the first exception Mercy Medical Center Merced – Community Campus had a result of 0.018, indicating the probability of being open as 1.80%. In reality, the hospital remained open during the entire study. However, after this study was completed in 2009, OSHPD reported that Mercy Medical Center Merced – Community Campus closed the following year in 2010. This result suggests that other factors influenced that hospital to remain open for an additional year. The second exception was San Jose Medical Center, which resulted in a probability value of 0.576 or 57.6% probability of being open. In reality, San Jose Medical Center closed in 2004 (OSHPD, 2010). Looking at the data for San Jose Medical Center, there was roughly a 50-50 chance of this hospital being open. Although San Jose Medical Center had better performance measures, it closed because the city and county did not want the financial burden (City of San Jose, 2004). If it were not for a legislative action, the hospital would have remained opened.

Among the socioeconomic factors, x_1 (unemployment) was found to be the only significant influence of hospital closures. As noted in Table 6, all 14 safety-net hospitals that closed were located in counties where the unemployment rate change was well below the mean for all 274 safety-net hospitals. The 14 safety-net hospitals that closed had an unemployment rate change value between 0.017 to -0.020, and a mean of 0.005. When a safety-net hospital closed, they experienced a slight increase or slight decrease in the unemployment rate change over the last 3 years of operation. A decrease (negative value) in unemployment (3-year rate change) showed that the unemployment rate was higher 3 years prior to close then it was when the hospital closed. An increase (positive value) in unemployment (3-year rate change) shows that the unemployment rate was higher when the hospital closed.

The review of the data for unemployment (3-year rate change), indicates a correlation. As the unemployment (3-year rate change) increased, there was a strong probability that the hospital would remain in operation. A lower or negative rate change was indicative among hospitals that closed. There was nothing in the research that would give an indication about why unemployment rate change had a counter intuitive result. However, there is a possibly that a lower or negative rate change could lead to decreased government reimbursement in the areas of DSH finding. This effect would cause safety-net hospitals to rely more on third party payer, Medicare, and Medicaid claims. Unemployment is also discussed in the recommendations for future studies section of this chapter.

The two financial factors found to have a significant influence on hospital closure were x_5 (operating margin) and x_7 (salary and benefits expenses per FTE). As noted in Table 3, 13 out of the 14 safety-net hospitals that closed had negative operating margins (3-year average). In Table 3, 13 of the 14 safety-net hospitals that closed were losing money during the last 3 years of operation. In addition, these 13 hospitals also had values below the mean of all 274 safety-net hospitals. One hospital that did close, Lassen Community Hospital or Case 49, had an operating margin (3-year average) greater than the overall mean of all 274 safety-net hospitals. However, Lassen Community Hospital had the lowest salary and benefit expenses per FTE (3-year average) among all 274 safety-net hospitals.

The results of operating margin suggest that this explanatory variable is an overall symptom of hospital closure. Although a lack of money can close any business, other forces caused the operating margin to result in a negative value (increased costs and decreased revenue). The increased costs included costs for technology upgrades (including electronic medical records), unreimbursed costs to care for the uninsured, and rise in physician and nurse salaries. The Balance Budget Act, decreased DSH payments, and decreased reimbursement from insurance carriers would account for the decrease in revenue.

Thirteen out of 14 hospitals that closed experienced negative operating margins during their last three years of operation. Additionally, all 14 safety net hospitals that closed had operating margin values below the mean of all 274 safety-net hospitals. When hospitals lost money there was an increased probability that they closed. Operating margin will also be discussed in the recommendation for future studies section of this chapter. The second significant financial ratio included in the hospital closure model was salary and benefit expenses per FTE. In the 14 safety-net hospitals that closed, the salary and benefit expenses per FTE range was $28,047 to $77,517, whereas the mean of all 274 safety-net hospitals was $82,046. All 14 hospitals that closed had a salary and benefit expenses per FTE below the mean for all hospitals. There was nothing in the research that would give an indication about why salary and benefit expenses per FTE had a counter intuitive result. However, a lower salary and benefit expenses per FTE could indicate that safety-net hospitals were already making adjustments to save costs prior to closing. In this case salary and benefit expenses per FTE would be a symptom of the problem. Salary and benefit expenses per FTE will also be discussed in the recommendations for future studies section of this chapter.

During the course of this study, it was determined that some of the explanatory variables were not significant (did not affect hospital closures). The socioeconomic factor that was not significant was x2 (median household income). After evaluating the hospitals with an operating status of closed (mathematically reported as 0), it was found that 12 of the 14 hospitals were located in counties where the median household income increased during the last 3 years of the hospital's operation. In other words, people living in those counties where safety-net hospitals closed had an increase in the median household income (made more money than other counties). A decrease in the median household income would be an indicator that people would require more financial assistance and possibly lack basic needs such as health care. Two hundred forty eight hospitals out of 260 hospitals (95%) with an operating status of open (mathematically reported as 1), were located in counties where the median household income decreased from 2007 to 2009. This decrease meant that the hospitals that remained open were most likely in a position to support this change. Their position could be affected by increased government funding, efficiency, or other cost saving measure.

The financial factors that were found not significant were x_3 (gross profit margin), x_4 (efficiency ratio), and x_6 (excess margin). In reviewing the data for gross profit margin, no distinct pattern existed. The gross profit margin range for hospital closure was -0.490 to 0.900. There was an even distribution among open and closed hospitals. Efficiency ratio was also evenly distributed from 0.098 to 1.040 among hospitals that closed. There was no pattern for open or closed hospitals. Excess margin had a range of -0.762 to 0.428 with an even distribution among closed hospitals. Hospitals that remained open also had an even distribution on values for the excess ratio. No patterns were found for excess margin. The hospital closure model provided a predictive conclusion. Tripepi, Jager, Dekker, and Zoccali (2008) showed that analyses that contained categorical variables (hospital operational status) were best evaluated by a logit model based on probability. Since logistic regression theory was used to develop the hospital closure model, the hospital closure can only be used as a predictive model. Based on the final hospital closure model:

$$P(y=1) = \frac{}{e^{-(9.54663 + 109.081(unemployment) + 14.3808(operating\ margin) + 0.0001613(salary\ \&\ benefits\ expenses\ per\ FTE)}} \quad (17)$$

a negative unemployment rate change (rebound), negative operating margin (losing money), and negative salary and benefit expenses per FTE rate (decreased spending on salaries and benefits) increased the probability that a hospital will close. Based on the data collected on the 14 safety-net hospitals that closed, it would appear that many of the safety-net hospitals were experiencing trouble at least 3 years prior to closure. This trouble can be explained by the unemployment 3-year rate change decrease, a 3-year average negative operating margin, and a 3-year average salary and benefit expenses per FTE value that was much lower than other safety-net hospitals that remained opened. The probability of a hospital closing was the greatest when all three factors existed (low unemployment rate change, negative operating margin, and low salary and benefit expenses per FTE).

During the study period, there was a sharp increase (5.7% rate change) in the unemployment rate for the state of California from 2000 to 2009. The average median household income decreased by $1,765 (stated in real dollars) in the state from 2000 to 2009. The mean operating margin and mean excess margin of all 274 hospitals safety-net hospitals decreased. Additionally, the mean gross profit margin and mean efficiency ratios for all 274 safety-net hospitals increased. In the 8-year period covered in this study from 2002 to 2009, 5.1% of the safety-net hospitals closed. From 1996 to 2002, only 2.7% of the safety-net hospitals in the nation closed (Bazzoli et al., 2005). In this study, three explanatory variables influence hospital operational status: unemployment (x_1), Operating margin (x_5), and salary and benefit expenses per FTE (x_7). Upon further study, a hospital closure model was developed using a stepwise approach. The interaction analysis yielded no interactions among the explanatory variables. The goodness-of-fits test

also resulted in a good fit among x_1, x_5, and x_7. The logistic regression analysis yielded a hospital closure model that was predictive in nature to determine if a hospital remains open or closed.

During the course of this project, a couple of limitations were noted. First, a sample was collected using current governmental data. In areas where the data were not based on a survey or government requirements, estimations were made based on percentages of the population. The percentages that were used were estimated by the government agency that used the mathematical proportion method. Second, all research in this study was limited to the State of California and includes no data from outside the state. This limitation was based on the reporting requirements of safety-net hospitals in California.

The two significant variables covered in this study that needed further studies were unemployment and salary and benefit expenses per FTE. We were able to show that unemployment was a factor in safety-net hospitals closures. However, the results were contrary to what was expected. We found that a slight change (positive or negative) in the unemployment rate was significant to hospital closure. A high rate change was not significant to hospital closure. It is important to note, if the unemployment rate was high or low for three straight years, there could be little to no change in the rate. Further studies are needed to determine the exact unemployment rate that is significant to hospital closure. We found salary and benefit expenses per FTE (3-year average) was lower in the safety-net hospitals that closed compared to the mean of all 274 safety-net hospitals. Since salary and benefit expenses per FTE was significant in the hospital closure model, further studies are needed to determine the exact cause of lower salary and benefit expenses per FTE values. Some of the more likely causes could include that the hospitals were making short-term adjustments to save costs, located in lower cost of living areas, or taking other cost-savings measure. Although the hospital closure model identified which factors were associated with safety-net hospitals that closed, it did not explain what the hospital was doing wrong or how to make changes within the organization. Future studies could be conducted to determine what safety-net hospitals can do to change the outcome of each factor. Since many of the variables included in this study were financial ratios related to efficiency, the focus of future studies should be on which factors effect efficiency and what hospitals can do to reverse the negative factors that cause poor efficiency.

Another area of future study could include a study on the relationship between safety-net hospitals and efficiency measures or practices. A study that shows the most common efficiency measures used among safety-net hospitals would be beneficial for hospitals use. Since efficiency was identified as a contributor to hospital closure, future researchers should focus around the idea of providing the most efficient service and operation. Efficiency is one way a hospital can control money and resources.

Our last recommendation for future study is time delay. The amount of time it takes for a change to be realized is important. The hospital closure model outlined three variables that were present when the hospital closed. It would be important to investigate at what point a hospital starts down the road to closure. It is possible there is a delay between the explanatory variables and the actual time the hospital closed. This information would be helpful for hospital administrators in identifying the factors associated with closure at a much earlier time. The results of this study were used to yield a hospital closure model that can be used to predict hospital closure or identify hospitals nearing closure. In this model, unemployment, operating margin, and salary and benefit costs were directly related to hospital closure. When safety-net hospitals experienced a low unemployment rate change, negative operating margin (negative value or loss of profit), and decreased salary and benefit costs; the probability of hospital closure was significant. This information contributed to existing research already completed on safety-net hospitals. The results of this study are useful for public and hospital administrators when evaluating socioeconomic changes and hospital financial data. In order for change to occur, collaboration is necessary to address the causes of safety-net hospital closures and prevent health care disparities.

In this study, we found that 14 out of 274 (5.1%) California safety-net hospitals closed between 2002 and 2009. This closure is almost double the national rate from 1996 to 2002. Bazzoli et al. (2005) reported that 11 of 404 (2.7%) safety-net hospitals closed in the United States from 1996 to 2002. There is an increase in unemployment, an increase in uninsured patients, and a decrease in the number of safety-net hospitals to help this growing population. This change causes the vulnerable population to seek alternative care. Seeking alternate means that many uninsured patients living in the areas where these hospitals were located had to find alternative sources for medical care. As uninsured patients find alternative sources for treatment, non- safety-net hospitals are at risk of baring the burden for covering the cost of treating uninsured patients. The results of this study were used to yield a hospital closure model that can be used to predict hospital closure or identify hospitals nearing closure. In this model, unemployment, operating margin, and salary and benefit costs were directly related to hospital closure. When safety-net hospitals experienced a low unemployment rate change, negative operating margin (negative value or loss of profit), and decreased salary and benefit costs; the probability of hospital closure was significant. This information contributed to existing research already completed on safety-net hospitals. The results of this study are useful for public and hospital administrators when evaluating socioeconomic changes and hospital financial data. In order for change to occur, collaboration is necessary to address the causes of safety-net hospital closures and prevent health care disparities.

APPENDICES

Appendix A: Case Number Assignments

CASE #	HOSPITAL NAME (IF APPLICABLE, YEAR CLOSED)	CASE #	HOSPITAL NAME (IF APPLICABLE, YEAR CLOSED)
1	Alameda Hospital	138	Tahoe Forest Hospital
2	Eden Medical Center	139	Children's Hospital of Orange County
3	Alameda County Medical Center	140	Anaheim general Hospital
4	Alta Bates Summit Medical Center – Summit Campus – Hawthorne	141	AHMC Anaheim Regional Medical Center
5	St. Rose Hospital	142	Brea Community Hospital (2002)
6	Washington Hospital – Fremont	143	Chapman Medical Center
7	Sutter Amador Hospital	144	Fountain Valley Regional Hospital and Medical Center – Euclid
8	Biggs-Gridley Memorial Hospital	145	Western Medical Center – Anaheim
9	Feather River Hospital	146	Hoag memorial Hospital Presbyterian
10	Oroville Hospital	147	Huntington Beach Hospital
11	Enloe Medical Center – Esplanade Campus	148	La Palma Intercommunity Hospital
12	Mark Twain St. Joseph's Hospital	149	Orange County Community Hospital – Buena Park (2003)
13	Colusa Regional Medical center	150	Coastal Communities Hospital
14	Doctors Medical Center – San Pablo	151	Mission Hospital Regional Medical Center
15	Contra Costa Regional Medical Center	152	University of California Irvine Medical Center
16	Sutter Delta Medical Center	153	Garden Grove Hospital and Medical Center
17	John Muir Medical Center – Concord Campus	154	Placentia-Linda Community Hospital
18	San Ramon Regional Medical Center	155	St. Joseph Hospital – Orange
19	Sutter Coast Hospital	156	St. Jude Medical Center
20	Barton Memorial Hospital	157	West Anaheim Medical Center
21	Marshall Medical Center	158	Western Medical Center – Santa Ana
22	Coalinga Regional Medical Center	159	Sutter Auburn Faith Hospital
23	Community Regional Medical Center	160	Sutter Roseville Medical Center
24	Sierra Kings District Hospital	161	Eastern Plumas Healthcare
25	St. Agnes Medical Center	162	Plumas District Hospital
26	Glenn Medical Center	163	Seneca Healthcare District
27	Mad River Community Hospital	164	Corona Regional Medical Center – Main Campus
28	Jerold Phelps Community Hospital	165	Desert Regional Medical Center
29	Redwood Memorial Hospital	166	Eisenhower Medical Center
30	St. Joseph Hospital – Eureka	167	Hemet Valley Medical Center
31	El Centro Regional Medical Center	168	John F. Kennedy Memorial Hospital
32	Pioneers Memorial Hospital	169	Palo Verde Hospital
33	Northern Inyo Hospital	170	Parkview Community Hospital
34	Southern Inyo Hospital	171	Riverside Community Hospital
35	Delano Regional Medical Center	172	San Gorgonio Memorial Hospital

36	Bakersfield Memorial Hospital	173	Menifee Valley Medical Center
37	Kern Medical Center	174	Southern Healthcare System – Murrieta
38	Kern Valley Healthcare District	175	Riverside County Regional Medical Center
39	Mercy Hospital – Bakersfield	176	Mercy General Hospital
40	Ridgecrest Regional Hospital	177	Mercy San Juan Hospital
41	San Joaquin Community Hospital	178	Methodist Hospital of Sacramento
42	Tehachapi Hospital	179	Sutter Medical Center – Sacramento
43	Mercy Westside Hospital (2003)	180	Mercy Hospital – Folsom
44	Corcoran District Hospital	181	Hazel Hawkins Memorial Hospital
45	Hanford Community Hospital	182	Barstow Community Hospital
46	Central Valley General Hospital	183	Bear Valley Community Hospital
47	St. Helena Hospital – Clearlake	184	Chino Valley Medical Center
48	Sutter Lakeside Hospital	185	Montclair Hospital Medical Center
49	Lassen Community Hospital (2002)	186	Mountains Community Hospital
50	Banner Lassen Medical Center	187	Redlands Community Hospital
51	Alhambra Hospital	188	San Antonio Community Hospital
52	Antelope Valley Hospital	189	Community Hospital of San Bernardino
53	Catalina Island Medical Center	190	St. Bernardine Medical Center
54	St. Mary Medical Center	191	St. Mary Medical Center
55	Bellflower Medical Center	192	Victor Valley Community Hospital
56	Beverly Hospital	193	Colorado River Medical Center
57	Brotman Medical Center	194	Hi-Desert Medical Center
58	California Hospital Medical Center	195	Desert Valley Hospital
59	Centinela Hospital Medical Center	196	Arrowhead Regional Medical Center
60	Tri-City Regional Medical Center	197	Alvarado Hospital
61	Community and Mission Hospitals of Huntington Park	198	Sharp Coronado Hospital and Healthcare Center
62	Los Angeles Community Hospital	199	Sharp Memorial Hospital
63	San Gabriel Valley Medical Center	200	Fallbrook Hospital District
64	Lakewood Regional Medical Center	201	Sharp Grossmont Hospital
65	Downey Regional Medical Center	202	Scripps Mercy Hospital
66	East Los Angeles Doctor's Hospital	203	Palomar Medical Center
67	Foothill Presbyterian Hospital	204	Paradise Valley Hospital
68	Garfield Medical Center	205	Scripps memorial Hospital – La Jolla
69	East Valley Hospital Medical Center	206	Tri-City Medical Center
70	Granada Hills Community Hospital (2002)	207	University of California – San Diego Medical Center
71	Greater El Monte Community Hospital	208	Sharp Chula Vista Medical Center
72	Robert F. Kennedy Medical Center (2004)	209	Pomerado Hospital
73	Hollywood Presbyterian Medical Center	210	Scripps Memorial Hospital - Encinitas
74	Providence Holy Cross Medical Center	211	California Pacific Medical Center
75	Good Samaritan Hospital – Los Angeles	212	San Francisco General Hospital Medical Center
76	Huntington Memorial Hospital	213	St. Francis Memorial Hospital
77	Lancaster Community Hospital	214	California Pacific Medical Center – St. Lukes Campus
78	Providence Little Company of Mary – Torrance	215	St. Mary's Medical Center – San Francisco
79	Community Hospital of Long Beach	216	Chinese Hospital
80	Marina Del Rey Hospital	217	Dameron Hospital
81	Providence Tarzana Medical Center	218	Lodi Memorial Hospital
82	Memorial Hospital of Gardena	219	San Joaquin General Hospital
83	Glendale Memorial Hospital and Health Center	220	St. Joseph's Medical Center of Stockton
84	Mission Community Hospital – Panorama Campus	221	Sutter Tracy Community Hospital
85	Long Beach Memorial Medical Center	222	Doctor's Hospital of Manteca
86	Methodist Hospital of Southern California	223	Arroyo Grande Community Hospital
87	Olympia Medical Center	224	French Hospital Medical Center
88	Monterey Park Hospital	225	San Luis Obispo General Hospital (2003)
89	Cedars-Sinai Medical Center	226	Twin Cities Community Hospital
90	Northridge Hospital Medical Center	227	San Mateo Medical Center
91	Pacific Hospital of Long Beach	228	Goleta Valley Cottage Hospital
92	Pomona Valley Hospital Medical Center	229	Lompoc Valley Medical Center
93	Presbyterian Intercommunity Hospital	230	Marian Medical Center
94	Citrus Valley Medical Center – Queen of the Valley Campus	231	Santa Barbara Cottage Hospital
95	San Dimas Community Hospital	232	Santa Ynez Valley Cottage Hospital
96	Providence Little Company of Mary – San Pedro	233	St. Francis Medical Center – Santa Barbara (2003)
97	Elaster Community Hospital (2003)	234	Regional Medical Center of San Jose
98	Santa Monica-UCLA Medical Center and Orthopaedic Hospital	235	El Camino Hospital
99	Santa Teresita Hospital (2003)	236	San Jose Medical Center (2004)
100	Pacifica Hospital of the Valley	237	Santa Clara Valley Medical Center
101	Sherman Oaks Hospital and Health Center	238	St. Louise Regional Hospital

102	St. Francis Medical Center	239	Dominican Santa Cruz Hospital – Soquel
103	St. John's Health Center	240	Watsonville Community Hospital
104	Providence Saint Joseph Medical Center	241	Mayers Memorial Hospital
105	St. Vincent Medical Center	242	Shasta Regional Medical Center
106	Coast Plaza Doctors Hospital	243	Mercy Medical Center
107	Ronald Reagan-UCLA Medical Center	244	Mercy Hospital of Mt. Shasta
108	Northridge Hospital Medical Center – Sherman Way Campus (2004)	245	Fairchild Medical Center
109	Valley Presbyterian Hospital	246	Sutter Solano Medical Center
110	Verdugo Hills Hospital	247	North Bay Medical Center
111	Los Angeles Metropolitan Medical Center	248	Vaca Valley Hospital
112	West Hills Hospital and Medical Center	249	Sutter Medical Center of Santa Rosa
113	White Memorial Medical Center	250	Healdsburg District Hospital
114	Whittier Hospital medical Center	251	Santa Rosa Memorial Hospital
115	Henry Mayo Newhall Memorial Hospital	252	Sonoma Valley Hospital
116	Los Angeles County/Harbor-UCLA Medical Center	253	Sutter Warrack Hospital (2004)
117	Los Angeles County/USC Medical Center	254	Palm Drive Hospital
118	Los Angeles County/Martin Luther King Junior Medical Center (2007)	255	Doctors Medical Center
119	Los Angeles County/Olive View-UCLA Medical Center	256	Emanuel Medical Center
120	Madera Community Hospital	257	Memorial Hospital Modesto
121	Marin General Hospital	258	Oak Valley District Hospital
122	Novato Community Hospital	259	St. Elizabeth Community Hospital
123	John C. Fremont Healthcare District	260	Trinity Hospital
124	Frank R. Howard memorial Hospital	261	Kaweah Delta Medical Center
125	Mendocino Coast District Hospital	262	Sierra View District Hospital
126	Ukiah Valley Medical center – Hospital Drive	263	Tulare District Hospital
127	Memorial Hospital of Los Banos	264	Sonora Regional Medical Center – Green ley
128	Mercy Medical Center Merced – Community Campus	265	Community Memorial Hospital – San Buenaventura
129	Surprise Valley Community Hospital	266	Ventura County Medical Center
130	Modoc Medical Center	267	Los Robles Hospital and Medical Center
131	Mammoth Hospital	268	Ojai Valley Community Hospital
132	Community Hospital of the Monterey Peninsula	269	St. John's Pleasant Valley Hospital
133	Salinas Valley Memorial Hospital	270	Simi Valley Hospital and Healthcare Services - Sycamore
134	Natividad Medical Center	271	St. John's Regional Medical Center
135	Queen of the Valley Hospital	272	Woodland Memorial Hospital
136	St. Helena Hospital	273	Sutter Davis Hospital
137	Sierra Nevada Memorial Hospital	274	Rideout Memorial Hospital

This table shows the case numbers assigned to each safety-net hospital included in the study. These case numbers are used again in Appendix B.

Appendix B: Hospital Data for Baseline Year of 2000 in U.S. Real Dollars

Case	Unemployment X_1	Median Household Income X_2	Gross Profit Margin X_3	Efficiency Ratio X_4	Operating Margin X_5	Excess Margin X_6	Salary & Benefit Expense/Full-time Equivalent X_7	Hospital Status (Open = 1, Closed = 0) Y
1	0.058	-$2,183.52	0.750	0.250	-0.132	0.050	$75,403	1
2	0.058	-$2,183.52	0.735	0.262	0.058	-0.018	$101,947	1
3	0.058	-$2,183.52	0.431	0.560	0.093	0.001	$94,169	1
4	0.058	-$2,183.52	0.773	0.224	0.033	0.059	$102,557	1
5	0.058	-$2,183.52	0.784	0.213	0.001	0.007	$78,932	1
6	0.058	-$2,183.52	0.763	0.235	0.045	0.084	$106,600	1
7	0.059	-$1,884.00	0.652	0.340	0.087	-0.072	$72,259	1
8	0.060	$710.59	0.567	0.433	-0.018	-0.035	$48,126	1
9	0.060	$710.59	0.821	0.177	0.008	0.000	$68,779	1
10	0.060	$710.59	0.724	0.272	0.023	0.032	$60,036	1
11	0.060	$710.59	0.749	0.248	0.036	-0.039	$70,322	1
12	0.075	-$1,339.05	0.631	0.365	0.044	0.004	$62,920	1
13	0.063	$1,659.29	0.648	0.346	-0.028	-0.038	$54,111	1
14	0.055	-$3,170.03	0.796	0.201	-0.186	0.222	$109,191	1
15	0.055	-$3,170.03	0.280	0.700	-0.418	-0.004	$102,094	1
16	0.055	-$3,170.03	0.721	0.273	-0.014	-0.073	$98,495	1
17	0.055	-$3,170.03	0.795	0.203	0.015	-0.080	$106,234	1
18	0.055	-$3,170.03	0.798	0.202	0.071	0.016	$91,337	1
19	0.046	$879.62	0.664	0.332	0.033	-0.071	$64,141	1
20	0.059	$3,237.61	0.567	0.429	0.108	0.007	$56,839	1

21	0.059	$3,237.61	0.735	0.261	0.010	0.014	$64,347	1
22	0.065	-$2,631.35	0.466	0.509	0.055	-0.138	$30,010	1
23	0.065	-$2,631.35	0.688	0.306	0.011	0.067	$59,481	1
24	0.065	-$2,631.35	0.546	0.446	-0.097	-0.072	$44,754	1
25	0.065	-$2,631.35	0.723	0.273	0.042	-0.387	$65,324	1
26	0.057	$1,642.46	0.541	0.456	-0.035	-0.005	$44,081	1
27	0.051	-$1,929.94	0.651	0.344	-0.084	-0.115	$44,590	1
28	0.051	-$1,929.94	0.139	0.854	-0.240	0.004	$46,665	1
29	0.051	-$1,929.94	0.728	0.271	0.102	-0.164	$58,894	1
30	0.051	-$1,929.94	0.735	0.262	0.024	-0.026	$50,910	1
31	0.082	$4,474.51	0.761	0.234	0.023	0.030	$40,998	1
32	0.082	$4,474.51	0.660	0.334	-0.013	0.014	$52,272	1
33	0.043	-$3,532.72	0.457	0.533	0.084	-0.010	$67,769	1
34	0.043	-$3,532.72	0.213	0.787	-0.176	0.048	$39,402	1
35	0.063	-$2,818.42	0.655	0.331	0.031	-0.035	$43,329	1
36	0.063	-$2,818.42	0.790	0.206	0.115	-0.065	$66,644	1
37	0.063	-$2,818.42	0.519	0.471	-0.248	0.078	$73,032	1
38	0.063	-$2,818.42	0.673	0.316	-0.055	-0.058	$41,126	1
39	0.063	-$2,818.42	0.768	0.229	0.149	-0.040	$68,761	1
40	0.063	-$2,818.42	0.612	0.387	0.063	-0.019	$56,378	1
41	0.063	-$2,818.42	0.811	0.186	0.054	0.035	$63,433	1
42	0.063	-$2,818.42	0.535	0.464	-0.030	0.140	$46,628	1
43	0.017	$2,811.00	0.193	0.686	-0.427	-0.438	$36,805	0
44	0.060	-$4,489.43	0.374	0.618	0.001	-0.014	$30,290	1
45	0.060	-$4,489.43	0.776	0.222	0.056	-0.005	$63,577	1
46	0.060	-$4,489.43	0.562	0.436	0.079	-0.009	$52,189	1
47	0.070	-$3,569.92	0.680	0.310	-0.027	0.043	$69,749	1
48	0.070	-$3,569.92	0.622	0.370	-0.059	-0.075	$80,570	1
49	0.004	-$2,103.00	0.245	0.477	0.083	-0.074	$28,047	0
50	0.045	-$2,370.58	0.618	0.370	0.196	0.065	$58,286	1
51	0.064	-$2,272.84	0.722	0.278	0.020	0.031	$51,919	1
52	0.064	-$2,272.84	0.706	0.288	-0.028	0.062	$66,974	1
53	0.064	-$2,272.84	0.260	0.739	-0.070	0.038	$52,648	1
54	0.064	-$2,272.84	0.769	0.228	0.022	0.048	$67,751	1
55	0.064	-$2,272.84	0.779	0.221	-0.081	0.064	$50,678	1
56	0.064	-$2,272.84	0.539	0.453	-0.079	0.116	$68,470	1
57	0.064	-$2,272.84	0.814	0.175	-0.104	0.302	$70,616	1
58	0.064	-$2,272.84	0.716	0.275	-0.032	0.255	$70,257	1
59	0.064	-$2,272.84	0.854	0.144	-0.055	0.313	$70,249	1
60	0.064	-$2,272.84	0.739	0.254	-0.116	0.422	$61,387	1
61	0.064	-$2,272.84	0.817	0.183	-0.014	0.076	$55,418	1
62	0.064	-$2,272.84	0.829	0.169	0.217	0.136	$47,864	1
63	0.064	-$2,272.84	0.794	0.204	-0.004	0.034	$55,821	1
64	0.064	-$2,272.84	0.832	0.168	-0.008	0.057	$79,144	1
65	0.064	-$2,272.84	0.782	0.215	-0.024	0.073	$60,723	1
66	0.064	-$2,272.84	0.713	0.279	-0.004	0.262	$53,052	1
67	0.064	-$2,272.84	0.740	0.260	0.017	0.014	$65,262	1
68	0.064	-$2,272.84	0.841	0.157	0.065	0.026	$62,293	1
69	0.064	-$2,272.84	0.795	0.200	-0.016	0.038	$54,744	1
70	0.014	-$233.00	0.346	0.630	-0.212	-0.354	$38,561	0
71	0.064	-$2,272.84	0.807	0.190	-0.070	0.056	$67,237	1
72	-0.003	$83.00	0.631	0.345	-0.263	-0.355	$44,827	0
73	0.064	-$2,272.84	0.813	0.186	-0.007	-0.003	$58,805	1
74	0.064	-$2,272.84	0.846	0.152	0.113	0.000	$72,317	1
75	0.064	-$2,272.84	0.781	0.214	-0.060	-0.120	$70,876	1
76	0.064	-$2,272.84	0.735	0.261	-0.027	0.092	$68,310	1
77	0.064	-$2,272.84	0.801	0.189	-0.081	-0.027	$57,944	1
78	0.064	-$2,272.84	0.807	0.189	0.030	-0.004	$65,157	1
79	0.064	-$2,272.84	0.814	0.183	-0.009	-0.019	$56,617	1
80	0.064	-$2,272.84	0.815	0.185	0.050	-0.063	$69,515	1
81	0.064	-$2,272.84	0.805	0.193	-0.107	0.110	$66,830	1
82	0.064	-$2,272.84	0.756	0.238	0.020	0.160	$50,302	1
83	0.064	-$2,272.84	0.801	0.198	-0.044	-0.122	$72,593	1
84	0.064	-$2,272.84	0.647	0.339	-0.045	0.146	$53,450	1
85	0.064	-$2,272.84	0.749	0.251	0.123	-0.044	$63,336	1
86	0.064	-$2,272.84	0.725	0.273	0.018	-0.002	$64,046	1
87	0.064	-$2,272.84	0.900	0.098	0.044	0.060	$71,327	1
88	0.064	-$2,272.84	0.844	0.154	0.028	0.056	$63,515	1
89	0.064	-$2,272.84	0.744	0.251	0.073	-0.002	$79,254	1

90	0.064	-$2,272.84	0.788	0.210	0.108	-0.030	$72,577	1
91	0.064	-$2,272.84	0.717	0.278	-0.019	-0.046	$62,897	1
92	0.064	-$2,272.84	0.810	0.188	0.030	-0.055	$68,029	1
93	0.064	-$2,272.84	0.808	0.189	0.076	-0.064	$61,664	1
94	0.064	-$2,272.84	0.730	0.267	-0.003	-0.008	$70,461	1
95	0.064	-$2,272.84	0.838	0.159	0.117	0.125	$52,979	1
96	0.064	-$2,272.84	0.820	0.178	0.044	-0.099	$63,015	1
97	0.013	$1,386.00	0.584	0.412	-0.134	0.095	$44,944	0
98	0.064	-$2,272.84	0.704	0.294	-0.004	0.051	$67,133	1
99	0.013	-$3.00	0.514	0.481	-0.255	-0.090	$29,801	0
100	0.064	-$2,272.84	0.615	0.365	-0.163	0.073	$61,874	1
101	0.064	-$2,272.84	0.742	0.255	0.061	0.043	$62,347	1
102	0.064	-$2,272.84	0.725	0.268	0.021	-0.095	$68,787	1
103	0.064	-$2,272.84	0.722	0.278	-0.060	-0.030	$62,502	1
104	0.064	-$2,272.84	0.817	0.182	0.019	-0.042	$70,340	1
105	0.064	-$2,272.84	0.761	0.234	-0.066	0.011	$61,450	1
106	0.064	-$2,272.84	0.689	0.304	-0.075	-0.078	$41,108	1
107	0.064	-$2,272.84	0.650	0.345	0.058	0.039	$70,558	1
108	-0.003	$83.00	0.728	0.271	-0.108	-0.018	$53,249	0
109	0.064	-$2,272.84	0.765	0.233	-0.024	0.014	$60,498	1
110	0.064	-$2,272.84	0.760	0.237	0.001	0.019	$56,526	1
111	0.064	-$2,272.84	0.785	0.215	-0.048	-0.222	$53,036	1
112	0.064	-$2,272.84	0.815	0.185	0.117	0.059	$88,006	1
113	0.064	-$2,272.84	0.797	0.203	0.001	0.046	$66,578	1
114	0.064	-$2,272.84	0.845	0.155	0.029	0.008	$62,047	1
115	0.064	-$2,272.84	0.818	0.175	0.027	-0.001	$61,843	1
116	0.064	-$2,272.84	0.547	0.446	-0.507	-0.084	$74,184	1
117	0.064	-$2,272.84	0.369	0.622	-0.685	-0.166	$71,590	1
118	-0.003	$3,450.00	0.442	0.543	-0.268	-0.267	$62,548	0
119	0.064	-$2,272.84	0.494	0.506	-0.495	-0.104	$74,603	1
120	0.062	-$3,087.99	0.623	0.376	0.015	-0.006	$48,023	1
121	0.041	-$568.45	0.755	0.242	0.098	-0.038	$97,715	1
122	0.041	-$568.45	0.728	0.266	0.082	-0.117	$98,908	1
123	0.045	-$1,176.47	0.265	0.717	-0.114	-0.068	$37,402	1
124	0.048	-$3,026.48	0.668	0.332	0.114	-0.017	$71,732	1
125	0.048	-$3,026.48	0.564	0.429	0.000	-0.009	$64,960	1
126	0.048	-$3,026.48	0.698	0.299	0.021	-0.046	$62,952	1
127	0.070	-$6,484.55	0.738	0.261	0.013	0.245	$65,661	1
128	-0.083	-$6,484.55	0.757	0.239	0.073	0.004	$68,652	1
129	0.044	-$475.88	-0.049	1.040	-0.116	0.038	$33,085	1
130	0.044	-$475.88	0.196	0.788	-0.278	0.111	$40,905	1
131	0.042	-$1,670.25	0.265	0.720	-0.076	0.038	$65,818	1
132	0.047	-$2,020.79	0.596	0.399	0.085	0.048	$102,346	1
133	0.047	-$2,020.79	0.592	0.408	0.042	-0.054	$95,827	1
134	0.047	-$2,020.79	0.690	0.300	-0.043	-0.001	$87,101	1
135	0.046	$1,444.52	0.736	0.261	0.042	-0.127	$88,178	1
136	0.046	$1,444.52	0.749	0.249	-0.063	0.001	$80,521	1
137	0.057	-$4,574.69	0.692	0.305	0.039	-0.184	$81,180	1
138	0.057	-$4,574.69	0.398	0.580	0.011	0.032	$65,223	1
139	0.050	-$5,263.09	0.640	0.359	0.018	-0.011	$64,600	1
140	0.050	-$5,263.09	0.746	0.252	-0.163	-0.338	$58,337	1
141	0.050	-$5,263.09	0.783	0.217	0.006	-0.047	$66,277	1
142	0.015	-$299.00	0.147	0.671	-0.531	0.134	$40,562	0
143	0.050	-$5,263.09	0.764	0.230	-0.133	0.080	$63,329	1
144	0.050	-$5,263.09	0.810	0.190	0.023	0.023	$76,917	1
145	0.050	-$5,263.09	0.763	0.234	-0.027	0.033	$69,486	1
146	0.050	-$5,263.09	0.600	0.384	0.049	-0.120	$71,396	1
147	0.050	-$5,263.09	0.742	0.256	0.068	0.001	$59,193	1
148	0.050	-$5,263.09	0.705	0.294	0.072	-0.007	$60,830	1
149	0.008	$1,818.00	0.395	0.604	-0.531	-0.762	$29,439	0
150	0.050	-$5,263.09	0.816	0.183	0.051	0.048	$67,973	1
151	0.050	-$5,263.09	0.732	0.261	0.087	-0.051	$73,656	1
152	0.050	-$5,263.09	0.756	0.244	0.116	-0.008	$62,470	1
153	0.050	-$5,263.09	0.807	0.193	0.009	0.132	$55,875	1
154	0.050	-$5,263.09	0.814	0.186	0.075	0.087	$69,065	1
155	0.050	-$5,263.09	0.697	0.296	0.054	-0.107	$70,550	1
156	0.050	-$5,263.09	0.724	0.271	0.088	-0.112	$68,304	1
157	0.050	-$5,263.09	0.750	0.247	0.082	-0.032	$61,060	1
158	0.050	-$5,263.09	0.792	0.206	0.050	0.058	$61,174	1
159	0.056	-$2,766.16	0.712	0.282	0.046	-0.105	$86,067	1

160	0.056	-$2,766.16	0.737	0.255	0.151	0.037	$84,654	1
161	0.072	-$3,540.89	0.442	0.544	-0.054	0.046	$39,699	1
162	0.072	-$3,540.89	0.448	0.549	0.004	-0.003	$55,743	1
163	0.072	-$3,540.89	0.458	0.534	-0.055	0.011	$44,226	1
164	0.074	-$5,485.00	0.736	0.264	-0.065	-0.016	$59,637	1
165	0.074	-$5,485.00	0.833	0.167	0.092	0.044	$70,068	1
166	0.074	-$5,485.00	0.796	0.200	-0.012	-0.062	$62,640	1
167	0.074	-$5,485.00	0.676	0.319	-0.049	-0.015	$56,417	1
168	0.074	-$5,485.00	0.829	0.171	-0.101	0.007	$73,909	1
169	0.074	-$5,485.00	0.643	0.356	-0.023	-0.013	$64,525	1
170	0.074	-$5,485.00	0.772	0.220	-0.017	0.010	$58,712	1
171	0.074	-$5,485.00	0.802	0.198	0.119	0.037	$75,647	1
172	0.074	-$5,485.00	0.687	0.310	-0.160	0.122	$52,564	1
173	0.074	-$5,485.00	0.747	0.245	-0.110	0.008	$60,937	1
174	0.074	-$5,485.00	0.702	0.288	0.036	0.083	$58,677	1
175	0.074	-$5,485.00	0.703	0.286	-0.183	-0.042	$63,763	1
176	0.059	-$6,936.31	0.798	0.201	0.089	-0.108	$91,879	1
177	0.059	-$6,936.31	0.779	0.220	0.087	-0.134	$90,978	1
178	0.059	-$6,936.31	0.742	0.257	0.020	-0.072	$82,183	1
179	0.059	-$6,936.31	0.761	0.236	0.087	0.007	$87,165	1
180	0.059	-$6,936.31	0.740	0.257	0.168	-0.090	$89,351	1
181	0.071	-$5,852.79	0.606	0.387	-0.035	-0.054	$75,543	1
182	0.074	-$6,425.40	0.849	0.147	0.213	-0.163	$44,650	1
183	0.074	-$6,425.40	0.405	0.595	-0.116	0.201	$52,454	1
184	0.074	-$6,425.40	0.712	0.288	0.148	0.003	$50,834	1
185	0.074	-$6,425.40	0.765	0.231	-0.013	0.180	$51,789	1
186	0.074	-$6,425.40	0.318	0.659	-0.441	-0.044	$48,732	1
187	0.074	-$6,425.40	0.649	0.347	0.000	-0.022	$62,975	1
188	0.074	-$6,425.40	0.762	0.236	0.038	-0.054	$67,533	1
189	0.074	-$6,425.40	0.788	0.209	-0.028	-0.035	$60,077	1
190	0.074	-$6,425.40	0.784	0.214	0.028	-0.050	$68,985	1
191	0.074	-$6,425.40	0.735	0.262	0.042	-0.055	$67,487	1
192	0.074	-$6,425.40	0.761	0.234	0.011	0.026	$49,657	1
193	0.074	-$6,425.40	0.616	0.387	0.054	0.428	$40,446	1
194	0.074	-$6,425.40	0.681	0.313	-0.014	0.145	$47,608	1
195	0.074	-$6,425.40	0.763	0.232	0.062	-0.041	$46,520	1
196	0.074	-$6,425.40	0.639	0.337	0.031	0.076	$59,598	1
197	0.051	-$4,802.84	0.789	0.211	-0.010	0.078	$74,492	1
198	0.051	-$4,802.84	0.695	0.305	-0.038	-0.009	$58,727	1
199	0.051	-$4,802.84	0.755	0.241	0.024	-0.023	$67,811	1
200	0.051	-$4,802.84	0.751	0.247	0.006	-0.052	$55,050	1
201	0.051	-$4,802.84	0.778	0.220	0.012	-0.001	$65,617	1
202	0.051	-$4,802.84	0.732	0.265	0.013	0.012	$62,547	1
203	0.051	-$4,802.84	0.716	0.277	-0.065	-0.128	$68,518	1
204	0.051	-$4,802.84	0.758	0.236	-0.020	0.164	$53,552	1
205	0.051	-$4,802.84	0.703	0.294	0.083	0.167	$62,687	1
206	0.051	-$4,802.84	0.703	0.291	-0.040	0.021	$65,936	1
207	0.051	-$4,802.84	0.565	0.433	0.136	0.004	$79,756	1
208	0.051	-$4,802.84	0.795	0.202	0.021	-0.056	$66,073	1
209	0.051	-$4,802.84	0.682	0.315	-0.018	0.000	$62,627	1
210	0.051	-$4,802.84	0.683	0.313	0.076	0.032	$64,844	1
211	0.047	-$1,587.47	0.711	0.283	0.145	-0.001	$93,212	1
212	0.047	-$1,587.47	0.559	0.441	-0.185	0.077	$89,991	1
213	0.047	-$1,587.47	0.752	0.244	-0.049	-0.053	$87,179	1
214	0.047	-$1,587.47	0.739	0.261	-0.291	-0.009	$85,252	1
215	0.047	-$1,587.47	0.758	0.240	-0.012	-0.053	$95,005	1
216	0.047	-$1,587.47	0.525	0.475	0.109	-0.027	$90,372	1
217	0.072	-$2,792.52	0.819	0.180	0.053	0.041	$67,417	1
218	0.072	-$2,792.52	0.850	0.150	0.054	-0.066	$63,303	1
219	0.072	-$2,792.52	0.371	0.611	-0.090	0.061	$68,293	1
220	0.072	-$2,792.52	0.801	0.197	0.055	-0.045	$78,619	1
221	0.072	-$2,792.52	0.745	0.251	0.174	-0.055	$78,931	1
222	0.072	-$2,792.52	0.893	0.107	0.250	-0.023	$81,438	1
223	0.047	-$3,248.35	0.810	0.184	-0.015	-0.043	$66,100	1
224	0.047	-$3,248.35	0.843	0.153	0.056	0.066	$85,342	1
225	0.007	$1,637.00	0.064	0.936	-0.536	-0.060	$46,907	0
226	0.047	-$3,248.35	0.861	0.139	0.122	0.017	$77,778	1
227	0.046	-$2,145.89	0.315	0.685	-0.007	0.049	$84,513	1
228	0.041	-$2,967.76	0.707	0.293	0.145	0.060	$70,400	1

229	0.041	-$2,967.76	0.463	0.534	-0.036	0.050	$49,906	1
230	0.041	-$2,967.76	0.765	0.231	0.057	-0.028	$61,951	1
231	0.041	-$2,967.76	0.693	0.304	0.104	0.035	$74,408	1
232	0.041	-$2,967.76	0.653	0.347	0.032	0.114	$78,994	1
233	0.007	$87.00	0.645	0.355	-0.223	-0.297	$40,701	0
234	0.061	-$4,850.93	0.812	0.174	-0.064	0.052	$116,077	1
235	0.061	-$4,850.93	0.781	0.218	0.107	-0.063	$96,608	1
236	-0.020	-$8,205.00	0.674	0.309	-0.204	-0.305	$77,517	0
237	0.061	-$4,850.93	0.564	0.429	-0.245	-0.057	$105,518	1
238	0.061	-$4,850.93	0.778	0.215	0.002	-0.006	$100,555	1
239	0.054	-$5,928.43	0.775	0.223	0.092	-0.003	$99,792	1
240	0.054	-$5,928.43	0.830	0.160	-0.031	0.047	$94,455	1
241	0.072	-$1,651.38	0.359	0.621	-0.105	0.083	$36,870	1
242	0.072	-$1,651.38	0.856	0.141	-0.664	0.148	$68,150	1
243	0.072	-$1,651.38	0.744	0.255	0.076	-0.099	$86,446	1
244	0.061	$1,844.34	0.512	0.484	0.046	-0.060	$80,855	1
245	0.061	$1,844.34	0.538	0.457	0.048	0.006	$60,913	1
246	0.054	-$4,700.02	0.736	0.260	-0.043	0.025	$102,971	1
247	0.054	-$4,700.02	0.790	0.208	-0.033	-0.066	$89,077	1
248	0.054	-$4,700.02	0.829	0.169	0.156	0.039	$86,753	1
249	0.053	-$3,732.87	0.599	0.397	-0.093	0.090	$88,299	1
250	0.053	-$3,732.87	0.580	0.416	-0.125	0.089	$62,506	1
251	0.053	-$3,732.87	0.770	0.226	0.036	-0.035	$100,515	1
252	0.053	-$3,732.87	0.683	0.315	-0.067	0.009	$71,374	1
253	-0.001	$1,839.00	0.569	0.431	-0.216	0.303	$60,509	0
254	0.053	-$3,732.87	0.599	0.387	-0.319	0.160	$66,617	1
255	0.073	-$4,688.08	0.877	0.123	0.039	-0.030	$83,016	1
256	0.073	-$4,688.08	0.784	0.212	-0.005	-0.020	$59,075	1
257	0.073	-$4,688.08	0.798	0.199	0.150	-0.018	$68,169	1
258	0.073	-$4,688.08	0.699	0.301	0.039	-0.059	$57,126	1
259	0.068	$12.11	0.703	0.296	0.137	-0.077	$84,407	1
260	0.068	-$2,506.52	0.355	0.645	-0.057	0.033	$39,285	1
261	0.060	-$2,498.51	0.712	0.284	0.020	-0.050	$57,362	1
262	0.060	-$2,498.51	0.769	0.227	0.066	-0.047	$55,156	1
263	0.060	-$2,498.51	0.633	0.363	-0.040	0.093	$51,626	1
264	0.063	$779.27	0.743	0.252	0.015	0.052	$60,700	1
265	0.050	-$5,362.95	0.816	0.183	0.021	0.015	$65,586	1
266	0.050	-$5,362.95	0.604	0.393	-0.428	0.024	$68,110	1
267	0.050	-$5,362.95	0.762	0.244	0.129	-0.032	$87,139	1
268	0.050	-$5,362.95	0.748	0.252	-0.012	-0.042	$55,776	1
269	0.050	-$5,362.95	0.772	0.226	0.039	-0.065	$74,008	1
270	0.050	-$5,362.95	0.736	0.254	-0.087	0.042	$52,722	1
271	0.050	-$5,362.95	0.744	0.252	-0.026	-0.019	$77,486	1
272	0.056	-$4,541.15	0.753	0.245	0.070	-0.048	$77,798	1
273	0.056	-$4,541.15	0.717	0.280	0.151	0.042	$85,692	1
274	0.080	-$99.75	0.628	0.367	0.000	-0.129	$65,892	1

This table shows the values of each variable used in the study. The first row is the description of each variable used in this study. The second row is the variable symbol assigned to each variable. The first column is the case number taken from Appendix A. The data for each variable was the result of the formula used.

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AN EMPIRICAL INVESTIGATION OF SUB DIMENSIONS OF HIGH PERFORMANCE WORK SYSTEMS THAT PREDICT ORGANIZATIONAL INNOVATION

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ABSTRACT

Driven by calls for empirical research, this paper aims to contribute to a deeper understanding of the specific sub-dimensions of high performance work systems (HPWS) that drive organizational innovation. To this end, data were gathered from a sample of 240 motel establishments in the USA. In sum, the paper found empirical evidence indicating that only two out of three sub-dimensions of HPWS predicted organizational innovation. Specifically, these two sub-dimensions relate to "Administrative HR" practices and "Merit-Based HR Evaluation" sub-dimensions. Finally, the academic and managerial significance of the study's outcome are presented.

JEL: MOO, M1, M2

KEYWORD: Hierarchical regression, Organizational innovation, High performance work systems

INTRODUCTION

It is well documented that there is a positive link between a firm's human resource practices subsumed under the rubrics of high performance work system (HPWS) practices, and various organizational outcomes (Huselid, 1995; Warech & Tracey, 2004) including organizational innovation (Messersmith & Guthrie, 2010; Carldon, Upton & Seaman, 2006; Soutaris, 2002; Hostager et al., 1998), productivity (MacDuffie, 1995; Guthrie, 2001, employee turnover (Way, 2002; Guthrie, 2001; Arthur, 1995), and financial performance (Huselid, 1995; Lee & Miller, 1995).

With specific focus on organizational innovation, evidently managers (Moosa & Panurach, 2008) and academics (Messersmith & Guthrie, 2010) are passionately interested in the predictors of organizational innovation, and that is why research employs various model specification of high performance work systems to predict organizational innovation (Messersmith & Guthrie, 2010; Guthrie, 2001). Evidently, even though previous research has sharpened scholarly understanding of the impact of high performance work system (HPWS) on organizational innovation (OI), research gaps still remain especially in the hospitality industry where scholars attest to serious research gaps on hospitality innovation (Rogers, 2007; Chan et al., 1998). For example, Chang, Gong and Shum (2011: 813) observed that "although there is some support for the importance of HRM in promoting hospitality innovation, as mentioned above, rigorous and systematic investigation is lacking." In addition, they stated that "…little empirical research has been conducted of the effects of HRM practices on hospitality innovation." Evidently, this is a critical research void.

However, the present study focuses on yet another specific research gap in the extant literature related to the observation that previous research has assumed that all the sub-dimensions of the HPWS construct can predict organizational outcomes (Martin-Tapia, Aragon-Correa & Guthrie, 2009; Messersmith & Guthrie, 2010). Evidently, because this assumption is questionable (Werner, 2011), it has become a critical research gap to be filled (Werner, 2011); namely: researchers should empirically investigate the

sub-dimensions of HPWS that predict organizational outcomes such as organizational innovation. To this end, Werner (2011:920) vehemently stated that:

> *Clearly some sub-dimensions of the HPWS are more important than others…future studies should not only focus on refining the construct, but also delve into the sub-dimensions and their effects…*

In response to Werner's (2011: 920) call for research, the purpose of our study was to empirically uncover the specific sub-dimensions of the HPWS construct that would predict organizational innovation (both incremental and radical innovation). Hence, our research objective is to seek answers to the following two sequential research questions posed by (Werner, 2011: 920):

Research Question 1: How many sub-dimensions underlie the HPWS construct?

Research Question 2: How many of the sub-dimensions of HPWS can predict organizational innovation?

The remainder of this paper is structured as follows. The literature review section discusses the salient conceptual and primarily empirical literature linking the extant high performance work practices systems (HPWS) to organizational innovations, thereby building a theoretical platform for the study. Following this, the methodology section presents the data sources and variable measurement issues of the study. Next, the results of the study are compactly articulately presented. Finally, a concluding section wraps up the discussion of the study with the academic and managerial significance compactly presented.

LITERATURE REVIEW

Arguably, organizational innovation is the chief among the drivers of corporate performance, especially in the hospitality industry (e.g., Chang, Gong & Shum, 2011; Ottenbacher & Gnoth, 2005, 2007; Moosa & Panurach, 2008; Ottenbacher & Harrington, 2007; Subramaniam & Youndt, 2005; Lloren-Montes et al. 2005; 2004). As a key strategy variable driving firm performance, organizational innovation enables hospitality managers to perform a wide range of functional operations that allow them to outperform their competitors at a profit (Ottenbacher & Gnoth, 2005; Sharma & Raj, 2003). Clearly then, both radical and incremental innovation are organizational capabilities in that these are business processes that allow a firm's strategic initiatives to be implemented (Amit & Shoemaker, 1993). Compactly stated, by radical innovation we mean breakthrough innovation. Similarly, by incremental innovation we mean discontinuous innovation (Koen et al. 2010). However, as important as innovation is to managers and practitioners, it remains surprising that "hospitality innovation is an understudied area" (Chang, Gong & Shum, 2011: 812), and its predictors are not well understood and researched (Sharma & Raj, 2003). As a consequence of this, hospitality industry managers lean on their hunch for matters that relate to corporate innovation strategic decisions (Ottenbacher & Gnoth, 2005). Thus, in the hospitality industry (Chang, Gong and Shum, 2011), managers (Moosa & Panurach, 2008) and academics (Messersmith & Guthrie, 2010; Tajeddini, 2010) keep searching for the predictors of organizational innovation.

Consequently, the search for the predictors of organizational innovation began to focus on developing conceptual and empirical models of high performance work systems (HPWS) practices on the assumption that HPWS would predict organizational outcomes including innovation (Rogers, 2007). As a system of work practices that are designed to operate holistically rather than individually (Huselid, 1995), HPWS directly impact organizational innovation (Zahra et al., 2000; Hayton, 2005). In reality, however, because HPWS is a multi-dimensional construct (Martin-Tapia, Aragon-Correa & Guthrie, 2009; Huselid, 1995), it should not be expected that all the sub-dimensions of HPWS would have predictive effects on organizational innovation. Given this expectation, calls for empirical research to investigate which sub-

dimensions of HPWS can really predict organizational innovation---started to emerge (Werner, 2011) as indicated in the introduction section of the present study.

It is noteworthy that even though the notion of R&D is well established in the product market (Schumpeter, 1934; Soutaris, 2002), in the service industry R&D takes a different form because of the simultaneous production and consumption of services---whereby, the service consumer is a co-producer of services (Ottenbacher & Harrington, 2007). Specifically, in the hospitality industry as an example, frontline customer contact employees such as waiters and waitresses---are the R&D personnel actively involved in service innovation of the motels. That is, these frontline customer-contact employees interact with customers and receive feedbacks from those customers regarding service gaps. Then, these customer feedbacks become input data for new service development as well as service innovation for the hotel (Moosa & Panurach, 2008).

In this notion of service industry R&D, we note that because the customer-contact employees are dispersed within the hotel in different departments where they provide services to the customers, it then means that the notion of R&D itself is dispersed within the boundaries of the service organization. This phenomenon has been dubbed decentralized R&D by Moosa and Panurach (2008), which is distinct from the notion of centralized R&D of tangible goods (Moosa & Panurach, 2008). Then, the question arises: what is the bottom line of this notion of decentralized R&D? The bottom line demands that decentralized R&D be a strategic priority of managers to identify, articulate, and leverage the bundle of HR practices related to selection, training, performance management, compensation of employees involved in decentralized R&D under the rubrics of the high performance work systems (HPWS) practices. This way, the HR practices subsumed under HPWS will strategically benefit organizational innovation and predict it. Here again, our analysis bumps head-on into our key research question stated above; namely, which sub-dimensions of HPWS will predict organizational innovation (Werner, 2011)?

Yet, from the perspective of the extant global economies characterized by dynamically competitive environments, organizational innovation has become the epicenter of corporate strategy for achieving sustainable competitive advantage (Nonaka, 2007; Spender, 1996) as well as the key for corporate survival (Hurley & Hult, 1998). Undoubtedly, absent organizational knowledge base embedded in employees within the decentralized corporate R&D, organizational innovation will be nonexistent (Cohen & Levinthal, 1990; Nonaka & Takeuchi, 1995). Likewise, absent organizational learning, organizational knowledge base will be nonexistent (Grant, 1996). Then, here again---absent organizational employees embedded in HR practices under the HPWS construct, organizational learning will varnish. Here, we underscore the critical link with high performance work systems (HPWS) practices as a dynamic capability embedded in employees (Huselid, 1995).

Therefore, corporate innovation strategies are embedded in employees and driven by employee knowledge, expertise and commitments as the drivers of value creation and new ideas (Ottenbacher & Harrington, 2007). Accordingly therefore, it should be expected that some sub-dimensions of the HPWS construct will predict organizational innovation but the exact number of HPWS sub-dimensions that can predict organizational innovation remains a black box (Werner, 2011). As such, a two-pronged analytical strategy was employed to answer the research questions of this study. First, a data reduction algorithm specifically principal component analysis (PCA), was used to determine the number of sub-dimensions of HPWS underlying our raw data. Second, the resultant sub-dimensions of HPWS were then entered in the organizational innovation prediction equation, after controlling for other potential predictor of organizational innovation as shown in the methodology section.

METHODOLOGY

Data Collection

Indeed, this study is a part of a large project in which data were gathered on selected marketing and management constructs. By December 2011, one of the authors of this study requested and generously received a database of 1, 503 hotels classified as "motels" from the Center for Business and Economics Research, the University of Alabama, Tuscaloosa, Alabama. By this process, motels were our sampling unit and thus the unit of analysis of this study. Then, a random sample of 599 motels was drawn from this list of 1, 503 motel. These 599 motels had the following pieces of information: motel names and physical address, the executives first and last names, phone numbers and website (if available).

Using the phone numbers on this list, we contacted some of the executives designated as owner/manager, president, director, and other such designees---prior to mailing out our questionnaires to them. The call served a dual purpose. First, it allowed us to confirm the currency and reliability of information on each of the 599 motels. Second, it allowed the confirmation of the potential respondents for the questionnaires as some motels had more than one executive. For example, some had presidents and directors concurrently, yet these were different individuals. Hence, we asked that only one executive should fill out the questionnaire on behalf of each motel. Again this process confirms that the unit of analysis for the study is the motel, not the executive representing the motel.

Consequently, using a first class mail, we sent the following to the potential executive respondent: (1) the questionnaire survey, (2) a cover letter explaining the purpose of the study and its benefits to the motel sector in the State of Alabama, (3) a pre-paid self-addressed envelope to return the completed questionnaire. Then, two weeks later, we had 200 completed and returned questionnaires on hand. At this juncture, we made more calls and sent *Thank You cards* to both those who responded and those who did not yet respond. Because we observed that most of the respondents were of India origin, we gave them post cards that reflect their rich Indian heritage in the hope that this strategy would increase the response rate. Surprisingly, we received additional 59 completed and returned questionnaires. Altogether, at this stage, we had 259 questionnaires. Of this number, 19 were not useable due to errors, omissions, and the like. Thus, we had 240 usable questionnaires---a response rate of 40% (240/599) which may be ascribed to the steps described above. Finally, using some demographic variable along with some questionnaire items of the study variables, a t-test suggested no statistically significant differences between the first and the second waves of responses to the survey.

Finally, a recurrent problem of postal surveys particularly in the hospitality industry is low and non-response rates. Research by Keegan and Lucas (2005) examined this issue and offered suggestions. Therefore, we juxtaposed Keegan and Lucas (2005) with other works including Newby, Watson, and Woodliffe (2003), to maximize response rate for this study in the following ways: (1) a binding anonymity contract was established between the respondents and us by agreeing that their names and the names of their establishment were not on the questionnaire, nor revealed to a third party, (2) the questionnaire contained no sensitive information (dollar amounts of sales, yearly ROI, etc), (3) the support of the local chapter of the American Hotel & Lodging Association, was obtained confidentially, and (4) benefits of the study to the hotel industry in the State of Alabama, were underscored.

Variable Measurement

Organizational Innovation (OI): As discussed above, the dependent variable of this study was organizational innovation (OI) with dual components; namely, incremental and radical innovation. These were measured using item developed by Subramaniam and Youndt (2005) as recently used by Chang, Gong and Shum (2011, 814, 818). On this instrument, respondents were asked to compare their

companies with their competitors on each of the statements on incremental and radical innovation. Each of those six five-point Likert items were anchored as follows: "1" represents 0-20% for strongly disagree, "2" represents 21-40% for disagree, "3" 41-60% for neutral, "4" 61-80% for agree, and "5" represents 81-100% for strongly agree. Of course, this form of measurement is not new to empirical research in management as can be found elsewhere (Martin-Tapia, Aragon-Correa & Guthrie, 2009).

High Performance Work Systems (HPWS) Practices : In this study, we conceptualized and then measured high performance work systems (HPWS) practices by drawing from some past landmark research on it (e.g., Huselid, 1995; Martin-Tapia et al., 2009; Wright et al., 2005; Shih, Chiang & Hsu, 2006). This way, the present study joins other works that have endorsed this aggregation approach to HR practices tied to HPWS (Huselid, 1995; Martin-Tapia et al., 2009; Wright et al. 2001). Concurring with this approach, Messersmith and Guthrie (2010: 242) measured HPWS practices as "a set or bundle of human resource management practices related to selection, training, performance management, compensation, and information sharing that are designed to attract, retain, and motivate employees."

Control Variables: To rule out the potential confounding effects of some variables that may have predictive effects on organizational variables (OI), some theoretically suggested control variables were directly entered into the estimation model: firm size and firm age. Focusing on firm size in a particular industry, the amount of resources small firms deploy towards organizational innovation may not be proportionate to their size as they may deploy more resources relative to their size (Rosen, 1991). Second, even though large firms may deploy more resources to R&D, production equipment, and marketing campaigns relative to small firms, they typically do so by selecting less risky projects that may entail less radical innovation (Rosen, 1991). Therefore, logarithmic function of total employees was the index of firm size used this study (Blonigen & Taylor, 2000). Likewise, firm age was measured by the natural logarithm of the number of years a firm has been in business. Our theoretical justification follows previous works suggesting that younger firms typically pursue more radical innovations than older firms (Huergo & Jaumandreu, 2004; van Geenhuizen & Gonzalez, 2007).

Statistical Analysis

Principal Component Analysis of HPWS: As was explicitly discussed in the research objective of this study, it was imperative to first ascertain the number of sub-dimensions underlying the HPWS construct. Once this number is ascertained, each HPWS sub-dimension was then regressed on organizational innovation (OI) and then tested for its statistical significance as a predictor of OI, as called by Werner (2011: 920). Therefore, a principal components analysis (PCA) was conducted to determine how many sub-dimensions or components were underlying the High Performance Work Systems (HPWS) practices data set. However, prior to the PCA, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.814) and Bartlett's Test of Sphericity (X^2=3585.2/78, p<0.000), suggested that the HPWS data set was not an identity matrix, and should then be subjected to PCA. As reported in Table 2, guided by Varimax rotation and Eigenvalue >1 criteria, a three-factor solution that explained 83.13% of the variance in the HPWS data set (α =0.88), emerged from the PCA.

Hierarchical Multiple Regression (HMR) Models: In the framework of this sequential statistical model estimation, once the PCA indicated that our HPWS data set has three sub-dimensions, the next step was to fit three hierarchical multiple regression (HMR) analysis models, so that each of the three HPWS sub-dimensions is tested for its specific statistical power to predict organizational innovation (IO), after controlling for firm size and firm age as potential rivalry predictors of OI, as discussed above. The three hierarchical multiple regression models fitted were as follows.

$$I = \beta_0 + \beta_1 FS + \beta_2 FA + \beta_3 HPWS_1 + e_i \quad (1)$$

$$I = \beta_0 + \beta_1 FS + \beta_2 FA + \beta_3 HPWS_2 + e_i \quad (2)$$

$$I = \beta_0 + \beta_1 FS + \beta_2 FA + \beta_3 HPWS_3 + e_i \quad (3)$$

where β_0 is the intercept, I is organizational innovation, *FS* is firm size, *FA* is firm age, *HPWS* is high performance work systems construct subscripted 1, 2, and 3 corresponding to HPWS sub-dimensions 1, 2, and 3, respectively, and $e_i, i = 1,2 \ldots N(240)$, is white noise error term. Hierarchically, the estimation proceeded as follows. In each of these three HMR models fitted, the variance accounted-for by firm size and firm age was controlled by entering them as a block in step 1 of the analysis, and then main effect (that is the i-th sub-dimension of HPWS) was entered in step 2 of respective models, as shown in Table 3.

EMPIRICAL RESULTS

The demographic characteristics of the respondents are reported in Table 1, 59 % (males) and 41% (females), and their age ranged from 18 years to 61 and above. About 65% are married. In terms of education, about 48% have bachelor's degree, 21% (Master's), and so on.

Table 1 Demographic Characteristics of the Respondents (N=240)

Gender		**%**
Male		59.0
Female		41.0
Age	18-30	30.19
	31-40	31.00
	41-50	16.39
51-60		20.92
61 and above		1.50
Marital Status		
	Married	64.59
	Single	35.41
Education		
	High School or below	14.31
	University/College Adult Student	12.20
Bachelor's Degree		48.03
	Masters/Doctorate	24.1
	Doctorate	1.36

The demographic characteristics of the respondents are reported in Table 1, 59 % (males) and 41% (females), and their age ranged from 18 years to 61 and above. About 65% are married and about 35% are single. In terms of education, about 14% of the respondents had higher school or less than that, about 12% were college adult students, about 48% had bachelor's degree, 21% (Master's), and only 1.36 % had a doctorate degree.

As reported in Table 2, the rotated components of the HPWS data set revealed that the HPWS has three sub-dimensions (components). To save space, the specific human resource practices of each sub-dimension is clearly stated in Table 2, and thus not catalogued here. Instead, the labels we ascribed to each sub-dimension were discussed. The results of the three hierarchical multiple regression (HMR) models are reported in Table 3. These results are encouraging for the following reasons. First, only two out of the three sub-dimensions of HPWS predict organizational innovation (OI). This result is underscored as it lends solid support to the central objective of this study based on the call for research by Werner (2011); namely, it should be expected (and now empirically shown in this study) that not all sub-dimensions of the HPWS construct predict organizational outcomes (OI in this study). Specifically, of the three sub-dimensions uncovered in this study, only two sub-dimensions predicted organizational innovation after we have accounted for the predictive effects the control variables. We now discuss the statistical significance of each of the three sub-dimensions

Table 2: HPWS Data Set: Rotated Component Matrix: alpha=0.88

HPWS Variables	**Principal Components**		
	1	2	3
1) What percentage of employees gets a promotion giving more importance to their performance than to other factors such as seniority, qualifications, skills, etc.?	0.839		
2) What percentage of employees has joined your firm during the last two years?	0.923		
3) What percentage of the total number of employees hired by your firm in one year receives formal training during their first year in your organization?	0.812		
4) What percentage of employees receives formal training after the first year working for your organization?			0.962
5) What percentage of employees is subject to a formal evaluation of their working performance?			0.967
6) What percentage of employees receives a pay rise linked to the evaluation of their performance?	0.907		
7) What percentage of employees has jobs where performance evaluation is made using an objective measure (e.g. sales volume, number of requests attended objective fulfillment, etc.)?	0.926		
8) What percentage of employees have available incentive plans linked to the organization's profits?	0.800		
9) What percentage of employees own shares or stocks of your company?	0.895		
10) What percentage of employees receives formal information (for example, through an information bulletin or regular meetings) about a wide range of issues relevant for the firm and its operations?	0.881		
11) What percentage of employees regularly has to answer a questionnaire about work climate, attitude or satisfaction?		0.814	
12) What percentage of employees has jobs which are subject to a formal analysis of the workplace and its characteristics?		0.937	
13) What percentage of employees is included in some system or program (e.g. quality circle) in order to be able to participate in the firm's decision-making processes?		0.890	
Eigenvalues	**6.670**	**2.308**	**1.844**
% variance	**47.532**	**20.809**	**14.908**
Cum. Explanation	**47.532**	**68.340**	**83.248**

Table 2 reports the results of a principal components analysis (PCA) conducted to ascertain the number of sub-dimensions or components were underlying the High Performance Work Systems (HPWS) practices data set. Prior to the PCA, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.814) and Bartlett's Test of Sphericity (x^2=3585.2/78, p<0.000), suggested that the HPWS data set was not an identity matrix, and should then be subjected to PCA. As reported in Table 2, guided by Varimax rotation and Eigenvalue >1 criteria, a three-factor solution that explained 83.13% of the variance in the HPWS data set (α=0.88), emerged from the PCA.

Sub-Dimension 1

As reported in Model 1 of Table 3, sub-dimension 1 of HPWS (which is the same as component 1of Table 2), predicted organizational innovation in the framework of hierarchical multiple regression (HMR) analysis. Specifically, hierarchically we entered the control variables as a block in step 1, and then we entered HPWS sub-dimension 1 as the only independent variable of interest in step 2, as detailed in Table 3. As reported in Table 3, notice that by adding HPWS sub-dimension 1 to the estimation model equation, the variance in Organization innovation (OI) accounted-for solely by sub-dimension 1, was highly statistically significant $\Delta R^2 = 0.025;\ \Delta F_{1,236} = 39.8; p < 0.05$. In addition, no variance inflation factor (VIF) reached a value of 2 and above suggested by Neter et al. (1990) at which multicollinearity problems occur in such statistical analysis, and this conclusion applies to sub-dimensions 2 and 3 for models 2 and 3, respectively in Table 3. What then is the substantive meaning of the statistical significance of HPWS sub-dimension 1? As reported in Table 2, we found that this sub-dimension 1 encompassed some typical HR practices such as promotion, formal training, and performance-based incentives. Previous research (Martin-Tapia et al., 2009) labeled this sub-dimension "Administrative HR" practices. Thus, by holding constant the differences in countries of origin and industry types, we followed Martin-Tapia and his colleagues to label this sub-dimension 1 "Administrative HR" practices.

Sub-Dimension 2

As reported in Model 2 of Table 3, HPWS sub-dimension 2 which is the same as component 2 of Table 2, failed to predict organizational innovation (OI). Specifically, in the framework of our hierarchical multiple regression (HMR) analysis, we entered the control variables as a block in step 1 of the analysis. Then, in step 2 of the analysis we entered HPWS sub-dimension 2 and we observed that it failed to predict OI after the variance in OI accounted-for by the set of control variables, were controlled $\Delta R^2 = 0.025;\ \Delta F = 0.210; p > 0.05 = 0.647$. Of course, the t-statistics on HPWS sub-dimension 2 (t=0.458), draws the same conclusion that HPWS sub-dimension 2 failed to predict OI even when the variance of OI accounted-for by HPWS sub-dimension 2, was controlled.

As reported in Table 2, the HR practices subsumed in HPWS sub-dimension 2 are the HR practices related to what we labeled "Work Environment HR" practices such as employee perception of work climate and employee decision-making autonomy. Substantively, we would infer that the failure of sub-dimension 2 to predict OI can be interpreted to mean that managers should strategically avoid or minimize resource deployment related to HPWS sub-dimension 2 which we labeled "Work Environment HR" practices. By this inference, it appears that those Work Environment HR practices may not be among the HR factors that promote OI.

Sub-Dimension 3

As reported in Model 3 of Table 3, sub-dimension 3 (which is the same as component 3 of Table 2), predicted organizational innovation in the framework of hierarchical multiple regression (HMR) analysis.

Table 3 Hierarchical Regression of Variables on Organizational Innovation (n=240)

Model 1					
	Beta (β)	t	Sig.	r^2	Δr^3
Step 1					
Constant	----	8.7	0.000		
Log FAge	0.158	2.45	0.015		
Log FSize	0.022	0.343	0.732		
Step 2					
HPWS Sub-dimension1	**0.377**	**6.314**	**0.000**	**0.025**	**0.025*****
Model 2					
	Beta (β)	t	Sig.	r^2	Δr^3
Step 1					
Constant	----	8.72	0.000		
Log FAge	0.158	2.45	0.015		
Log FSize	0.022	0.343	0.732		
Step 2					
HPWS Sub-dimension2	**0.030**	**0.458**	**0.647**	**0.025**	**0.025** ns
Model 3					
	Beta (β)	t	Sig.	r^2	Δr^3
Step 1					
Constant	----	8.7	0.000		
Log FAge	0.158	2.45	0.015		
Log FSize	0.022	0.343	0.732		
Step 2					
HPWS Sub-dimension3	**0**.030	**2.517**	**0.012**	**0.050**	**0.025** ***

*Table 3 reports the results of each of the three hierarchical regression models fitted for each of the three sub-dimensions of the HPWS construct. In that framework, each of the sub-dimensions was tested for its significance as a unique predictor of organizational innovation (OI). Overall, only two out of the three sub-dimensions of the HPWS appeared as significant predictors of OI. *,**, *** indicate significance at the 10, 5, 1 percent levels respectively, ns indicates non-significant. FAge is firm age, FSize is firm size.*

As shown in Table 3, hierarchically we entered the control variables as a block in step 1, and then we entered HPWS sub-dimension 3 as the only independent variable of interest in step 2. As reported in

Table 3, notice that by adding HPWS sub-dimension 3 to the estimation model equation, the variance in Organization innovation (OI) accounted-for solely by sub-dimension 3, was statistically significant $\Delta R^2 = 0.025;\ \Delta F_{1,236} = 6.3; p < 0.05$. Finally, as reported in Table 2, we found that this sub-dimension 3 was essentially related to "Merit-based HR Evaluation" and we labeled it as such "Merit-base HR Evaluation."

CONCLUSION

The study's concluding remarks are as follows. First, the goal of this study was to respond to the call for research by Werner (2011:290) asking management researchers to empirically ascertain those sub-dimensions of high performance work systems (HPWS) practices that could predict organizational outcomes including organizational innovation. Second, to this end, 240 motels were drawn from a random sample of 599 motels in a database of 1, 503 motels freely provided by the Center for Business and Economics Research, the University of Alabama, Tuscaloosa, Alabama. Obviously then, motels were the sampling unit of analysis of this study even though motel executives responded to the survey questionnaires used. Third, answers to the research questions were gleaned by subjecting the data to principal component analysis (PCA), and then to hierarchical multiple regression (HMR) analysis. Fourth, briefly stated---two of the three sub-dimensions of the high performance work systems (HPWS) practices, predicted organizational innovation (OI). Fifth, because this study is cross-sectional, there was the likelihood that it failed to capture dynamic shift in the population parameters of interest. This would not be the case if the study were longitudinal by design. In addition, to the extent that motels in the state of Alabama are unique, the results of this study cannot be generalized to motels outside the state of Alabama. Finally, future studies would aim to replicate this study using a sample of motels other than motels sampled in the state of Alabama. In doing so, such future efforts should consider the additional benefits ascribed to the use of longitudinal research design as suggested above.

Methodologically, our paper made a contribution by using a statistical approach that was capable of isolating the unique variations in organizational innovation due solely to the predictive effects of statistically significant sub-dimensions of HPWS. This way, our paper made a substantive contribution because academics now have a clue about the sub-dimensions of HPWS that drive variations in organizational innovation in response to Werner (2011) call for research. Managerially, the findings of our paper inform managers to strategically deploy their organizational assets to capture the benefits of those significant sub-dimensions of HPWS that would enhance their organizational competitive advantage, and more.

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BIOGRAPHY

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TIME REQUIRED TO BREAK-EVEN FOR SMALL AND MEDIUM ENTERPRISES: EVIDENCE FROM KENYA

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ABSTRACT

The past two decades have seen exponential growth in the number of small and medium enterprises in Sub-Sahara Africa; however, about two-thirds of such enterprises often fail to take off, resulting to negative economic impacts at the micro and macro-levels. However, documentation of the subject remains limited, especially in Kenya. This study involved 146 enterprises that had been operational for between 1 and 5 years. Inclusion criteria included availability of consistent financial records as well as willingness to share such information. The findings showed that the duration taken to break-even ranged between 3 and 40 months. The level of training in financial management was the most important covariate, explaining up to 12.1% of variation in the duration taken to break-even. Ever training in financial management accounted for 10.2%, marketing (9.7%); educational attainment (8.6%), capitation-funding level (7.5%) and firm size (6.8%). The study recommends the need for universal entrepreneurship training programs, integration of entrepreneurship training in national plans, a multisectoral approach to entrepreneurship training, linkages between the private sector, academia and development partners as well as support centres at the county level to facilitate the development of such enterprises.

JEL: O16

KEYWORDS: Small and Medium Enterprises, Break-Even Analysis, Break-Even Point, Urban Slums

INTRODUCTION

Starting a new business is a risky undertaking that requires proper preparation to address challenges such as competition, resource constraints, staffing, staff development and management, product development, sales management and most importantly, financial resource management (Deakins, Logan & Steele, 2001; Rogoff, Lee & Suh, 2004; Wanjohi, 2008). Although the success of business ventures can be measured using various indicators, the most important is the achievement of financial stability (Deakins et al., 2001). Break-even analysis is one of the key tools available for planning and managing a firm's financial performance, particularly during the initial years of operation. As noted by LeFever (1998), break-even analysis is a useful tool for planning the success of young business ventures as well as new products and services. It facilitates budgeting and long-range planning of cash inflows and outflows. Break-even analysis is logically appealing and readily applicable to business firms of all sizes. Once constructed, break-even charts provide the management with a convenient guide for judging operational performance, adjusting pricing levels or controlling cost components (Deakins et al., 2001; Rothberg, 2012).

The break-even point is achievable when the total costs of production or services equals the total revenue received from sales. It is a point where a business neither makes profits nor incurs losses (Ndaliman & Bala, 2007; Rothberg, 2012). For new business ventures or new products launched in the market, achieving the break-even point (BEP) is a great milestone towards success. The duration taken to achieve the BEP is an indication of the management's capacity to plan and manage the inflow and outflow of financial resources. It also reflects a firm's success in marketing its products or services, as well as supportiveness of the business environment (Rothberg, 2012).

Break-even analysis utilizes two types of cost inputs, viz. fixed and variable costs (Riggs, 1992). For instance, in a business producing furniture, the purchase of paintbrushes would be an example of a fixed cost. Whether a manufacturer paints three or twelve pieces of furniture with a brush, the expense cannot change. Variable costs change with production volume. For instance, a business venture producing furniture would not incur any cost on paint when it has not produced any furniture. Moreover, the amount of paint and time required for three and twelve pieces of furniture vary significantly. The more the pieces of furniture, the more the paint required. As noted by Riggs (1992), the amount of input and the time used to produce a commodity constitute variable costs.

The traditional linear break-even analysis anchors on a linear relationship between total revenue (TR) and total cost (TC). The difference between TC and fixed costs (FC) yields the value of variable costs (VC). The BEP is the intersection between TR and TC. The difference between TR and TC before achieving BEP represents losses, while the difference after achieving BEP, represents profits. The break-even volume changes when the margins increase or decrease and when the efficiency of operations rises or falls (LeFever, 1998). It changes in response to purchases of equipment, inputs and services as well as to sales of finished products. In developing countries, achievement of the BEP is a key indicator of economic contribution of small and medium enterprises (SMEs) (Wanjohi, 2008).

In Kenya, SMEs play an important role in national development by employing about 75% of the national workforce and contributing about 22% of the national Gross Domestic Products (GDP). As noted by Atieno (2009), the development of SMEs a key strategy for Kenya's industrialization, employment creation, income generation and poverty reduction. Consequently, the Government of Kenya (GoK) has formulated a number of policy documents to stimulate the growth of SMEs, including the Sessional Paper Number 2 on *Industrial Transformation to the Year 2020* and the Sessional Paper Number 2, on the *Development of Micro and Small Enterprises for Employment and Wealth Creation* (Atieno, 2001; Mbithi & Mainga, 2006; Atieno, 2009).

The government's policy initiative aims at encouraging Kenyans to establish SMEs by enhancing access to funding and creating an enabling environment for SMEs to thrive. Although the number of SMEs has increased significantly over the past two decades, about two-thirds of such SMEs often fail to take off, thereby, subsiding with billions of resources (Ndaliman & Bala, 2007; Sharma, Sneed & Ravichandran, 2007). The failure of SMEs has serious impacts on the economic status of entrepreneurs, the financial sector as well as the national economy. Firms taking more than ten months to break-even in their operations are likely to fail, leading to loss of capitation funds and subsequent impoverishment of entrepreneurs. In an environment of resource scarcity, most SMEs may bow out of business before reaching the BEP (LeFever, 1998; Ndaliman & Bala, 2007).

The duration taken by SMEs to achieve the BEP is critical for Sub-Sahara African (SSA) economies; however, there is a dearth of relevant empirical literature to inform the planning, policy formulation and financing of SMEs, particularly in Kenya. Although many SMEs are emerging, poverty levels remain all time high in most parts of the country, which raises concern about the preparedness of entrepreneurs with relevant financial management skills, the capacity to plan and manage cash inflows and outflows to expedite financial stability (Wanjohi, 2008; Mbithi & Mainga, 2006; Atieno, 2009). The issues also raise concern on whether the business environment is supportive to the growth of SMEs or otherwise (Mbithi & Mainga, 2006).

The duration taken by SMEs to achieve the BEP has significant micro- and macro-economic implications; thus, necessitating empirical investigations. The main objective of this study was to determine factors influencing the duration taken by SMEs in Nairobi's slum settlements to achieve BEP. The focus on Nairobi's slums stems from the high population growth rate, resulting from rural-urban migration. SMEs remain the largest provider of employment opportunities for rural-urban migrants; thus, their financial

stability and growth becomes of paramount interest to management scholars. The information generated by the study is also useful to financial institutions providing credit to SMEs, particularly because the financial success of SMEs translates to their own success, while SME failure increases the incidence of bad debts and court cases, with far-reaching negative effects at the micro and macro-economic levels. The remainder of this paper comprises of four sections, including the literature review, data and methodology, results and discussions as well as conclusions.

LITERATURE REVIEW

Empirical literature suggests that BEP changes from time to time with every purchase, production or sale. As noted by LeFever (1998), BEP changes in response to adjustments in production volumes, variable costs as well as prices of finished products or services. The duration taken by firms operating in certain environments to break-even is a function of various internal and external factors (Cragg & King, 1998; Rogoff et al., 2004; Watson, 2006; Sharma et al., 2007; Rothberg, 2012). Internal factors include financial management capacity, amount of capital invested and marketing initiatives, while external factors include demand and supply forces as well as purchasing power of the targeted market (Rothberg, 2012).

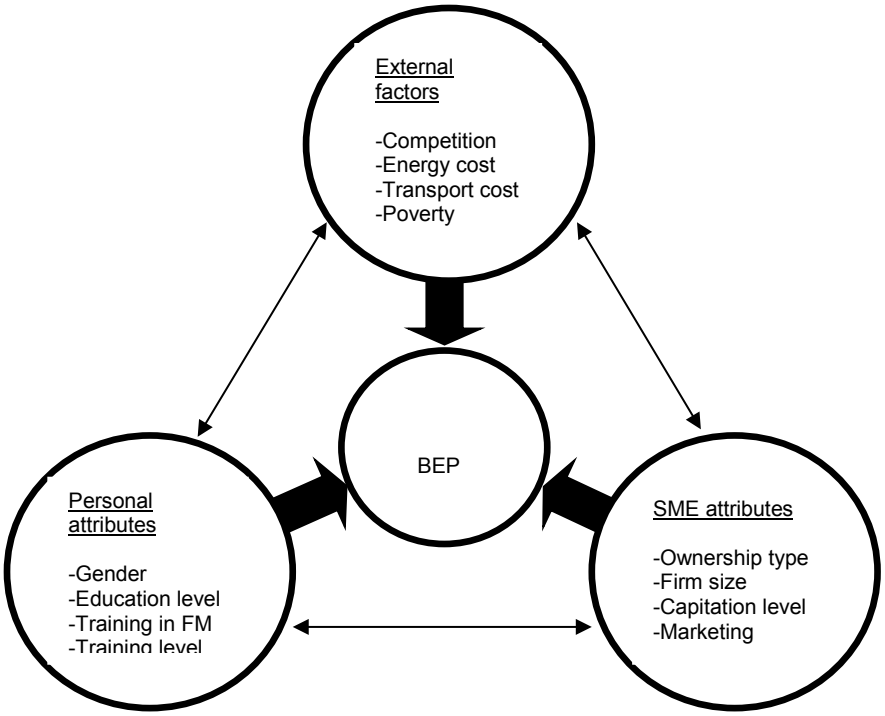
Rogoff et al. (2004) also note that the duration taken by firms to break-even correlates with the individual attributes of entrepreneurs, firm-specific aspects and external factors. Furthermore, Watson (2006) point out that management literature has focused on whether large firms take a shorter duration to achieve financial stability than small firms do and vice versa. On the same note, Cooper and Dunkelberg (2006) note that small firms may have limited access to human, financial and organizational resources, which in turn, is likely to retard their performance and delay the attainment of BEP. Sharma and Upneja (2005) found that marketing resources, the amount of capital invested, as well as manager's education level, training in financial management, previous experience are the most important factors influencing the duration taken to achieve financial stability among new business ventures. Earlier, Cragg and King (1998) noted that the duration taken by young business firms to achieve financial stability strongly relates to market forces as well as entrepreneur's objectives, characteristics and management practices.

Islam and Ali (2008) found that the duration taken to achieve financial stability was a function of factors such as business practices, financial management skills, experience and external environmental factors such as macro-economic policies and procedures, access to financing, infrastructure and quality of infrastructural services, which may directly or indirectly influence the performance of small businesses. As noted by Sharma et al. (2007), the external environment, in most cases, is beyond the control of firms and can be either hostile or in favor of new market entrants. However, it is important for business managers to formulate strategies to adapt to prevailing business environmental conditions.

Similarly, Indarti and Langenberg (2005) categorized factors influencing the financial performance of SMEs to include characteristics of the entrepreneurs, characteristics of the SMEs; and contextual elements of SME development. Other factors influencing the duration taken to achieve financial stability include products and services (Hitt & Ireland, 2000), level of capitation funding and availability of supplementary resources to sustain operations before BEP is achieved (Swierczek & Ha, 2003) and marketing strategy (McMahon, 2001).

Based on the empirical studies, figure 1 categorizes factors influencing the duration taken by SMEs to achieve BEP into three groups, viz. personal attributes of business managers, SME attributes and external factors playing at the market. The three categories are interrelated and influence each other. For instance, the amount of capital available is likely to influence the decision of a firm to embark on staff training. Similarly, expenditure on utilities influences the amount of resources available for marketing or motivation of staff members.

Figure 1: Factors Influencing the Duration taken by SMEs to Break-Even



The figure shows the factors influencing the achievement of the break-even point (BEP), which fall into three groups, namely personal attributes such as training in financial management, SME attributes such as capitation level and external factors such as the cost of energy. Whereas BEP is the dependent variable, those listed under each groups are the independent variables. A unit change in the value of each independent variable causes a proportionate change in the dependent variable. Note that FM stands for financial management.

The conceptual framework shows that BEP is the dependent variable, while independent variables include external factors, personal attributes of SME managers as well as SME-specific attributes. The next section provides details of the methods used in this study.

DATA AND METHODOLOGY

The study targeted small and medium enterprises (SMEs) that had been operational for between 1 and 5 years. Inclusion in the sample depended on the availability of consistent financial records detailing monthly sales and expenditures, as well as willingness to share such information and to participate in the interview. Out of 266 SMEs contacted, 146 (54.9%) met inclusion criteria and their managers participated in interviews in early 2012. Data collection included identification of SMEs meeting the inclusion criteria, consenting, interviews and extraction of information from financial records. We applied a cross-sectional survey design, with quantitative and qualitative approaches to guide the research process. Detailed description of the design and approaches used in this study are available in following publications (Nachmias & Nachmias, 1996; Bryman & Cramer 1997; American Statistical Association, 1999; Owens, 2002; Rindfleisch, Malter, Ganesan & Moorman, 2008).

Quantitative analysis generated cross-tabulations with Chi-square (χ^2) tests, correlation co-efficients, scattergram with F-statistic and *odds ratios - Exp (β)*. Binary logistic regression predicts the proportion of variation in a dichotomous variable from a set of independent variables (Aldrich & Nelson, 1984). In this study, the dependent variable was the duration taken to attain the break-even point (BEP), with only two possible values – *below 1 year or above 1 year*. The model takes the following form:

$$Logit[\theta(Y) = \log\left[\frac{\theta(Y)}{1-\theta(Y)}\right] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots + \beta_i X_i + \varepsilon \quad (1)$$

Where: Y = the predicted variable *(duration taken to attain BEP);* $\theta(Y)$ = the probability of an SME breaking-even within one year; *1-* $\theta(Y)$ = the probability of an SME breaking-even after one year; α = the constant term of the equation; $\beta_1, \beta_2 \ldots \beta_i$ = regression co-efficients associated with independent variables; $X_1, X_2 \ldots X_i$ = independent variables and ε = the error term. In addition, we processed and analyzed qualitative data using thematic analysis, which involved transcription of responses, creating thematic nodes and systematic interpretation.

RESULTS AND DISCUSSIONS

Of the 146 small and medium enterprises (SMEs), 19% dealt in woodwork products, 21% traded in metalwork products, 13% sold clothing products, while another 12% specialized in bakery products. Other business forms involved in the study included beadwork (10%), automobile (9%), chemists (6%), drycleaners (6%) and supermarkets (4%). Up to 82.2% of SMEs dealing in wooden products operated as retailers. For metalwork traders, 58.4% served the market as both retailers and wholesalers, while 54.6% of SMEs dealing in clothing products operated as both retailers and wholesalers. In the case of bakery products, nearly two-thirds (58.1%) were involved in retailing, while 79.3% of SMEs specializing in beaded products also operated as retailers.

Table 1 shows the mean duration taken by business ventures in each category to break-even. The results show that supermarkets took the longest time (24.5 months) to achieve BEP, followed by drugstores (23.1 months), automobile services (22.1 months) and beadwork (17.5 months). Contrastingly, businesses specializing in bakery products recorded the shortest mean duration (13.1 months) to break even, with the fastest firms taking 3 months. Next in line from the top were SMEs specializing in metalwork products (13.7 months) and woodwork products (14.8 months).

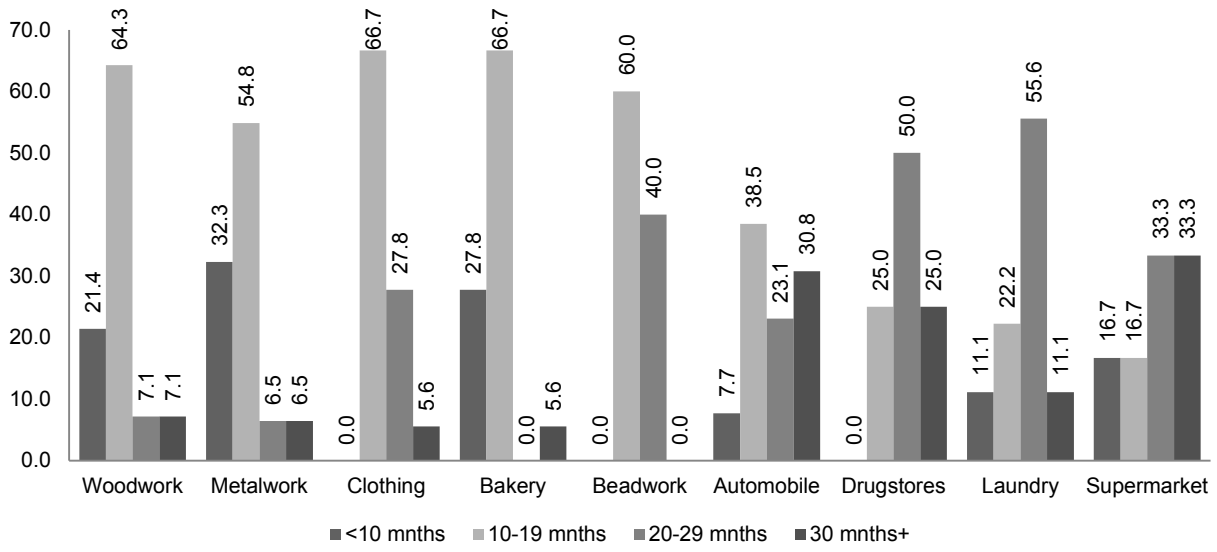
Table 1: Mean Duration Taken to Achieve the Break-Even Point (Months)

Sub-sector	N	Mean	Std. Deviation	Minimum	Maximum
Woodwork	28	14.791	7.347	3	34
Metalwork	31	13.735	7.565	4	39
Clothing	18	16.721	7.002	10	36
Bakery	18	13.110	6.761	3	33
Beadwork	15	17.472	6.404	11	27
Automobile	13	22.077	9.087	8	35
Drugstores	8	23.123	7.553	11	33
Drycleaners	9	20.891	9.060	4	34
Supermarkets	6	24.501	10.905	9	40
Overall	146	16.748	8.236	3	40

This Table shows the mean duration taken by firms in various sub-sectors to achieve the break-even point. The first column shows the sub-sectors captured by the study, the second column shows the number of firms in each sub-sector, the third column is the standard deviation from the mean in each group, while the fourth and fifth columns show the minimum and maximum duration (in months) taken by firms in each sub-sector to break-even.

Firms dealing in wooden and bakery products reported the shortest time taken to achieve BEP, supermarkets showed the longest duration. Overall, SMEs included in the study took an average of 16.8 months to break-even. Figure 2 shows that up to 21.4% of the SMEs in the woodwork achieved the break-even level within the first 10 months of their operations.

Figure 2: Sectoral Variation in the Duration Taken Break-Even



This Figure shows the average duration taken by small and medium enterprises in each sub-sector to achieve the break-even point. The duration has been grouped into four categories, including 'less than 10 months', which is represented by the first bar from left; '10 to 19 months', represented by the second bar; '20 to 29 months' represented by the third bar and '30 months or higher'. Within the text, I designate the categories as first, second, third and fourth terms, respectively. Besides, I refer to firms attaining the BEP within the first 10 months as 'early bloomers' and those doing so at 30 months or higher as 'late bloomers'.

Among SMEs dealing in metalwork products, about one-third (32.3%) attained the break-even point within 10 months. The proportion of firms achieving BEP within the first term was high among traders in the metalwork, woodwork and bakery sub-sectors, while the proportion of late bloomers was high among drycleaners, drugstores, beadwork dealers and supermarkets. The analysis obtained a computed χ^2 value of 56.381, with 24 degrees of freedom and a ρ-value of 0.000. The result is significant at 1 percent, suggesting up to 99% chance that the duration taken to achieve BEP was significantly different across the various sectors.

The duration taken by SMEs to break-even is a function of various factors both within and outside business firms. Internal factors include the background profile of SME managers and attributes specific to SMEs. Besides, external factors arise from the environment in which a firm operates and may include market demand and supply forces, competition, cartels and distribution channels as well as government policy. This study captured variables such as gender of SME managers, education level, professional training in financial management, ownership form, amount of capital invested, firm size in terms of number of paid workers and business age.

The SME managers included 96 (65.8%) men and 50 (34.2%) women. Table 2 indicates that among SMEs run by men, up to 19.8% achieved the BEP within the first 10 months of operation. This is slightly higher than the proportion of women-run SMEs that achieved the BEP within the same period. The results in Table 2 further show that men were likely break-even faster than women were. Consequently, the analysis obtained a computed χ^2 value of 8.562, with 3 degrees of freedom and a ρ-value of 0.036, which is significant at 5 percent. This suggests up to 95% chance that gender significantly associated with the duration taken to achieve that BEP among SMEs. In other words, SMEs run by men were more likely to achieve financial stability faster than those managed by women were. Hence, interventions designed to enhance SME survival should consider the needs of women-run SMEs.

Table 2 further indicates that the proportion of firms breaking-even within the first term was highest among those whose managers had university education (100.0%), followed by those having college education (50.0%) and secondary education (32.3%). Contrastingly, the proportion of those delaying to achieve BEP was highest among SMEs whose managers had no education (45.5%), followed by those whose managers had primary education (34.5%). The analysis showed that educational attainment by SME managers and duration taken to achieve BEP significantly associated (computed χ^2 value = 35.843, degrees of freedom = 12 and ρ-value = 0.000).

Table 2: SME Managers' Background Profile and the Break-Even Point

Background attributes	<10 mnths		10-19 mnths		20-29 mnths		30 mnths+		Total	
	Freq	Pct	Freq	Pct	Freq	Pct	Freq	Pct	Freq	Pct
Gender										
Male	19	19.792	55	57.292	13	13.542	9	9.375	96	100.00
Female	5	10.000	23	46.000	16	32.000	6	12.000	50	100.00
Highest education level										
No education	2	9.091	10	45.455	6	27.273	4	18.182	22	100.00
Primary	5	6.173	48	59.259	18	22.222	10	12.346	81	100.00
Secondary	10	32.258	15	48.387	5	16.129	1	3.226	31	100.00
College	5	50.000	5	50.000	0	0.0000	0	0.0000	10	100.00
University	2	100.00	0	0.0000	0	0.0000	0	0.0000	2	100.00
Financial management training										
Yes	24	47.059	24	47.059	1	1.961	2	3.922	51	100.00
No	0	0.0000	54	56.842	28	29.474	13	13.684	95	100.00
Training level										
Certificate	2	11.111	13	77.778	1	5.556	1	5.556	17	100.00
Diploma	18	62.069	10	34.483	0	0.0000	1	3.448	29	100.00
Higher diploma	4	80.000	1	20.000	0	0.0000	0	0.0000	5	100.00
Ownership structure										
Proprietorship	8	9.877	45	55.556	20	24.691	8	9.877	81	100.00
Partnership	6	12.500	26	54.167	9	18.750	7	14.583	48	100.00
Limited company	10	58.824	7	41.176	0	0.0000	0	0.0000	17	100.00

This Table shows the cross tabulation results between SME managers' background profile and the duration taken to break-even. Among other findings, the Table shows that a higher proportion of firms run by men than women achieved the BEP within the first 10 months of operation. The Table further shows that the proportion of firms breaking even in the first term was higher among those whose managers had trained in financial management than among those whose managers lacked such training; while the proportion of firms breaking-even within the first 10 months of operation was highest among limited companies and lowest among firms operating as sole proprietorships. Note that 'Freq" is the abbreviation of frequency distribution, while "Pct" stands for percent.

Furthermore, Table 2 indicates that the proportion of firms breaking even within 10 months was higher among those who had acquired some training in financial management, while the proportion of late bloomers was higher among those who had not acquired training in such skills. Based on this, the analysis obtained a computed χ^2 value of 61.025, with 3 degrees of freedom and a ρ-value of 0.000, which is significant at 1 percent. This suggests up to 99% chance that having some training in financial management significantly associated with to the duration taken by SMEs to break-even in their operations.

Regarding the training level, of the 51 SME managers who had trained in financial management, 29 (19.9%) had trained up to the diploma level; 18 (12.3%) had attained certificates, while 5 (3.4%) reported having higher diplomas in financial management. The results in Table 2 show that the proportion of SMEs attaining BEP was highest among firms whose managers had higher diploma, but lowest among those whose managers had certificate qualifications. The analysis indicated that training in financial management and the duration taken by SMEs to attain BEP significantly related (computed χ^2 value = 15.089, degrees of freedom = 6 and ρ-value = 0.020).

More still, out of 146 SMEs, 81 (55.5%) were registered as sole proprietorship businesses, 48 (32.9%) were registered as partnerships, while 17 (11.6%) operated as limited companies. The results in Table 2 indicate that the proportion of firms attaining BEP within the first 10 months of operation was highest

among limited companies and lowest among SMEs operating as sole proprietorships. Contrastingly, the proportion of firms delaying to break-even was highest among sole proprietorships than among limited companies.

Bivariate analysis yielded a computed χ^2 value of 28.689, with 6 degrees of freedom and a ρ-value of 0.000. This suggests up to 99% chance that the association between ownership form and the duration taken to attain BEP was significant. Apparently, limited companies were likely to be most efficient in financial planning and management, followed by partnerships and sole proprietorships. I measured firm size in terms of the number of paid workers. The study found that 82 (56.2%) firms had between 4 and 7 paid workers, 48 (32.9%) had between 1 and 3 workers, 11 (7.5%) reported having between 8 and 11 paid workers, while 5 (3.4%) had at least 12 such workers.

The level of capitation funding determines an SME's ability to venture into the market with quality and competitive products or services. I plotted the two variables (firm size and level of capitation funding) on a scattergram to determine significance of the correlation between the two variables and the duration taken to break-even. The analysis obtained three curves, namely, linear, logarithmic and exponential, whose model summary and parameter estimates I have presented in Table 3. The results indicated that SMEs having a lower number of paid workers were likely to take longer duration to break-even, while those having relatively higher numbers of paid workers were likely to take a shorter duration to achieve the BEP. Thus, the number of paid workers and the duration taken to break-even correlated inversely.

Table 3: Model Summary and Parameter Estimates

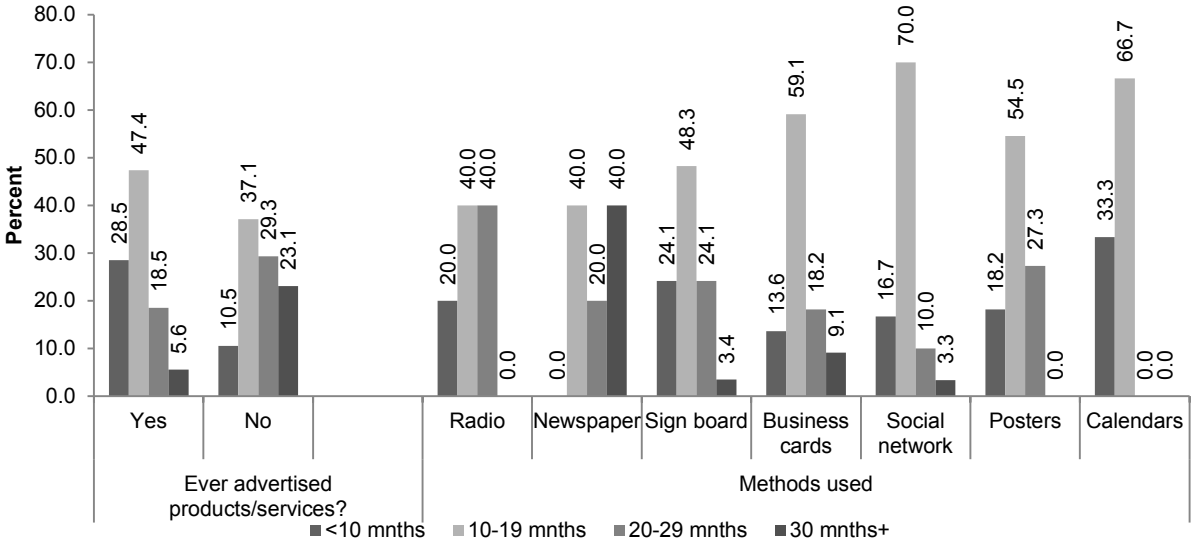
	Equation type	Model Summary					Parameter Estimates	
		R Square	F	df1	df2	Sig.	Constant	b1
Firm size	Linear	0.6137	229.04	1	144	0.000***	8.769	-0.2285
	Logarithmic	0.6783	302.88	1	144	0.000***	15.193	-3.812
	Exponential	0.7069	347.46	1	144	0.000***	10.598	-0.0527
Capitation funding	Linear	0.3345	72.385	1	144	0.000***	24.550	-5.548
	Logarithmic	0.4386	112.79	1	144	0.000***	180.17	-1.006
	Exponential	0.4723	128.98	1	144	0.000***	26.014	-0.0401

*This Table presents summary of the models generated though scattergram analysis, including linear, logarithmic and exponential. The column labeled R Squared is the coefficient of determination, which shows the explanatory power of each equation. The computed F-statistic values were significant, implying that correlation between each variable (firm size and capitation level) and duration taken to break-even was significant. Note that *, **, and *** indicates significance at 10, 5 and 1 percent respectively.*

The results indicated that SMEs investing low amount of capital were likely to take longer time to break-even. Contrastingly, at higher levels of capital investments, the time taken by SMEs to break-even was relatively shorter. Table 3 further indicates that the computed F-statistic values for the three curves are significant at 1 percent, suggesting up to 99% chance that the number of paid workers significantly correlated with the duration taken by SMEs to reach BEP. Out of 146 firms, 108 (74.0%) had taken some initiative to advertise their products and services.

Furthermore, figure 6 shows that up to 28.5% of the SMEs that advertised their merchandise reached BEP within the first 9 months of their operations, as compared to 10.5% of those who did not advertise the same. Based on this finding, the analysis obtained a computed χ^2 value = 11.694, degrees of freedom = 3 and ρ-value = 0.009, which was significant at 1 percent. This suggests up to 99% chance that advertisement of merchandise significantly associated with the duration taken to break-even.

Figure 3: Advertisement and Break-Even Duration



This Figure indicates the proportion of firms that had advertised their merchandise and those that had not vis-à-vis the duration taken to break-even. Besides, the figure presents the methods used by firms to advertise their merchandise in relation to the duration taken to achieve BEP. Notably, firms that advertised their merchandise achieved financial stability faster than those did that did not advertise their products.

In addition, SMEs used various methods to advertise their merchandise, including signboards (26.9%), social networks (27.8%), business cards (15.1%), calendars (10.2%), posters (5.6%), radio (4.6%) and newspapers (4.6%). The results presented in figure 6 above indicate that the proportion of early bloomers was highest among SMEs that used calendars to advertise their merchandise, followed by signboards and radio. The study found that advertisement methods and the duration taken to break-even had no significant relationship (computed χ^2 value = 21.754, degrees of freedom = 18 and ρ-value = 0.243). As regards external factors, table 4 shows that 94 (64.4%) SME managers identified competition as the main factor influencing the duration taken to break-even.

Table 4: Factors Influencing the Duration Taken by SMEs to Break-Even

Valid responses	Frequency	Percent of Responses	Percent of Cases
Competition	94	30.032	64.384
Cartels	8	2.556	5.479
High cost of electricity	72	23.003	49.315
High transportation cost	37	11.821	25.342
High poverty levels	78	24.920	53.425
Heavy taxation	24	7.668	16.438
Total	313	100.00	214.38

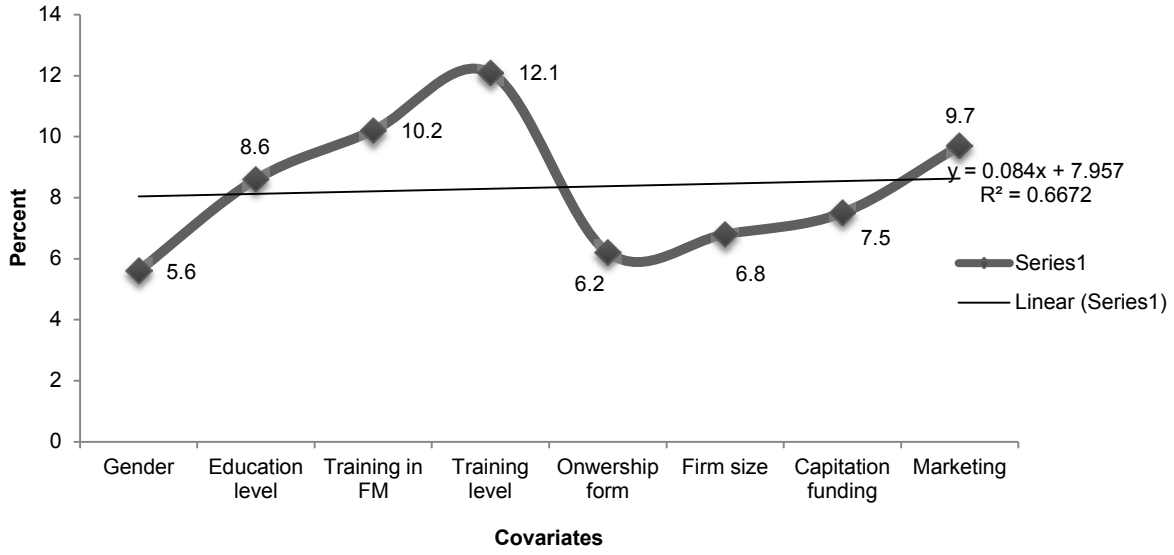
This Table presents findings on the external factors influencing the duration taken by SMEs to break-even in their operations. I have presented the findings as multiple responses, with four columns, including 'valid responses', 'frequency', 'percent of responses' and 'percent of cases'. The most critical factors include competition, high poverty levels and high cost of electricity.

More still, 78 (53.4%) respondents identified high poverty levels as one of the factors undermining the purchasing power of the target market. The main economic activities in the Nairobi slum settlements include casual labour, small businesses such as vegetable vending, roadside cafes and grocery shops; illicit brewing and drugs; as well as formal employment. Other factors included high cost of electricity (49.3%), high transportation cost (25.3%) and heavy taxation (16.4%).

Cross tabulation with Chi-square tests and curve estimation show that the duration taken by SMEs to break-even in their operations significantly associated with various background factors, including *managers' gender, highest education level, ever training in financial management, level of training in financial management*. Break-even duration also significantly related with firm attributes such as *ownership structure, firm size, level of capitation funding* and *ever marketing of products/services*. However, bivariate analysis techniques are not capable of determining the effect of a set of independent variables on a dependent variable, which necessitated the application of multivariate analysis techniques.

Binary logistic regression is a multivariate analysis technique often used to predict variation in a dependent variable from a set of independent variables. We applied the technique to determine factors influencing the duration taken by SMEs to attain the break-even point. To achieve this, a regression model was generated using binary logistic regression. The model incorporated the independent variables (covariates listed in the preceding paragraph. The magnitude of change in the value of in -2 Log Likelihood (-2LL) statistic each time a covariate is added into the equation determines the importance of a covariate in the equation. In this study, the odds ratios associated with each covariate was converted into percentages and plotted on a scattergram as indicated in Figure 4.

Figure 4: Effect of Covariates on the Duration Taken to Break-Even



This Figure shows the distribution of covariates on a scatter-gram, which was also used to generate best-fit line and co-efficient of determination R^2, representing the predictive power of the model. The linear equation for the model is y=0.049x + 4.181, with R^2=0.6672. Overall, the model explains up to 66.7% of variance in the duration taken by small and medium enterprises to break even in their operations.

The results in figure 4 show that the training level accounted for up to 12.1% of variation in the duration taken by SMEs to attain the BEP. In other words, supporting SME managers to attain the highest level of training in financial management is likely to reduce the time taken to break-even by up to 12.1%. Training in financial management explained up to 10.2% of variation in the duration taken to achieve BEP. Next in order are marketing initiative (9.7%), education level (8.6%), the level of capitation funding (7.5%), firm size (6.8%), ownership form (6.2%) and gender of SME managers (5.6%). Overall, the model explains 66.7% of variance in the duration taken by SMEs to attain BEP.

CONCLUSIONS

The purpose of this study was to determine factors influencing the duration taken by SMEs to break-even in their operations. There is no doubt that SMEs play a significant role in both developed and economy of developing economies. Although the Government of Kenya (GoK) has formulated various policy frameworks to spur the growth of SMEs, there seems to be a gap when it comes to concrete plans to improve the management capacity of entrepreneurs, which in turn, undermines the survival of SMEs. As a result, about two-thirds of SMEs often fail to realize their potential and purposes for which they are established. SME failure negatively affects the economy at the household and national levels.

The study found that the duration taken by SMEs to break-even varies significantly from one sector to the other. While some firms reached the BEP within a few months of operation, the study showed that others took as long as 40 months before breaking-even. Furthermore, training in financial management was the most important covariate explaining up to 12.1% of variation in the duration taken by SMEs to attain the BEP. This is followed by ever training in financial management, which accounted for 10.2% of variation in the duration taken to break-even, ever marketing (9.7%), educational attainment (8.6%), the level of capitation funding (7.5%), firm size (6.8%), ownership form (6.2%) and gender of SME managers (5.6%). However, the central theme of factors influencing the duration taken by SMEs to achieve BEP is poor planning and management of financial resources vis-à-vis the external environment.

With appropriate skills in financial management, SME managers are likely to reduce up to 10.2% of delays in breaking even. Better still, with training of up to higher diploma level, SME managers are likely to reduce up to 12.1% of delays in achieving financial stability. This implies that enhancing access to credit facilities, easing taxation and providing infrastructural facilities alone is incomplete it such measures are not accompanied with training programs to enable potential entrepreneurs acquire and develop skills in financial management. In view of this, SSA governments should consider investing in entrepreneurial training programs to support the growth of SMEs. Already countries such as Rwanda and Mozambique have made efforts to target entrepreneurship education to women and rural populations, as part of their poverty reduction strategy. The experiences of these two countries can provide useful lessons to inform entrepreneurship education in other SSA countries.

Training in financial management and the level of such training are the most crucial covariates explaining the duration taken by SMEs to achieve the BEP in their operations. The Government of Kenya continues to support the development of SMEs by improving access to funding through programs such as the Youth and Women's Enterprise Funds. The government also strives to create an enabling business environment by easing-off taxation and providing necessary infrastructural facilities. However, there is limited evidence of strong and well-funded training programs targeting potential entrepreneurs in all parts of the country. Consequently, measures such as enhancing access to funding and creating an enabling environment are less likely to reduce the proportion of SMEs sinking with capitation funding. Financial management skills are particularly important in resource-poor countries, particularly in SSA. Initiating appropriate training programs for entrepreneurs is likely to shorten the duration taken to achieve the BEP by SMEs, which in turn, is likely to synergize the positive role of SMEs in economic development, rather than perpetuate poverty.

Furthermore, efforts to support the growth of SMEs should have a long-term scope of investment, particularly through training programs, designed to help prospective entrepreneurs identify their abilities, analyze the environmental setup of small-scale business and industry, fulfill entrepreneurial ambition and acquire skills. Entrepreneurship education should not only help people incubate business ideas but also how to steer business ventures to great heights of financial stability. Entrepreneurship education should form part of the education system. The idea is to embed entrepreneurial culture in the education and training systems to prepare people for effective management of SMEs. Besides, national development

strategies and plans should incorporate entrepreneurship education. Entrepreneurship education should not be a continuous process that is accessible to all entrepreneurs.

An effective entrepreneurship education should involve all stakeholders in the private sector, education institutions and development partners. This necessitates linkages to facilitate the flow of skills, information and resources to support curriculum development and actual training activities at all levels. Such linkages are also necessary to open up opportunities for trainees to access opportunities to practices and develop their skills.

The inclusion of SMEs in this study depended on the availability of consistent financial records detailing monthly sales and expenditures, as well as willingness to share such information and to participate in the interview. However, the study found that nearly one-half of the sampled firms did not have complete and up-to-date financial records, which constrained their inclusion. Consequently, out of 266 firms that were contacted, only 146 (54.2%) met the inclusion criteria. Due to this challenge, I failed to attain the target sample size, which may have implications on the precision and validity of results.

Furthermore, this study focused on three broad conceptual groups of factors influencing the duration taken by SMEs in Nairobi to break-even in their operations. Arguably, the duration taken to break-even is critical for SMEs operating in environments of resource constraints. The sooner a firm attains the BEP, the better the chances for survival. However, the study fails to provide information on the failure/survival rate of SMEs before and after breaking even, because even after attaining the BEP SMEs remain vulnerable to failure. In view of this, future studies should undertake survival analysis of SMEs before and after breaking even, as well as determine factors influencing the survival of such entities during the two periods.

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RELATIONSHIP MARKETING AND DESTINATION LOYALTY: EVIDENCE FROM PENANG, MALAYSIA

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ABSTRACT

Relationship marketing is a strategy to obtain a competitive advantage in tourism destinations. The term is defined as marketing activities for creating and maintaining customer loyalty. Despite the fact that creating customer loyalty is the main objective of relationship marketing, there is little agreement on which antecedents could be used to achieve it. This is particularly true in the competitive market of tourist destinations. This study attempts to examine the level of international tourists' satisfaction with basic elements of destination (attraction, amenities, accessibility, image, price, people working in tourism), as well as the relationship between 'overall satisfaction' and destination loyalty in terms of revisit intention and recommendation. The results support the existing relationships between overall satisfaction and destination loyalty. We find that overall satisfaction is significant for revisit intention and recommendation. Finally, the paper discusses managerial implications as well as potential for further research in light of the findings.

JEL: M30

KEYWORDS: Relationship Marketing, Satisfaction, Basic Elements, Destination Loyalty

INTROUCTION

Economic and technological changes as well as services sector growth provide a ground for strong and considerable competitive market in the tourism industry. Tourism destinations operate in competitive markets. Customers (tourists) have many choices. Most people like to try a new place. Due to the increased competition between destinations, the major way to grow market share is to build long-term relationships and create loyal tourists. It is argued that "with increasing global competition owing to newly-emerging destinations and tourists becoming more exacting in their choice and desire for a variety of options, relationship marketing arguably offers considerable potential to achieve competitive advantage" (Fyall *et al.* 2003:645). In the words of Flambard-Ruaud (2005), globalization of markets, competitive pressure, brand multiplication and, above all, changing life styles and consumer behaviors have forced companies to develop strategies to keep their clients, create consumer loyalty programs and thus carry out relationship marketing.

Kotler *et al.* (1999) make the point that customer satisfaction is the core issue in relationship marketing and a requisite for loyalty. Several scholars note that tourist satisfaction is a crucial factor to generate destination loyalty (e.g. Oh & Mount, 1998; Yoon and Uysal, 2005; Chi &Qu, 2008; Meng *et al.,* 2008), although a few studies assert that satisfied tourists may not return to the same destination. Therefore, it is imperative to evaluate tourist satisfaction to achieve a definite and significant competitive advantage. The aims of this study are to assess international tourist satisfaction with basic elements in Penang as well as its relationship with loyalty in terms of revisit intention and recommendation. The study also identifies significant factors that contribute to international tourist satisfaction and subsequently destination loyalty.

Penang is located in the northern region of Peninsular Malaysia. It is approximately 1,030 square kilometers, consisting of two separate areas, the Penang Island and Seberang Perai in the mainland with 1,773,442 inhabitants in 2010. On 7 July 2008, George Town, the historic capital of Penang, was

formally inscribed as a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site. Tourism is the second largest contributor to Penang's economy (OECD, 2011). Direct international tourist arrivals increased from 39,357 in 1970 to 583,097 (through international airport and Port Swettenham) in 2008. Major disembarkation countries for Penang were Indonesia, Singapore, China, Japan, Taiwan and Thailand in 2009. Penang is known as the 'Pearl of the Oriented' for its various attractions such as white sandy beaches, beautiful landscape and unique and diverse culture.

The degree to which a country can benefit from its tourism sector depends largely on the sector's competitive position in the international tourist market (Gomezelj & Mihalic, 2008: 249). Hence, in a highly competitive market, it is vital for a tourist destination to investigate international tourist satisfaction since customer loyalty is influenced by customer satisfaction (Okello *et al.,* 2005; Singh, 2006; Chi & Qu, 2008). The paper is structured as follows: the introductory section highlights the aims of the study. The next section presents the relevant literature about customer satisfaction in tourism destinations. The research methodology is then explained, followed by findings and discussions.

LITRATURE REVIEW

Satisfaction-loyalty in Relationship Marketing (RM)

Relationship marketing has drawn significant consideration since the 1990s, because customers have become more demanding in their exchanges and competition has increased (Sherrell and Bejou, 2007). Casielles *et al.* (2005:83) argue that in circumstance of global competitive market, international changes impact tourism destinations creating challenges to survive in market. Relationship marketing as a competitive strategy aimed at the creation, maintenance and development of successful relationship with customers is currently considered a management approach to cover all marketing activities and generate important advantages in its implementation, both for firms and customers". Berry (1983:26) defines relationship marketing as "attracting, maintaining and - in multi-service organizations - enhancing customer relationships". He believes the marketing mind-set is that the attraction of new customers is merely the first step in the marketing process. Cementing the relationship, transforming indifferent customers into loyal ones, serving customer as clients – is marketing too (ibid). Stated in another way, the focus of relationship marketing is elaborating on long-term relationships and improving corporate performance through customer loyalty and customer retention (CRM Today, 2007). According to Bruhn and Frommeyer (2004), measuring customer satisfaction, its antecedent and the consequence is important for effective control and management of relationship marketing.

Many scholars in the marketing literature examined satisfaction-loyalty relationships (e.g. Hallowell, 1996; Oliver, 1999; Homburg & Giering, 2001; Singh, 2006; Sharma, 2007; Bodet, 2008). Customer loyalty is influenced by customer satisfaction (Bitner, 1990; Dick &Basu, 1994; Oliver, 1999; Okello *et al.,* 2005; Singh, 2006; Chi &Qu, 2008) which in turn affects profitability (Zeithaml *et al.,* 1990; Reicheld &Sasser, 1990; Gummesson, 1993; Anderson &Fornell, 1994; Heskett *et al.,* 1990, 1994; Strobacka *et al.,* 1994; Rust *et al.,* 1995; Schneider & Bowen, 1995). In tourism research, various studies have identified a positive relationship between satisfaction and loyalty (e.g. Alexandris *et al.*, 2006, Yuksel &Yuksel, 2001, Chi & Qu, 2008) but some researchers demonstrate a non-positive as well as non-linear, asymmetric relationship between satisfaction and loyalty (e.g. Bowen & Chen, 2001, Niininen *et al.,* 2004). A number of studies note a complicated relationship between satisfaction and loyalty (e.g. Bennett & Rundle-Thiele, 2004). More recently, Velazquez *et al.* (2011:68) maintain that even though several studies have examined loyalty and satisfaction in the service literature, "there are still deficiencies in the conceptualization and measurement of loyalty and the nature of its relationship with satisfaction". Throughout the literature, there is consensus that satisfaction leads to repeat purchase and optimistic word-of-mouth recommendation, which are focal indicators of loyalty (Chi & Qu, 2008).

Customer Satisfaction and Destination Loyalty

The works by Anderson &Sullivan (1993); Taylor & Baker (1994) and Cronin *et al.* (2000) confirm a considerable positive relationship between customer satisfaction and loyalty/retention. Valle *et al.* (2006:27) assert "the satisfaction that tourists experience in a specific destination is a determinant of the tourist revisiting". In contrast, Reese (1996) found no positive relationship between customer satisfaction and customer retention. McDowell (2010:24) argues that satisfaction is a valuable concept in understanding the destination performance. Destinations that can identify attributes that satisfy tourists increase their chances of having loyal tourists. Reichheld (1993) argues that satisfaction indices do not fully predict loyalty. In this respect, Jang and Feng (2007:581) assert that although repeat visits are not the same as loyalty. It is meaningful to look at tourists' revisits from a loyalty perspective. In the tourism industry, customer retention is a key factor for success in competitive marketing (e.g. Yoon & Uysal, 2005; Valle *et al.,* 2006; Hui *et al*., 2007). Kotler (1994: 20) asserts that the key to customer retention is customer satisfaction which is crucial for successful tourism destination business (Yoon & Uysal,2005).

As mentioned earlier, there is consensus that satisfaction leads to intention of word-of-mouth (WOM) recommendation, which is another key indicator of loyalty. Chi and Qu (2008:626) assert that if customers are satisfied with the product, they will more likely continue to purchase, and be more willing to spread positive WOM. Simpson & Siguaw (2008:167) argue that satisfied travelers might promote a destination because of their desire to help others (altruism), to appear travel wise (instrumentalism), or to reassure themselves and others about destination selection (cognitive dissonance reduction). Baloglu and McCleary (1999:892) found that word-of-mouth recommendations from friends and relatives was the most important source in forming touristic images. Zairi (2000) notes that satisfied customers are most probable to share their experiences with others, to the order of perhaps five or six people. Similarly, dissatisfied customers are likely to tell another ten people of their unpleasant experience. Yoon & Uysal (2005) mention that WOM recommendations are notably significant in tourism marketing for the reason that they are considered to be the most trustworthy, and hence one of the most preferred information sources for prospective tourists. It is likely to affect travelers' destination choices considerably (Gitleson and Crompton 1984).

A positive relationship between satisfaction and loyalty in tourism destinations is acknowledged in several tourism studies (e.g. Valle *et al.*, 2006). Still there are open questions. Mckerecher and Guillet (2011:121), note that while loyalty research has focused on the individual, a strong body of evidence suggests that individual tourist revisits to international destinations are rare. In Chen and Gursoy's view (2001), it may be true that loyal tourists are more inclined to use the same airline and stay the same franchised hotel wherever they travel; however, the tenet may not necessarily be applied to the selection of travel destination" (ibid). Importantly, as Andriotis *et al.* (2008:221) mentioned, tourist satisfaction has been considered as a tool for increasing destination competitiveness.

OBJECTIVES OF THE STUDY

In the light the above literature review, this study proposed the following objectives to examine the relationship between satisfaction with basic elements and destination loyalty in terms of revisit intention and recommendation. The objectives of this study are 1) examine the satisfaction level of international tourists with basic elements of Penang, 2) identify the importance of basic elements of Penang in terms of revisit intention and recommendation and 3) examine the influence of overall satisfaction on destination loyalty in terms of revisit intention and recommendation.

METHODOLOGY

A quantitative method was employed to collect data for this study. A survey questionnaire was used to conduct this study between June and December 2010. It was developed based on studies of Valle *et al.* (2006), Fabricius *et al.* (2007), Andriotis *et al.* (2008) and McMullan and O'Neill, (2010), because each tourist destination has particular attributes (Andriotis *et al.,* 2008). First, international tourists were asked about trip characteristics. Next they were asked to indicate the level of satisfaction or dissatisfaction concerning basic elements in Penang. Constructs have been operationalized using 5-point Likert scales, ranging from 1= strongly dissatisfy to 5= strongly satisfy), with expectation of questions related to the importance of basic elements of a destination, which were assessed on scales ranging from 1= not important to 5= strongly important. According to Allen & Rao (2000, p. 23), most, if not all, scales in customer satisfaction research yield interval data and, particularly, in tourism research, the Likert scale is widely used in questionnaires (Hsu *et al.,* 2008). The survey comprised 42 items including destination attributes (33 items) and overall perception of Penang (9 items). The 33 destination attributes were divided into six basic elements: attractions, amenities, accessibility, image, price and people working in tourism (Fabricius *et al.,*2007). International tourists were also asked to indicate the importance of basic elements in deciding whether to revisit or recommend Penang. According to Valle *et al.* (2006:28), several scholars agree that customer satisfaction can be estimated with a single item, which measures overall satisfaction. Accordingly, respondents were asked about overall satisfaction (1 question), their future intention for revisit to Penang and recommend it to others (2 questions). Demographic information was requested in the last part of questionnaire. The survey instrument also contained a covering letter, and short directions on how to fill the questionnaire. A pre-test was carried out to make certain the questionnaire was appropriate for this study. Based on a pre- test process, minor changes to wording and layout were made to ensure the questions were clear to all respondents. The self-administered questionnaire needed 10 minutes to complete.

Judgmental sampling was used where international tourists were approached at the departure lounge of the international airport of Penang Island. Purposive or judgmental sampling is a technique in which elements of the sample are selected based on the judgment of the researcher (Hsu *et al.* ,2008, p.142). The justification behind using judgmental sampling is that, it is more effective than other types of samples because the population (international tourists who visited Penang Island in 2010) may include international visitors who had transit visas or residency in Malaysia. A total of 445 usable questionnaires were collected from international airport of Penang Island. Descriptive statistics alongside factor analysis and multiple regressions were used to analyze data collected for this study.

RESEARCH FINDINGS

Out of 500 questionnaires distributed, 445 were found usable for the study representing a response rate of 89%. Approximately 51% of respondents were males with 48% aged between 21 and 40 years of age. A total of 56% of respondents were married, employed as managers, professional or businessmen (43.3%) while 16.5% were retired or self employed and 13.5% were studying. Approximately 31% of respondents had income over US$5000 per month, while 13.2 % earned less than US $1000 per month. The vast majority of international tourists (72%) surveyed were from Europe, Australia and New Zealand, and North America, while 25.7% from Asia. The main purpose of visit was holiday (77.8%). Approximately 57% of respondents visited Penang for the first time. The internet was the main source of information for travel planning to Penang (57.3%) followed by friends and relatives (42.9%). More than half of the respondents visited Penang with family or families (56.3%). Approximately 67.8% of respondents stayed between two to six nights in Penang, while 25.1% of them stayed more than one week.

To investigate which destination attributes contribute the most or least to international tourists' satisfaction, respondents were asked to indicate how much they were satisfied or dissatisfied with each of

the destination attributes in Penang. Table 1 reports the ranking of mean values (M) of destination attributes. Variety of food was ranked the highest among destination attributes (M= 4.32), followed by friendliness of people (M = 4.25), reasonable price of food and beverages (M = 4.23), friendliness of people working in tourism (M = 4.13) and attitude of people working in tourism (M = 4.04). While cleanliness of environment was ranked the lowest among destination attributes.

Table 1: Ranking of Destination Attributes

Rank	Items	Mean
1	Variety of food	4.32
2	Friendliness of people	4.25
3	Reasonable price of food and beverages	4.23
4	Friendliness of people working in tourism	4.13
5	Attitude of people working in tourism	4.04
6	Services in restaurants and cafes	4.03
7	Diversity of accommodation	4.01
8	Variety of shops	3.98
9	Ease of access to Penang	3.98
10	Reasonable price of transport	3.92
11	Reasonable price of accommodations	3.90
12	Quality of service of people in tourism	3.90
13	Reasonable price of attractions	3.89
14	Diversity of transportation	3.87
15	Uniqueness of destination	3.84
16	Reasonable price of tour services	3.83
17	Communication skills of people in tourism	3.82
18	Distinctiveness of sight or scenes	3.80
19	Availability of financial services	3.74
20	Safety and security	3.71
21	Variety of cultural attractions	3.69
22	Variety of built attractions	3.66
23	Variety of natural attractions	3.66
24	Convenience of public transportation	3.59
25	Availability of visitor information	3.58
26	Availability of tour guides	3.57
27	Variety of recreation facilities	3.51
28	Helpfulness of welcome center	3.49
29	Quality of service in public utilities	3.47
30	Variety of entertainment	3.35
31	Availability of welcome center	3.31
32	Variety of special events or festivals	3.21
33	Cleanliness of environment	3.12

Note: Measurement Scale, 1=strongly dissatisfy and 5= strongly satisfy

Table 2 reports the mean scores of the importance of basic elements in Penang for repeat visitation or recommendation. Respondents were asked to indicate the importance of attractions, amenities, accessibility, image, price and people working in tourism in deciding whether to revisit or recommend Penang. The importance of the items was measured by five point Likert scales ranging from 1 being Not Important to 5 being Strongly Important. The items are sorted in descending order according to the mean importance scores. All basic elements have importance mean scores over 3, which are Price (M=4.05), Accessibility (M= 3.81), Image (M= 3.79), People working in tourism (M= 3.77), Amenities (M= 3.75), Attraction (M= 3.68).

Table 2: Importance of Basic Elements in Penang

Basic elements	Mean	Standard Deviation
Price	4.05	0.86
Accessibility	3.81	0.86
Image	3.79	0.92
People working in tourism	3.77	0.96
Amenities	3.75	0.92
Attraction	3.68	1.05

Note: Measurement scale, 1= Not Important and 5 = Strongly Important

International visitors were asked to indicate how satisfied or dissatisfied they were with their visits to Penang generally. Table 3 presents the overall perception of respondents about Penang. Respondents were asked to provide answers on each item that was measured by a five point Likert scale ranging from 1 being strongly dissatisfied to 5 being strongly satisfied. Based mean scores of each item, respondents tended to strongly satisfy with friendliness of local communities (M = 4.19), followed by value for money vacation (M = 4.10). Additionally, they were satisfied with overall quality of holiday experience (M = 4.08). The lowest mean value was on cleanliness (M = 3.16). Overall, the results indicate that international tourists surveyed were satisfied with the majority of Penang's destination attributes.

Table 3: Overall Perception of Penang

Items	Mean	Standard Deviation
Friendliness of local communities	4.19	.805
Value for money vacation	4.10	.804
Overall quality of holiday experience	4.08	.747
Safety at destination	4.02	.808
Peaceful and restful atmosphere	4.00	.905
Quality of service	3.88	.821
Ease of communication	3.77	.826
Quality of facilities	3.55	.831
Cleanliness	3.16	1.023

Note: Measurement scale, 1= Strongly Dissatisfy and 5 = Strongly Satisfy

Relationship between Overall Satisfaction and Destination Loyalty

Regarding international tourists' overall satisfaction with their trips to Penang, approximately 86% of respondents were very satisfied or satisfied with their trips overall. Only 11.6 % were neither satisfied or dissatisfied, while 1.8% dissatisfied and 0.9% very dissatisfied.

The regression analysis indicated a relationship between overall satisfaction and destination loyalty in terms of revisit intention and recommendation. Simple regression analysis was performed using overall

satisfaction as the independent and revisit intention and recommendation as dependent variables. Table 4 shows the relationship between overall satisfaction, revisit intention, and recommendation.

Table 4: Relationship between Overall Satisfaction, Revisit Intention and Recommendation

Coefficients											
Independent Variable	**Revisit Intention**					**Recommendation**					
Overall satisfaction	R^2	Beta	*F*	*T*	*Sig*	R^2	Beta	*F*	*t*	*Sig*	
	0.032	.180	14.503	3.808	.000	0.303	.550	188.678	13.736	.000	

*Note: a. Dependent Variable = intention to revisit Penang in future b. Dependent Variable = recommendation to friends and relatives to visit Penang. **Significant at the 0.05 level*

The result of regression analysis indicates that overall satisfaction makes a statistically significant contribution in revisit intention. However, its effect explains only 3 percent of variance (R^2=0.032) in respondents' scores on the revisit intention scale. The result is in agreement with previous studies in which overall satisfaction were found significant in predicting revisit intention. For example, Kozak and Rimmington (2000) found that the level of overall satisfaction with holiday experiences had a considerable influence on revisit intention to the same destination. Alegre and Cladera (2006:293) found that overall satisfaction has the greatest explanatory capacity, followed by the repeat visitation rate. The result of this study showed that overall satisfaction has a significant impact on recommendation intention. Overall satisfaction helps explain nearly 30 percent of the variance in respondents' scores on the recommendation scale (*R2*=0.303). In other words, the likelihood of international tourists recommending Penang to others was positively related to their overall satisfaction.

The result is consistent with the findings of Ritchie *et al.* (2008). They found that intention to recommend from international tourists had a high correlation with overall satisfaction in Australia. In addition, they assert that overall satisfaction is highly correlated with intention to recommend than to revisit in future. The findings of this study highly support the previous research conducted by Hui *et al.* (2007) and Ritchie *et al.* (2008) who found that satisfied international tourists were more willing to recommend a destination than to return to the same destination in the future. Accordingly, the findings of this study are in agreement with Chi and Qu's study (2008:631) who assert that overall satisfaction positively affected destination loyalty.

In identifying the significance of basic elements that account for tourists' overall satisfaction level, a regression analysis was utilized. The R square in Table 5 explains the variance in the overall satisfaction with basic elements of destination. In this case the value is 0.296. This means that satisfaction with basic elements in Penang explains 29.6 percent of the variance in overall satisfaction.

Table 5 Regression Analysis between Satisfaction with Basic Elements of Penang and Overall Satisfaction

Independent variable	R^2	R^2 adj	**F**	**Sig.**
Basic elements of destination	0.296	0.288	36.116	0.000

Dependent Variable: Overall satisfaction

According to Alegre & Garau (2010), it is well established that both overall tourist satisfaction and tourist's intention to return are partially determined by his/her assessment of the destination's different

attributes (p. 52). They found that in addition to a tourist's declared satisfaction with different attributes, certain negative situations or characteristics can partially explain overall satisfaction and intention to return (p. 53). The results of this study indicate that the influence of satisfaction with basic elements in Penang on overall satisfaction is statistically significant. It is in concordance with Chi and Qu's study (2008). They found the satisfaction attribute is positively affected overall satisfaction (p. 631).

CONCLUSIONS

The investigation of satisfaction and future behavior is of great interest to both researchers and practitioners due to intense competition among international destinations (Kozak, 2000:800). The measurement of customer satisfaction is a crucial issue in relationship marketing. In the competitive market of tourism destinations, visitor satisfaction is a requisite for destination loyalty in terms of revisit intention and recommendation. However, the measurement of visitor satisfaction is complex and multi-dimensional. The results of this study indicate that international tourists were generally satisfied with Penang Island as a tourist destination. The results suggest that overall satisfaction is related to satisfaction with destination attributes. The highest satisfaction scores were variety of food, friendliness of people and reasonable price of food and beverage. On the other hand, cleanliness of environment received the lowest score on satisfaction. International tourists placed the highest importance on price in deciding to revisit or recommend Penang in future. The survey results also showed that the overall perception and satisfaction of international tourists about their trip to Penang was generally positive, and friendliness of local communities had the highest mean score.

This study has extends the research of overall satisfaction by investigating its influence on destination loyalty in terms of revisit intention and recommendation. The results revealed overall satisfaction was significant for both revisit intention and recommendation. The findings showed that overall satisfaction as a whole explained 3.2 percent of the variance in revisit intention, while it explained 30.3 percent of the variance in recommendation. While overall satisfaction has positive influence on destination loyalty, destination managers in Penang should provide the groundwork to increase overall satisfaction to achieve higher level of revisit intention and recommendation if it is to remain as one of the prominent international tourism destinations. A comprehensive understanding of the key findings of this study is important and prerequisite for tourists' destination loyalty. Since tourist destinations include a number of basic elements, a systematic analysis for evaluating tourists' satisfaction is imperative and required to achieve competitive advantages. Although the results of this study are specific to Penang Island, it offers theoretical and managerial implications to enhance the effectiveness of relationship marketing and competitive advantages of tourist destinations. Assessing satisfaction of destination attributes is a prerequisite for identifying the determinants of loyalty, but it is not sufficient. An evaluation of tourists' expectation to achieve a detailed analysis of determinants of destination loyalty shall be investigated in further research.

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PREDICTORS AND OUTCOMES OF SPORT EVENT EXPERIENTIAL VALUE: INSIGHTS FROM FORMULA ONE PETRONAS MALAYSIA GRAND PRIX

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ABSTRACT

Value creation for customers in the form of experiences has been gaining attention remarkably. Great customer experiences could fuel surprising "wow" moments of truth, or perhaps magic moment. In fact, customer experience is destined to act as the tool for differentiation strategy. Quality products and services are no longer sufficient for business sustainability, for customers need to bestow upon with satisfactory experiences that they valued. Research stream on experiential value is sparse; hence, this paper aims to fill the void by conducting an empirical investigation on predictors of sport event experiential value and in turn, assessing its impacts on total experience and loyalty. Distribution of the survey instrument at the vicinity of the Formula 1 Sepang International Circuit resulted in 225 usable feedbacks. Structural equation modeling procedure was employed to test the hypothesized linkages in the proposed research model. Evidence established that all the hypothesized linkages were supported. A discussion of the implications for future research directions and sports events organizers were deliberated.

JEL: MO, M3, M30, M31

KEYWORDS: Experiential value, Formula 1, Involvement, Sport Orientation

INTRODUCTION

In today's commoditized economy, marketers realized that products, prices, people and technology are becomingly similar. A potentially significant alternative strategy that could attract consumers' attention must go beyond a product's functional features, benefits and quality and offer instead, a customer experience. It is predicted that customer experience is the next competitive battleground for business success and unsurprisingly, it has been described as the next business tsunami (Colin and Ivens, 2005). Indeed, it has not only emerged as one of the hottest topics amongst top management but is also becoming an uppermost-prioritized research area in accordance with the customer-orientation philosophy (Mascarenhas, Kesavan and Bernacchi, 2006). Although Pine and Gilmore first introduced the concept in 1998, customer experience has eventually played a prime role in determining the winners and losers in years to come. However, identifying factors that drive the experience that customer valued most remains today's key challenging and critical management issues. Colin and Ivens (2005) postulate that customer experience comprises of two elements: physical and emotional aspects and research have unveiled that emotions are the one often being disregarded in the business practices. Recent study has found that these emotions are one of the key differentiators to evoke customers' attention (Mascarenhas et al., 2006).

Regardless of the fact that customers' experience plays a critical role in many contemporary discussions among business practitioners and academics scholar, there has been conspicuously few empirical investigations on this emerging concept with notably exception of the seminal work by Mathwick et al., (2006). Against this backdrop, this paper attempts to fill this void with an empirical examination on the core predictors of Sport Event Experiential Value (hereafter called SEEV) and its impacts on total experience and in turn spectators' loyalty. In order to accomplish this objective, valid and reliable

multidimensional measures have to be established and validated as suggested by Churchill (1979), Gerbing and Anderson (1988) and Ping (2004). Ultimately, the research's primary goal is to develop and validate a plausible model that could be characterized as having statistical and explanatory power to exemplify the factors that determine the focal construct, SEEV and subsequently predict its consequences within a motor sport event environment.

The motor sport event environment in this context refers to the prestigious world of Formula 1 (hereafter called F1). This event has the ability to stimulate feelings of excitement, which rush the adrenalin of the spectators. The industry analysts from Formula Money, Deloite Sports Business Group, a Britain based sports business specialist reported that F1's global revenues stood at US$3.9 billion. This has made F1 the world's highest revenue-generating sports event of the year (StarBizweek, 2009) The amount comprised of commercial rights' revenues such as race sponsorship, corporate hospitality and broadcasts fees; team revenues which include sponsorships and contributions from partners and owners and circuit revenues from ticket sales and sponsorships. The benefits of F1 are abundant and are not only confined to track revenues. In fact, hosting F1 event has also contributed generously to a country's tourism and hospitality sector. Malaysia is second in Asia after Japan to have a F1 track and has remained a value for money destination for many Europeans, who made up the bulk of international audiences at F1 PETRONAS Malaysian Grand Prix (Mahalingam, 2009). F1 is currently the third most watched live sporting event, second to Olympics and the World Cup.

The following section will review and synthesize relevant literature and follows by the research methodology. The empirical results section delineates the respondents' demographic profile; consequently, the findings from exploratory factor analysis, confirmatory factor analysis and structural model analysis are discussed. The last section will discuss on the implications of the research findings.

LITERATURE REVIEW

This section highlights the relevant literature in relation to sport involvement, sport orientation, sport event experiential value (SEEV), spectators' total experience and spectators' loyalty. Examining and synthesizing gaps within the literature review subsequently lead toward the conceptualization of these identified constructs and development of hypotheses, which will be deliberated below:

Sport Involvement

Peter and Olsen (1987) assert that level of involvement is aa critical determinant of experiential value, which subsequently affect an individual's behavior. Research indicates that highly involved consumers of sport tend to consume sport activities through event attendance more than those who are not as involved (Stone, 1984). Furthermore, evidence suggests that many individuals attending action-sporting events are involved with action sports (Bennett and McColl-Kennedy, 2005). Involvement reflects the degree to which people devote themselves to an activity or event (Peter and Olson, (1987). Building from the existing literature, this study extends the multi-dimensional view of the most commonly used instrument adapted from consumer involvement profile (CIP) scale developed by Havitz and Mannel (2005). They suggest CIP comprises three dimensions: attraction, centrality and self-expression, which have been shown to be consistently applicable and reliably measured within leisure settings.

Sport Orientation

In the multi-billion dollar sports industry, event organizations must incessantly assess how to meet or exceed consumer orientation and experience (Kang and James, 2004). Pons, Mourali and Nyeck (2005)

and Wann (1995) define sport orientation as an individual's specific motives or inherent predisposition toward attending or participating in sports events. Manifestation of sport orientation could be reflected through the spectators' behaviors; it is often conjectured to be closely associated with enduring involvement (Pons et al., 2005). For example, an individual might participate in a sporting event for the purpose of group affiliation; which is viewed in marketing literature as the core driver in explaining 'high levels of fan involvement (Wann, 1995). Additionally, Pons et al., (2005) conjecture that the common behavior, sign and values will be shared and displayed conspicuously among the group members not only based on the choice of sport event selected, but also exhibited through the evaluation of their experiences derived from the sport events. Most prior studies in this research stream focused on sport orientation from the perspective of athletes, with a notable exception of Greenwell,

Fink and Pastore (2002), who examined the impact of goal orientation on the satisfaction of sport event from the lenses of the spectators. Recently, Pons et al. (2005) developed a reliable instrument to measure the concept of orientation towards sporting event (OSE). They unveiled that OSE consists of three core dimensions, which are sensation, cognition and socialization seeking orientation towards sport event. Since then, it was noted that no study has adapted or adopted their scale to validate its generalizability in other sport events or test its applicability within the cross-nation context. What more to integrate OSE in a research framework in the mega-sporting event, such as F1 Grand Prix, which has racing circuits in nineteen countries. Following the above rationale, it inspires the authors to propose the following hypothesis:

H1: Sport involvement has a positive effect on sport orientation.

Sport Event Experiential Value (SEEV)

Sheth, Newman and Gross (1991) have indicated that values driving individuals' consumption behaviour has been attributed to functional, conditional, social, emotional and epistemic utility. Customers of today are seeking more value, choices, and subsequently, richer customer experience. In retailing, recent empirical research findings by Keng, Huang, Zheng and Hsu (2007) and Mathwick et al., (2002) have highlighted on the critical role of service experience. They suggest that retailers should focus on creating theatrical retailing environment involving fun, excitement and entertainment, as well as encouraging shoppers to engage actively in the retailing activities. In sports marketing, such an experiential value concept developed by Holbrook (1994) is being applied, and it relates to personal interaction and physical environmental encounters within the sport event environment.

Indeed, Holbrook and Hirschman (1982) point out the significant role of the multi-sensory, imaginary, and emotional aspects of consumption experience in advancing the knowledge of consumer behavior. The tangible physical environment plays a pivotal role in stimulating excitement in sport event settings and the excitement in turn, influences spectator loyalty (Musa, Putit and Kassim, 2009; Wakefield and Blodgett, 1999). Hence, in this research context, SEEV is conceptualized as the value proposition offered by event organizer in terms of the service, atmospherics condition in the vicinity of the circuit, entertainment value, social engagement opportunity, enjoyment and also the value of money acquired when attending this event. Bitner and Brown (2000) assert that level of experience value might influence customer satisfaction, and loyalty. Following the above, it is plausible to put forward the next two hypotheses as identified below:

H2: Sport involvement has a positive effect on sport event experiential value.

H3: Sports orientation has a positive influence on sport event experiential value.

Spectators' Total Experience (STE)

Total customer experiences are the key driver in generating lasting customer loyalty in today's businesses (Mascarenhas et al., 2006). In sports marketing, STE can be translated into the overall experiences of spectators with regards to the set of integrated products and services available when attending any sports-related events. Spectators' total experience is conceptualized as fulfilling physical and emotional experience when spectators attend a sport event as well as interacting with event organizer. The positive experience might influence spectators' loyalty (Mascarenhas et al., 2006). Russell and Pratt (1980) assert that emotions consist of two independent dimensions: pleasure and arousal. Pleasure refers to the level at which a person feels well, happy or content in a situation, while arousal refers to the extent to which a person feels stimulated and active. Past research accentuate the established relationship between pleasure and arousal when attending the event (Mano and Oliver, 1993; Musa, et al., 2009; Westbrook, 1987 and Westbrook and Oliver, 1991. It was unravelled that the more pleasure the subjects experienced during the event, the higher will be their loyalty. Hence, we postulate that:

H4: SEEV has a positive effect on spectators' total experience

Spectators' Loyalty

Sport event attendance is considered very critical in generating revenue as well as significant contribution to the economy for the host cities and countries (Hall, O'Mahony and Vieceli, 2010). Undoubtedly, high attendance sporting events could attract bigger corporate sponsorships (Halls, et al., 2010). Event organizers have to identify the key factors that influence sports events attendance and unearth the drivers that contibute to spectators' loyalty towards the sports events. In essence, high attendance of spectators to spots events is pertinent for the viability and sustainability of the events. Zeithaml, Berry and Parasuraman (1996) postulate that acquring customer loyalty would give sellers more competitive protection and greater control in devising and planning marketing programs.

They assert that favorable behavioral intentions are manifested through customers propensity to recommend and advocate positive word of mouth and remain loyal by repatronizing the service provider frequently. Creating value for customers beyond the products or services will ultimately enhance loyalty and increase tolerance to pay higher price and spend more (Smith and Wheeler, 2002). Oliver (1999) suggest that a customer's loyalty must be measured further by analyzing his or her beliefs, affects and experience. In this research context, loyalty is seen as behavioural in nature, which reflects loyalty in terms of revealed purchase and usage behavior that is normally based on customer satisfaction and measured by past purchasing of one's brand and/or competing brand (Mascarenhas et al., 2006). It is important to note that customer satisfaction is not included in the research framework because spectators' total experience construct has captured it as an indicator of pleasure. In sports marketing setting, loyalty is conceptualized as spectators' probable inclination to attend the events again in future and advocate positive word-of-mouth, prompting the authors to postulate the following hypotheses:

H5: SEEV has a positive influence on spectators' sport loyalty.

H6: Spectators' total experience has a positive effect on sport loyalty.

In view of the significance of the research context, the proposed research model is considered novel as it attempts to explore the predictors of SEEV and in turn, its effect on spectators' total experience and ultimately spectators' loyalty. The research model and hypothesized linkages are graphically illustrated in Figure 1.

Figure 1: The Research Model and Hypothesized Linkages

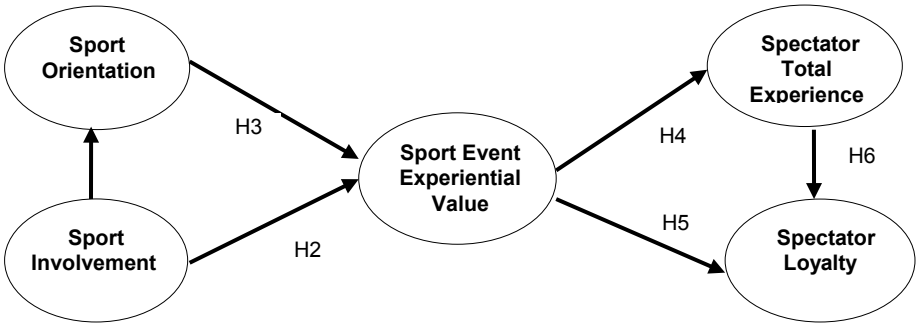

Figure 1 depicts a structural model which integrates two predictors of SEEV (Sport orientation and Sport involvement) and two outcomes (Spectator Total Experience and Spectator Loyalty). The plausibility of the model will be tested using Structural equation modeling procedure.

RESEARCH METHODOLOGY

Some 350 questionnaires forms were distributed to F1 sports spectators during Formula 1 PETRONAS Malaysian Grand Prix 2010 at Sepang International Circuit in Malaysia. Researchers personally administered data collection by intercepting potential respondents within the circuit's vicinity. During this exercise, the researchers approached respondents to elicit interest in survey participation and explained the research objectives. The researchers remained in the vicinity until respondents had completed the survey and interact with them only at a time where and if any minor clarification was needed. Respondents were given approximately fifteen minutes to complete it.

Upon completion, the respondents were given souvenirs as a token of appreciation of their voluntary participation. This data collection technique has resulted in 225 usable survey questionnaires for data analyses. A seven-point Likert scale has been employed for all the measures used in the study except demographics profile and travel behavior sections. The measures were mainly adapted from previous research such as Keng et al., (2007), Mathwick et al., (2002) and Pons et al., (2005). The data were initially assessed to detect outliers and normality then descriptive analyses were performed. Subsequently, data were analyzed to determine the goodness of data in terms of reliability and validity by following guidelines offered by Anderson and Gerbing (1988) and Gerbing and Anderson (1988).

RESULTS AND DISCUSSIONS

Demographics Profile of Respondents

Table 1 presents the respondents profile: 74.2% were male, the majority of which fall in the age category of 21 to 40 years (83.1 percent). Interestingly, high proportion of the sample comprises of international spectators (66.2 percent) of which 39% were European, and 77.4 percent has attained tertiary education.

Exploratory Factor Analysis (EFA)

Three exploratory factor analyses (EFA) were conducted separately on SEEV (Table 2), Sport Orientation (Table 3) and Sport Involvement, Spectators' Total Experience, and Spectators' Loyalty (Table 4). The EFA used principal components extraction with varimax rotation. It is the most commonly used analytical technique for reducing a large item pool to a more manageable set. It has been recognized to be a valuable preliminary analysis when no sufficient theory is available to establish the underlying dimensions of a specific construct (Sharma, 1996). Table II shows the results of EFA for SEEV.

Table 1: Respondents' Demographic Profile

Variable	Description	Frequency	Percentage
Gender	Male	167	74.2%
	Female	58	25.8%
Age	< 20 years old	15	6.7%
	21 – 30 years old	117	52.0%
	31 – 40 years old	70	31.1%
	41 – 50 years old	21	9.3%
	51 – 60 years old	2	0.9%
Highest Academic Achievement	High School	51	22.7%
	Undergraduate	121	53.8%
	Post graduate	53	23.6%
Nationality	Malaysian	76	33.8%
	ASEAN (Indonesian, Brunei, Singapore and Thailand)	31	13.8%
	European	58	25.8%
	North & South America	13	5.8%
	Africa	12	5.3%
	Australia/New Zealand	12	5.3%
	Far East (China /Japan/Korea/ Taiwan)	23	10.2%

This table shows the breakdown of respondents' profile based on gender, age distribution, academic achievement and nationality

In assessing the initial factor structure of SEEV, all the 32 items were analyzed using EFA. It displays the result for both Bartlett test of sphericity (χ^2 of 4520.82, df = 231 at p = 0.001) and the Kaiser-Mayer-Olkin measure of sampling adequacy (KMO = 0.94). This indicates that there are sufficient inter-item correlations with the data for performing factor analysis. Sharma (1996) suggests that the cut-off level for the KMO statistic should be greater than 0.8, but a value of 0.6 is tolerable. A six-factor solution was extracted; however, this initial purification exercise resulted in deletion of 10 items because of failing to fulfill the above-mentioned criteria. In summary, the results reveal that SEEV construct comprises of six factors, which are labeled as esteem/escapism, entertainment, economy (customers' return on investment), social, service and aesthetics.

Table 2: Final Exploratory Factor Analysis for Sport Event Experiential Value (SEEV)

	Sport Event Experiential Value Items	F1	F2	F3	F4	F5	F6
1	The F1 circuit is aesthetically appealing		0.73				
2	The motor exhibition displays products attractively		0.82				
3	The signage and electronic board at F1 Grand Prix is visually eye-catching		0.73				
4	The layout design of the F1 circuit makes it easy to get around		0.65				
5	Overall, the atmosphere at F1 Grand Prix circuit is stimulating		0.61				
6	F1 provides great entertainment			0.69			
7	F1 is a fun way to spend time			0.73			
8	Attending F1 is fun			0.82			
9	When I think of F1, I think of excellence event			0.73			
10	F1 Grand Prix staff are responsive on request						0.72
11	F1 Grand Prix at staff are knowledgeable						0.69
12	F1 event is an opportunity to make friends with people who share the same interest					0.67	
13	Attending F1 with my friend or family is a bonding experience					0.75	
14	I got my money's worth for attending F1				0.67		
15	I am happy with F1 price ticket				0.84		
16	Overall I feel F1 ticket is of a good economic value				0.80		
17	The thrill of F1 performance "gets me away from it all"	0.67					
18	The excitement of F1 makes me forget my problems	0.70					
19	My friend would think highly of me if I attend F1 event	0.79					
20	My social status will be enhanced when I attend F1 event	0.76					
21	F1 is a prestigious event	0.61					
22	I feel proud attending F1 event	0.67					

This table shows that Sport Event Experiential Value construct consists of six factors namely: F1 (esteem/escapism); F2 (aesthetics); F3 (entertainment); F4 (economy): F5 (social) and F6 (service.)

Table 3 demonstrates the results of the second EFA. Two factors emerged from 14 items, which contravene expected outcome of three factors. It was noted that all items (4) to represent the third expected factor, which is social seeking sport orientation, did not converge into the third factor, and the items fall into sensation factor with high cross loading with cognition seeking orientation. The result reveals that the KMO statistic of sampling adequacy was 0.87. However, this initial purification exercise resulted in deletion of eight items based on high cross-loadings (greater than 0.40) on multiple factors. This result implies that sport orientation comprises of two factor structures, which are sensation seeking and cognition seeking.

Table 4 depicts the third EFA results, which illustrates that there is three factor-structure emerged from these three constructs: sport involvement, spectators' total experience and spectators' loyalty, totaling 25 items. The result reveals an adequate sampling adequacy based on the KMO statistical value of 0.95. The initial purification exercise resulted in deletion of one item in sport loyalty construct based on high cross loadings (greater than 0.40) on multiple factors.

Table 3: Final Exploratory Factor Analysis for Sport Orientation

Sport Orientation Items	Sensation Seeking	Cognition Seeking
1. attending sport event is real pleasure	0.81	
2. always excited when going to this sport event	0.90	
3. always enthusiastic when thinking about attending this event	0.86	
4. attending this sport event, I feel part of the event	0.80	
5. happy when I can attend this event	0.78	
6. consider myself as a motor sport expert		0.82
7. can talk about tactic and strategies like a professional		0.87
8. I know very little about motor sports		0.70

This table demonstrates that Sport Orientation construct is comprises of two factors/dimensions that are sensation seeking and cognition seeking.

Confirmatory Factor Analysis

As argued by Gerbing and Anderson (1988) item-total correlation, alpha coefficient and exploratory factor analysis procedures could not ensure unidimensionality of measures, which is viewed as an important requirement of valid measurement. They strongly recommend that a more rigorous statistical procedure be employed to refine and confirm the factor structure generated from the initial EFA. Confirmatory factor analysis (CFA) has been proposed as an analytical tool to ascertain unidimensionality of measures (Gerbing and Anderson, 1988). Hence, in line with this suggestion, all the resulting measures derived from EFA were validated using a CFA analytic procedure by employing the AMOS 18 analytical program. In order to achieve an acceptable ratio of observations to estimate parameters, it is essential to run three separate measurement models; the fit indices suggest that these models fit the data well. The first measurement model consists of SEEV construct of six-factor solution.

The results of the first measurement model are as follows: the fit statistics were $\chi^2 = 468.64$, $df = 194$, $\chi^2/df = 2.41$, $p < 0.001$; RMR = 0.079; IFI = 0.94; CFI = 0.94; and RMSEA = 0.08. All indicators loaded heavily on the construct and have *t*-values greater than 13.95 and all standardized coefficient are greater than 0.50. The second measurement model comprises of sport orientation construct with two-factor structure. The fit statistics were $\chi^2 = 21.16$, $df = 12$, $\chi^2/df = 1.76$, $p < .048$; RMR = 0.08; IFI = 0.99; CFI = 0.99; and RMSEA = 0.06. Items loaded heavily on their posited constructs and have t-values greater than 7.35 and all standardized coefficient are greater than 0.50.

Table 4: Final Exploratory Factor Analysis for Sport Involvement, Spectators Total Experience and Spectators Loyalty

	Measurement Items	Sport Involvement	Spectators Total Experience	Spectator Loyalty
1	Interested in F1	0.70		
2	Involvement with f1is high	0.83		
3	Expert in F1	0.82		
4	Strong supporter of F1	0.85		
5	Enjoy following coverage of F1	0.77		
6	Well-informed about F1	0.83		
7	F1 matters to me a lot	0.89		
8	Enjoy discussing F1	0.86		
9	Unhappy-happy		0.70	
10	Unenjoyable-enjoyable		0.74	
11	Unsatisfactory-satisfactory		0.76	
12	Dull-fascinating		0.77	
13	Not fun-fun		0.77	
14	Boring-interesting		0.79	
15	Unpleasant-pleasant		0.83	
16	Terrible-delighted		0.85	
17	Monotonous-sensational		0.83	
18	Calm-excited		0.78	
19	Unarousal-arousal		0.78	
20	Relaxed-stimulated		0.73	
21	Not safe-safe		0.72	
22	Come again to F1 PETRONAS Grand Prix in the future			0.75
23	Recommend F1 PETRONAS Grand Prix to friends/relatives			0.75
24	Desire to attend F1Petronas Grand Prix event again in future			0.75
15	F1 PETRONAS Grand Prix is my first preference			0.66

The above table depicts that Sport Involvement, Spectators Total Experience and Spectators Loyalty is a one dimensional construct

The third measurement model comprises of Sport Involvement, Spectators' Total Experience and Spectators' Loyalty. The fit statistics were $\chi^2 = 327.25$, $df = 235$, $\chi^2/df = 1.39$, $p < 0.001$; RMR = 0.07; IFI = 0.98; CFI = 0.98; and RMSEA = 0.04). Items loaded heavily on their posited constructs and have *t*-values greater than 8.23 and all standardised coefficient are greater than 0.50. In essence, all the items in the three measurement models have achieved convergent validity. The widely accepted cut off value for factor loading is when the *t*-values are greater than ± 1.96 or ± 2.58 at 0.05 or 0.01 levels respectively and standardized factor loading of 0.5 and above as recommended by Anderson and Gerbing (1988). Construct validity was assessed in terms of convergent and discriminant validity. Convergent validity is established through high correlations between the measure of interest and other measures that are supposedly measuring the same concept (Aaker, Kumar and Day, 2007). The critical ratio (*t*-value) of the items in the three measurement models were ± 1.96 or ± 2.58 at 0.05 or 0.01 levels respectively, and standardized factor loading of 0.5 and above. Thus, the convergent validity of the constructs was upheld (Anderson and Gerbing, 1988).

Alternatively, discriminant validity can also be established through low correlations between the constructs and it is evident, when the correlation between factors was lower than 0.80 (Klein, 2005) and (Yanamandram and White, 2006). Discriminant validity is achieved as the correlation coefficients ranging from 0.53 to 0.71. For a rigorous test of discriminant validity according to Fornell and Larcker (1981), the AVE of each construct was computed and found to be greater than the squared correlation between the construct and any other constructs in the model. A complementary assessment of discriminant validity was conducted to determine whether confidence interval of (±2 standard errors) around the correlation estimated for each pair of constructs includes 1 (Anderson and Gerbing, 1988). The result illustrates that this criteria has been achieved satisfactorily. In conclusion, it is reasonable to claim that all the measures used in the study possess adequate psychometric properties.

Table 5 presents the summarized results of measurement models, which include correlation matrix, mean value, Cronbach's alpha, composite reliability and Average Variance Extracted (AVE). Construct

reliability was also assessed by estimating the AVE, which reflects the overall amount of variance captured by the latent construct and Composite Reliability (CR). CR reflects the internal consistency of the construct indicators, while AVE reflects the amount of variance captured by the construct indicators (Hair, Babin and Anderson, 2010). All CR scores ranging from 0.85 – 0.93, were much higher than the recommended cut-off point of 0.7 (Olorunniwo, Hsu and Udo, 2006). Thus, each of the factors are reliably measured its respective constructs. The AVE scores ranged from 0.60 to 0.72, exceeding the recommended cut-off point of 0.5 (Fornell and Larcker, 1981). It is important to note that Cronbach's alpha, the customary index of reliability was assessed after unidimensionality of a measure has been established; this was in line with the suggestion proposed by Anderson and Gerbing (1988). A commonly used threshold value of 0.70 (Nunnaly and Bernstein, 1994) was used; however (Hair, Anderson and Black, 1998) suggest that values slightly below 0.70 are acceptable if the research is regarded as exploratory.

Table 5: Correlation Matrix, Squared Correlation, Average Variance Extract, Mean Value, Square Multiple Correlation, Cronbach's Alpha and Composite Reliability

Construct	F1	F2	F3	F4	F5	Mean Score	Standard Deviation	Cronbach's Alpha	Composite Reliability
Sport Involvement (F1)	**0.60**					4.94	1.28	0.90	0.93
Sport Orientation (F2)	0.70 (0.49)[a]	**0.65**				4.98	1.03	0.93	0.86
Sport Event Experiential Value (F3)	0.71 (0.50)[a]	0.70 (0.49)[a]	**0.66**			5.09	0.96	0.92	0.91
Spectators' Total Experience (F4)	0.55 (0.30)[a]	0.63 (0.40)[a]	0.71 (0.50)[a]	**0.68**		5.59	1.00	0.96	0.90
Spectators' Loyalty (F5)	0.54 (0.29)[a]	0.53 (0.28)[a]	0.63 (0.40)[a]	0.66 (0.44)[a]	**0.72**	5.40	0.99	0.84	0.85

The table indicates that the data used in the analysis for this study has been verified through efa, cfa and structural equation modeling to be reliable and valid. [a]Squared Correlation is presented in parenthesis and Average Variance Extracted (AVE) is presented on the diagonal axis

Structural Model Analysis

Subsequently, structural equation modeling (SEM) was utilized to test the six hypothesized relationships among the constructs postulated in the proposed model (Figure 1). Because of sample size constraints, composite means were constructed for all the scales. These indices were used as new variables in the data set (Settoon, Bennett and Liden, 1996). As recommended by MacKenzie and Lutz's (1989), for latent construct with one dimension, its loading (lamda) is fixed to be the square root of its reliability, and the error term is set at one minus the construct reliability. The structural model has a significant χ^2 value (χ^2 = 58.30, *df*=32, χ^2/df = 1.82, p< 0.003), indicating inadequate fit of the data with the hypothesized model. This is to be expected as in practice this statistic is very sensitive to sample size (Klein, 2005 and Ullman, 2006). Hence, the other fit indices were employed (GFI = 0.96; RMR = 0.03; AGFI = 0.91; CFI = 0.99; IFI = 0.99; NFI = 0.97; RMSEA = 0.06) suggest that the model fits the data satisfactorily. Therefore, the study's objective to establish a plausible model that has statistical and explanatory power, which could permit confident interpretation of results, was thus successful. Results of the tested hypotheses are reported in Table 6.

CONCLUSION AND IMPLICATIONS

The result in Table 6 demonstrates that all the hypothesized linkages were supported. It delineates a few key implications such as sport involvement has a significant impact on sport orientation (H1) and in turn sport involvement has a positive influence on SEEV (H2). The findings confirm that sport orientation has significant positive effect on SEEV (H3). Thus, the results established that sport involvement and sport orientation are significant predictors of SEEV and consequently, spectators' total experience (H4) and

spectators' loyalty (H5) are outcomes of SEEV. Clearly, this study reveals that SEEV directly influence spectators' loyalty towards F1 PETRONAS Grand Prix (see H5). Although spectators' loyalty could also be realized via spectators' total experience (see H6), however, spectators' total experience has a greater impact on their loyalty as compared to SEEV. Most importantly, the research's primary goal to develop and validate a plausible model to exemplify the factors that determine the focal construct, SEEV and its outcomes have been accomplished.

Table 6: Results of Tested Hypotheses

	Hypothesized Path	Standardized Coefficient	Construct Reliability (t-value)	Results
H1	Sport Involvement — Sport Orientation	0.75	9.19***	Supported
H2	Sport Involvement — Sport Event Experiential Value	0.24	3.34***	Supported
H3	Sport Orientation — Sport Event Experiential Value	0.76	8.13***	Supported
H4	Sport Event Experiential Value — Spectators' Total Experience	0.73	12.69***	Supported
H5	Sport Event Experiential Value — Spectators' Loyalty	0.36	4.40***	Supported
H6	Spectators' Total Experience — Spectators' Loyalty	0.47	5.78***	Supported

This table depicts that all the six hypotheses posited in this study are supported by the data that comprises of a sample of 225 respondents. H3 path has the strongest effect on SEEV. Whilst Spectators' Total Experience is of greater influence to Spectators' Loyalty compared to SEEV.
*, **, *** to indicate significance at the 10, 5 and 1 percent levels respectively

The finding of the study accentuates that F1 management stands to gain by placing extra emphasis on enhancing SEEV, as it has a direct positive significant impact on spectators' total experience, and ultimately sport loyalty. Thus, motor sport organizers and other related sector such as hospitality and Tourism Board could gain competitive advantage and above all business sustainability. This goal could be achieved by devoting resources to enhance and fulfill the spectators' expected experiential value, which should be congruent with their sport orientation and underlying motives of attending the sporting events. Moreover, identifying the predictors of SEEV would enable event managers to create a delightful and memorable experience, which is critical and perhaps would provide an effective competitive weapon in the face of intense competitions from other sport events. It seems reasonable to speculate that spectators that had memorable and enjoyable experience will increase propensity of their loyalty towards F1 Grand Prix as their most preferred sporting event.

Today mega-event such as F1 becoming major revenue generating tool which entails spillover effect to local and regional economic development (Mahalingam, 2009). Therefore, it is critical that sports event organizers attract as many spectators as possible in order to gain maximum economic impact. Undeniably, building great experience require an ecosystem approach which focus on a constellation of products and services that deliver a seamless experience, and demand involvement and integration of strategy, technology and management commitment. A major criticism of the study concerns external validity as the respondents were not selected based on random sampling, but rather on convenient sampling. This sampling procedure thus may not be an accurate representation of the spectators of F1. However, it is conceivable to speculate that those who were at the vicinity of F1 circuit during the qualifying and final race days could be somehow have the interest and experience required by this study. On this argument, the results and interpretations might be generalizable, specifically in the context of motor sport events. In fact, Ferber (1977) suggests that there is no place for probability samples in basic or applied consumer research.

Furthermore, the research design of using questionnaires and statistical method of analysis is often criticized in assessing the experiential aspect of consumption. The preliminary investigation might provide rich insights by qualitative research approach, such as in-depth interviews and focus group discussion. Additionally, it is noted that another pertinent weakness of the research is pertaining to the cross-sectional research design used in this study. Longitudinal research is required to capture the dynamic nature of customer post-consumption behavior. Nevertheless, efforts to test the present model

through sagacious longitudinal research would require an enormous amount of sustained cooperation by consumers serving as key informants over time, moreover the sample attrition through time could be considerable. The limitations of the present research provide opportunities for further research direction. It may be fruitful for future research to replicate and validate all or parts of the present research model, in order to determine the robustness of the findings in other sporting event settings.

Apparently, replication and comparative cross-national studies are essential in order to examine the generalizability of the model. This research direction appears to be potentially fertile because F1 is a global motor sport event; hosted in nineteen countries with extensive global audiences. Perhaps, the evidence of the plausibility of the two pivotal links—SEEV to spectators' total experience and SEEV to spectators' loyalty—would require validation in other sports events. It is also noteworthy that future study should devote the focus on extending the present model by integrating other pertinent constructs in sporting events such as identity salience and motivation. A remarkable avenue for future research is to investigate the effect of SEEV on spectators' attachment and engagement behavior by employing longitudinal research design. Perhaps, this prospective research endeavor could impart more interesting and deeper insights to both academic and practitioners.

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