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EFFECT OF AUDITOR'S JUDGMENT AND SPECIALIZATION ON THEIR DIFFERENTIAL OPINION BETWEEN SEMIANNUAL AND ANNUAL FINANCIAL REPORTS

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ABSTRACT

This study examines the factors that lead to issuing negative opinions on semiannual reports while issuing positive opinions in annual reports from the perspective of auditor-client relationships in listed companies in Taiwan. The empirical results show that the importance of the client is significant positively related to differential opinions while auditor tenure and industry specialists are significant negatively related to differential opinions. The results suggest that auditors have become more conservative and pay more attention to protecting their reputations post-Enron. The conclusion indicates that enhancing auditors' specialization and independence reduces the opportunity to issue differential opinions in order to evade legal responsibility.

JEL: M41, M42, G12, G32

KEYWORDS: Industry specialist auditor, Auditor tenure, Audit opinion, Value of firms, Risk

INTRODUCTION

Financial statements summarize company performance and operation results for investors. For the purpose of monitoring and assessing companies' future development, the authority in charge of securities in Taiwan specifies that listed and over-the-counter companies must release their financial information quarterly and that the semi-annual reports and the annual report must be audited by certified public accountants. These requirements are stricter than those of most other countries, where semiannual reports do not have to be audited. The Generally Accepted Auditing Standards (GAAS) No. 33 of Taiwan classified the auditor's opinion into five categories: unqualified opinion, modified unqualified opinion (add an explanatory words in the report), qualified opinion, disclaimer of opinion, and adverse opinion. Among the five categories of audit opinions, unqualified and modified unqualified opinions are classified as "positive opinions" that indicate that the company is well operated. Qualified, disclaimer, and reverse opinions are generally classified as "negative opinions" that indicate that the company has some problems in its operation. This study uses the 1999 to 2008semiannual and annual audit reports of companies listed on the Taiwan Stock Exchange Corporation (TWSE) and the Gre Tai Securities Market (OTC) as a research database. In Table 1 Panel A, we find that 20.73 percent of semiannual reports were issued unqualified opinions by auditors, and 62.24 percent were issued qualified opinions.

For annual reports, auditors issued 36.13 percent unqualified opinions, 63.06 percent modified unqualified opinions, and only 0.81 percent qualified opinions. This result shows a shift in audit opinions between semiannual and annual financial reports, as unqualified audit opinions increased from 20.73 percent on semiannual reports to 36.13 percent on annual reports, and qualified opinions dramatically decreased from 62.24 percent on semiannual reports to 0.81 percent on annual reports. It appears that auditors often changed their "negative" opinions in semiannual reports to "positive" opinions in annual reports. The study will explore the factors that led to these changes of opinion. Evidence from the U.S. suggests that, after Enron, auditors' behavior became more conservative in regard to bankrupt companies

(Geiger, Raghunandan and Rama, 2005; Fargher and Jiang, 2008). Francis and Yu (2009) found that larger audit offices provide higher-quality audits and those clients of larger audit offices evidence less aggressive earnings management. Prior studies have also reported that an auditor's having an industry specialization results in higher-quality audits (Balsam, Krishnan and Yang, 2003; Velury, 2003; Carcello and Nagy, 2004; Reichelt and Wang, 2010).

We explore the reasons for auditors' changes of opinion by asking whether the change is caused by the economic dependence of auditor from their clients. We also examine whether the auditor's industry specialty can reduce the incidence of changed opinions between semiannual and annual reports. According to the Generally Accepted Accounting Principles (GAAP) of Taiwan No. 23, "Expression and Disclosure of Interim Financial Reporting", the semiannual report figures contain many estimates, apportions, and deferrals, so there is considerable uncertainty in semiannual reports. In addition, the company has only two months to prepare a semiannual report, which is significantly shorter than the four months for annual report preparation. According to Business Regulations No. 49 of Taiwan Stock Exchange Act, the acceptable reports are those with unqualified opinions or modified unqualified opinions; the auditor can issue qualified opinions in semiannual reports that the gain or loss of investments is according to unaudited financial statements and only needs to add an explanation words in the audit report to remind readers to pay heed to the statement. Both unqualified opinions and modified unqualified opinions are accepted by the TWSE and OTC as clean opinions, unlike the other types of opinions (i.e., qualified opinions), so auditors are likely to issue qualified opinions in semiannual reports to diminish their responsibility. The annual report allows more audit procedures that reduce the audit risks, so auditors are more likely to issue unqualified or modified unqualified opinions for annual reports.

Prior studies have analyzed reporting frequency effects around the years that quarterly reporting became mandatory in the US. Givoly, Ronen and Schiff (1978) compared a group of reports subjected to audit review against a control group that had not gone through review procedures in order to determine whether the level of auditor involvement affects the quality of semiannual reports and found no differences between the two groups. Holthausen and Verrecchia (1988) showed that the degree of stock price fluctuation is positively correlated with the accuracy of financial information. Gigler and Hemmer (1998) indicated that excessively frequent reports reduced the degree to which other voluntary information is disclosed because of the report cost, so investors' information acquisition was affected. Butler, Kraft and Weiss (2007) indicated that the US's requiring specified quarterly report information in 1971 failed to have the intended effect of increased annual surplus. Mensah and Wemer (2008) suggested that more frequent interim reports force firms to make estimates, so more frequent interim reports may be subject to more error than less frequent ones are.

Cuijpers and Peek (2010) studied European countries and verified the findings of Butler et al. (2007) that the mandated change from semiannual to quarterly reporting did not increase the extent to which prices anticipate annual earnings. Kubota, Suda and Takehara (2010) indicated that Japanese analysts usually use semiannual report information to revise the predicted surplus in the annual report. Since the semiannual report is free from the effect of quarterly reports and the stockholders' annual meeting, this paper infers that auditors are more likely to issue negative opinions in semiannual reports to protect themselves and to issue positive opinions in annual reports in order to keep important clients.Windsor and Ashkanasy (1995) pointed out that auditors could not resist management pressure when their moral reasoning was low. From an economic perspective, the greater an auditor's financial dependence upon its clients, the more likely the auditor will be to compromise with the client in terms of accounting treatment and disclosure of information, and the more difficult it will be to maintain a fair and objective attitude and to provide a reliable opinion. In particular, in the culture of accounting firms in Taiwan, the client is engaged by audit partnerships who have expertise in the industry and who have solid public relationships.

Lai (2000) pointed out that the type of organization in Taiwan accounting firms is similar to a taxi license leasing system; the internal audit departments in the firm do things in their own way, and the purpose of partners is to reduce expenses or simply to use the same brand as the foreign accountants' alliance. For personal economic purposes, the audit partner may lower his or her audit quality, regardless of the damage caused to the overall reputation of the firm. DeAngelo (1981b) stated that the importance of the client is reflected in the future quasi-rents of the client in proportion to the quasi-rents of all other clients such that, the higher the proportion, the more important the client. From the legal perspective, the risk of litigation and legal costs in the event of audit failure can be avoided by checks and balances (Bonner,

Palmrose and Young, 1998; Reynolds and Francis, 2000; DeFond, Raghunadan and Subramanyan, 2002), which will strengthen the independence of the auditors. Compared to that of the US, Taiwan's legal environment still has room for improvement, although the "Securities Investor and Futures Trader Protection Act" was adopted in 2002, and group litigation cases are accepted to protect investors. However, according to the Financial Supervisory Commission of Taiwan there have been only 28 cases to date of auditors listed as co-defendants because of audit failure. Because investors' legal actions are targeted at individual auditors—that is, the individual auditor takes legal responsibility when an audit failure occurs—internal supervision in audit firms is rare. Therefore, the question concerning whether an auditor's audit opinion is based on an independent opinion or is actually affected by other factors, such as economic considerations, has raised the issue of auditors' moral hazard (Narayanan, 1995).

Although audit quality cannot be directly observed and measured, auditors are responsible for improving the audit process and enhancing the quality of reports. Auditors' awareness of professional ethics plays an important role in the quality of the audit. According to prior research, reputation is the most important element in audit firms. Auditors may lose their professional ethics because of factors related to their work, salary, position, and personal benefits gained from their clients. The Enron case in 2001 resulted in the collapse of Arthur Andersen, one of the top five accounting firms in the US. Some listed Taiwanese companies have also been involved with accounting scandals similar to Enron, resulting in the need to enhance the public company and capital market control system. Taiwanese officials, companies, and academics have been devoted to preventing the problems in capital markets and future possible troubles: following the US's Sarbanes-Oxley Act, the Securities and Futures Commission of Taiwan revised the management regulations to gain stricter control of listed companies.

In the existing literature, fraud is often discussed in terms of the impact of earnings management, auditor tenure, and provision of audit services and non-audit services on auditor independence and audit fees. However, issues related to professional ethics are rarely addressed, and studies on how the relationship between individual auditors and clients can lead to different audit opinions in annual and semiannual reports and mislead investors are also rare. Some studies based in Taiwan took the Enron case as the cut-off point in order to discuss the influence of the Enron case on auditor behavior. For example, Fu, Chang and Chen (2005) showed that discretionary accrual in financial statements decreased markedly with the change in the audit environment after Enron and that auditors issued non-standard unqualified opinions more frequently after Enron. Yang and Guan (2006) compared the periods pre- and post-Enron and found that client importance is significantly negatively associated with abnormal accruals, supporting the view that the Enron case influenced auditor behavior and the adoption of conservative decisions. Guan, Chien and Hsu (2008) studied accounting frauds and financial report conservatism and showed that financial reporting has become more conservative after the Enron/Procomp frauds.

This paper contributes to the literature on auditor-client relationship and industry experts, addresses the issue of negative opinions in semiannual reports and positive opinions in annual reports, and explores the potential of auditors' awareness of professional ethics. Consistent with our hypotheses, we find that the importance of the client is significantly positively related to changes of opinion between semiannual and annual reports and that auditor tenure and industry specialization are significantly negatively related to

those changes of opinion. The results suggest that, before Enron, auditors' decisions were more easily compromised, while after Enron, auditors take a more conservative approach to decision making with regard to important clients and pay more attention to protecting their own reputations.

The remainder of this paper is organized as follows. The next section discusses the background of auditor-client relationships and related research and develops the hypotheses. Sections 3 and 4 present the method and the results of the experiments, respectively. Section 5 offers conclusions and implications.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The auditing profession is highly specialized, and the audit market's maturity and saturation increases auditors' economic dependency on their clients, which may prejudice their independence as well. The semiannual reports contain many estimates because they tend to be more urgently filed than the annual reports. Auditors tens to present negative opinions in semiannual reports and positive opinions in annual reports to maintain their formal independence while maintaining their important customers, which is one of the primary issues in this paper. Table 1 Panel A, which compiles the opinions of semiannual reports and annual reports issued between 1999 and 2008, shows that there are nearly 99 percent fewer qualified opinions in annual reports than in semiannual reports.

After the Enron failure, the Sarbanes-Oxley Act, which reinforced the independence of auditors and their issuance duty, was published. Table 1 Panel B shows that the qualified opinions in annual reports were greatly reduced between 1999 and 2008, and the ratio of annual reports with unqualified opinions after Enron (25.85%) was significantly lower than the proportion before Enron (51.55%). Geiger and Raghunandan (2002) found that, when the laws change, auditors change how they issue opinions about companies having financial difficulties. Fargher and Jiang (2008) demonstrated that, after the Enron incident, auditors revised their attitudes toward client beneficial in response to increasing litigation risk and the need to reconstruct the firm's reputation. Our exploration concerns whether a change in the audit environment affects audit opinions in annual and semiannual reports.

Audit Reports

As a form of monitoring, auditing is an auditor-client negotiation process which mitigates incentive problems between managers and outsiders. Windsor and Ashkanasy (1995) studied clients' bargaining power and auditors' moral reasoning development and pointed out that, the lower auditors' moral ideals are, the less ability they have to resist pressure from clients. Matsumura, Subramanyam and Tucker (1997) explored the strategic behavior of auditors and going-concern decisions, and Tucker and Matsumura (1998) investigated the issue of going-concern judgments. Their studies found that auditors behaved strategically which indicates that, with relatively weaker negotiation ability, auditors have increased difficulty maintaining their independence, thereby affecting the quality of the audit opinion.

According to Taiwan GAAS No. 33, when there were scope limitations and departures from the GAAP, and the auditor considers the situation to be significant, he or she must issue a qualified opinion. GAAS No. 15 "Adopts the Other Auditors' Opinion" if the chief auditor is satisfied with the results or reports of the other auditors; the chief auditor may not mention the other auditors' work in the audit report. Furthermore, if the other auditors issue audit reports that contain any but unqualified opinions, and the influence of the overall financial statement is not significant as evaluated by the chief auditor, the chief auditor will still be able to issue a clean opinion. From Table 1 Panel C, we find the majority qualified opinions are reason for gain or loss of investments are according to unaudited financial statements (n=3,577; 55.54%) not for going-concern (n=7) in semiannual reports, which almost all opinions (99.98%) are changed to modified unqualified opinion in annual reports for long-term investment to adopt the other auditors' opinions (n=2,705; 42.01%). Meanwhile, there are 1,652 observations (61.07%) which the ratio

of long-term investment to total assets is over 20 percent and the chief auditor adopts other auditor's opinion, the auditor is willing to bear the risk of the other auditor and not mention their work in the audit report, issuing clean opinion in the annual reports.

Before presenting their opinions, the auditors will have fully discussed them with their clients. If the client consents to the auditor's proposed changes, the auditor can still issue a clean opinion. This communication gives auditors and clients space in which to negotiate the audit opinions. Evidence in Nelson, Elliott and Tarpley (2002) suggests that auditors and management virtually always resolve earnings-management issues before opinions are issued. Chung and Kallapur (2003) used the importance of individual clients to auditors as a proxy for relative importance to discuss the effect of clients and non-audit services on earnings quality. They found that the strength of clients' negotiating power affects the pricing decisions of auditors and the audit quality. This present study infers that auditors issue qualified opinions in semiannual reports to avoid audit risks because of limited audit scope, and that auditors issue modified unqualified opinions in annual reports by adopting the other auditors' opinions to separate responsibility and to please the client. Therefore, when there is less awareness of professional ethics, auditors are vulnerable to the influence of economic incentives from their main clients, thereby affecting their audit opinions.

The Auditor-Client Relationship

The purpose of the audit is to reduce information asymmetry; the role of the external auditor is to show whether the financial statements are prepared in accordance with the GAAP and to ensure that reporting errors are limited. Compared to other sectors, the auditor profession is a more highly specialized service industry. Grant and Schlesinger (1995) suggested that the focus should be on increasing the use of products, increasing the number of customers to be served, encouraging customers to use more products or services, and establishing and maintaining long-term relationships with customers. The first two strategies concern product differentiation and the importance of clients.

Unlike in the US, audit reports in Taiwan contain the names of both the audit firm and two auditor partners from the same firm. Certified public accountants are personally responsible in Taiwan in the event of audit failure, so the relevance of audit quality and the auditor firm is relatively low compared to the impact of the individual auditor's proficiency level in the industry. This proficiency is based on the auditor's accumulation of expertise from working with several companies in the same industry (Fan, Chen and Wu, 2007). The more auditing experience an auditor has, the better the auditor will understand his or her clients' conditions, which can also improve his or her ability to solve problems. Therefore, we use auditors' work experience and qualifications as the proxy for industry specialization.

The Importance of Client

Audit fees are the main source of income for auditor firms. According to economic theory, the more important their clients become, the more incentive auditors have to compromise their independence. DeAngelo (1981b) pointed out that the importance of clients is reflected in the future quasi-rents from these clients in proportion to the quasi-rents of all other clients. Auditors are more likely to sacrifice independence for important clients. Reynolds and Francis (2000) explored the influence of large clients on auditor reporting decisions and argued that, depending on economic factors, auditors may acquiesce to clients' desires for a favorable financial report to maintain a good relationship. Thus, the auditor's decision is a choice between maintaining economic dependence and maintaining its reputation. Chung and Kallapur (2003) studied the relationship between the importance of customers, non-audit services, and abnormal accruals and revealed that auditors' independence is compromised by the importance of clients as the amount of corporate governance and the number of industry specialists increases.

Cenker and Nagy (2008) examined the relationship between auditors' resignations and industry specialization and found that auditors are less likely to give up customers who pay high audit fees than they are to give up other customers. In Taiwan, Lee and Chen (2004) used auditor groups to calculate the importance of clients and explored whether the importance of a client influenced auditors to allow room for earnings management. They found that, the greater the importance of the client, the greater the room for earnings management, but when the auditors' clients expand beyond a single client and a client's relative importance decreases, so does the flexibility to manipulate earnings. Yang and Guan (2006) investigated whether the importance of clients and non-audit services affected audit quality and found that auditors paid more attention to maintaining their reputations and tended to adopt a more conservative role after the Enron case.In general, then, before the Enron incident auditors tended to compromise with their clients because of economic factors, but after the Enron incident, increasing litigation risk and the need to maintain brand reputation and independence made auditors' decisions significantly more conservative. We accept that auditors will consider economic factors in their estimation of the importance of clients and will maintain their formal independence by issuing negative opinions in semiannual reports and by issuing positive opinions in annual reports. The hypothesis is established as follows:

H1: *When the relative importance of a client is higher, there is a positive relationship between negative opinions in semiannual reports and positive opinions in annual reports.*

Auditor Tenure

In marketing research, Grant and Schlesinger (1995) pointed out that one way to improve corporate profits is to extend the duration of customer relationships. Bolton (1998) used a dynamic model to explore continuous service provision and the customer relationships and found that customer satisfaction is a key factor in customer retention. There have been several instances of fraud in financial statements in recent years, which have led investors to question the quality of auditor reports. In particular, the seventeen-year relationship between Enron and the Arthur Andersen accounting firm in the US caused investors to lose confidence in the independence of auditors following the Enron debacle. To strengthen auditor independence, the Sarbanes-Oxley Act of 2002 (Section 203) mandates a five-year rotation for the lead and reviewing partners. In the same vein, in April 2003, Taiwan reviewed the "Financial Reports of Companies' Operating Procedure" and stipulated that, "if the lead or concurring partner has performed audit services to the company after it is publicly traded for the most recent five consecutive years," the company's financial reports require substantive review and examination. Actually, audit firm rotation is not mandatory in Taiwan, but rotation of audit partners has been commonplace since 2003.This provision is intended to ensure that auditors of publicly traded companies are rotated.

It has been argued that rotation of auditors increases the competitiveness of the audit market, lowers audit fees (Ettredge and Greenberg, 1990; Turpen, 1990), increases the formal independence of auditors, and enhances audit quality (Chi and Huang, 2005; Carey and Simnett, 2006). Davis, Soo and Trompeter (2000) found that auditor tenure and discretionary accruals are positively correlated but that they were negatively correlated with financial forecast errors, which implied that, the longer the tenure, the more likely auditors are to allow clients to undertake earnings management, and the easier it is for clients to achieve their desired financial forecasts. Chi and Huang (2005) found that discretionary accruals are large regardless of the length of auditor tenure and that they have a negative impact on earnings. Carey and Simnett (2006) studied Australian companies and found that the longer the auditor's tenure, the more unlikely it is to issue a negative report to clients that are having financial difficulties. These studies support the idea that, if the auditors' tenure is too long, the audit quality will be affected.

Those who oppose the idea of auditor rotation say that rotation increases the cost of the initial audit and prevents the auditors from accumulating necessary knowledge about their clients. However, Geiger and Raghunandan (2002) contended that it is easily caused by a lack of professional ability and that increases

the likelihood of audit failure. Prior studies have shown that, the longer an auditor has served a company, the higher the audit quality (Myers, Myers and Omer, 2003; Ghosh and Moon, 2005). Carcello and Nagy (2004) examined the correlation between auditor tenure and fraudulent financial statements and found that financial statement fraud usually occurs when the auditor has a shorter tenure (within three years), while there is no significant difference between auditor tenure and fraudulent statements in the longer term. In other words, the study shows that the longer the term, the lower the probability of fraudulence in financial statements. Stanly and DeZoort (2007) studied auditor tenure in relation to financial restatements found a negative relationship between length of auditor tenure and financial restatement. Lee and Lin (2005) explored the correlation between auditor tenure and abnormal accruals, Jiang and Yang (2005) investigated the relationship between the audit firm's industry specialization and earnings quality, and Liu and Wang (2008) studied auditor tenure and audit quality, and all found that audit firms did not allow earnings management in order to maintain long-term relationships with clients. Instead, they pointed out that the longer the auditors' tenure, the greater the likelihood that they inhibit the client's motivation to undertake earnings management.

Taiwan GAAP No. 23 states that "the preparation of interim financial statements should consider the costs, benefits, and information readily available, may, in accordance with certain provisions of the accounting methods or expedient to use more of the estimated ...". Interim reports not only provide clients more space in the semiannual report for earnings manipulation but also give auditors greater discretion in decision making. Chi, Huang, Liao and Xie (2009) researched listed companies in Taiwan to explore the relationship between the implementation of mandatory audit partner rotation and audit quality and found that mandatory partner rotation or firm rotation does not necessarily improve audit quality. Because of the two competing views, we inferred that auditors are motivated to report different opinions in annual reports and semiannual reports in order to maintain long-term appointments. Therefore, we state the following hypotheses:

H2: *The longer the audit tenure, the less likely that there is a significant relationship between auditor's issuing semiannual reports with negative opinions and their issuing positive opinions in annual reports.*

Industry Specialization

Auditors' industry experience, knowledge, and specialization affect their decision-making and audit quality. Dopuch and Simnic (1980) believed that auditing is a multi-property service that enhances customer satisfaction and expectations of higher returns. DeAngelo (1981a) defined audit quality as the joint probability of auditors' detecting and reporting financial misstatement, with the former referring to the auditor's professional competence and the latter to the auditor's independence. Because of the increasing complexity of business transactions, companies' ever-changing financial practices, and complex accounting procedures (e.g. Financial Instruments), sometimes even the most professional accountants and accounting academics find it difficult to understand the economic substance of financial statements, let alone to detect errors. Therefore, industry demand for professional auditors is becoming more pressing than ever.

A high level of experience with either clients or the industry will help reduce audit failure and occurrences of fraud. Through specialization, industrial upgrading, and professional development, auditors have greater ability to collect evidence and make adequate professional judgments. Johnson, Jamal and Berryman (1991) suggested that, when auditors have a wealth of industry knowledge, they can improve their ability to detect fraud and can also invest more resources in staff recruitment, training, and auditing techniques to improve audit quality. Becker, DeFond, Jiambalvo and Subramanyam (1998) considered that high-quality staves are more capable of finding material misstatement and, once such misstatement are detected, they are more likely to issue qualified opinions.

Krishnan (2003) found that, if a company has been audited by industry experts, its earnings quality is higher, and such experts obtain higher fees (Craswell, Francis and Taylor, 1995; DeFond, Francis and Wong, 2000). Balsam et al. (2003) explored the difference in the relationship of discretionary accruals and the earnings response coefficient with audits by industry specialists and non-specialist and showed that specialists are more likely to mitigate earnings management than non-specialists are. Velury (2003), who tested the association between auditor industry specialization and earnings management using companies with high leverage and discretionary accruals, confirmed that the level of earnings management is lower when it is audited by a specialist.

Carcello and Nagy (2004) discussed client size, specialization, and financial statement fraud and found that larger clients have a higher capability to enable auditors to compromise, but empirical results showed that less fraud occurred in financial statements audited by specialists.

Francis and Yu (2009) suggested that larger audit firms provide higher quality because of greater in-house experience in administering. Reichelt and Wang (2010) investigated whether audit quality is higher for Big 4 industry specialists and found evidence that audit quality is higher when the auditor is both a national and a city-specific industry expert. Clearly, the audit quality of industry specialists is higher.In a recent study in Taiwan, Chen, Liu and Lin (2003) investigated the relationship among industry specialists, client satisfaction, and audit fees and showed that client satisfaction with industry specialists is significantly higher than that with non-specialists. Consistent with audit product heterogeneity, industry specialization can successfully help auditors to respond to the increasing competition in audit market. Fan et al. (2007) used audit groups to explore the impacts of a client's importance and the auditor's industry specialization on earnings quality and showed once again that industry specialization is effective in reducing the importance of clients in terms of negative impact on earnings quality. Following prior studies, we examine the issue of different opinions by industry specialists in annual reports and semiannual reports and establish hypothesis three:

H3: *When a company is audited by industry specialists, an inverse relationship exists such that auditors issue semiannual reports with negative opinions and annual reports with positive opinions*

DATA AND METHODOLOGY

Data

This study's sample consists of annual and semiannual reports from 1999 to 2008 from the Taiwan Economic Journal (*TEJ*) database for companies listed on the TWSE and OTC.

The paper focuses on listed and OTC companies in Taiwan because these companies are required by the GAAP of Taiwan to report their financial statements, and their auditors issue opinions according to the GAAS of Taiwan. Any multinational listed companies will adjust their financial statements according to the GAAP and the legal rules of the invested countries, so we do not consider national differences in accounting principles and legal norms. This study compares companies one by one in order to determine whether they were audited by specialists. The initial sample is comprised of 10,750 observations. When samples without complete financial data, those that lacked semiannual report opinions, and those with incomplete of ten-year data were excluded, 6,440 observations remained for analysis.

Table 1 provides the types of auditor reports issued from 1999 to 2008. Panel A shows that there 20.73 percent were unqualified opinions and 62.24 percent were qualified opinions in the semiannual reports; in the annual reports, 36.13 percent of opinions were unqualified opinions and 0.81 percent were qualified opinions. Compared to semiannual reports, annual reports have 98.7 percent fewer qualified opinions, in fact, qualified opinions barely exist at all in annual reports, much less disclaimers and adverse opinions.

Table 1: Types of Auditor Opinion in Reports

Panel A:	***1999~2008***				
Opinion	**Semiannual**		**Annual**		**Difference**
	Number	**Percent**	**Number**	**Percent**	**Percent**
Unqualified (clean)	1,335	20.73	2,327	36.13	74.31
Modify Unqualified	1,089	16.91	4,061	63.06	272.10
Qualified	4,008	62.24	52	0.81	-98.70
Others	8	0.12	0	0.00	-100.00
Total	6,440	100.00	6,440	100.00	

Panel B	***Pre Enron (1999~2002)***				***Post Enron (2003~2008)***			
Opinion	**Semiannual**		**Annual**		**Semiannual**		**Annual**	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Unqualified	869	33.73	1,328	51.55	466	12.06	999	25.85
Modify Unqualified	277	10.75	1,225	47.55	812	21.01	2,836	73.40
Qualified	1,429	55.47	23	0.89	2,579	66.74	29	0.75
Others	1	0.04	0	0.00	7	0.18	0	0.00
Total	2,576	100.00	2,576	100.00	3,864	100.00	3,864	100.00

Panel C: Explanatory words in opinion								
	Semiannual				**Annual**			
Opinions	**Unqualified**	**Modify**	**Qualified**	**Others**	**Unqualified**	**Modify**	**Qualified**	**Others**
Gain or loss of investments according to unaudited financial statements	1,321	10	3,577	7	2,318	3	10	0
Change accounting principle or application of new GAAP	2	421	18	0	2	968	4	0
Long-term investment adopts other auditor's opinion (**notes**)	1	509	280	1	1	2,705	10	0
Initial long-term investment unaudited	1	19	30	0	1	42	0	0
Emphasis of an important event	1	21	9	0	1	84	0	0
Last year's financial statement is audited by other auditor	0	36	43	0	2	106	2	0
Going-concern has queries or breach	0	45	7	0	0	83	2	0
Others	9	28	44	0	2	70	24	0
Total	1,335	1,089	4,008	8	2,327	4,061	52	0

Notes (in annual):1.the ratio of long-term investment to total assets is over 15% and the chief auditor adopts other auditor's opinion: n=1,964; rate=72.94% 2.the ratio of long-term investment to total assets is over 20% and the chief auditor adopts other auditor's opinion: n=1,652; rate=61.07% Panel A shows the types and the number of auditor opinions of semiannual and annual reports from 1999 to 2008. Panel B shows the types and the number of auditor opinions of pre- and post- Enron. Panel C shows the types and the number of opinions add an explanatory words in reports.

Panel B of Table 1 shows the opinions pre- and post-Enron. Before Enron, 33.73 percent of opinions in semiannual reports were unqualified opinions and 55.47 percent were qualified opinions; 51.55 percent of opinions in annual reports were unqualified opinions and 47.55 percent were modified unqualified opinions. After Enron, 12.06 percent of opinions in semiannual reports were unqualified opinions, while 66.74 percent were qualified opinions; in annual reports, 25.85 percent of opinions were unqualified

opinions, and 73.40 percent were modified unqualified opinions. These results show that, before Enron, auditing policy was more relaxed and there were relatively more clean opinions issued on semiannual reports. However, after Enron, clean opinions in semiannual reports declined by 49.85 percent, although auditors still issued positive opinions in the annual reports. Even so, auditors issued more modified unqualified opinions during the transition process of decision making on semiannual reports with negative and annual with positive reports. The changes in the audit environment made auditors more careful.

Model

We use the following logistic regression equation (1) to test the importance of clients, auditor tenure, and industry specialization regarding the relevance of divergence of opinion on audit reports.

$$DifOpin = \beta_0 + \beta_1(\mathrm{Im}\ por) + \beta_2(Tenure) + \beta_3(Spec) + \beta_4(Size) + \beta_5(Loss) + \beta_6(Lev) + \beta_7(Ca) + \varepsilon_i \quad (1)$$

Regression equation (2), the interaction of independent variables is added to verify whether the auditor's issuing opinion is influenced by auditor-client relationships, such that the influence on issuing different opinions on annual reports and semiannual reports is strengthened.

$$\begin{aligned} DifOpin = {} & \beta_0 + \beta_1(\mathrm{Im}\ por) + \beta_2(Tenure) + \beta_3(Spec) + \beta_4(Size) + \beta_5(Loss) + \beta_6(Lev) + \beta_7(Ca) \\ & + \beta_8(\mathrm{Im}\ por \cdot Tenure) + \beta_9(\mathrm{Im}\ por \cdot Spec) + \beta_{10}(Tenure \cdot Spec) + \beta_{11}(\mathrm{Im}\ por \cdot Tenure \cdot Spec) + \varepsilon_i \end{aligned} \quad (2)$$

The dependent variable in this study is the auditor opinion discrepancy in semiannual and annual reports, while the independent variables are the importance of the client, auditor tenure, industry specialization, and control variables (corporate size, previous year loss, debt ratio, and current ratio).

Dependent Variable-Different Opinions in annual and semiannual reports (DifOpin): This study uses a dummy variable to measure opinion discrepancy; therefore, when auditors issue semiannual reports with negative opinions and positive opinions in annual reports, the variable is set to 1, and 0 otherwise.

Independent Variables

The importance of clients (Impor): Revenue from auditor fees based on specific clients in the proportion of revenue from auditor fees of all clients of auditors can be used to evaluate the effect of the financial incentives (Chung and Kolhapur, 2003). However, domestic, publicly traded companies must disclose auditor fees only under certain conditions, so the importance of clients and that importance's relationship to auditor fees is difficult to assess. Consistence with prior literature (Craswell et al., 1995; Francis, 1984), this study adopts the sales revenue of a particular client as a percentage of the total sales revenue from all clients to calculate the importance of the client. The importance ratio of clients is divided into two groups, where those with revenue higher than the median are set to 1, and 0 otherwise.

Auditor tenure (Tenure): An auditor's years with the company is used as auditor tenure. We calculate the average tenure of each industry and set tenure to 1 when the auditor's tenure is greater than the industry average tenure, and 0 otherwise.

Industry specialist (Spec): This measures industry specialization based on the auditor's industry auditing experience. Because Taiwan adopts a dual-signature system, tenure is calculated separately for each auditor and deputy. Auditors with more seniority are assumed to have more industry knowledge and experience. The first three auditors with industry seniority qualify as the industry specialists. A company audited by an industry specialist is set to 1, and 0 otherwise.

Other Control Variables

Corporate size (Size): according to Becker et al. (1998) corporate size can be used as an alternative measure for many missing variables in order to reduce measurement error. Therefore, we take a natural logarithm of total assets to measure corporate size.

Previous year loss (Loss): is used to avoid loss or gain of deferred income tax or net profit arising from bias. This study is based on a continuous operation sector income so when the company had a pre-tax income loss in the prior year, this variable is set to 1, and 0 otherwise.

Debt ratio (Lev): DeFond and Jiambalvo (1994) and Dechow and Sweeney (1995) found that higher rates of corporate debt increase the likelihood of debt covenants and earnings management. Companies with high rates of corporate debt usually operate under a debt contract that limits debtors more strictly. Debt ratio (total debt divided by total assets) is added as a control variable.

Current Ratio (Ca): when the relative liquidity of a company's assets increases, the likelihood of a financial crisis decreases. Higher flow rates mean a better financial situation and increased ability to cope with short-term need for funds. Current the liquidity of current assets divided by current liabilities.

RESULTS

Univariate Tests

Table 2 presents descriptive statistics. The importance ratio ranges from 0 to 1 with an average of 0.38, implying that some auditors do not focus on listed and OTC companies. Auditor tenure ranges from 1 to 9 years, a comparatively short range that may be due to the rotation system, and companies' willingness to follow accounting laws and regulations to switch auditors regularly. Therefore, the average tenure is only 2.53 years. The average value for industry specialization is 0.24, so industry specialization is not particularly prevalent. The average rate of opinion discrepancy, where auditors issue negative opinions in semiannual reports and positive opinions in annual reports, is 0.62. The comparison in Table 1 Panel A shows that clean opinions in semiannual reports increased 74.31 percent and qualified opinions in annual reports declined by 98.70 percent. The average value of corporate size is 6.77, with a range from 5.10 to 9.15. The average debt ratio is 0.43 percent, which is 2.28 times the average current ratio. This indicates that the overall sample describes the financial situation as steady; however, a minority of companies still control financial leverage and with greater liquidity risk.

Panel A of Table 3 shows that almost all independent variables are significantly correlated, the correlation of auditor tenure and opinion difference is -0.69, the average tenure of auditors in descriptive statistics is 2.53 years, and the previous year's financial statements were audited by other auditors rarely. (Table 1 Panel C shows the audited by other auditors for only 79 observations in semiannual reports and 110 observations in annual reports.) Taiwan did not require auditor rotation until April 2003, so the main cause for different opinions on semiannual reports and annual reports is not auditor tenure. The VIF values in Panel B of Table 4 are below 1.25, which does not suggest a co-linearity problem. Since the purpose of this study is to determine the reason for auditors' providing better opinions in annual report than in semiannual reports, we decided not to exclude any variables.

Multivariate Tests

Table 4 presents the results of a regression analysis of clients, auditor tenure, and industry specialization on the likelihood of issuing negative opinions on semiannual reports and positive opinions on annual reports. The results of equation (1) are shown in model (1). The client importance (*Impor*) is significantly

Table 2: Descriptive Statistics

Variable	Mean	S.D.	Median	Min	Max
DifOpin	0.62	0.49	1.00	0.00	1.00
Impor(%)	0.38	0.36	0.24	0.00	1.00
Tenure	2.53	1.67	2.00	1.00	9.00
Spec	0.24	0.43	0.00	0.00	1.00
Size	6.77	0.61	6.70	5.10	9.15
Loss	0.24	0.42	0.00	0.00	1.00
Lev(%)	0.43	0.19	0.41	0.01	1.89
Ca(%)	2.28	4.18	1.54	0.02	160.30

This table shows the descriptive statistics of variables. Variable definitions: DifOpin = 1 if the auditor issuing negative opinions in semiannual reports and issuing positive opinions in annual reports, and 0 otherwise; Impor = a ratio of sales revenue to the auditor's total sales revenue of all clients. Tenure = auditor tenure in years Spec = 1 if the company is audited by industry specialists, and 0 otherwise; Size = natural log of total assets (in thousands of dollars); Loss = 1 if there was a loss in the previous year's pre-tax income, and 0 otherwise; Lev = total liabilities divided by total assets at the end of the year; and Ca = the end of year current assets divided by current liabilities.

Table 3: Correlation Matrix

***Panel A*: Pearson Correlation**

	DifOpin	*Impor(%)*	*Tenure*	*Spec*	*Size*	*Loss*	*Lev*(%)	*Ca*(%)
DifOpin	1.00							
Impor(%)	0.03 **	1.00						
Tenure	-0.69 **	0.01	1.00					
Spec	-0.03 **	-0.06 **	0.28 **	1.00				
Size	0.03 *	0.32 **	0.01	0.08 **	1.00			
Loss	0.04 **	-0.05 **	-0.05 **	-0.05 **	-0.12 **	1.00		
Lev(%)	-0.08 **	0.13 **	-0.01	-0.07 **	0.22 **	0.23 **	1.00	
Ca(%)	-0.07 **	-0.03 *	0.01	0.02	0.00	-0.04 **	-0.18 **	1.00

***Panel B*：VIF Value**

	Dependent Variable：DifOpin				
Independent	β	S.C	t- value	p- value	VIF
Impor(%)	0.03	0.03	2.45	0.02	1.13
Tenure	-0.06	-0.06	-4.71	0.00	1.09
Spec	-0.03	-0.02	-1.72	0.09	1.11
Size	0.05	0.05	4.18	0.00	1.21
Loss	0.08	0.07	5.71	0.00	1.09
Lev(%)	-0.33	-0.13	-9.73	0.00	1.18
Ca(%)	-0.01	-0.09	-7.43	0.00	1.03

*Panel A shows the Pearson Correlation of variables. Panel B shows the Variance Inflation Factors of variables. ** and * indicate significance at the 1 and 5 percent levels respectively. Variable definitions: Impor = 1 if the importance ratio is greater than the median, 0 otherwise; Tenure = 1 if auditor tenure is greater than industry average tenure, 0 otherwise Other variables are defined in Table 2.*

positively related (0.13, p<0.05) to the likelihood of different opinions (*DifOpin*), which supports H1, indicating that auditors may compromise with clients on whom they are economically dependent. The auditor tenure (*Tenure*) is significantly negatively related (-0.26, p<0.01) with different opinions, which supports H2. Industry specialization (*Spec*) has a significantly negative (-0.11, p<0.10) correlation, with supports H3's view that industry specialists can make proper professional judgments and have fewer different opinions on semiannual reports and annual reports for important clients.

Next, we use equation (2) to examine the relationships among the variables in order to validate whether there is an incremental effect on the auditors who report different opinions on semiannual and annual reports. After controlling for other factors that may affect the audit opinions, the regression results from models (2) to (13) show that client importance maintains its significant positive effect, while auditor tenure and industry specialization are significantly negative. The interaction of client importance and auditor tenure (*Impor*×*Tenure*) is significantly negatively related to different opinions. The coefficient values are, respectively, -0.23, -0.27, -0.36, -0.21. -0.30, -0.24, -0.31 (p< 0.05), indicating that a long-term cooperative relationship helps auditors to be more familiar with clients and improves the independence of auditors. The interactions of client importance and industry specialist (*Impor*×*Spec*) are insignificant, and it cannot validate that expert auditors issue different opinions for important clients.

As to the interaction of auditor tenure and industry specialist (*Tenure*×*Spec*), the signs of the coefficient in model (10) and (13) are positive, while that of other models are significantly positive (p<0.05), suggesting that industry experts may compromise on annual reports in order to maintain a long-term relationship with the clients. The interaction of client importance, auditor tenure, and industry specialization (*Impor*×*Tenure*×*Spec*) is not significant, so it cannot validate whether industry specialists issue different opinions on semiannual and annual reports as a result of economic dependency and the desire to maintain long-term relationship with the clients. Corporate size (*Size*), the prior year's loss (*Loss*), and opinion divergence showed significantly positive correlation (p<0.01) in all of the models. Usually, investors don't notice when smaller companies experienced financial losses the previous year, so auditors are more likely to issue different opinions on annual reports and semiannual reports for smaller companies. Debt ratio (*Lev*) and current ratio (*Ca*) showed a significantly negative correlation (p<0.01), fueling speculation that auditors may help clients consider their debt contracts. In situations where the corporation is in a poor financial situation, different audit opinions on semiannual and annual reports could arouse the full attention of creditors and result in more stringent debt limitations, so auditors are less likely to issue differing opinions. The situations of the businesses with better current ratios are better, and auditors can make a decision that reflects the true results.

Because of Enron and the dissolution of Arthur Andersen, which forced the establishment of the US Public Company Accounting Oversight Board (PCAOB), the Taiwan Securities Exchange was amended through securities laws that affected the reports of financial statements of listed and OTC companies. This study aims to determine the influence of subsequent remedial measures taken by regulators concerning audit decision making after Enron. Thus, the sample is divided into two subsets, "before Enron" and "after Enron." The regression analysis and the results are compiled in Table 5.

Table 5 Panel A shows pre-Enron results. In model (1), client importance is no longer significant, but the sign remains positive; auditor tenure is significantly negative; and the coefficient of industry specialization is negative but not significant. This result indicates that, before the Enron case, auditor tenure did not affect the attitude of auditors, and industry specialization reduced the likelihood that different opinions would be issued. Regarding the interaction of independent variables on the incremental effect on different opinions, client importance and auditor tenure (Impor×Tenure) shows a significantly negative correlation (p<0.05). Client importance and industry specialization (Impor×Spec) in models (3), (5), (7), and (11) show a significantly positive correlation (p<0.10), and the coefficient symbol for models (4), (6), and (13) are positive. As to auditor tenure and industry specialization (Tenure×Spec), the coefficient symbol of model (10) is positive, and those of all other models are significantly positive (p<0.05), suggesting that before Enron, auditors used their professional judgment to choose a relaxed policy in order to keep an important client and to reveal formal independence to exterior third parties. The impact of other control variables on opinion divergence is consistent with the results shown in Table 4.

Table 5 Panel B shows the results post-Enron. The results in model (1) are similar to those in Table 4. Client importance is significantly positive (0.13, p<0.10), while auditor tenure and industry specialization are significantly negative (-0.18, p<0.05; -0.16, p<0.10). This result indicates that the change in audit environment affected auditors' practice, and the economic factors caused the opinions of auditors to be compromised. By establishing a long-term relationship with clients and becoming familiar with the client's operation and industry knowledge, expert auditors have the ability to collect evidence and develop professional capabilities that can effectively reduce the adverse impact of the different opinions.

Table 4: Logistic Regression Analysis

Panel A	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
Variables	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**
Impor(%)	0.131 **	0.228 ***	0.205 **	0.236 ***	0.113 *	0.111 *	0.111 *
	(0.02)	(0.00)	(0.01)	(0.00)	(0.07)	(0.08)	(0.08)
Tenure	-0.258 ***	-0.146 *	-0.129 *	-0.130 *	-0.260 ***	-0.343 ***	-0.343 ***
	(0.00)	(0.06)	(0.09)	(0.09)	(0.00)	(0.00)	(0.00)
Spec	-0.108 *	-0.105 *	-0.177 **	-0.177 **	-0.143 *	-0.323 ***	-0.330 **
	(0.09)	(0.09)	(0.04)	(0.04)	(0.09)	(0.00)	(0.01)
ImporxTenure		-0.228 **	-0.268 **	-0.361 ***			
		(0.03)	(0.02)	(0.00)			
ImporxSpec			0.164	-0.134	0.077	0.049	0.069
			(0.20)	(0.45)	(0.53)	(0.69)	(0.72)
TenurexSpec						0.336 **	0.348 **
						(0.01)	(0.03)
ImporxTenurexSpec				0.465 **			-0.029
				(0.02)			(0.89)
Size	0.204 ***	0.201 ***	0.198 ***	0.202 ***	0.203 ***	0.207 ***	0.207 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Loss	0.366 ***	0.366 ***	0.365 ***	0.364 ***	0.365 ***	0.365 ***	0.365 ***
	(0.00)	(.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Lev(%)	-1.53 ***	-1.52 ***	-1.52 ***	-1.51 ***	-1.52 ***	-1.51 ***	-1.51 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ca(%)	-.0078 ***	-0.078 ***	-0.078 ***	-0.077 ***	-0.078 ***	-0.077 ***	-0.077 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	-0.090	-0.116	-0.087	-0.115	-0.074	-0.079	-0.077
	(0.77)	(0.41)	(0.78)	(0.71)	(0.81)	(0.80)	(0.80)
N=6,440							
Cox & Snell R	0.030	0.030	0.031	0.032	0.030	0.031	0.031
Nagelkerke R	0.041	0.041	0.042	0.043	0.041	0.042	0.042

Panel B	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**	**Model 13**
variables	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**	**Coefficient (*p*-value)**
Impor(%)	0.123 **	0.212 ***	0.212 ***	0.195 **	0.100 *	0.217 **
	(0.03)	(0.00)	(0.00)	(0.01)	(0.09)	(0.01)
Tenure	-0.343 ***	-0.236 **	-0.188 **	-0.220 **	-0.279 ***	-0.185 **
	(0.00)	(0.01)	(0.04)	(0.01)	(0.00)	(0.04)
Spec	-0.304 ***	-0.290 ***	-0.290 ***	-0.337 ***	-0.160 **	-0.276 **
	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.02)
ImporxTenure		-0.208 **	-0.300 **	-0.239 **		-0.305 **
		(0.05)	(0.02)	(0.03)		(0.02)
ImporxSpec				0.126		-0.035
				(0.32)		(0.86)
TenurexSpec	0.341 **	0.323 **	0.204	0.308 **		0.190
	(0.01)	(0.01)	(0.18)	(0.02)		(0.26)
ImporxTenurexSpec			0.240		0.181	0.275
			(0.15)		(0.15)	(0.29)
Size	0.208 ***	0.204 ***	0.202 ***	0.202 ***	0.205 ***	0.203 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Loss	0.366 ***	0.366 ***	0.364 ***	0.365 ***	0.364 ***	0.364 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Lev(%)	-1.51 ***	-1.51 ***	-1.50 ***	-1.50 ***	-1.52 ***	-1.50 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ca(%)	-0.077 ***	-0.077 ***	-0.077 ***	-0.077 ***	-0.078 ***	-0.077 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	-0.089	-0.112	-0.101	-0.090	-0.073	-0.106
	(0.77)	(0.72)	(0.74)	(0.77)	(0.81)	(0.73)
N=6,440						
Cox & Snell R	0.031	0.031	0.032	0.032	0.030	0.032
Nagelkerke R	0.042	0.043	0.043	0.043	0.041	0.043

*This table shows the regression estimates of the equation: $DifOpin=\beta_0+\beta_1(Impor)+\beta_2(Tenure)+\beta_3(Spec)+\beta_4(Size)+\beta_5(Loss)+\beta_6(Lev)+\beta_7(Ca)+\beta_8(ImporxTenure)+\beta_9(ImporxSpec)+\beta_{10}(TenurexSpec)+\beta_{11}(ImporxTenurexSpec)+\varepsilon_i$. The first figure in each cell is the regression coefficient. The second figure in each cell is the p-value. ***, ** and * indicate at the 1, 5 and 10 percent levels respectively (two-tailed). Variable definitions:ImporxTenure= the interaction of importance client and auditor tenure;ImporxSpec= the interaction of importance client and industry specialist; TenurexSpec= the interaction of auditor client and industry specialist; ImporxTenurexSpec= the interaction of importance client, auditor client, and industry specialist Other variables are defined in Table 2.*

In Table 5 Panel B, the interactions of independent variables are no longer significant. The effect of the company size variable on opinion difference does not reach a significant level, but the results of other

control variables are similar to the results in Table 4. Referring to the results in Table 1, the majority opinions in the annual reports improve, but most are modified unqualified opinions, indicating that, after the Enron case, in the financial reports of important clients audited by industry specialists, auditors paid increased attention to maintaining their reputations and conservative decision-making. The implementation of a rotation system gave auditors a more stringent attitude.

Sensitivity Analysis

In order to confirm the reliability of the results, this paper conducts the sensitivity tests based on the following procedures.

We remove the samples with importance ratio lower than 1, from which we obtain 952 observations, and we re-execute the regression. The results are that tenure (*Tenure*) and opinion divergence are significantly negative (-0.40, $p<0.01$), and industry specialization (*Spec*) is significantly positive (0.52, $p<0.05$). The inter-relationship between auditor tenure and industry specialization shows that tenure (*Tenure*) remains significantly negative (-0.50, $p<0.01$). The interaction of auditor tenure and industry specialization (*Tenure*×*Spec*) is significantly positive (0.85, $p<0.10$). The other control variables concerning the impact on opinion divergence are similar to those in Table 4.

There are 291 observations with an importance proportion of 1 before Enron, and the results with those observations are identical with those reported above: Auditor tenure and opinion divergence still have significantly negative correlations (-0.76, $p<0.01$), industry specialization still has a significantly positive correlation (1.04, $p<0.01$), and the interaction of auditor tenure and industry specialization is significantly positive (1.42, $p<0.10$). There are 661 observations with an importance proportion of 1 after Enron, and the independent variable and all interaction variables are no longer significant. This result verifies again that the overall audit environment has changed to improve the awareness of the professional judgment of auditors such that they pay more attention to their reputations and tend to be more conservative.

There are 2,480 observations from the electronics industry, accounting for 38.51 percent of the total samples. The regression results may be influenced by industrial characteristics. We include the industry dummy variable for control so when the company is in the electronics industry, the variable is 1, and 0 otherwise. The empirical results show that the industry variable has a significantly positive relationship with opinion divergence. (The coefficient of industry is 0.36, $p<0.01$; that before the Enron case is 0.21, $p<0.05$; and that after the Enron case is 0.56, $p<0.01$.) This result indicates that, relative to other industries, companies in the electronics industry are more likely to have different auditing opinions in their semiannual and annual reports. Other variables have the same results as shown in Table 4.

In order to prevent the influence of extreme values on the empirical results, this paper refers to DeFond and Park (1999) method for controlling the extreme values. We delete the observations that are 1 percent lower and 1 percent higher than the control variables, eliminating 217 observations. The results of the regression analysis are not affected and remain consist with those shown in Table 4 and Table 5.

CONCLUDING COMMENTS

This study emphasizes the importance of clients in whether annual reports and semiannual reports show different views by their auditors. Auditors may issue negative opinions in semiannual reports but positive opinions in annual reports to please clients, indicating that auditors are affected by economic dependence on important clients. Prior literature showed that expert auditors can inhibit management from manipulating earnings management, this study finds that auditor specialists and opinion divergence were significantly negatively correlated, which means that industry experts can effectively reduce the impact of important clients.

Table 5: Logistic Regression Analysis- pre/post Enron

Panel A	**Pre Enron (1999~2002)**						
Variables	**Model 1 Coefficient (*p*-value)**	**Model 2 Coefficient (*p*-value)**	**Model 3 Coefficient (*p*-value)**	**Model 4 Coefficient (*p*-value)**	**Model 5 Coefficient (*p*-value)**	**Model 6 Coefficient (*p*-value)**	**Model 7 Coefficient (*p*-value)**
Impor(%)	0.013	0.198 *	0.128	0.168	-0.072	-0.064	-0.063
	(0.88)	(0.10)	(0.31)	(0.19)	(0.47)	(0.52)	(0.53)
Tenure	-0.209 **	-0.062	-0.029	-0.029	-0.213 **	-0.331 ***	-0.331 ***
	(0.01)	(0.56)	(0.79)	(0.79)	(0.01)	(0.00)	(0.00)
Spec	-0.027	-0.023	-0.191	-0.191 *	-0.149	-0.404 **	-0.480 **
	(0.77)	(0.80)	(0.10)	(0.10)	(0.20)	(0.01)	(0.01)
ImporxTenure		-0.356 **	-0.454 **	-0.538 ***			
		(0.03)	(0.01)	(0.00)			
ImporxSpec			0.438 **	0.135	0.313 *	0.258	0.534 *
			(0.02)	(0.65)	(0.09)	(0.16)	(0.09)
TenurexSpec						0.451 **	0.574 **
						(0.02)	(0.01)
ImporxTenurexSpec				0.425			-0.385
				(0.19)			(0.27)
Size	0.423 ***	0.419 ***	0.411 ***	0.412 ***	0.418 ***	0.417 ***	0.415 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Loss	0.501 ***	0.502 ***	0.500 ***	0.502 ***	0.499 ***	0.504 ***	0.503 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Lev(%)	-1.66 ***	-1.66 ***	-1.65 ***	-1.64 ***	-1.65 ***	-1.64 ***	-1.64 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ca(%)	-0.053 **	-0.052 **	-0.052 **	-0.052 **	-0.053 **	-0.051 **	-0.050 **
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	-1.82 ***	-1.86 ***	-1.78 ***	-1.79 ***	-1.75 ***	-1.71 ***	-1.69 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N=2,576							
Cox & Snell R	0.033	0.035	0.037	0.038	0.035	0.037	0.037
Nagelkerke R	0.045	0.047	0.050	0.051	0.046	0.049	0.050

Panel B	**Pre Enron (1999~2002)**					
Variables	**Model 8 Coefficient (*p*-value)**	**Model 9 Coefficient (*p*-value)**	**Model 10 Coefficient (*p*-value)**	**Model 11 Coefficient (*p*-value)**	**Model 12 Coefficient (*p*-value)**	**Model 13 Coefficient (*p*-value)**
Impor(%)	0.006	0.177	0.178	0.119	-0.044	0.122
	(0.94)	(0.15)	(0.15)	(0.35)	(0.64)	(0.36)
Tenure	-0.336 ***	-0.194	-0.124	-0.150	-0.235 **	-0.146
	(0.00)	(0.11)	(0.33)	(0.22)	(0.01)	(0.26)
Spec	-0.323 **	-0.304 **	-0.303 **	-0.414 **	-0.105	-0.407 **
	(0.03)	(0.04)	(0.04)	(0.01)	(0.32)	(0.02)
ImporxTenure		-0.329 **	-0.478 **	-0.413 **		-0.421 **
		(0.05)	(0.01)	(0.02)		(0.03)
ImporxSpec				0.374 **		0.350
				(0.05)		(0.28)
TenurexSpec	0.483 **	0.458 **	0.285	0.402 **		0.389 *
	(0.01)	(0.02)	(0.19)	(0.04)		(0.10)
ImporxTenurexSpec			0.386		0.281	0.036
			(0.11)		(0.14)	(0.93)
Size	0.421 ***	0.418 ***	0.414 ***	0.411 ***	0.421 ***	0.411 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Loss	0.506 ***	0.506 ***	0.505 ***	0.504 ***	0.501 ***	0.504 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Lev(%)	-1.65 ***	-1.65 ***	-1.64 ***	-1.64 ***	-1.65 ***	-1.64 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ca(%)	-0.051 **	-0.050 **	-0.050 **	-0.050 **	-0.053 **	-0.050 **
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	-1.76 ***	-1.80 ***	-1.78 ***	-1.74 ***	-1.77 ***	-1.74 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N=2,576						
Cox & Snell R	0.036	0.037	0.038	0.039	0.034	0.039
Nagelkerke R	0.048	0.050	0.051	0.052	0.046	0.052

(***The table is continued on next page.***)

Table 5: (continued)

Panel C	**Post Enron (2003~2008)**						
Variables	**Model 1 Coefficient (*p*-value)**	**Model 2 Coefficient (*p*-value)**	**Model 3 Coefficient (*p*-value)**	**Model 4 Coefficient (*p*-value)**	**Model 5 Coefficient (*p*-value)**	**Model 6 Coefficient (*p*-value)**	**Model 7 Coefficient (*p*-value)**
Impor(%)	0.127 * (0.09)	0.168 * (0.07)	0.173 * (0.06)	0.192 * (0.04)	0.145 * (0.08)	0.143 * (0.08)	0.143 * (0.09)
Tenure	-0.184 ** (0.02)	-0.123 (0.26)	-0.128 (0.25)	-0.129 (0.25)	-0.182 ** (0.02)	-0.212 ** (0.02)	-0.212 ** (0.02)
Spec	-0.155 * (0.08)	-0.154 * (0.08)	-0.132 (0.29)	-0.132 (0.29)	-0.116 (0.34)	-0.177 (0.24)	-0.109 (0.52)
ImporxTenure		-0.111 (0.45)	-0.100 (0.51)	-0.172 (0.28)			
ImporxSpec			-0.044 (0.80)	-0.242 (0.28)	-0.078 (0.64)	-0.086 (0.61)	-0.240 (0.34)
TenurexSpec						0.120 (0.49)	0.002 (0.99)
ImporxTenurexSpec				0.339 (0.17)			0.249 (0.41)
Size	0.018 (0.77)	0.016 (0.79)	0.017 (0.79)	0.021 (0.73)	0.019 (0.76)	0.021 (0.73)	0.023 (0.71)
Loss	0.217 ** (0.01)	0.216 ** (0.01)	0.217 ** (0.01)	0.215 ** (0.01)	0.218 ** (0.01)	0.218 ** (0.01)	0.217 ** (0.01)
Lev(%)	-1.43 *** (0.00)	-1.43 *** (0.00)	-1.43 *** (0.00)	-1.42 *** (0.00)	-1.43 *** (0.00)	-1.43 *** (0.00)	-1.43 *** (0.00)
Ca(%)	-0.097 *** (0.00)	-0.097 *** (0.00)	-0.097 *** (0.00)	-0.096 *** (0.00)	-0.097 *** (0.00)	-0.096 *** (0.00)	-0.096 *** (0.00)
Constant	1.365 *** (0.00)	1.355 *** (0.00)	1.347 *** (0.00)	1.316 *** (0.00)	1.350 *** (0.00)	1.339 *** (0.00)	1.329 *** (0.00)
N=3,864							
Cox & Snell R	0.029	0.029	0.029	0.030	0.029	0.029	0.029
Nagelkerke R	0.040	0.040	0.040	0.041	0.040	0.040	0.041

Panel D	**Post Enron (2003~2008)**					
Variables	**Model 8 Coefficient (*p*-value)**	**Model 9 Coefficient (*p*-value)**	**Model 10 Coefficient (*p*-value)**	**Model 11 Coefficient (*p*-value)**	**Model 12 Coefficient (*p*-value)**	**Model 13 Coefficient (*p*-value)**
Impor(%)	0.124 * (0.09)	0.163 * (0.07)	0.163 * (0.07)	0.170 * (0.07)	0.115 (0.14)	0.202 * (0.04)
Tenure	-0.212 ** (0.02)	-0.152 (0.20)	-0.118 (0.37)	-0.160 (0.19)	-0.194 ** (0.01)	-0.096 (0.47)
Spec	-0.216 * (0.09)	-0.210 * (0.10)	-0.210 * (0.10)	-0.186 (0.22)	-0.179 * (0.08)	-0.076 (0.66)
ImporxTenure		-0.105 (0.47)	-0.166 (0.34)	-0.091 (0.55)		-0.205 (0.24)
ImporxSpec				-0.055 (0.75)		-0.298 (0.24)
TenurexSpec	0.113 (0.52)	0.105 (0.55)	0.020 (0.93)	0.111 (0.53)		-0.114 (0.64)
ImporxTenurexSpec			0.156 (0.51)		0.081 (0.64)	0.453 (0.20)
Size	0.020 (0.74)	0.018 (0.77)	0.017 (0.78)	0.019 (0.76)	0.019 (0.76)	0.020 (0.75)
Loss	0.217 ** (0.01)	0.216 ** (0.01)	0.214 ** (0.02)	0.217 ** (0.01)	0.216 ** (0.01)	0.215 ** (0.02)
Lev(%)	-1.42 *** (0.00)	-1.42 *** (0.00)	-1.42 *** (0.00)	-1.42 *** (0.00)	-1.42 *** (0.00)	-1.42 *** (0.00)
Ca(%)	-0.096 *** (0.00)	-0.096 *** (0.00)	-0.096 *** (0.00)	-0.096 *** (0.00)	-0.096 *** (0.00)	-0.096 *** (0.00)
Constant	1.356 *** (0.00)	1.347 *** (0.00)	1.354 *** (0.00)	1.337 *** (0.00)	1.368 *** (0.00)	1.316 *** (0.00)
N=3,864						
Cox & Snell R	0.029	0.029	0.029	0.029	0.029	0.030
Nagelkerke R	0.040	0.041	0.041	0.041	0.040	0.041

*This table shows the regression estimates of the equation: $DifOpin=\beta_0+\beta_1(Impor)+\beta_2(Tenure)+\beta_3(Spec)+\beta_4(Size)+\beta_5(Loss)+\beta_6(Lev)+\beta_7(Ca)+\beta_8(ImporxTenure)+\beta_9(ImporxSpec)+\beta_{10}(TenurexSpec)+\beta_{11}(ImporxTenurexSpec)+\varepsilon_i$. Panel A and Panel B show the results of pre Enron. Panel C and Panel D show the results of post Enron. The first figure in each cell is the regression coefficient. The second figure in each cell is the p-value. ***, ** and * indicate at the 1, 5 and 10 percent levels respectively (two-tailed). All variables are defined in Table 2*

Whether auditors issue different opinions on annual and semiannual reports is not influenced by their tenure with a company. Further, the empirical results of exploring the professional judgment of auditors show that the interaction of important clients and auditor tenure (*Impor*×*Tenure*) and opinion divergence has a significantly negative correlation, and the interaction of auditor tenure and industry specialization (*Tenure*×*Spec*) has a significantly positive relationship. Apparently, auditors have their own industry specialization, but they change their opinions in face-to-face meetings in order to maintain long-term relationships with clients, suggesting moral flaws. In comparing the pre- and post-Enron periods, we find that, before Enron, auditors' decisions were more easily influenced by companies, and more compromises were made; after Enron, however, the changes in the auditing environment affected the auditors' decision-making, and they paid more attention to maintaining their reputations and became more conservative in their audits.

This study discusses how potential moral flaws arise among auditors in the provision of services to important clients. However, the study has several limitations. First, because of the lack of information about auditor fees, some errors may exist in the estimation of the importance of clients. Furthermore, auditor tenure is measured by the seniority of auditors in a particular industry; as this study focuses on listed and OTC companies, it includes samples only of Certified Public Auditors data in estimating relative audit seniority, and this approach may have affected findings on the situation of issuing negative opinions on semiannual reports and positive opinions on annual reports. The environment for accounting practice today is very different from that of the past because of the domestic Act that attaches greater liability and legal responsibility to auditors, the implementation of the auditor rotation system, regulators' punishment of negligent auditors, and the promotion of the collective litigation system. Under these circumstances, the risk in audit practice is increasing. Whether auditors' decision-making will be different will be addressed in further study.

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EVALUATION OF MULTI-ASSET VALUE AT RISK: EVIDENCE FROM TAIWAN

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ABSTRACT

Under the internal model approach (IMA) stipulated by Basel II, financial institutions are allowed to develop and employ proprietary internal models to evaluate various risk. However, the flexibility to develop a proprietary model leads to the question of which computing method delivers the most accurate and reliable estimates of value at risk (VaR). This research employs the new backtesting method proposed by Pérignon and Smith (2008) to determine the best method for computing integrated value at risk. It tests three major VaR computation methods — historical simulation, Monte Carlo simulation, and variance-covariance methods. The portfolio on which VaR is computed includes equities, government bonds, foreign exchange, and index options, all of which are commonly traded by financial institutions. The empirical analysis indicates that historical simulation is the best VaR computation method, which is consistent with the result of Pérignon and Smith (2008).

JEL: G11; G28; G32

KEYWORDS: Value-at-Risk (VaR), Backtesting, Unconditional Coverage Test, Internal Model Approach (IMA)

INTRODUCTION

Under the internal model approach (IMA) stipulated by Basel II, financial institutions are allowed to develop and employ proprietary internal models to evaluate various risk. However, the flexibility to develop a proprietary model leads to the question of which computing method delivers the most accurate and reliable estimates of value at risk (VaR). An improper risk assessment model leads to severe consequences. An overstated VaR results in retaining excessive and inefficient amounts of capital, and an understated VaR results in retaining insufficient capital to deal with crises. Thus, judging the accuracy of a VaR model is extremely important.

The univariate unconditional coverage test proposed by Kupiec (1995) is the conventional method for the backtesting of a VaR model. However, Pérignon and Smith (2008) proposed a new backtesting framework — the multivariate unconditional coverage test — to improve the backtesting procedure. The multivariate unconditional coverage test focuses on the left tail of the loss distribution and is a multivariate generalization of Kupiec's unconditional test. This paper employs the backtesting method proposed by Pérignon and Smith (2008) to confirm the best method for computing the integrated VaR of a portfolio containing different asset categories. Three major VaR computation methods: historical simulation, Monte Carlo simulation, and variance-covariance methods are tested. Moreover, four different volatility estimation approaches are used in the calculation of the variance-covariance method. The portfolio on which VaR is computed includes equities, government bonds, foreign exchange, and index options, all of which are commonly traded by financial institutions.

This paper is organized as follows. The Literature Review section reviews the literature on VaR. The Data and Methodology section presents the data and explains the methodology employed for the empirical analysis of integrated VaR methods. The Results section presents the results and analyzes the VaR

computation methods employed. Finally, a conclusion is drawn and suggestions are made for the direction of future research in the Concluding Comments section.

LITERATURE REVIEW

VaR is the maximum loss expected to occur within a fixed period at a given confidence level. According to Hull and White (1998a), at the confidence level $1-\alpha$, in the next T days, the maximum loss will not exceed Q dollars, where Q denotes VaR. Additionally, Jorion (2007) defines VaR as follows: given the confidence level $1-\alpha$, if the portfolio profit and loss is ΔL, the relationship between VaR and the confidence level is

$$\text{Prob}(\Delta L < -VaR) \leq \alpha \tag{1}$$

The three major VaR computation methods are historical simulation, Monte Carlo simulation, and variance-covariance methods. Historical simulation uses actual historical data to predict future price changes. It employs historical observations of risk factors (e.g., stock prices, interest rates, and exchange rates) to model the probability distribution of the portfolio's value in the future and calculates the VaR. This method assumes that future price fluctuations of assets in the portfolio will be the same as historical fluctuations. Duffie and Pan (1997) discuss the effect of a fat-tailed distribution of returns on VaR, with examples applied to equity, foreign exchange, and commodity markets. Hull and White (1998b) also find that the returns on many financial assets tend to exhibit a fat-tail distribution. They point out that if, instead, a normal distribution is applied to the returns, the VaR is likely to be underestimated. The historical simulation method needs not assume a normal distribution of returns, but can incorporate the statistical information provided by the data itself. Boyle (1977) first applies the Monte Carlo simulation method to option pricing. Subsequently, this method has been widely used in derivative pricing and risk management. The method assumes that movements in asset prices are stochastic, and on this basis, the probability distribution of portfolio returns is constructed to calculate the VaR. Monte Carlo simulation is based on the law of large numbers. As the number of experiments increases, the simulation result is more accurate. Variance-covariance method assumes that asset returns follow the normal distribution to simplify the VaR calculation. The variance-covariance VaR of a portfolio is calculated as follows:

$$VaR_p = Z_\alpha \times \sigma_p \times V \times \sqrt{t} \tag{2}$$

where $\sigma_p^2 = \begin{bmatrix} w_1 \cdots w_n \end{bmatrix} \begin{bmatrix} \sigma_{11} & \cdots & \sigma_{1n} \\ \vdots & \ddots & \vdots \\ \sigma_{n1} & \cdots & \sigma_{nn} \end{bmatrix} \begin{bmatrix} w_1 \\ \vdots \\ w_n \end{bmatrix}$, σ_{ij} is the covariance between assets i and j, n is the number of assets in the portfolio, w_i is the weight of asset i, where i = 1, 2, …, n, V is the market value of the portfolio, and t is the holding period.

Beder (1995) applies eight VaR methods to three hypothetical portfolios: treasury bills, equities together with their options, and a combination of the two asset types. The results demonstrate that the methods employed produce significantly different VaRs. They also imply that the VaR is strongly related to the parameters, data, assumptions, and methodology adopted. Pritsker (1997) examines six VaR computation methods that are applied to foreign exchange options, in order to investigate the trade-off between accuracy and computational time. He uses the Monte Carlo simulation method with full repricing as the benchmark. Pritsker demonstrates that when the trade-off between accuracy and computational time is considered, the delta-normal Monte Carlo simulation method is the most suitable for a portfolio containing options. Engel and Gizycki (1999) use data from Australian banks, collected over the past 10

years, to compare four VaR methods: variance-covariance, historical simulation, Monte Carlo simulation, and extreme value models. The first three methods tend to be adopted by the majority of financial firms. They show that of the four methods, historical simulation produces the most reliable results.

According to Jorion (1996) and Lopez and Walter (2001), backtesting is a statistical framework employed to evaluate the effectiveness of a VaR method. It examines the difference between actual loss and that estimated from a VaR method to determine whether the model bears up statistically. If a VaR model fails, its assumptions, parameters, calculation, and test procedure need to be reviewed. The conventional method to backtest the effectiveness of a VaR method is the univariate unconditional coverage test referred to Kupiec (1995). However, the results produced by the univariate test when different confidence levels are employed are often contradictory. The multivariate unconditional coverage test proposed by Pérignon and Smith (2008) provides a solution to this problem. Their method focuses on the left tail of the distribution of losses and is a more generalized model compared with the Kupiec's univariate test.

DATA AND METHODOLOGY

This paper conducts an empirical analysis for the integrated VaR methods. The portfolio for VaR calculation contains equities, bonds, foreign exchange, and equity index options. The initial value of the portfolio is NTD $40 million, and the four asset categories are equally weighted, as shown in Table 1. Historical data, including the TAIEX Index, ten year government bond prices, NTD/USD exchange rates, and TAIEX Index option (put option), are obtained from the Taiwan Economic Journal (TEJ) database. Weekly data are based on Friday closing prices from 1/4/2002 to 12/12/2009, totaling eight years or 417 weeks. Historical simulation, Monte Carlo simulation, and variance-covariance methods are employed to compute the VaRs over the eight-year period studied. Four volatility estimations obtained by RiskMetrics, generalized autoregressive conditional heteroscedasticity (GARCH), GARCH with Student-t distribution (GARCH-t), and AR(1)-GARCH(1,1) approaches are used in the variance-covariance method. Finally, all the VaRs are tested by both univariate (Kupiec, 1995) and multivariate (Pérignon and Smith, 2008) coverage tests.

Table 1: The Portfolio for VaR Computation

Asset Categories	Weight	Amount
Equity (TAIEX Index)	25%	NT $10,000,000
Bond (10 yr Government Bond)	25%	NT $10,000,000
Foreign Exchange (USD Deposit)	25%	US $300,000*
Option (TAIEX Index Option)	25%	NT $10,000,000
Portfolio	100%	NT $40,000,000

This table lists the weights and amounts of the four asset categories which compose the portfolio. By using the average foreign exchange rate of $33 NTD/USD for calculation, the amount of USD deposit equals to about NTD $10,000,000.

Developed by J.P. Morgan (1996), the RiskMetrics VaR calculation employs an exponentially weighted moving average (EWMA) to estimate the variance-covariance matrix. Considering that the impact of more recent volatility on return is greater, EWMA assigns a higher weight to recent data to capture short-term fluctuations. According to Zangari (1995), EWMA volatility can be expressed as

$$\sigma_t^2 = (1-\lambda)\sum_{i=1}^{\infty} \lambda^{i-1} r_{t-i}^2 \tag{3}$$

where λ is the decay factor and $0 < \lambda < 1$. Fleming, Kirby, and Ostdiek (2001) state that $\lambda = 0.94$ will result in more accurate predictions for daily VaR. According to J.P. Morgan's

system (1996), the best setting of λ is to assume $\lambda = 0.94$ for daily data and $\lambda = 0.97$ for monthly data.

Morgan (1976) finds that the variance of stock returns may change over time. That is, heteroscedasticity is present. Engle (1982), Bollerslev (1986), and Engle and Manganelli (2004) believes that residual variance is usually unstable in time series data of asset prices. The time series data often has two characteristics: non-normal distributed and volatility clustering. Engle (1982) proposes an autoregressive conditional heteroscedasticity (ARCH) model to explain this phenomenon. In the ARCH model, the conditional variance of the time series data is a function of past residuals, and heterogeneous variance is emphasized. This differs from the traditional assumption that volatility is time independent. Bollerslev (1986) extends the ARCH model to a GARCH model, which makes the setting of variables more flexible.

The GARCH model assumes that conditional variance of return is affected not only by the past residual but also by past conditional variance. The simplest form of this model is GARCH(1,1), expressed as

$$\sigma_t^2 = \omega + \alpha\, r_{t-1}^2 + \beta\, \sigma_{t-1}^2 \tag{4}$$

A large α indicates that volatility will disappear slowly, and a small β indicates that volatility will react fast to market fluctuations. If $\alpha + \beta = 1$, volatility will grow at a constant rate, and the model will not be convergent. Thus let $\alpha + \beta < 1$ and $E(r_{t-1}^2) = \sigma_t^2 = \sigma_{t-1}^2 = \sigma^2$, then the volatility will converge to $\dfrac{\omega}{1-\alpha-\beta}$. Bollerslev, Chou, and Kroner (1992) believe that the volatility of asset return in financial markets is predictable. Their empirical study also shows that GARCH(1,1) can fully describe heteroscedasticity in the variance of asset returns.

This paper also adopts the AR(1)-GARCH(1,1) model to estimate variance. Let the asset return of time t be R_t, where $t = 1, 2, \cdots, T$. Then, the AR(1)-GARCH(1,1) model can be expressed as

$$\begin{aligned} R_t &= \gamma_0 + \gamma_1 R_{t-1} + \varepsilon_t \\ \varepsilon_t &= \nu_t \sigma_t \\ \sigma_t^2 &= \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2 \end{aligned} \tag{5}$$

where $\nu_t \overset{i.i.d.}{\sim} N(0,1)$, $\alpha_0 > 0$, $\alpha_1 \geq 0$, $\beta_1 \geq 0$, and $\alpha_1 + \beta_1 < 1$. When applying this model to financial markets, we generally set $\alpha_1 \geq 0.7$.

Coverage tests are used to identify the most accurate estimation method when comparing the performance of VaR computation methods. Let N_v be a random variable that denotes the number of periods elapsed till the first VaR failure is recorded. If p is the probability of a VaR failure at any given time, the probability of observing the first failure in period n is given by

$$\Pr(N_v = n) = p(1-p)^{n-1} \tag{6}$$

N_v follows a geometric distribution with an expected value of $1/p$. Given a realization for N_v, Kupiec (1995) constructs a likelihood ratio (LR) test to determine whether the potential loss estimates are consistent with the null hypothesis. The LR statistic for testing the null hypothesis $p = p^*$ is given by

$$LR(n, p^*) = -2\ln[p^*(1-p^*)^{n-1}] + 2\ln[(1/n)(1-1/n)^{n-1}] \quad (7)$$

Under the null hypothesis, $LR(n, p^*)$ has a chi-square distribution with one degree of freedom. The univariate test uses only a single VaR and a confidence level. While this test remains the reference test in financial risk management, it displays low statistical power.

Rather than using a single VaR, Pérignon and Smith (2008) suggests an alternative testing procedure, a multivariate coverage test, which uses a series of VaR with different coverage probabilities. Considering K VaRs with different coverage probabilities, indexed by i in descending order, i.e., $p_1 > p_2 > \ldots > p_K$. These VaRs become more extreme as i increases, i.e., VaR(p_1) < VaR(p_2) < …< VaR(p_K). Associated with each of the K VaR numbers is an indicator variable for losses falling in each disjoint interval. That is,

$$J_{it} = \begin{cases} 1, & if\ -VaR(p_{i+1}) < R_t \le -VaR(p_i) \\ 0, & otherwise \end{cases} \quad (8)$$

where $i = 1, 2, \cdots, K$ and R_t denotes the portfolio return. J_{it} are Bernoulli random variables. Thus, $J_{it} = 1$ with probability $\theta_i = p_i - p_{i+1}$. We collect the K elements θ_i into a K-dimensional parameter vector $\theta = (\theta_1, \ldots, \theta_K)^T$.

We can test the joint hypothesis of this specification of the VaR model, i.e., if the empirical θ significantly deviates from the hypothesized θ_i^*, using a multivariate LR test LR_M. Formally, the LR_M test is given by

$$LR_M = 2\left\{\left[n_0 \ln\left(1-1^T\theta^*\right) + \sum_{i=1}^{K} n_i \ln\left(\theta_i^*\right)\right] - \left[n_0 \ln\left(1-1^T\theta\right) + \sum_{i=1}^{K} n_i \ln\left(\theta_i\right)\right]\right\} \quad (9)$$

where $n_i = \sum_{t=1}^{T} J_{it}$, $n_0 = N_v - n_i$, and $\theta_i^* = (1/T)\sum_{t=1}^{T} J_{it}$, where θ_i^* is the maximum likelihood estimator of θ with element i.

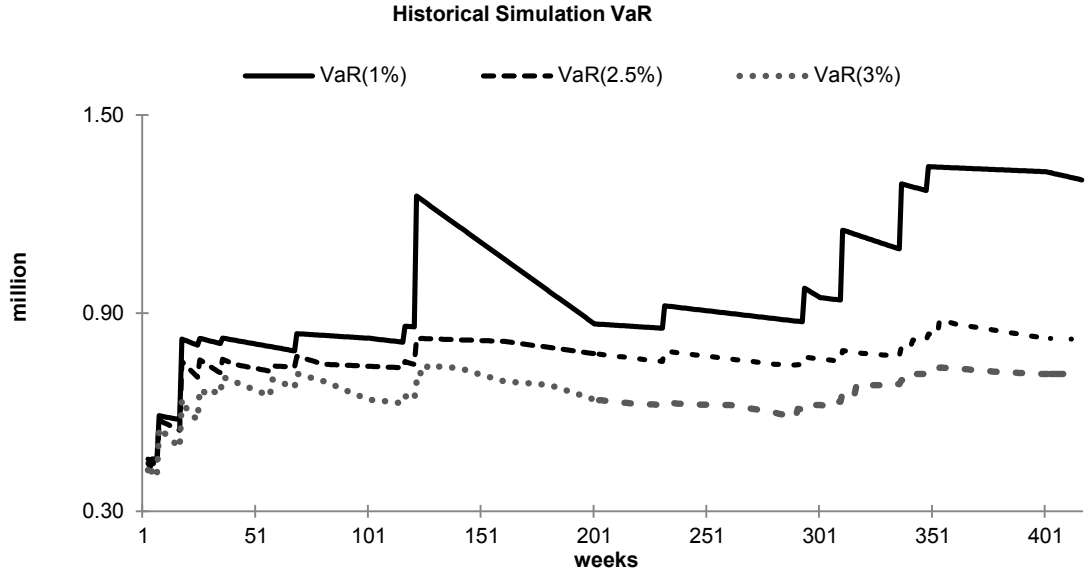
The LR_M statistic is asymptotically a chi-square distribution with K degrees of freedom. When $K = 1$, the LR_M test is equivalent to the univariate coverage test of Kupiec (1995). In this paper, we employ both the univariate and multivariate coverage approaches to test VaR models.

RESULTS

The VaRs are shown in Figure 1 to 6. The historical simulation VaRs in Figure 1 is generally smooth. The smoothness of the curve demonstrates a slow response to market. Campbell (2005) and Pritsker (2006) indicates that one drawback of the historical simulation method is that it cannot react immediately to

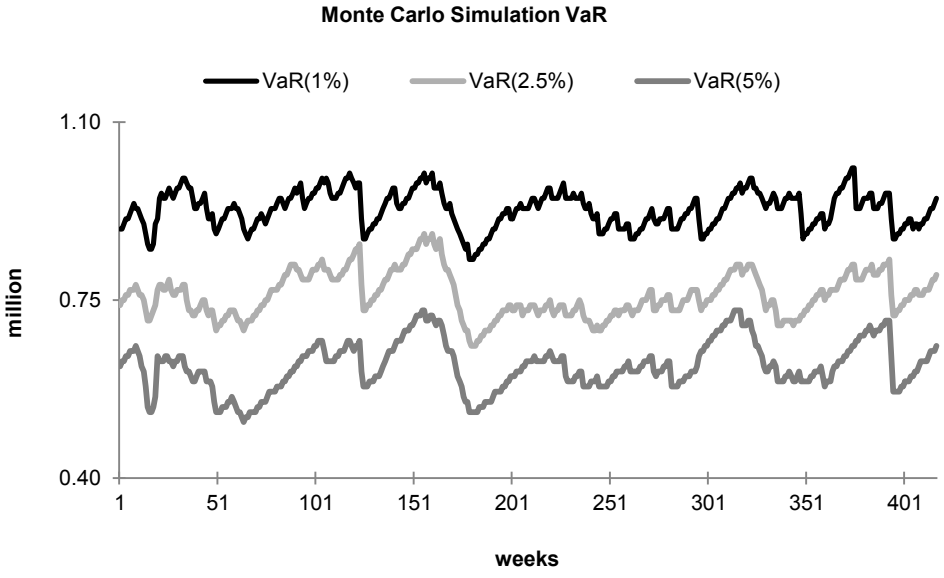
market fluctuations. However, the variance-covariance methods, including RiskMetrics, GARCH, GARCH-t, and AR(1)-GARCH(1,1), are more sensitive to market fluctuation. Moreover, as shown in Figures 4, 5, and 6, the GARCH-based models are particularly similar in their path.

Figure 1: The Historical Simulation VaRs



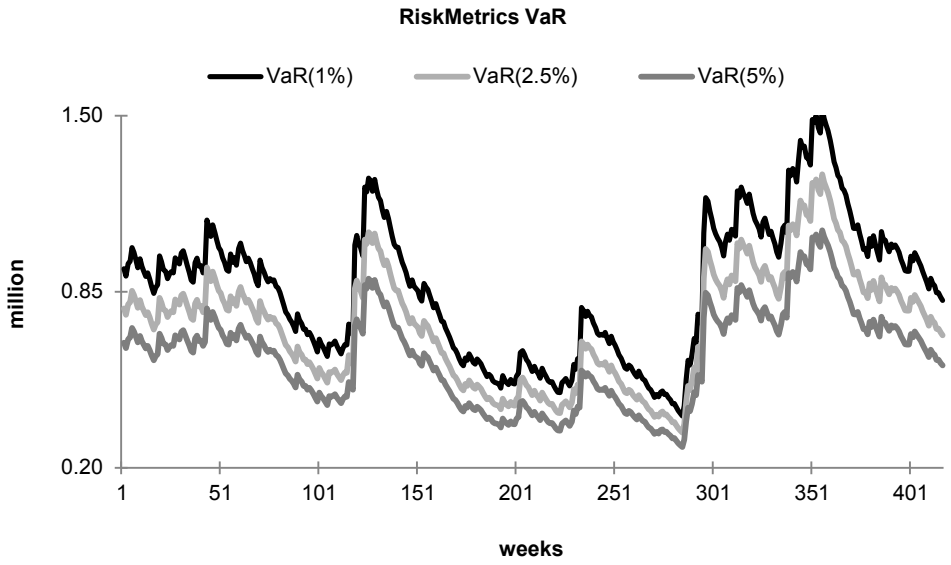
This figure shows the historical simulation VaRs of the portfolio for 417 weeks and 1%, 2.5% and 5% confidence levels. The historical simulation VaR is generally smooth.

Figure 2: The Monte Carlo Simulation VaRs



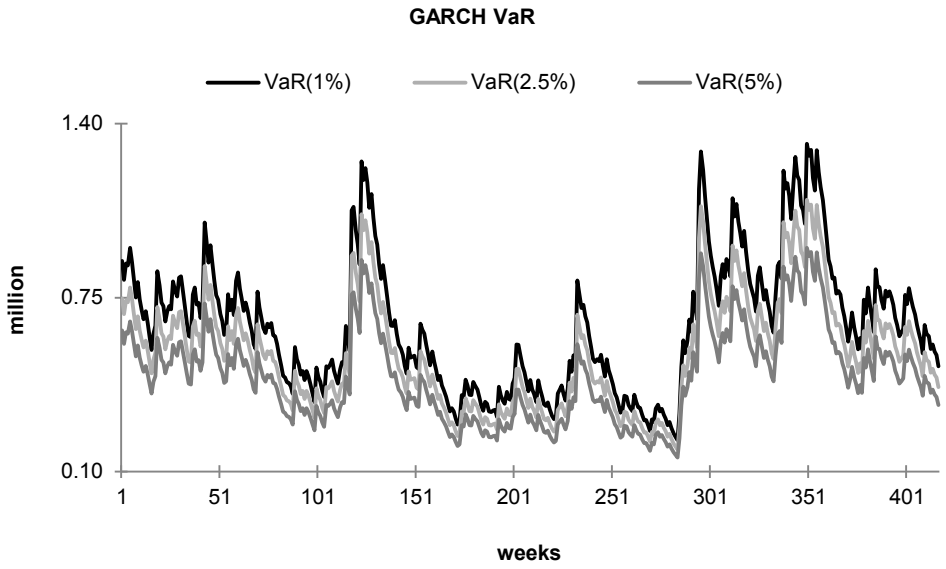
This figure shows the Monte Carlo simulation VaRs of the portfolio for 417 weeks and 1%, 2.5% and 5% confidence levels. The Monte Carlo simulation VaR is more fluctuant compared with the historical simulation VaR.

Figure 3: The RiskMetrics VaRs



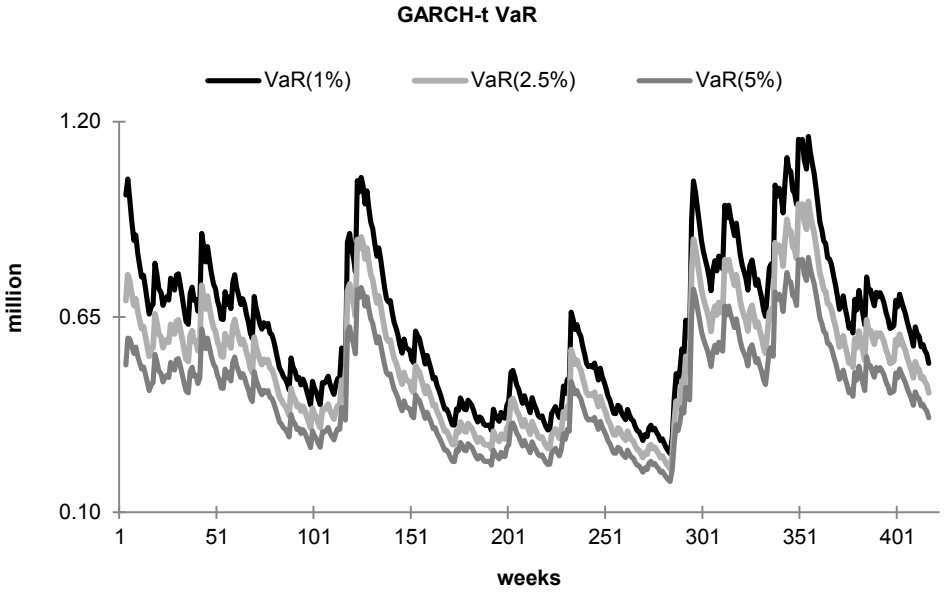
This figure shows the RiskMetrics VaRs of the portfolio for 417 weeks and 1%, 2.5% and 5% confidence levels. The RiskMetrics VaR is volatile.

Figure 4: The GARCH VaRs



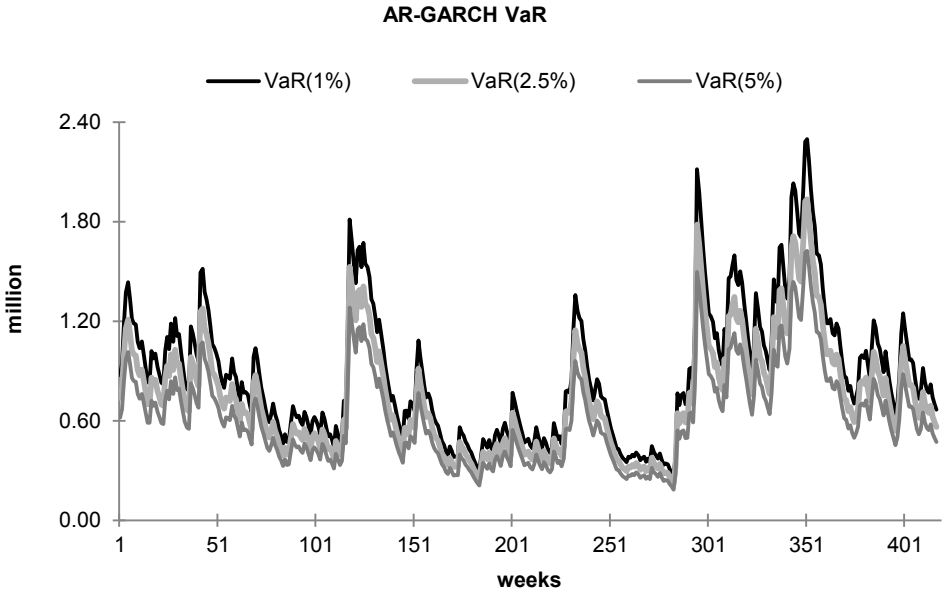
This figure shows the GARCH VaRs of the portfolio for 417 weeks and 1%, 2.5% and 5% confidence levels. The GARCH VaR is much more volatile than the historical simulation, Monte Carlo simulation and RiskMetrics VaRs.

Figure 5: The GARCH-*t* VaRs



This figure shows the GARCH- t VaRs of the portfolio for 417 weeks and 1%, 2.5% and 5% confidence levels. The GARCH-t VaR is much more volatile than the historical simulation, Monte Carlo simulation and RiskMetrics VaRs.

Figure 6: The AR(1)-GARCH(1,1) VaRs



This figure shows the AR(1)-GARCH(1,1) VaRs of the portfolio for 417 weeks and 1%, 2.5% and 5% confidence levels. The AR(1)-GARCH(1,1) VaR is much more volatile than the historical simulation, Monte Carlo simulation and RiskMetrics VaRs.

Table 2 shows the results of univariate and multivariate convergence tests of different VaR methods. The sample periods are from 52 to 417 weeks. Violation rate is defined as the ratio of the number of violations to the number of observed samples. The performance of historical simulation appears superior regardless of the length of the sample period and the extent of the coverage probability. Neither the univariate nor the multivariate test allows the null hypothesis to be rejected, which indicates that the historical simulation method performs well. As the length of the sample period increases, the violation rate decreases. This shows that increments in sample size aid the accuracy of the model.

Table 2: The Violation Rates and P-Values of Different VaR Models

VaR Model \ Sample period			T = 52	T = 104	T = 156	T = 208	T = 260	T = 313	T = 365	T = 417
Historical Simulation	Univariate Coverage Test	α = 1%	1.92%	1.92%	1.28%	1.44%	1.15%	1.28%	1.10%	1.20%
			(0.5528)	(0.4012)	(0.7344)	(0.5476)	(0.8077)	(0.6356)	(0.8561)	(0.6920)
		α = 2.5%	3.85%	2.88%	2.56%	2.88%	2.69%	2.56%	2.74%	2.64%
			(0.5640)	(0.8062)	(0.9593)	(0.7286)	(0.8444)	(0.9497)	(0.7726)	(0.8581)
		α = 5%	5.77%	5.77%	5.13%	5.29%	5.00%	5.11%	5.21%	5.04%
			(0.8036)	(0.7250)	(0.9417)	(0.8499)	(0.9998)	(0.9279)	(0.8580)	(0.9731)
	Multivariate Coverage Test		-	-	-	-	-	-	-	-
			(0.9225)	(0.8033)	(0.9825)	(0.9460)	(0.9918)	(0.9534)	(0.9936)	(0.9802)
Monte Carlo Simulation	Univariate Coverage Test	α = 1%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			(0.3066)	(0.1482)	(0.0766)	**(0.0409***	**(0.0222***	**(0.0121***	**(0.0068***	**(0.0038***
		α = 2.5%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			(0.1047)	**(0.0217***	**(0.0049***	**(0.0012***	**(0.0003***	**(0.0001***	**(0.0000***	**(0.0000***
		α = 5%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
			(0.0209*	**(0.0011***	**(0.0001***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
	Multivariate Coverage Test		-	-	-	-	-	-	-	-
			(0.1489)	**(0.0137***	**(0.0011***	**(0.0001***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
RiskMetrics	Univariate Coverage Test	α = 1%	1.92%	3.85%	3.85%	3.85%	3.08%	3.51%	3.29%	3.12%
			(0.5528)	**(0.0262***	**(0.0065***	**(0.0017***	**(0.0069***	**(0.0005***	**(0.0005***	**(0.0005***
		α = 2.5%	5.77%	9.62%	9.62%	7.69%	6.15%	6.71%	6.30%	6.47%
			(0.1956)	**(0.0004***	**(0.0000***	**(0.0001***	**(0.0014***	**(0.0001***	**(0.0001***	**(0.0000***
		α = 5%	5.77%	11.54%	11.54%	9.13%	7.69%	7.99%	8.22%	8.15%
			(0.8036)	**(0.0084***	**(0.0012***	**(0.0137***	(0.0640)	**(0.0251***	**(0.0095***	**(0.0065***
	Multivariate Coverage Test		-	-	-	-	-	-	-	-
			(0.2330)	**(0.0052***	**(0.0003***	**(0.0009***	**(0.0081***	**(0.0003***	**(0.0007***	**(0.0001***
GARCH	Univariate Coverage Test	α = 1%	5.77%	12.50%	12.18%	10.10%	8.08%	8.63%	8.49%	8.39%
			(0.0019*	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
		α = 2.5%	11.54%	15.38%	14.74%	12.02%	10.38%	10.22%	10.68%	10.55%
			(0.0022*	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
		α = 5%	17.31%	19.23%	17.31%	15.38%	13.85%	13.74%	13.42%	13.43%
			(0.0012*	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
	Multivariate Coverage Test		-	-	-	-	-	-	-	-
			(0.0086*	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
GARCH-*t*	Univariate Coverage Test	α = 1%	5.77%	12.50%	12.18%	10.10%	8.08%	8.63%	8.49%	8.39%
			(0.0172*	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
		α = 2.5%	11.54%	15.38%	14.74%	12.02%	10.38%	10.22%	10.68%	10.55%
			(0.0022*	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
		α = 5%	17.31%	15.38%	17.31%	15.38%	13.85%	13.74%	13.42%	13.43%
			(0.0012*	**(0.0001***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
	Multivariate Coverage Test		-	-	-	-	-	-	-	-
			(0.0086*	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
AR(1)-GARCH(1,1)	Univariate Coverage Test	α = 1%	5.77%	9.62%	9.62%	7.69%	6.15%	6.71%	6.30%	6.47%
			(0.0172*	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
		α = 2.5%	5.77%	11.54%	11.54%	9.13%	7.69%	7.99%	8.22%	8.15%
			(0.1956)	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***
		α = 5%	9.62%	14.42%	13.46%	11.06%	9.62%	9.90%	10.14%	10.07%
			(0.1729)	**(0.0003***	**(0.0001***	**(0.0005***	**(0.0023***	**(0.0004***	**(0.0001***	**(0.0000***
	Multivariate Coverage Test		-	-	-	-	-	-	-	-
			(0.0561)	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***	**(0.0000***

*This table shows the results of univariate and multivariate convergence tests of VaR methods. The sample periods in this table are from 52 to 417 weeks. Violation rate is defined as the ratio of the number of violations to the number of observed samples. The p-values are listed in the parentheses. * indicates the p-values that allow a rejection of the null hypothesis at the 5% confidence level.*

The Monte Carlo simulation performs well for short sample periods, particularly in the univariate coverage test with 1% coverage probability. As observed from the table, sometimes the univariate and multivariate coverage tests render different conclusions regarding the null hypothesis when employing a

Monte Carlo simulation method. As Table 2 shows, among the four variance-covariance VaRs, the RiskMetrics approach performs well for shorter sample periods involving more recent data. The other three variance estimation approaches, including GARCH, GARCH-t, and AR(1)-GARCH(1,1), also emphasize time-varying variance. Although GARCH-t improves the GARCH method by using the t-distribution to calculate the multiplier Z_α, its performance is not substantially improved according to the test result. Almost all test results of GARCH and GARCH-t show a rejection of the null hypothesis. Moreover, AR(1)-GARCH(1,1) performs better than GARCH and GARCH-t.

In Table 2, the univariate test produces contradictory conclusions for different confidence intervals. For example, in the RiskMetrics approach sampling 260 weeks, the tests with coverage probabilities of 1% and 2.5% reject the null hypothesis, whereas the test with a coverage probability of 5% shows that the null hypothesis should not be rejected. This demonstrates the inadequacy of the univariate coverage test and the importance of the multivariate coverage test, which considers the entire left tail of the distribution.

The empirical test shows that the historical simulation method performs best. The Monte Carlo simulation, RiskMetrics and AR(1)-GARCH(1,1) are second best. The GARCH, and GARCH-t perform poorly. Perhaps because the portfolio contains options, a nonlinear asset, variance-covariance methods, which are more suitable for linear assets, perform poorly, and the historical simulation performs better.

CONCLUDING COMMENTS

VaR is an important measure of risk for the Basel II internal model approach (IMA). The most widely used VaR computation models are historical simulation, Monte Carlo simulation, and variance-covariance method. This gives rise to the question of which computing method produces the most accurate and reliable estimates of VaR. This research employed univariate (Kupiec, 1995) and multivariate tests (Pérignon and Smith, 2008) to evaluate the performance of three VaR models with differing sample periods. The empirical data are drawn from the four major asset categories in Taiwan market for the period 2002–2009. The empirical analysis shows that the historical simulation performs best. Among the four volatility estimation approaches for variance-covariance method, RiskMetrics and AR(1)-GARCH(1,1) perform better than the GARCH and GARCH-t approaches. The presence of nonlinear assets in the portfolio may explain the poor performance of variance-covariance methods. In addition, this research results are consistent with those of Pérignon and Smith (2008). The VaR test results for the most commonly traded financial assets in Taiwan market are presented here. When the selected portfolios differ in terms of the assets included, the period chosen for data collection, or the market involved, the test results tend to vary. There is scope, therefore, for further research that seeks to evaluate which VaR method is the most suitable for portfolios containing other assets such as foreign exchange options and swaps.

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GLOBALIZING RURAL MARKETS: EVIDENCE FROM HANDMADE TRADITIONAL PRODUCT MARKETS

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ABSTRACT

Learning market realities improves businesses. Kerala, India, traditional cottage units producing indigenous handmade goods are not an exception. Changes because of globalization have intensified competition to imported non-natural factory products into Kerala markets. Traditional industries, ignorant of these penetrations, struggle hard to challenge their urban competitors. Response delays may push these units out, replacing them with imported products. This study carries a market threat analysis to appraise current market realities for traditional products of Kerala. The first part of the study involves a competitor analysis with a survey focusing on 200 artisans selected from three districts. We focus on five market key causes. The primary survey focused on a sample of 200 artisans randomly selected from voluntary traditional craft units of three districts. Competitive profiles developed in this paper assessed the market realities and global challenges for handmade products. The second part of the analysis, studies the types of threat that could wreak havoc the future of handmade traditional products.

JEL: M20, M30, M31

KEYWORDS: Market Threat, Global & Rural Markets, Traditional Products, Kerala

INTRODUCTION

The marketplace isn't what it used to be. In the recent past, globalization has brought great changes across the world. The key characteristic of today's global market is the speed with which the demand for a product and change in its style, design, and colour, offer greater opportunities as well as threats to producers. Perhaps, improved technology with advanced infrastructure, to a greater extent promotes hastened movement of goods without trade barriers. The growing commercialization of Kerala's traditional handicraft products is a sign of inevitable movement of cottage industries to keep them refreshed with changing markets. The precarious nature of handmade craft markets invites strategic approaches to reach global consumers. But, delayed response can push these deep-rooted traditional handmade products out, replacing them with mass, factory–made, machine crafts.

Kerala a land of rich cultural heritage presents colourful traditional handmade products handed down from generations. Regional products, especially craftworks, involve large and diversified designs in wood, metals, glass, stone, clay and other materials. Although large industries did not make inroads in rural Kerala, the inspiration is to preserve village traditions and encourage artisans to organize themselves into small craft units under cooperative line.

Often, the scarcity and distinctive nature of materials needed for production compel artisans to move their units into interior regions, close to forests, in search of good quality raw materials at low cost. Perhaps, for this reason, until recently, most traditional handmade products of the State lack accessibility to urban pockets.

In recent years, the notion to expand rural tourism with a significant move to promote rural crafts by the government invited attention of private traders to this industry. The industry joined with government sponsored crafts centres and the State Tourism Campaign. Private traders welcomed the move and established factory-made production and marketing units in villages. The growing global publicity for

traditional products encouraged private traders to set up business in rural tourist pockets. Enjoying a better share of Kerala markets, private merchants revolutionized the handmade product industry with fake, low priced crafts.

Experts agree that the rush of imported crafts had an impact on production and marketing of handmade traditional products in rural Kerala. Unaware of the current market realities, a majority of cooperative artisanal units struggled to place their products with the conventional methods of marketing. This paper explores current market realities for traditional products of Kerala. Selecting, rural artisanal units functioning under cooperative principles as an example, this study appraises the extent of competitive threat faced by the handmade traditional products of the State.

The remainder of the paper explores the aforesaid challenges. Focusing on past research on related issues in promoting hand-made crafts the literature review explores the market scenario of traditional hand-made products of India as well as Kerala. Explaining the data and methodology, following sections explain the results and summary of study with suggestions for further research.

LITERATURE REVIEW

In early periods, artisans selected local markets as their outlets to sell indigenous traditional products. However, with expanding tourism, the trend to globalize rural craft markets offered a wide opening to several traditional ethnic products across the world (Margaret, 1990). In addition, the rising income and consequent change in lifestyles brought demand for handmade home accessories and décor crafts (Ted and Marina, 2006). However, in the age of globalization, a study by the author (2010) on applying quantitative marketing in handicraft industry recommends artisans not to limit their designs to a fixed range, but to diversify products to push themselves ahead of their competitors.

Today's markets witness radical changes because of technological shifts in consumers buying behavior (Kotler, *et. al*, 2009). For instance, the information age with fast market communication ease producers' link with business partners, customers and government regulators. Eventually, things designed manually become computerized (Osmond, 2010), exposing even regional products to global consumers. The indigenous traditional products are not an exception, because e-promotions offer wide exposure to the diverse culture and traditions of a number of countries to global consumers.

The growing markets for decorative crafts intensified competition between handmade and factory-made crafts in Kerala. But sometimes, in contrast to the market observations, some products, because of the aesthetic designs are unable to be copied by machines. These products fetch a good share in global markets (Rajagopal, 1989). Even if, globalization encourages cottage industries to thrive rather than wither with their aesthetic beauty (Vanaja, 2010), it brings a market threat because of free trade, mass factory production or import of low priced crafts (Thomas *et.al*, 2003). To add to, Pradeep (2008) discovers that in a majority of rural crafts deregulation and privatization eventually out priced the hard labor of artisans.

If one asked the cottage industries to identify the greatest challenges faced by them, one of the commonest responses would be competition (Norman, et. al, 2009). What causes, indeed drives the increased competition may vary from smarter rivals to large factory units competing at a low price (Executive Outlook, 2006). Therefore, when consumers receive same products with less differentiation but at low price, rural artisans face competitive pressure in same market (Norman, et. al, 2009). Also, the emergence of several e-retailers, similar to Amazon.com, bypasses existing rural retailers, facilitating buyers to place orders online at lower prices. This new distribution strategy has enormously expanded the market horizon, welcoming crafts of different regions into Kerala markets (New Kerala, 2009).

Because of the market developments reflected on a global scale, majority of village artisans have lost their hold over the old 'patron-client' market network (Manoj, 1994). In some parts of rural India, regional markets remained untapped with an impression that handmade goods are high priced and poorly designed (Layila, 1994 and Nerys.et.al, 2006). An early study by Uma (1965) discovers wide disparities in market opportunities between urban and rural products and complaints on the inability of village crafts to penetrate external markets competing with machine made urban crafts. Keplan's (1977) study on relative significance of strategic marketing to promote cottage industries corroborates Uma's findings.

Much has been discussed about the prevailing economic conditions of traditional industries of various states (Manzoor 1992; Thambi 1975 and Thaimani, 1987). A study by Nurkse (1954) warns of a threat of a vicious circle of undevelopment in this sector. With low productivity, low income and low investment, this vicious circle gradually leads to market failure. To support the above argument Dak (1989) lists reasons that cause market failure to handmade products. He claims poor designs, low product quality and inefficient market approaches are the major weaknesses of rural artisans. These weaknesses exploited by urban based factories, with low costs keep village crafts from global markets (Digbey, 1960; Sanjay, 1988 and Luckose (1992). In response to these issues, emerging literature addressing the limitations of rural enterprises recommends viable solutions to above market issues (Gundiff, 1972; Manzoor 1992; Thambi, 1975 and Ram, 1988).

Thaimani (1987), admits that a lack of market awareness is the main obstacle pulling village products from global markets. Some researchers recommend periodic market research to design workable solutions to gain competitive advantage (Prajapati, 1986; Layila, 1994; George, 2009 and Vanaja, 2010). A strategic market study by Aron (2003) also supports these issues, recommending innovation-based strategies to assess market threats. In brief, artisans should have an understanding of market dynamics including variations in channel policies and pricing techniques to develop a comprehensive plan to meet tailor-made demands (Kashyap and Raut, 2006). When multinational companies refilled rural Kerala with hi-tech marketing (Artncraft, 2010), apparent change in consumer buying trends and the entry of various aggressively promoted factory products result. In light of this artisans must appraise their own market policies.

Conceptualizing the significance of assessing market realities for these products, the aim of this study is to explore the challenges for indigenous traditional products through a competitive and threat analysis, selecting Kerala handicraft markets as a case example.

DATA AND METHOD

Realizing that artisans, despite their inherited craftsmanship, are constantly exploited by merchant capitalists and middlemen, this study tries to learn the types of marketing mix that threats handmade products. We group the entire ethnic traditional industries of the State into three segments: traditional handmade craft cooperative units, private merchants with factory-based products and government supported cluster units which concentrate in production of both indigenous as well as contemporary style of decorative products.

The first stage of the research carried a competitor analysis using primary data. We anticipating the key success factors that decide the competitive strength of a business are based on the 4*P*s: *(P1), convenient pricing (P2), Product awareness (P3), innovative distribution (P4)as well as customer service* (Norman, et. al, 2009). For this reason, the survey focused on these variables. Based on ownership patterns, the study grouped competitors into three types of units: indigenous traditional handicraft units (sample units) private factory-based production units and government supported cluster units. 200 craftsmen randomly selected from the traditional cooperative units framed the research sample. The primary survey was

administered in three districts of Kerala with a questionnaire where respondents rated the market strategies of their own units and competitors on a ten point scale ranging from low (1) to high (10).

Next the study attached weights to each key success factors derived from the survey, reflecting their relative importance for Kerala crafts. Based on the survey results, we list the leading competitors for traditional cottage units, by rating the key success factors based on the mean of score gained on a four-scale; such as; $\bar{x} < 2$= major weakness (1), $\bar{x}$ 2 to 4 = minor weakness (2), $\bar{x} = 4$ to 6 minor strength (3) and $\bar{x} > 6$ = major strength (4). This rating model for competitor profile is a matrix created by multiplying the weights assigned to each key factor by the rates gained by them. The result of the total weighted score for each competitor allowed us to identify challenges and weak strategies of sample units.

The result applied in a competitive profile matrix traced out the threats that could make a severe impact on Kerala rural crafts. In addition, selecting seven major sources of market risk (Greg, 2005), the primary survey with same sample obtained artisans responses to each risk that would have a major impact on their products. The severity of the impact of each threat was rated on a 1 to 10 scale, assigning points to the probabilities of occurrence (between 0 and 1) to each threat. Multiplying the severity of each threat by likelihood of its happening (maximum threat score=10), reveals the most severe threat on which artisans should focus attention. The questionnaire was governed in three districts of Kerala during the period March to April, 2011.

The results of the pilot survey, showed wide variation in the product designs introduced by the three groups of craft units. Hence a Product Concentration Index (Fred, 1992), was used to measure the extent of diversity in the product mix offered by these units. Applying equation (1), production details about five main crafts; such as wood and metal carved idols of medium sizes, cane baskets, papier-mâché´ crafts, and horn carvings were included in the data. The production details were collected from the unpublished records of 12 units, four each, conveniently selected from the three groups of units from the same districts.

$$\text{PCI} = 100\sqrt{\sum_{r-1}^{n}\frac{(zr)^2}{z}} \qquad (1)$$

The equation shows that z = the production of total crafts from a unit and zr, r $(1,...n1)$ = production of sample crafts under study in a given year. The maximum value of the index is 100 which occurs when the society concentrates production in one item of craft. Higher values indicate less design diversity.

RESULTS

Respondents' opinion on the key factors for successful marketing was recorded on a ten point scale. Table 1 presents the rating of three sets of producers on a five selected key success factors. Score value (S), mean ($\bar{x}$) standard deviation (SD) and rating (R) of key factors were reported. The descriptive statistics in Table 1 reveal that product quality was the major strength of sample units. However, lack of consumers' awareness, customer services and innovating strategies in distribution were the major market limitations for handmade products compared to their rivalries.

Table 1: Respondents Rating of Their Units' against Their Competitors' Key Success Factors

Key Success Factors	Sample Units[1]				Competitors Group[2]				Competitors Group[3]			
	S	$\bar{x}$	SD	R	S	$\bar{x}$	SD	R	S	$\bar{x}$	SD	R
P1: Product Quality	1693	8.46	1.68	4	751	3.75	2.02	2	1237	6.19	3.66	4
P2 Convenient Pricing	859	4.29	2.35	3	1248	6.24	3.64	4	985	4.92	2.63	3
P3:Innovate Distribution	578	2.89	1.74	2	1229	6.15	3.33	4	1110	5.55	2.91	3
P4: Product Awareness	312	1.56	1.58	1	848	4.24	2.43	3	909	4.54	2.66	3
Customer Services	664	3.32	1.75	2	951	4.75	2.59	3	852	4.26	2.46	3

This table shows the rating for five variables by the indigenous traditional handicraft units (1) against private factory-based production units (2) and government supported cluster units (3). With a rating scale; $\bar{x}$: < 2= major weakness (1), $\bar{x}$: 2 to 4 = minor weakness (2), $\bar{x}$: 4 to 6 minor strength (3) and $\bar{x}$ >6 = major strength (4) the study identifies the major strength as well as weakness of sample units compared to its rivalries.

Realizing the relative importance of each key success factor in promoting indigenous traditional products, the weights assigned to each one identified the strongest and weakest strategies in production and marketing of rural handmade products.

The weights were allotted according to the market importance assigned to each key factor by the artisans. According to the significance of each factor the weights possessed by the factors were as follows: P1 = 35 %; P2= 20 %, P3= 25 %, P4= 10 % and customer services= 10%. The weight multiplied with rates assigned in table two, gave the weighted score for each type of handicraft units. Table 2 presents the market realities for each traditional products and reports the key success factor for each group of competitors, assessing the scores they obtained.

Table 2: Competitive Profile Matrix of Kerala Traditional Craft Sector

Key Success Factors	Sample Units[1]				Competitors Group[2]			Competitors Group[3]		
	Weight		Weighted			Weighted			Weighted	
Column number	1	2	3	*4*	5	6	7	6	7	8
	W* (w/100)	R	Score (*W x R)*	*% to total in column 3*	R	Score (*W x R)*	*% to total in column 6*	R	Score (*W x R)*	*% to total in column 7*
P1: Product Quality	.35	4	1.40	50.0	2	0.70	22.5	4	1.40	41.8
P2: Convenient pricing	.20	3	0.60	21.4	4	0.80	25.8	3	0.60	17.9
P3: Innovative Distribution	.25	2	0.50	17.8	4	1.00	32.3	3	0.75	22.5
P4: Product Awareness	.10	1	0.10	3.6	3	0.30	9.7	3	0.30	8.9
Customer Services	.10	2	0.20	7.2	3	0.30	9.7	3	0.30	8.9
Total	1.00		2.80	100		3.10	100		3.35	100

*This table shows the weighted score for five variables by the indigenous traditional handicraft units (1) against their competitors grouped as private factory-based production units (2) and government supported cluster units (3). In this tables weights were indexed according to the importance of each key factor to promote products in the market (P1 = .35; P2=.20; P3=.25; P4=.10, and customer services= .10). (|*Source: suggested by artisans and officials of Handicraft Development Board).*

Every business faces threats (Norman, et. al, 2009). Traditional cottage industries should not ignore threats that have potential to destroy their very existence or sustainability. This paper applies the most productive approach to identify the threats and their severe impact on traditional units by measuring the highest probability of occurrence. The variables listed in Table 3 emerged reflective of the market reality analysis done in above paragraphs.

The threat analysis identified the major areas on which an enterprise should focus their attention. Table 3 reports high scores for a few threats that demand more attention. Six threats that stood out above seven in the threat rating scale warn the indigenous traditional cottage units of the need to accommodate current market changes in their production and marketing strategies. However, among the listed six threats, since product innovation (7.14) was found to be the major limitation with lack of diversity in design the most severe threat (7.92), the rationality of this finding was appraised by comparing the production concentration index of three units in Table 4.

Table 3: Major Threat Analysis

1	2	3	4	5	6	7
	Source	Specific Threat	Severity (1=Low; 10=High) Mean	Probability of Occurrence (0 to 1) Mean	Threat Rating (Severity x Probability) (Max=10)	Extent of threat to variables in cell 2 (averages)
1	Distribution Channel	Channel reputation	7.1	0.7	4.97	
		Channel spread	6.9	0.9	6.21	4.12
		Paying channel cost	4.0	0.3	1.20	
2	Demographic changes in market	Shift in income	4.1	0.5	2.05	
		Multicultural buyers	7.8	0.9	7.02	4.34
		More female buyers	7.9	0.5	3.95	
3	Globalization	Import of low priced goods	8.2	0.9	7.38	5.93
		Global consumer	5.6	0.8	4.48	
4	Government regulations	Liberalization of import	8.4	0.5	4.20	5.32
		Blanket approach in polices	9.2	0.7	6.44	
5	Product innovations	Lack of diversity in product design	8.8	0.9	7.92	
		Speed in introducing new designs	6.8	0.9	6.12	7.14
		Imported unique festival designs	8.2	0.9	7.38	
6	Influence of interest group	Private traders	9.4	0.8	7.52	4.04
		Stake holders	4.3	0.3	1.29	
7	Changes in Technology	Production easiness	7.6	0.9	6.84	
		Market propinquity	8.0	0.9	7.20	5.68
		Global promotions	5.0	0.6	3.00	

This table shows seven areas of market threats to the indigenous traditional handicraft units (1) against their competitors grouped as private factory-based production units (2) and government supported cluster units (3). The figures in cell 4 and 5 are the mean of the score of respondents' opinion. Figure in cell 6 reveals the market reality in terms of the threat measured multiplying cells 4 & 5.

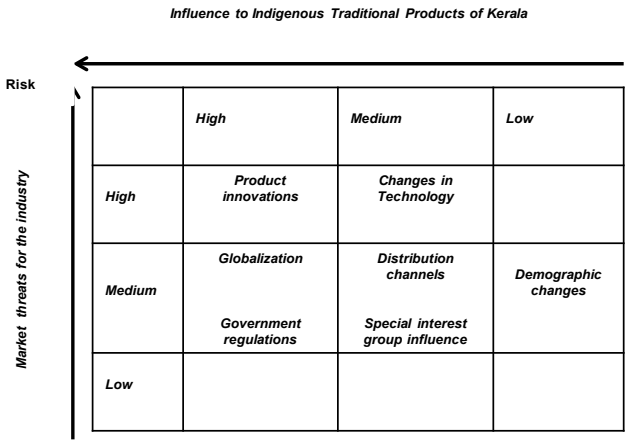
Table 4: Product Concentration Index for Selected Five Products (Value in US $, in thousands)

	Rural Indigenous Traditional Handicraft (Value In US $, in Thousands)						**Private Factory-Based Production Units (Value In US $, in Thousands)**						**Government Supported Cluster Units (Value In US $, in Thousands)**					
	Wood & Metal	Cane	Paper	Horn	Other crafts	PCI	Wood & Metal	Cane	Paper	Horn	Other crafts	PCI	Wood & Metal	Cane	Paper	Horn	Other crafts	PCI
2007	22.70	1.6	1.49	2.1	4.8	69	18.7	8.3	8.5	11.6	11.3	32	22.6	9.5	6.1	10.2	8.9	0.39
2008	30.30	1.4	2.11	1.1	5.01	76	16.5 5	7.6	8.4	10.5	11.5	30	22.1	11.8	6.5	10.6	7.5	0.37
2009	31.06	1.3	2.11	1.2	4.52	77	15.6	5.9	7.6	6.2	10.5	34	24.1	10.5	6.3	11.2	8..5	0.46
2010	30.98	1.5	1.99	0.9	4.12	79	14.6	6.8	9.5	10.6	11.6	27	26.8	7.6	7.2	12.1	9.5	0.42

This table shows the extent of product diversification in designing indigenous traditional handicraft by the sample units by assessing the PCI index. Table show the result of the secondary data collected from the unpublished records of 12 units, four each, conveniently selected from the aforementioned three groups of units. PCI ≤ 50 (participant's observation) was accepted as benchmark to access the efficacy of each group of units in applying product-design diversification.

The product concentration index, bench marking PCI ≤ 50 (participant's observation) reveals the efficacy of each group of units in applying product-design diversification. Based on the aforementioned analysis Fgure 1 highlight the area where intensity of threat is high, medium and low for the traditional products of Kerala compared with their rivalries.

Figure 1: Threat Intensity Matrix



This figure shows the threat intensity matrix

Besides the machine made crafts with innovative designs, dumping of low priced imported fake antiques with versatile designs, warns traditional craft industries of Kerala to shift from conventional methods of production to more product innovation strategies to meet diversified demands

CONCLUDING COMMENTS

This paper presents the market realities for cottage industries engaged in production of indigenous traditional products in Kerala. Focusing on 200 rural artisans, randomly selected from traditional handcraft cooperative units, the study explores market threats for handmade products. The competitive strength of the sample units were compared with their rivalry units by measuring the key factors that determine the success of craft marketing on a ten point scale. Competitor profile matrix reveals that product quality is the main strength for handmade products, however, these units fail to compete with the private and government sponsored production units with innovative distribution, promotion and customer service strategies. This study identifies the lack of innovative design as a severe threat. Therefore, to win global demands, the traditional handmade products have to traverse with diversified market strategies.

One limitation common with most of the works in this area is availability of data to consider the influence of other factors on threat analysis. The relative impact of anticipated market threats was assessed based on the perception of rural artisans on their own market as well as their competitors' strategies. Taking into account the gap in primary data on competitors' opinion on their market strategies, we acknowledge the need for further research in this area to explore the efficacy of traditional handicraft units to accommodate strategies as well to challenge market threats.

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DEVELOPING EXPERIENCE-BASED LUXURY BRAND EQUITY IN THE LUXURY RESORTS HOTEL INDUSTRY

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ABSTRACT

Businesses constantly strive to provide added value and brand equity to gain a competitive advantage, particularly in the contemporary hospitality industry. It is widely accepted that a luxury experience brand enhances the value of a luxury resort hotels industry. Since the 1980s, the concept of brand equity has focused mainly on tangible products, as opposed to services or experiences. This study found that experience-based luxury brand equity is perceived through extensive implicit equity related dimensions. In addition, all research tourists of luxury resorts hotel industry in Taiwan and Macao emphasized extended intrinsic values (EIV), which including variables of brand awareness, brand loyalty, organization association and brand identity than fundamental extrinsic value (FEV), including variables of perceived brand loyalty, experience value and unique.

JEL: L83; M16

KEYWORDS: Luxury Resorts Hotel Industry, Brand Equity, Experience of Luxury, Experience-based Luxury Brand Equity

INTRODUCTION

Branding is a field that requires dynamic thinking and the implementation of corporate strategies in response to developing trends, shifts in consumer values, and rapid technological innovation. Urde (1994) notes that the inclusion of brand orientation in corporate models is a key to corporate survival and sustainable growth in the 21st century. This is due to the accessibility of product related information via modern information technology devices that enable the replication of products and lower the development threshold (Aaker, 1991; Farquhar, 1989; Keller, 1993; Shocker and Weitz, 1991; Tauber, 1988).In a rapidly changing competitive environment, the service industry has found it increasingly difficult to distinguish physical products by their function. Consumers today often base their purchases on the added value of a product or service (Bailey and Ball 2006). Perceived added value of product might distinguish it from other brands in the same category. Hence, extending brand equity through intangible services that enhance the customer's experience will become increasingly important in the future. It will also become a key influence in the formation of many aspects of brand equity.

The development of brand equity in the service industry has in recent years become a major issue in the area of branding. Since Cobb-Walgren, Ruble, and Donthu (1995) first applied Aaker's (1991) techniques to investigate various aspects of the hotel industry, brand equity has prompted a great deal in service industries. The results of the present study indicate that "quality awareness" was not an important indicator for consumers' assessment of hotels, contra previous research regarding physical product-based brands (Aaker, 1991； Chen, 1996；Farquhar, 1989； Kamakura and Russell, 1993； Keller, 1993；Trevor, 1998). At present, there is a paucity of literature and empirical research related to service brand equity (Berry, 2000；Cobb-Walgren et al., 1995； Keshav, 1999； Lassar, Mittal and Sharma, 1995； Sharp, 1995). Previous studies on brand equity measurement can be classified into Customer-based Brand Equity (CBBE), where the value of the brand is determined by customers' associations with a product brand and Corporate Brand Equity (CBE), where the value of the brand is determined by stakeholders' associations toward a corporate brand（Shamma and Hassan, 2011）.

Therefore, this study constructs experience-based luxury brand equity (LBE) model using a logically developed, creative, and integrated research design. Nonetheless, service brand equity is a hot topic, with most researchers focusing on concepts related to the experience and self-extension of consumers. Positive brand equity would increase in the level of utilitarian and informational punishing consequences. In previous investigation (e.g. Foxall, Oliveria-Castro and Schrezenmaier, 2004; Oliveria-Castro, Foxall and Schrezenmaier, 2005), based on consumer panel data, brands were ranked according to two levels of utilitarian benefit and three levels of information benefit(Oliveria-Castro et al., 2008).A certain degree of lag should be expected between conceptualization and applied research in an industrial context. Based on upon concept, the major considerations were deciding which aspects to include and how to identify the relevant variables in luxury resorts hotel industry in Taiwan and Macao. The purpose of this study is to determine whether there exists a difference between the brand equity of luxury resorts hotel and traditional tangible product-based brands.

LITERATURE REVIEW

The concept of "luxury" originated from the attempts of businesses to maintain market leadership through a differentiation strategy (Porter, 1985). Silverstein and Fiske (2003) proposed a 'new luxury' strategy, theorizing that consumer psychology has reached beyond the nature of a product to be purchased or consumed. In other words, satisfaction can be gained from a better experience, a more profound meaning, greater enjoyment, or from a lasting perception. Consequently, luxury has an *a priori* quality related to the expectation of realizing one's dreams. The term "luxury hotel" often refers to a resort that transcends the pre-conceived notions of tourists, through the creation of an impressive luxury milieu, with the application of luxury elements such as personnel and facilities. Nevertheless, the definitions and the awareness of luxury often differ from person to person. The criteria for luxury are defined through consumer expectations and experience (Kerr, 1985). As a result, a great many luxury hotel operators and marketing researchers have indicated that the perception of experience is more important than tangible characteristics or interest.

Experience-Based Luxury Brand Equity (LBE)

Customer brand equity is based on the dynamic responses of enterprises to different economic environments. "Brands" were only defined in terms of product ownership in the early 18th century, while "brand equity" was first emphasized by U.S. industrial groups in the early 1980s (Barwise, 1993). Bharadwaj, Varadarajan and Fahy(1993)argued that service branding might be more essential because of the complexity with which consumers are faced with in the purchasing process. de Cherbatony, Cottam and Segal-Horn(2005, 2006)explored the ways that service brand values are communicated to both staff and customers. In academia, it was only after Aaker (1991) developed the systematic and overall brand equity dimensions that the study of brand equity was promoted and emphasized. Therefore, Chang and Liu (2009) explored consumer preference and purchase intention impacts brand equity. This study aims to develop brand equity through luxury experience.

The development history of brand equity in Table 1 shows that the industrial view of the early 21st century values the importance of developing a company's competitive advantage through experience. Brand equity is a dynamic concept. Therefore, its dimensions and perspectives must remain flexible. Shamma and Hassan (2011) propose a holistic approach to Total Brand Equity measurement which integrates CBBE into Total Brand Equity measurement. This study discusses the historical significance of brand equity in different periods based on the following variables: economic development, business emphasis, and consumer demand. Aaker (1991) was the first scholar to construct a systematic, all-embracing model of brand equity. However, as industry develops and businesses change, the concept of brand equity is no longer exclusively associated with tangible products; it now encompasses experience, spiritual satisfaction, and self-actualization. Keller (1998), who approached the concept of brand equity from the perspective of the consumer, defined "CBBE as the differential effect that brand knowledge has on the consumer or how customers respond to the marketing of that brand." Keller (1998) also suggested that as customers respond more favorably to a product whose brand is identified, the brand has positive CBBE and it exists when the consumer has a high level of awareness and familiarity and strong, favorable, and unique brand associations in their memory (Keller, 2002).

In contrast to CBBE construction or the measurement of its dimensions, consumer products are based on service, which means brand equity is measured using non-functional added value or extensiveness. Brand equity in the hotel industry has lately become a preferred topic (Kim, Jim and Kim, 2008; Yu, 2009). Brand-equity studies in the hospitality industry began to emerge from Cobb-Walgren et al. in 1995 (Kim et al., 2008). Cobb-Walgren et al. (1995) investigated relationships between consumer brand perception and brand preference and brand choice. They suggested that consumer's perception about the physical and psychological features of a hotel brand contribute to building their brand equity and that brand equity influences consumer preferences, purchase intentions, and brand choice. They also discovered that higher brand equity generates significantly higher preferences and purchase intentions (Yu, 2009).

This study focuses on the variables of experience-based LBE, which are divided into two sections. Firstly, conventional aspects of brand equity (Aaker, 1991； Keller, 1993) are investigated as factors of the fundamental functional value for service brand equity. Secondly, extended non-functional value is addressed using the concept of experience and research related to industry specific characteristics of LRHs. Non-functional value is then discussed in relation to the quantification of LRHs. In the last two decades, a growing amount of attention has been devoted by practitioners and academics to the conceptualization, measurement of brand equity (e.g. Aaker, 1991, 1996; Aaker and Keller, 1991; Ailawadi, Lehman and Neslin, 2003; Erdem, Swait and Valenzuela, 2006; Keller, 1993, 1998; Netemeyer, Krishnan, Pulig, Wang, Yagci, Dean, Ricks and Wirth, 2004; Oliveria-Castro, Foxall, James, Pohl, Dias and Chang, 2008).Positive brand equity would increase in the level of utilitarian and informational punishing consequences. In previous investigation (e.g. Foxall, Oliveria-Castro and Schrezenmaier, 2004), based on consumer panel data, brands were ranked according to two levels of utilitarian benefit and three levels of information benefit(Oliveria-Castro et al., 2008).

Table 1: Concept of Brand Equity in Different Periods

Period	**1980s**	**1990s**	**2000s(until 2011)**
Economic Development	Product	Service	Experience
Application time	1. It is used by the finance department to calculate the value of present/future earning. 2. It is used as a proof to identify the functional attributes of the product.	1.In case of corporate merger and liquidation 2.It started to emphasize on the non-functional attributes formed through the product, but it is still limited in the feelings related to the actual product	1. It is used to evaluate the practical effect of a customer-based concept on the finance of an enterprise 2. It is used in the appraisal of service brand with experience; it is biased in terms of pose-awareness of consumers after consumption
Discussion focus	Taking the internal book value/actual product as the basis for discussion	For the calculation of merger or liquidation based on the market mechanism/ the transactional market value/customer perspectives	Brand equity is used to rank enterprise values based on intangible service, such as experience
Practical and academic study focus	1.The effect of media such as advertisements and the market on brand equity(Push marketing) 2. It is the emerging era of brand equity, so most studies or literatures discuss the definition, evaluation and importance of brand equity.	1.It is biased in terms of customer perspectives when discussing and evaluating brand equity(Pull marketing) 2. It tends to evaluate brand equity from the perspectives of functional attributes and non-functional attributes, but the focus is still on taking the actual product's brand as the subject of study.	1. Through professional brand evaluation of institutions, it combines financial and overall marketing perspectives to evaluate brand equity. 2. It focuses on creating extended equity to form an enterprise's core competencies, such as exclusive experience, and self-realized luxury experience. 3. There is no academic study or literature related to brand equity with experience, so there is a gap between the practical group and the academe.
Important theories or social phenomena	Emerging online strategic management(low-cost and differentiated competitive strategy concepts)	Emerging customer-oriented concept Asian financial crisis Industrial cluster concept	M-mode society Emerging luxury trend

This table shows the different meaning in the concept of brand equity among the period of 1980s, 1990s, and 2000s (until 2011).

Experience of Luxury

Ohmae (2006) notes "luxury" and "experience" are highly related in industry. Luxury is a non-functional value, going beyond physical products. It is a means of self-actualization in which consumers attempt to transcend the set patterns of their daily lives. Despite the number of adjectives associated with luxury, a definitive definition remains impossible. The effects of this extended value can be appreciated only when a consumer "experiences" the transforming of their recollections, through their consciousness.Mathwick, Malhorta, and Rigdon (2001) believed consumers could use the value of luxury directly, when they experience the various properties of the product or the quality of the service. We also proposed a self-oriented customer experience value framework by classifying experiential value into four dimensions: playfulness, aesthetic, consumer-returning investment and service excellence(Table 2).

Table 2: Definition of All Operational Concepts and Measurement Variables

Concept	Operational Definition	Measurement Variable	Source
Brand loyalty	previous experience of the use and purchase of from previous experience in the use and purchase of customers	Trustworthiness, imagination, reputation and brand alternative	Aaker（1991, 1996） Cobb-Walgren et al. (1995) Baker and Crompton（2006） Kotler(2007)
Brand awareness	brand recognition and ability of consumers recall, which can provide a kind of brand familiarity and commitment to choose a product or service	Awareness level, marketing media, consumer association and perception	
Organization associations	Consumer associates the brand from memory, such as brand characteristic, consumer value, using method and product categories. It is the most acceptable brand equity helping consumer to deal with information and format product positioning	Total business innovation and capability, business social responsibility	
Brand personality	Brand is a combination of personality traits similar to human performance, and brand personality is unique	stability, moderation and affability	Aaker（1996）
Perceived brand luxury	Perceived luxury is a personal perception in an atmosphere formed by a subjective value judgments	perceived conspicuousness, perceived uniqueness, perceived quality supremacy, perceived delighted and perceived self extension	Silverstein and Fiske (2003) Vigneron and Johnson（2004）
Experience value	consumers engage the market and direct use of the product attributes and service performance objectives to achieve the psychological feelings of consumption	Playfulness, aesthetics, consumer return on investment and service excellence	Mathwick et al.（2001） Atilgan, et al. (2003) Baker and Crompton（2006） Sundbo and Darmer (2008)
Uniqueness	The market forms the basis for strategic positioning and forming differences, unique industries, and consumption style. Each industry or business / brand has enough unique resources or capabilities to lay the business council for sustainable development and competitive advantage	Design, exterior of building, geographic location and transport accessibility, meet consumer expectations for luxury and repurchase intention	Keller(1993, 1998)
LBE	Brand equity is aimed at two targets (business and consumers). The main purpose of this investigation was to explore the development of brand equity.	1. effect of price premium 2. perception of supreme quality 3. market exclusivity 4. reduction in searching costs 5. brand extension 6. brand innovation 7. brand distance 8. overall evaluation of brand	Aaker(1991) Cobb-Walgren et al. (1995)

This table shows the definition of all operational concepts and measurement variables in this study.

DATA AND METHODOLOGY

Based on the above literature review, basic LRHs brand equity can be classified into the enterprise's brand association dimension and the customer's brand experience association. This dual classification will be referred to as "Fundamental explicit value (FEV)". The FEV was constructed using the key concepts of

brand equity association, meaning our four major components of FEV were developed by applying the theory of brand equity formation featured in earlier studies (Aaker, 1991；1996；Batra, Lehmann and Singh, 1993；Cobb-Walgon et al., 1995；Fournier, 1997；Keller, 1993；Oliveria-Castro et al., 2008; Soloman, Marshall and Stuart, 2004). Furthermore, we will empirically study luxury hotels as their quality control and basic products and services generally exceed the quality provided in the general hospitality industry. This study considers "perceived quality" as an indispensable and essential factor in luxury hotels. de Chernatony et al., (2005, 2006)found that organizational culture and employees' values are likely to influence the cluster of values consumers perceived as constituting a service brand. Therefore, we have excluded this aspect from the basic explicit brand equity components (Cobb-Walgren et al., 1995).

H_1: FEV has significant influence on experience-based LBE.
$H_{1\text{-}1}$: Brand awareness has a significant influence on experience-based LBE.
$H_{1\text{-}2}$: Brand loyalty has a significant influence on experience-based LBE.
$H_{1\text{-}3}$: Organization association has a significant influence on experience-based LBE.
$H_{1\text{-}4}$: Brand identity has a significant influence on experience-based LBE.

Based on the concept of experience value, the notions of luxury and industrial characteristics used in the evaluation of the elements of experience-based LBE shall be different from the fixed form of previous brand equity studies, which we have named the "extended implicit value (EIV)". Therefore, it will consider the three elements of perceived brand luxury, experience value, and uniqueness, to construct our evaluation of the key points of extended implicit equity.

H_2: EIV has a significant influence on experience-based LBE.
$H_{2\text{-}1}$: Perceived brand luxury has a significant influence on experience-based LBE.
$H_{2\text{-}2}$: Experience value has a significant influence on experience-based LBE
$H_{2\text{-}3}$: Product uniqueness has a significant influence on experience-based LBE.

When LRHs are the subject of brand equity, the consumer emphasizes EIV above FEV, because of the appeal or image of luxury hotels, and the consumer's expectation or experience of the consumption process.

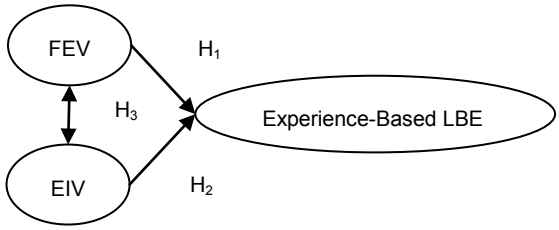
H_3: EIV has a more significant effect on experience-based LBE than FEV.

This study was conducted as a follow-up quantitative survey. Most investigations of brand equity are divided into fundamental functions and extended non-functions (Aaker 1991；Blackson 1992；Chen 1996；Cobb-Walgren et al., 1995；Kamakura and Russell 1993；Keller 1993 ； 1998；Park and Srinivasan 1994). It adopts both of these categories, adding FEV（including business association, brand awareness, brand loyalty and brand identity）and EIV（including perceived brand luxury, experience value, and uniqueness）to construct a means of measuring LBE of LRHs (Figure 1).

Questionnaire Design

Questionnaires were distributed to tourists patronizing luxury hotels in Taiwan and Macao that adopted the method of stratified convenient sampling. With the hypothesis values of $p = .05$，$\alpha = .05$ and $e = .05$, it is estimated that the samples needed for each region are 385. Therefore, this study aimed to randomly select above 400 samples from Taiwan and Macao, with the expectation of investigating the consumption perception of tourists in these regions. Therefore, the sample number of each hierarchy is estimated by the formula: (total number of rooms in the target hotel×occupancy rate)/total number of rooms in the target hotel. Moreover, to prevent invalid questionnaires from affecting our analysis, the estimated sample number of each stratum will be increased by 10%. Thus, the valid number of questionnaires should not be less than the number of minimum questionnaires expected.

Figure 1: Conceptual Framework



This figure constructed to verification that how the FEV and EIV influence on experience-based LBE in Taiwan and Macao respectively.

Data

The questionnaires in this study were distributed during July 1st to August 31st, 2010. The subjects were the guests from this 4 targeted luxury hotels in Taiwan (consist of The Lalu Sun Moon Lake Hotel, Hotel Royal Chiao His, Fenisia Hotel, Sun Moon Lake, and Hotel China) and Macao (consist of Wynn Hotel, MGM Grand, Crown Plaza Hotel, and Venetian Resort) separately. These hotels were chosen based on the luxury hotel judgment criteria of Hung (2008). This study distributed 430 questionnaires in Taiwan, and 440 in Macao. The response rate was 99.07% and 96.59 %(Table3).

Table 3: Profile of Respondents

Survey Area	Extending Questionnaire Number	Effective Number	Effective Ratio
Taiwan	**430**	**426**	**99.07%**
The Lalu(sun moon lake)	100	96	96%
Hotel royal Chiao hsi	185	181	97.84%
Fleur De Chine	111	115	96.52%
Landis Resort	34	34	100%
Macao	**440**	**425**	**96.59%**
ALTIRA	20	20	100%
MGM Macao	56	53	94.64%
Wynn Macao	58	55	94.83%
The VENETIAN Macao	308	297	96.43%

This table shows the result of the questionnaires recovery in Taiwan and Macao respectively. The questionnaires in this study were distributed during July 1st to August 31st, 2010.

Of the valid surveys, the percentage of male and female respondents was 54.23% and 45.77% in Taiwan, respectively. The percentages were quite different for respondents in Macao (69.88% and 30.12%). The age of the respondents was primarily middle aged adults in Taiwan (30~49 years), with a higher proportion of senior citizens in Macao. This shows that the population distribution between the patrons of LRHs in the two regions was different. The proportion of participants traveling for a holiday was 70.66% in Taiwan and 67.06% in Macao. Most respondents had a university degree level of education. Finally, the regional distribution in Taiwan showed that Taiwanese comprised the largest proportion of participants (77.0%), followed by the Republic of China. The regional distribution in Macao showed visitors from the Republic of China (including Hong Kong and Macao) accounted for 73.65%, followed by Europe and the United States (13.18%).

Reliability and Validity

Reliability is considered acceptable when Cronbach' α exceeds 0.7, and item-to-total correlations are over 0.5（Hair, Anderson, Tatham and Black, 1998）. All the factors in the constructs of LBE were above 0.7, and all the values of the item-to-total correlations exceeded 0.05. This indicates that the constructed variables were within the reliable range for both Taiwan and Macao (Table 4).

Table 4: Construct Reliability

Factor	Cronbach's α in Taiwan	Cronbach's α in Macao
Brand loyalty	0.712	0.707
Brand awareness	0.793	0.812
Organization association	0.801	0.759
Brand personality	0.723	0.831
Perceived brand luxury	0.816	0.746
Experience value	0.787	0.867
Uniquess	0.877	0.948
Overall independent variables	0.912	0.904
LBE	0.882	0.863
Item-to-total correlations both in Taiwan and Macao are ≧		

This table shows the Cronbach' α and item-to-total correlations in Taiwan and Macao respectively. And the Item-to-total correlations both in Taiwan and Macao are ≧0.50.

To ensure construct validity of the measurement variable for each factor, we used confirmatory factor analysis, based on the critical values of test statistics proposed by Joreskog and Sorbom (2000)（Table 5）. All of the index values met the general assessment criteria, showing that the construct validity of LBE in Taiwan and Macao were both satisfactory. These values met general assessment criteria, showing that the construct validity of Macao's LBE was also complete. In Table 6, all variables of LBE had a significant positive relationship in Taiwan and Macao. However, the correlation coefficients between the variables ranged from 0.4 to 0.7, showing moderate correlations (the lowest was .344 and the highest was .694).

Table 5: CFA Measures

Concepts	Goodness-of-fit index(GFI)	Criterion	Taiwan	Macao
FEV	χ^2	p< 0.05	.000***	.000***
	GFI	≧0.90	0.952	0.963
	RMR	＜0.05	0.046	0.034
	AGFI	≧0.90	0.953	0.962
	CFI	≧0.90	0.971	0.985
EIV	χ^2	p< 0.05	.000***	.002**
	GFI	≧0.90	0.924	0.967
	RMR	＜0.05	0.042	0.031
	AGFI	≧0.90	0.918	0.945
	CFI	≧0.90	0.930	0.973

*This table shows the CFA measures result form the concept of FEV and EIV in Taiwan and Macao. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Table 6: Operational Measurement-Convergent and Discriminant Validity

concept	Brand Loyalty	Brand Awareness	Organization Association	Brand personality	Perceived brand luxury	Experience value	Uniqueness
Taiwan							
Brand Loyalty	1.00						
Brand Awareness	.512**	1.00					
Organization Association	0.487**	0.515**	1.00				
Brand personality	0.421**	0.576**	0.491**	1.00			
Perceived brand luxury	0.543**	0.591**	0.523**	0.418**	1.00		
Experience value	0.387**	.606**	0.462**	0.500**	0.662**	1.00	
Uniqueness	0.415**	0.734**	0.537**	0.585**	0.575**	0.621**	1.00
μ	4.67	4.92	4.87	4.21	4.97	4.85	4.94
s	0.68	0.67	0.85	1.07	1.05	0.57	0.73
Macao							
Brand Loyalty	1.00						
Brand Awareness	0.532**	1.00					
Organization Association	0.607**	0.413**	1.00				
Brand personality	0.448**	0.594**	0.423**	1.00			
Perceived brand luxury	0.519**	0.527**	0.478**	0.668**	1.00		
Experience value	0.344**	0.403**	0.503**	0.572**	0.611**	1.00	
Uniqueness	0.421**	0.425**	0.385**	0.591**	0.553**	0.694**	1.00
μ	4.82	4.75	4.91	4.86	4.77	4.89	4.90
s	1.05	.97	1.00	.94	1.12	1.01	0.88

*This table shows the correlation coefficients between all variables of LBE in Taiwan and Macao respectively, and the correlation coefficients between the variables ranged from 0.4 to 0.7. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

RESULTS

In Table 7, the result indicated that all variables of experience-based LBE had lower multicollinearity. In order to ensure the accuracy of the results of follow-up data analysis, it used eigenvalue and condition index (CI) as the basis of judgment. In other words, a higher CI indicates a notable problem with collinearity. Belsley, Kuh and Welsch (1980) considered the CI acceptance range to be lower than 30. There was no multicollinearity in this research, because of the CI was lower than 20 both in Taiwan and Macao. In this section, it utilized the forced entry multiple regression method to test the variables of FEV and variables of EIV affect experience-based LBE.

Table 7: Multicollinearity Test of LBE

Variable	Among All Variables		Overall Regression Model	
	Tolerance	VIF[Note1]	Eigenvalue	Condition Index [Note2]
Taiwan				
Brand Loyalty	0.773	1.294	0.0988	11.653
Brand Awareness	0.843	1.186	0.0593	16.342
Organization Association	0.746	1.340	0.0861	12.751
Brand personality	0.660	1.515	0.0232	19.503
Perceived brand luxury	0.858	1.166	0.0811	12.954
Experience value	0.671	1.490	0.0212	19.967
Uniqueness	0.997	1.003	0.0358	19.389
Macao				
Brand Loyalty	0.991	1.009	0.0968	11.798
Brand Awareness	0.842	1.188	0.0680	15.881
Organization Association	0.993	1.007	0.0429	17.228
Brand personality	0.831	1.203	0.0256	18.991
Perceived brand luxury	0.853	1.172	0.0734	14.443
Experience value	0.967	1.034	0.0877	12.419
Uniqueness	0.858	1.166	0.0919	11.992

This table shows the Multicollinearity result among all variables and overall regression model of LBE in Taiwan and Macao respectively, and the CI both are lower than 20 both in Taiwan and Macao . The calculate VIF = 1/tolerance and CI = $\sqrt{\lambda_{max}/\lambda}$.

From Table 8, all variables exist with a high degree of explanatory power both in Taiwan and Macao (Taiwan 77.1% and Macao 81.5%). Furthermore, the value of Durbin-Watson both were 2.003(Taiwan) and 2.016(Macao).

Table 8: Explanatory Dimensions of LBE-results of forced Entry Multiple Regression Model and Analysis of Variance (ANOVA) (*a*)

Model	R(*b*)	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson	F	p
Taiwan	0.790	0.771	0.763	0.5138	2.003	78.31	.000***(*b*)
Macao	0.900	0.815	0.808	0.4962	2.016	73.10	.000***(*b*)

*This table shows the LBE-results of forced entry multiple regressions and the explanatory power are 77.1% and 81.5% in Taiwan and Macao respectively. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively. a Dependent Variable: LBE b Predictors:(Constant), Brand Loyalty, Brand Awareness, Organization Association, Brand personality, Perceived brand luxury, Experience value, Uniqueness*

In view of the overall combination of the variables showing a significant influence of experience-based LBE in the Taiwan and Macao, it used the post hoc test to test each individual variables of experience-based LBE. The variable of brand awareness (β=0.352) had the best explanatory power in Taiwan, wherein LRHs increased visibility and reputation through marketing channels. These were followed by the organization association (β=0.203), experience value (β=0.173), perceived brand luxury (β=0.158) and uniqueness (β=0.104). On the other hand, the variable of perceived brand luxury (β=0.403) had the optimal explanatory power to experience-based LBE in Macao. It displayed LRHs might create a special extended attributes and consumer self-concept approach to brand building shape. As follows are the brand awareness (β=0.267), uniqueness (β=0.225), experience value (β=0.184) and organization association (β=0.133). Second, in this section, it utilized the stepwise multiple regression analysis to identify the differences in variables of experience-based LBE in different regions. Based on the above

data, it sorted all variables according to importance. Furthermore, "brand loyalty" and "brand identity" were deleted because they did not significantly influence the experience-based LBE ($p > .05$).

From Table 9, the primary variable of brand awareness was the first predictors in model *a* with explanatory power as high as 46.2%. In model *b*, we entered the variable of "organization association" with explanatory power as high as 58.0%. In addition, it also entered the variable of "experience value" in model *c*, "perceived brand luxury" in model *d* and "uniqueness" in model *e*. Finally, in model e the explanatory power was as high as 76.7%. The following stepwise regression equation was estimated to construct experience-based LBE in Taiwan:

LBE =1.427+0.371×Brand Awareness+0.245×Organization Association +0.200×Experience value +0.172×Perceived brand luxury +0.113×Uniqueness (1)

The results are presented in Table 9.

Table 9: Stepwise Multiple Regression Analysis of Experience-Based LBE in Taiwan (*F*)

variable ranking	multiple correlation coefficient R	R^2	ΔR	F	β estimate	β
Intercept					9.371	1.427
Model *a*: Brand Awareness	0.814(*a*)	0.462	0.462	215.79	2.413	0.371
Model *b*: Organization Association	0.901(*b*)	0.580	0.118	124.63	1.551	0.245
Model *c*: Experience value	0.877(*c*)	0.656	0.076	103.39	0.846	0.200
Model *d*: Perceived brand luxury	0.897(*d*)	0.719	0.063	82.40	0.417	0.172
Model *e*: Uniqueness	0.753(*e*)	0.767	0.048	79.48	0.904	0.113
a Predictors:(Constant), Brand Awareness						
b Predictors:(Constant), Brand Awareness, Organization Association						
c Predictors:(Constant), Brand Awareness, Organization Association, Experience value						
d Predictors:(Constant), Brand Awareness, Organization Association, Experience value, Perceived brand luxury						
e Predictors:(Constant), Brand Awareness, Organization Association, Experience value, Perceived brand luxury, Uniqueness						
f Dependent Variable: LBE						

This table shows the Stepwise multiple regression estimates of the equation: LBE =1.427+0.371×Brand Awareness+0.245×Organization Association +0.200×Experience value +0.172×Perceived brand luxury +0.113×Uniqueness. In model e the explanatory power was as high as 76.7% in Taiwan.

Additionally, in Table 10, the primary variable of perceived brand luxury was the first predictors in model *a* with explanatory power as high as 51.6%. In model *b*, it entered the variable of "brand awareness" and the explanatory power as high as 64.5%. In addition, we also entered the variable of "uniqueness" in model *c*, "experience value" in model *d* and "organization association" in model *e*. Finally, in model e the explanatory power was increased to 80.4%. The following stepwise regression equation was estimated to construct experience-based LBE in Macao:

LBE =1.176+0.411×Perceived Brand luxury +0.326×Brand Awareness +0.278×Uniqueness +0.224×Experience value +0.207×Organization Association (2)

The results are presented in Table 10.

CONCLUDING COMMENTS

This study constructs experience-based luxury brand equity (LBE) model in Taiwan and Macao, using a logically developed, creative, and integrated research design. In the developing design process, the major considerations were deciding which aspects to include and how to identify the relevant variables. The purpose of this study is to determine whether there exists a difference between the brand equity of luxury resort hotels and traditional tangible product-based brands. The questionnaires in this study were distributed during July 1st to August 31st, 2010. The subjects were the guests from targeted luxury hotels in Taiwan and Macao separately. Then the response rate was 99.07% in Taiwan and 96.59 % in Macao.
First of the finding in this study, all consumers in Taiwan and Macao believed that extensive implicit equity dimensions more significantly influenced their perception experience-based LBE. On the other

hand, consumers of LRHs in Taiwan tended to make fundamental explicit equity dimensions the factor in their perception of experience-based LBE.

Table 10: Stepwise Multiple Regression Analysis of Experience-Based LBE in Macao (*F*)

Variable Ranking	Multiple Correlation Coefficient R	R^2	ΔR	F	β estimate	B
Intercept					11.208	1.176
Model *a*: Perceived brand luxury	0.889(a)	0.516	0.516	332.41	4.101	0.411
Model *b*: Brand Awareness	0.845(b)	0.645	0.129	274.59	2.374	0.326
Model *c*: Uniqueness	0.911(c)	0.728	0.083	220.17	1.852	0.278
Model *d*: Experience value	0.741(d)	0.770	0.042	183.65	1.037	0.224
Model *e*: Organization Association	0.803(e)	0.804	0.034	165.61	0.749	0.207
a Predictors:(Constant), Perceived brand luxury						
b Predictors:(Constant), Perceived brand luxury, Brand Awareness						
c Predictors:(Constant), Perceived brand luxury, Brand Awareness, Uniqueness						
d Predictors:(Constant), Perceived brand luxury, Brand Awareness, Uniqueness, Experience value						
e Predictors:(Constant), Perceived brand luxury, Brand Awareness, Uniqueness, Experience value, Organization Association						
f Dependent Variable: LBE						

This table shows the Stepwise multiple regression estimates of the equation: LBE =1.176+0.411×Perceived Brand luxury +0.326×Brand Awareness +0.278×Uniqueness +0.224×Experience value +0.207×Organization Association. In model e the explanatory power was as high as 80.4% in Macao.

On the other hand, consumers in Macao focused on many implicit variables relevant to dimensions of equity, influencing their perceptions of experience-based LBE. This was very different from Taiwanese consumers, and may be due to the operational attitudes of LRHs in both areas related to variables such as the source of consumers and demographics. Target LRHs in Macao funded, planned and operated by internationally renowned hotel groups. As a result, they had certain popularity and awareness of the consumer market. Moreover, regarding the molding of experience-based LBE in LRHs, each hotel resorted to professionalism, context, and variability. They offered an integral process planning with luxury concept over hardware and software facilities and services, which is all-embracing or consecutive, not distinguishing or occasional feel.This finding also confirms that consumers from different social and economic backgrounds have different feelings and tend to be flexible with regard to the concept of "luxury" under different situations. It also suggests that relevant research on the concept of luxury concept is a challenging task and that, when choosing a subject or goal, large-scale or cross-disciplinary studies is not preferred.

According to the results of this study, experience-based LBE tended to make extensive implicit equity related dimensions the determining criteria of perception. These included brand luxury, experience values, and industry characteristics. As for fundamental dimensions of explicit equity, brand popularity and organization association were more important. These findings are significantly different from the results of the empirical studies of brand equity construction based on physical products of Aaker (1991), Chen (1996), Erdem, Swait and Valenzuela, (2006), Farquhar (1989), Keller (1993), Netemeyer, Krishnan, Pulig, Wang, Yagci, Dean, Ricks and Wirth(2004), Oliveria-Castro, Foxall, James, Pohl, Dias and Chang(2008), Park and Srinivasan (1994). Moreover, consumers distinguish dimensions of brand equity formed by professional services from product equity. However, as experience-based LBE stresses on an upgrade in the body and mind and an extension in self or social group, this is a scope which has not been covered by any brand equity-relevant research in the past. The finding also suggests when conducting a research into brand equity based on brands with different properties, it is essential to construct a brand equity model based on local circumstance to promote dynamic thinking.

This study was aimed at LRHs in Taiwan and Macao. The results indicate consideration differences in the operations of LRHs in both areas (with Taiwan biased toward nature and leisure, and Macao focused on artificial entertainment), but a high degree of similarity in the local operating patterns.This suggests that the operating patterns LRHs should coincide with industrial clustering effects and that they are subject to influence by political and economic situations, with synergistic effects. This point can be verified through the results in the empirical research in Taiwan and Macao.According to an analysis of the difference in the variables regarding demographics, there was a significant difference in variables in the main tourist

sources in Taiwan and Macao (the customers in Taiwan mostly local; while the customers in Macao came principally from mainland China). As a result, when Taiwan is considering policy changes to open the market to mainland Tourists, the results of empirical research on LRHs in Macao could serve as a reference. This may help to plan strategies for the tourist industry or serve as a reference for consumption patterns in Taiwan.Furthermore, although currently Taiwan is entering into an alliance with mainland China, there is a gap between perception and consumption regarding the tourism industry, due to cultural development, cultural accomplishments, consumption intent, and concepts? With this, a study may be undertaken on consumers in these two areas through Schwartz (1997), Hofstede (1980), and Cheng (2006). Because this is not a consideration in this study, this variable was excluded.

The brand equity model of LRHs in Taiwan and Macao provides empirical evidence that issue such as "brand loyalty" and customer maintenance, which have been highly valued by businesses in the past, did not have a significant impact like ordinary businesses. This might be the most difficult challenge confronting LRHs both in Taiwan and Macao.

With respect to issue related to research in luxury or experience-based LBE, there is little evidence of primary compilation of material or construction of models. However, for those involved in relevant research, this aspect needs to be addressed. This underlines the value and contributions of this research to such issues. It is also an important academic research thinking jointly formed through industrial practical development and important national policy. The short period in which the tourism industry has developed and is a yet-to-mature field with a lack of relevant theories and consensus, and very little relevant research on the LRHs industry. It is suggested that in the future, national governing agencies or operators in the tourism industry attempt to develop, promotional schemes for the LRHs industry in conjunction with academic research institutions (units). The purpose would be to increase diversity, to usher in new era for the luxury tourism industry. Finally, tourism is an important means for a country to develop its economy and increase its international visibility. For this reason, all countries in the world have been investing resources in the tourism and leisure industry. Moreover, the policy of governments should be adjusted according to trends in the development of tourism market to achieve a competitive advantage. This study suggests that governments proactively discuss relevant issues of the tourism industry such as LRHs and promote development of the tourism industry in favor of marketing the country as a whole.

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FACTORS AFFECTING CONSUMER CHOICE OF MULTIPLE MOBILE SERVICES

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ABSTRACT

This paper examines student selection of mobile phone services. The research used a quantitative methodology. The author surveyed some 500 University and Polytechnic students in Ghana and finds that the basic reason for changing phone servers is reliability and cost savings. The author also finds that reference group influence, social reputation and regular contact with others were also influential factors.

JEL: D11, D12

KEYWORDS: Tertiary Students, Multiple Services, Mobile Phone, Service Operators

INTRODUCTION

Mobile phones have become a fundamental communication tool in both developed and developing countries. Previous studies have identified a number of reasons for owning or using a mobile phone as well as choice of phone operator (Hamel and Prahalad, 1991; Kumar, 1997; Nagel, 2003; Gerstheimer and Lupp, 2004; Chakraborty, 2005; Donner, 2007; de Silva and Zainudeen, 2007). Apart from expanded mobile phone usage, there has also been an increase in the number of network providers. According to Hansen (2003), the mobile handset market has experienced between five percent and ten percent growth and a substantial growth in operator subscribers.

Ghana is not left out in this global development of increasing expansion in mobile handset and operator subscribers. The Business Monitor International (BMI) report on October 12, 2010 indicated that in the first six months of 2010, the number of mobile subscribers increased by 7.3% to 16.475 million in Ghana. For the year as a whole, BMI predicted a market expansion of over 14%. This was to raise the penetration rate to just over 70% by the end of 2010.

In response to the increasing subscriber penetration rate, Ghana has six mobile phone companies licensed to do business in the country. Five are currently in operation. These are MTN, which is the largest, Tigo, the oldest mobile phone provider, Vodafone, Zain and Espresso. The sixth provider, Globacom is yet to start operations. It is however, expected that when Globacom begins operations the number of subscribers will rise. One segment of the market that is affected by this increase in mobile phone penetration rate is the tertiary student in Ghana.

Studies have tried to use the wider concept of consumer behavior and its associated consumer decision making process to research factors affecting consumer choice of mobile phones. These studies have identified different factors that influence the decision making process. Riquelme (2001) used 94 consumers to investigate the amount of self-knowledge consumers have when choosing between mobile phone brands. The study suggested six key attributes that affect consumer choice of a mobile phone; connection fees; access cost; mobile-to-mobile phone rate; call rates; and free calls.

Another study by Lui (2002) investigated factors affecting the brand decision in the mobile phone industry in Asia. The study found attitudes towards the mobile phone brand and attitudes towards the network as the two distinct attitudes that determined consumer phone selection decisions. While choices

between mobile phone brands were affected by new technology features such as memory capacity and SMS options; price and regularity of services determined choice of network providers.

In-Stat/MDR Research Institute (2002) examined consumer choice of mobile phones and found color displays as a driving force behind consumer decisions. Consumers considered a color display a more important choice criteria than high data rates or new features. The report also revealed a real demand for color display handsets. Another study was conducted in Finland where 397 respondents from selected educational institutions in Finland were surveyed. The study found price and properties as the most important motives affecting the decision to purchase a current mobile phone model (Karjaluoto et al., 2005). These findings suggest that consumer decision processes on the choice of mobile phone may be economy-specific; technology-specific; cultural-specific; and person or buyer-specific.

Despite the many studies on consumer decision process in the purchase of mobile phones (Riquelme, 2001; Lui, 2002; Jones, 2002; Bradner, 2002; Wagstaff, 2002; Karjaluoto et al., 2005), these studies have basically been limited to issues related to factors for choice the of mobile brand. Those factors associated with adoption and choice of mobile operators; factors that affect the introduction of mobile payment systems; and factors affecting adoption of mobile content services. The issue of multiple choices of mobile phone services has not received any attention, which creates a gap in the literature.

This article investigates consumer choice of multiple mobile phone service in Ghana. This is not only to fill the literature gap, but also to provide empirical evidence on multiple choices of mobile phone which has escaped research attention for some time. We study the choice of multiple phone services by Ghanaian phone users, particularly students of the tertiary institutions in Ghana. Students of Tertiary are used for the study because in adopting a "mobile personality", this group has adopted mobile phones as a means of personal expression. With the ever growing market there is a demand that needs regular attention. Moreover it is important to distinguish between buying behavior and usage aspects referring to reasons that affect multiple choice of service (Karjaluoto et al, 2005).

The rest of the paper reviews previous studies on the topic, including the objective of the study and the questions to be answered. The method for the study and results of findings are also addressed. The paper ends with conclusions and comments based on the results of the study.

LITERATURE REVIEW

Consumer choice of multiple mobile phone services is examined from the larger discipline of consumer behavior (Blackwell et al., 2001; Beckman and Rigby, 2003; Solomon et al., 2003; Turckwell, 2004). These authors defined consumer behavior in slightly deferent but similar meanings. Blackwell et al. (2001) identified consumer behavior as activities people undertake when obtaining, consuming and disposing of products and services. Beckman and Rigby (2003) see consumer behavior as consisting of activities of individuals in obtaining, using, and disposing of goods and services, including the decision processes that precede and follow these actions. Solomon et al. (2003) suggested that consumer behavior is the process that individuals or groups go through to select, purchase, and use goods, services, ideas, or experiences to satisfy their needs and desires. Turkwell (2004) sees consumer behavior as "the acts of individuals in obtaining goods and services, including the decision processes that precedes and determine these acts". An organization must have a firm understanding of how and why consumers make purchases decisions so that appropriate marketing strategies are planned and implemented.

The consumer goes through a number of stages before finally making a decision to buy. This is referred to as the consumer purchases decision process (Blackwell et al., 2001; Turkwell, 2004). According to Turkwell (2004), the decision process involves problem recognition, information search, evaluation of alternatives, purchase decision and post purchase evaluation. Blackwell et al. (2001) had earlier suggested

that the consumer buying process involves need recognition, search for information, pre-purchase evaluation of alternatives, purchase, consumption, post purchase evaluation, and divestment. It must be noted, however that consumers who use multiple mobile phone services might not always go through all the stages of the decision making process.

Beckmann et al., 1997 argued that the consumer decision making process is dependent on the type of problem-solving effort required. They argue the problem solving effort includes routine response, limited problem solving, and extended problem solving. Routine response is when the consumer sets the evaluation criteria and identifies the alternative option. In the limited problem solving, the consumer has set evaluative criteria but encounters a new unknown brand. Extended problem solving occurs when evaluative criteria have not been established for product category or when the individual wishes to review such criteria.

Students' choice of multiple phone services thus, might be affected by all the three types of problem solving criteria in one case or the other. While some choice may be routinely made by just buying under the influence of peer pressure, other choices might require the student to give some level of careful thought to the choice decision, but might change his or her mind when new service providers enter the market, or when better service is perceived to be provided by other mobile phone operators. Finally, some choices might be decided upon by a comprehensive and careful review of important factors such as dependability, reliability and economy of use. Therefore, whether a user of multiple mobile phone services goes through all the stages; or few of the stages of the decision making process, will basically dependent on which problem solving effort is required by the student.

Shapiro et al.'s (1996) indicated that, among other things, economic needs primarily affect consumer choice of a product or service. They identified these needs as economy of purchase of use, dependability, efficiency in operation or use and improvement of earning. Thus, students' choice of multiple mobile phone services is considered to be affected by economic, social, technological and psychological factors which shape their decision to use particular mobile phone operators. Consumer choice of multiple mobile service is particularly considered to be influence by such factors as economy of purchase or use, convenience, efficiency in operation or use, and dependability of service or use (Shapiro, 1996); reference group influence, life style and social class (Turckwell 2004); and attitudes, personality and opinion leadership (Solomon et al. 2003).

The purpose of this article was to investigate student choice of multiple mobile phone services, with its economic and non-economic implications. The study's specific objectives were to find the extent of use of multiple mobile phone services by students; factors that affect the choice; the economic and non-economic implications of the choice of multiple phone services; and the different ways to finance the use of multiple phone services. These objectives were addressed by finding answers to the following research questions: a) How far reaching is the choice of multiple phones by students in the tertiary institution of Ghana? b) What factors actually motivate the consumers' choice of multiple phone services? c) What are the economic and non-economic implications of choosing multiple phone services? d) How are students able to finance the multiple phones?

METHODOLOGY

Both primary and secondary research methods were employed. Secondary research was primarily to study other works in the field to form the basis of this research. Primary data was needed because the variables used in this study were different from those of the previous studies. Thus, a survey was appropriate to test the variables**.** Quantitatively, the research instrument for the study was structured as an undisguised questionnaire. The use of only a quantitative instrument was because the study aimed at avoiding introduction of subjectivity into the findings. However, open-ended questions were used alongside closed

ended questions to make room for variables that the study might not anticipate could constitute factors of consumer choice. The survey included twenty four item variables.

With the concept of tertiary students in mind, there were three target groups for the study - the Polytechnics, the Public Universities, and the Private Universities. Purposive sampling technique was used to select four Polytechnics, three Public Universities and three Private Universities, where 50 respondents each were surveyed for the study (given a total of 500 respondents). To get the appropriate number of female and males; and to ensure that only non-working students are survey, a quota sampling technique was adopted. SPSS Version 17 was used for the data analysis. Descriptive statistics were computed for frequencies for the respondents' profiles and mean scores for the other constructs. Looking at the nature of the questionnaire and the purpose of the study mean scores were analyzed.

RESULTS

The response rate for the study was 98%. Regarding an acceptable response rate Babbie (1990) quoted an acceptable response rate of 60% as 'good' and 70% as 'very good'. Thus, the 98% response rate is encouraging. The demographic profiles of the respondents were made up institutions, ages, gender and class. Tables 1 to 4 give an insight into the profile of the respondents. With the 468 of the questionnaire completed and returned, the descriptive statistics showed that 33.1% were from public universities, 23.9% from private universities and 42.9% from the polytechnics. Males represented 46.8% of the respondents, while females represented 53.5%. The respondents whose ages ranged between 16 years and 30 years were made up of students from first year to fourth year.

Four constructs were used to measure the extent of use of multiple mobile phone service. The findings showed an average mean of 1.53 (SD 0.584). The highest mean score was 1.95 for the item "how long multiple mobile phone services have been used"; while the lowest mean score was 1.19 for the item "desire to use more than one mobile phone." This means that the degree to which users of mobile phones in the tertiary institutions in Ghana choose to subscribe to multiple services is below average. Thus, the situation is not as alarming as the researcher might perceive. The degree of multiple uses of services was higher than the desire to do so. The mean score of 1.44 for consumers desire to use multiple phone if they could afford was an indication that under desirable conditions consumers would not be attracted to the use of multiple. Table 1 below gives the statistical details of the extent of use of multiple phone services.

Table1: Extent of Multiple Uses of Mobile Phone Services

	N	Minimum	Maximum	Mean	Std. Deviation
Service Operators	468	1.00	3.00	1.4444	0.64046
Desire to use more than one phone	298	1.00	2.00	1.1946	0.39658
How different services are used	170	1.00	4.00	1.9706	0.91939
Length of use of multiple service	170	1.00	3.00	1.9471	0.71552

Descriptive Statistics of the use of multiple mobile phone services

Factors that affect the choice of multiple phone services were measured by five constructs. There are "reference group influence"; "social reputation"; network unreliability"; "follow common practice"; and "others factors" (including, different call rate for different operators, enjoy variety of service, and keep old contacts). The findings denote "service unreliability" as the main factor for the choice of multiple mobile phone services; with a means score of 3.38 (SD 1.322). This means that students are very particular about their calls, and would not like to miss important calls no matter their location, hence the desire to have different services that made it possible for them to reach and be reached at all time in all places. With a mean score of 3.08 (SD 1.674), the collective effect of other factors (including, different

call rate for different operators, enjoy variety of service, and keep old contacts) was found to be the second most significant in determining the choice of multiple services. This implies that if there is a uniform call rate for mobile services in Ghana, use of multiple services should go down. Since some customers use multiple services just to enjoy variety, and some to keep old contacts, even when the system is improved to take care of all major factors, some customers shall still opt for multiple phones.

The findings also showed "reference group influence as the third important factor for choice of multiple services, with a mean score of 2.40 (SD 1.247). This shows that reference group has an appreciable level influence in the consumer decision making of tertiary students. Mobile phone operators should appreciate this and find ways to incorporate reference group factor in the design of their marketing mix. The item "social reputation", ranked fourth, with a mean score of 2.27 (SD 2.40) as a factor that affect multiple choice of mobile phone services. This means some use multiple services because they think too much of themselves, or want undue attention and recognition.

The least factor determining choice of multiple services was identified to be the item, "follow common practice". The mean score was 2.18 (SD 1.226). This means that some customers of the mobile phone service do not know their needs. They would only buy and use a service only when they find it usual and convenient to use, without necessarily consider their benefits or associated costs. Customer-centric product development should help these customers be more focused on the use of just a service at a time. Service providers should involve customers of mobile services so as to ensure that products are designed to meet customer needs. Intelligence generation and intelligence responsiveness should be employed with introduction of new technologies.

Even though some of factors were below average mean score, the fact that they were all had mean scores of above 2.0 indicate that the factors are all necessary in the choice consideration of customers. The reason behind the used of multiple mobile phone services are outlined in the Table 2.

Table 2: Factors Affecting Multiple Uses of Mobile Phone Services

	N	Minimum	Maximum	Mean	Std. Deviation
Reference group	410	1.00	5.00	2.4024	1.24759
Social reputation	410	1.00	5.00	2.2732	1.28124
Manage unreliability in service	410	1.00	5.00	3.3829	1.32207
Follow common practice	410	1.00	5.00	2.1756	1.22660
Other reasons	88	1.00	7.00	3.0455	1.67407

Descriptive Statistics of the use of factors affecting the use of multiple mobile phone service

Implications for subscribing to more than one mobile phone service were measured by six variables: "monetary cost"; "opportunity cost"; "inconvenience"; "need for extra income"; "missing important calls"; and "difficulty to have financial assistance from friends". The average mean score for the choice implication was 3.22. This implied that all six variables had strong implication on consumer choice. The highest mean score was 3.47 for the item "monetary cost"; while the lowest mean score was 2.81 for the items "inconvenience." This confirms that consumers' choice of multiple phone services have great economic and non-economic impact on them. This can affect customer satisfactory and loyalty to the mobile operators in Ghana. Table 3 below is a statistical description of the implications for using multiple phone services.

Table 3: Implications for Multiple Use of Mobile Phone Services

	N	Minimum	Maximum	Mean	Std. Deviation
High cost of using multiple services	170	1.00	5.00	3.4765	1.15745
Forgoing other more pressing need	170	1.00	5.00	2.9706	1.29828
Inconvenience	170	1.00	5.00	2.8059	1.23699
Financing from additional sources	170	1.00	5.00	3.4647	1.27397
Missing important calls	170	1.00	5.00	3.4588	1.25508
Difficulty in getting help from friends	170	1.00	5.00	3.1588	1.38186

Descriptive Statistics of the use of implication of the use of multiple mobile phone services

The means by which consumers finance the multiple phones was measured by five variables. These were: "parents/Guardians"; "friends"; "self-financing"; "borrowing"; "other means" (including, "gifts" and "bonus credit". The item "self financing" had a mean score of 3.65 (SD 1.198) to indicate the highest means of financing choice of multiple mobile phone services. The least means score is 1.64 (SD 1.000) for the item, "borrowing". This means that students basically finance the use of multiple services with their money that are to be used in school; and considers borrowing as a means of financing their services. The study also revealed that a reasonable number of students are able to subscribe to multiple phones because they are either sponsored directly or indirectly by their parents/guardians (mean score, 2.46) or by friends – who may be same sex or opposite sex (mean score, 2.07). Though students sometimes benefit from 'bonus credit' given by mobile operators, and credit from a friend as a gift, these constitute just a small amount of the cost of using multiple services. How multiple mobile phone services users have been financed is detailed in Table 4.

Table 4: Financing of Multiple Mobile Phone Services

	N	Minimum	Maximum	Mean	Std. Deviation
Parents/Guardians	170	1.00	5.00	2.4647	1.21696
Man friend/ woman friend	170	1.00	5.00	2.0647	1.13651
Use "pocket money"	170	1.00	5.00	3.6471	1.19868
Borrowing	170	1.00	5.00	1.6412	1.00033
Other means of financing	42	1.00	3.00	1.7857	0.71689

Descriptive Statistics of the financing of the use of multiple mobile phone services

CONCLUSION AND COMMENTS

This study was carried out to examine the factors affecting choice of multiple mobile phone, their implications and sources of funding among students in Ghana. The findings identified unreliability of service, different call rate for difference operators, and reference group influence as some of the factors affecting choice of multiple services. The study also found increased mobile phone expenditure, the pain of looking for other sources of funding of mobile services, and missing important calls while receiving other calls as major prices to be paid for the use of single mobile phone services. The main source of financing multiple choices of mobile phones was 'self-financing'; that is from consumers' own income.

There is every reason to believe that the use of multiple mobile phones is not a desirable but rather response to a situation. Thus, until such situations improve the choice of multiple phones shall increase. Multiple services mean fierce competition on operator selection at a time, especially where the problems associated with networking are almost synonymous with almost all the service operators. This means that

mobile phone companies in the country would have to improve their services to remain competitive in the market. Such an environment should promote customer power which shall be an impetus for customer value creation.

The primary reason affecting consumer behavior or choice of multiple mobile phone services was the presence of poor service reliability. Thus, to address the undesirable but phenomenal use of multiple phones, operators must improve services reliability. This would help overcome the economic and non-economic costs associated with the choice of multiple phones. Consumer associations and regulators in the telephone industry should perform their respective functions effectively so the country enjoys wider coverage from all mobile operators in the country.

Choice of multiple phone services is not without a price – increased mobile phone expenditure, opportunity cost of forfeiting other pressing needs, the task of finding additional sources of financing, and the possibility of missing important calls while using other services, especially for those who use double services with one phone were found to seriously affect the use of multiple mobile phone services. The negative effects of these factors on the students, their guardians and the nation at large cannot be overemphasized. Resistance to unnecessary peer pressure, putting less premium on social reputation, and the willingness to 'say no' to what 'common practices dictates should serve as an antidote to bearing the cost associated with use of multiple mobile phones.

The main source of funding multiple mobile phone services among students was "self -financing", or "pocket money". This means student would demand more from their guardians so they can finance their multiple choices of phones.

Knowing the use of multiple phones has both economic and non-economic implication on the users, consumers must insist on their right to advocate for reliable service from the mobile phone operators. This means that a customer can serve most, if not all the good reasons for owing a mobile phone. Consumer associations should demand from mobile phone operators nothing but reliable service comparable to services rendered in other countries. This shall ensure customer value creation in the provision of mobile phone services in Ghana. The way forward is to put due pressure on both the service operator and the communication regulators for a deserving service, especially with regards to network reliability. The results of the study should be useful for consumer activists in the country whose tactics can include boycotts, petitioning the government, media activism, and organizing interest groups (Kzinets and Handelman, 2004; Hilton, 2008; Glickman, 2009)

The findings should also help the government impress upon mobile phone operators in the country to improve on their services. The regulators should put in all efforts to formulate and implement telecommunication policies in general and policies on mobile telephony in particular that is customer friendly, create value, and comparably cheaper. Service reliability, uniform 'call rates', and nationwide network coverage are some of the considerations that regulators can factor into their policy framework. As much as possible, both the consumer association and the telephone regulators should aim at negotiating for a uniform 'call rate' for all mobile phone operators in the country. This shall go a long way to reduce the increasing use of multiple mobile phone services with its associated social and financial implication, especially for the young tertiary students who might not be working.

The results of the study duly contribute to the existing literature on consumer choice behavior in the mobile phone market. For mobile phone operators, the results of the study provide a vital aspect of consumer choice of mobile phone services by indicating that consumers tend to value network reliability and wider or nationwide coverage than any other consideration.

The study was basically quantitative and hence could not ascertain in-depth issues. Thus, a more in-depth, and qualitative studies needed to be carried out to examine the details pertaining to the factors, implications and funding of multiple use of mobile phone services. Future studies on consumer choice of multiple mobile services can look at the effects of gender, and life style on consumer buying behavior. Also the sample size of the study was relatively small. Hence future studies may consider increasing the sample size to make it more representative to generalize the results for a more forceful understanding of motive behind choice of multiple phone services. Researchers may also widen the scope to cover consumers in the working class, since this study was limited to only students. A cross-country analysis of consumer choice of multiple mobile operators might be an appropriate study to consider having a more global perspective of the phenomenon.

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COMMUNICATION ISSUES IN A MULTILINGUAL BUSINESS ENVIRONMENT: INSIGHTS FROM MANAGERS

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ABSTRACT

This paper presents the conclusions and implications of the research study based on responses from a sample of 20 manufacturing leader-managers working in the states of California or Florida. This research also presents recommendations for further action followed by a summary of findings. Organizational policies and procedures are in place to ensure standards are implemented for an efficient and safe work environment for all employees. It is expected that employees understand such processes so they can meet the goals of the organizations. Organizations that embrace diversity are able to bring unique talents and ideas that will serve clients' needs. However, when language presents a barrier to communication, then management has to weigh whether it is placing itself in a position to do more harm than good for employees involved. Two questions were fundamental to the research: (1) How do leader-managers share and transfer organizational knowledge to a linguistically diverse manufacturing workforce to prevent workplace injuries in their organization? (2) What are perceived challenges in sharing and transferring organizational knowledge in a linguistically diverse manufacturing work force to prevent workplace injuries in their organization?

JEL: D8, D83

KEYWORDS: Communication, Leadership, Organizational Knowledge

INTRODUCTION

Organizations with a workforce that speak different languages can present challenges to the organization. The main difficulty particularly for management is the ability to communicate effectively with its employees. Organizations may see that having a diverse workforce with linguistic abilities could serve as an advantage to a global economy; however, literature presented asserted that linguistic diversity added complexity within an organization. For example, employees with limited English skills in organizations "places a significant expanded challenge on management, especially regarding communication" (Solomon as cited in Pierce, 2003, p. 41).

The purpose of this qualitative phenomenological study was to contribute to the linguistic diversity literature by exploring lived experiences of a small sample of leader-managers in manufacturing environments. Twenty leader-managers from seven manufacturing organizations contributed to the study. Organizations and the location of the manufacturing sites are not referenced due to confidentiality.

Research identified the estimated total economic costs in 2004 of occupational deaths and injuries were $142.2 billion, with 120 million days of total time lost; 4,952 employees died and 3.7 million employees were disabled while on the job (National Safety Council, 2006, p. 1). Loh and Richardson (2004) stated, "In manufacturing, foreign-born workers' share of employment increased by 22 percent, from 13 percent in 1996 to 16 percent in 2001, but their share of workplace fatalities increased by 46 percent over the same period, from 9 to 14 percent" (p. 47).

The study included a review of the literature related to the phenomenon of sharing and transferring knowledge in a linguistically diverse environment, and the growth of linguistic diversity within the workplace. The increase of workplace injuries was presented as relational to the increase of employees with no or limited English proficiencies. Organizational literature was used to integrate the safety system as part of the organization's system and leaders' responsibility.

LITERATURE REVIEW

The purpose of this qualitative phenomenology research study was to explore how leader-managers share and transfer organizational knowledge in linguistically diverse manufacturing organizations to prevent workplace injuries. The increase of linguistic diversity in the workplace and the increase in the number of employees with limited English skills, or English as a Second Language (ESL), have been linked with a disproportionate rise in the number of workplace injuries (Brooks, 2003; Kalaroa, 2004). The study used the modified Van Kaam method by Moustakas (1994) to explore the lived experiences of 20 California or Florida leader-managers about how they share and transfer organizational knowledge in linguistically diverse manufacturing organizations to prevent workplace injuries.

The literature review revealed research focused on the relationship between language and safety did not exist (Trajkovski & Loosemore, 2006). In addition, the lack of recognition by leaders or their decisions not to confront the existence of various languages in the workplace has resulted in language barriers within organizations (Kalaroa, 2004). With the lack of initiative from leaders to resolve problems associated with or caused by language barriers and unsafe working environment has been created within some organizations (Dutton, 1998, Kalaroa).

The safety system excellence model presented in the literature review identified leadership as an essential input (Blair, 2003). The role of leadership within organizations drives values, behavioral reinforcement, communication, accountability, and management credibility (McCarroll, 2004; Blair, 2003). The Hersey Blanchard model was used to emphasize leader-managers need to be adaptable and flexible to meet the changing needs of the employees and the various situations.

Twenty leader-managers from seven manufacturing organizations contributed to the study. The result of this study showed that no formalized program exists within the participants' organizations and that leader-managers are left to their own demise to create a means to address linguistic diversity within the workplace. Leader-managers may benefit by developing and implementing formalized communication strategies to address better the challenges in linguistically diverse manufacturing environments. In addition, leader-managers may benefit by understanding that cultural differences, motives, and needs behind specific behaviors can possibly enhance communication and team building within an organization, and can possibly facilitate the management of linguistically diverse workplaces (Parvis, 2003).

DATA AND METHODOLOGY

As part of her dissertation, Dr. Jett conducted extensive research and data collection. Dr. Escobedo reviewed this study as part of his faculty affiliation with the University of Phoenix. The methodology used employed NVivo© qualitative data analysis software to ascertain themes, issues, and relationships of data obtained during the data collection process. The study included horizonalization, a reduction of the horizons, and a review of the common themes which evolved as a result of the analysis of the data. Direct quotes of participants were used to illustrate the themes in order to establish perceptions of the organizational culture, and the day-to-day impact of linguistic diversity.

The synthesis of the meanings and essence of the lived experiences identified by the participants presented that current systems or lack of systems in place to facilitate the sharing and transferring of

knowledge, and challenges of leader-managers when sharing and transferring knowledge in linguistically diverse manufacturing environments exist. The participants' experiences of linguistic diversity did conform to the assertions and claims presented in the review of relevant literature. Leader-managers within organizations have been challenged with facing workplace injuries within linguistically diverse environments.

Participants identified that current systems within their organizations do not formally address challenges presented when sharing and transferring knowledge in a linguistically diverse environment. Informal practices are developed by leader-managers within specific departments to execute operating plans developed annually and to meet established objectives in a changing environment. These practices can vary within the same organization, as well as within a department. The variance was noted by dissimilar responses in this study from participants within the same organization.

The overarching theme presented a gap in linguistically diverse manufacturing environments. As presented in the literature review, the overall result has been little or no guidelines for organizations, possibly leaving leader-managers to their own demise.

RESULTS

This qualitative phenomenological study explored and captured the lived experiences of a small sample of leader-managers working in various linguistically diverse manufacturing environments in California and Florida. The primary intent was to contribute to the safety literature in the manufacturing sector to prevent workplace injuries. The central phenomenon, sharing and transferring organizational knowledge, was defined as moving knowledge from one individual to another through communication or across organizational boundaries to provide sustainable competitive advantage throughout an organization (Ichijo & Nonaka, 2007, p. 289).

The manufacturing industry has a large percentage of employees who are English as Second Language workers, as identified in the literature review. The study revealed that sharing and transferring organizational knowledge in a linguistically diverse environment continues to be challenging in today's manufacturing environments, and continues not to be addressed formally by manufacturing organizations as revealed by participants of this study. A majority of participants have informally developed systems to address language barriers within their sphere of influence. For example, some of these systems include spending additional time observing employees, or requesting other employees, peers or leader-managers who can translate.

A large majority of participants agreed to using various languages in manufacturing environments, and translating various manuals to different languages. For example, Participant 256 stated, "…if language is a barrier then the only way you can communicate is to use language that somebody understands." This viewpoint is a significant finding primarily because Pierce (2003) identified that of the four strategies organizations implement to address the challenge of safety in the linguistically diverse workplace, implementing a systematic approach of inclusion was not commonly used. Most organizations focused on one of the following: (1) Do not address issue, or use sign-type language; (2) Learn to speak a different language, and hire only workers who speak that language; or (3) Reduce the number of non-English speaking employees and replace only with English-speaking. Additionally, Davenport and Prusak (1998), and Pelinka (2007) identified that the complexity of sharing and transferring knowledge within organizations can be reduced when there is a focus on a common language.

Table 1 presents the participants responses about methods of sharing and transferring safety communication. Participant unanimously identified meetings and training as a means of safety communication, emerging as the primary theme. Forty-five per cent of responses drove the theme as

using signage to facilitate communication. Approximately 10% of the responses identified the use of translators. For example, other peers or resources to facilitate sharing and transferring of information related to challenges within a linguistically diverse environment.

Table 1: Methods of Sharing and Transferring Safety Communication

Emerging Themes/Textual Descriptors	Frequency Of Response	% Of Respondents Endorsing Themes	Significant Minority	Secondary Theme	Primary Theme
Meetings and Training	21	100			✓
Signage	10	45		✓	
Translators	2	10	✓		
Incentives and Recognition	4	15	✓		

This table shows the frequency of responses and the percentage of respondents endorsing emerging themes and textual descriptors. A primary theme was supported by 65 percent or more of the participants. A secondary theme consisted of responses between 35 percent and 64 percent affirmed by participants. A significant minority theme had less than 35 percent response rate by participants.

CONCLUDING COMMENTS

While all aspects of manufacturing, such as productivity, quality, rewards and recognition, are important, safety is emphasized as being most critical by leader-managers. In addition, the results of the study revealed that participants believe employees in manufacturing environments want their needs to be addressed and a safe place to work. However, participants identified that current systems within their organizations do not formally address challenges presented when sharing and transferring knowledge in a linguistically diverse environment.

Based on findings in this study, leader-managers need to address formally how knowledge is shared and transferred within the work environment. Leader-managers need to develop and implement communication strategies to address the challenges and gaps in linguistically diverse manufacturing environments. Leader-managers, senior and middle managers, and safety professionals need to work with Human Resource Departments to align on a specific approach for their organizations to mitigate legal issues, and address safety concerns. Dunlap (2004) emphasized it is the organizational culture which drives what is expected in health and safety, and to make changes or develop a safety culture the organizational culture must be aligned.

In addition, leader-managers within organization need to be adaptable and flexible to meet the changing needs of the employees and the organization's environment. Leader-managers should establish safety expectations, provide engineering support, set exemplary behavior, educate employees, enable employees, encourage employees, and evaluate effectiveness (Blair, 2003). The lack of ownership by leaders could possibly lead to the lack of literature on this subject, and the gaps that exist in the manufacturing environment. Not addressing the phenomenon of linguistic diversity cannot only increase workplace injuries (Brooks, 2003; Kalaroa, 2004), but also can stagnate the organization and its resources if language barriers affect communication (Roberson & Stevens, 2006).

This article recommends actions that leadership can take to improve safety in a linguistically diverse manufacturing environment. While all aspects of manufacturing, such as productivity, quality, rewards and recognition, are important, safety is emphasized as being most critical by leader-managers.

Leadership within an organization drives values, behavioral reinforcement, communication, accountability and management credibility (McCarroll, 2004; Blair, 2003). In addition, leadership is highlighted as an essential input in the safety system excellence model presented by Blair (2003). Participants of this study identified that employees in manufacturing environments expect their needs to be addressed by leader-managers.

Kalaroa (2004) identified cultural differences as a possible prevention that would keep employees from questioning authority or the unsafe acts of their coworkers, or unsafe work practices of organizations or leaders within their organization. In addition, Trajkovski and Loosemore (2006) stated, "People who speak different languages will therefore be more likely to view the world differently" (p. 2*)*. Leader-managers should recognize and understand cultural differences, motives, and needs behind specific behaviors. Parvis (2003) identified this level of understanding by leader-managers could possibly enhance communication and team building within an organization, and facilitate the management of linguistically diverse workplaces.

Limitations

Limitations of this qualitative phenomenological research study were that data obtained was limited to 20 participants working within linguistically diverse manufacturing organizations within California or Florida. Participants were limited to persons in leadership positions, and not manufacturing employees' perception of safety or the organization's safety culture. Even though participants volunteered to be involved in the study, participants may have provided bias and superficial responses based on their personal opinions, motivation to participate, their personality, or leadership style.

In addition, although there are a number of communication models, a widely held notion is that communication meaning is comprised of 57% nonverbal, 37% tone, and 6% words (Mehrabian, 1981). Therefore, this suggests that communication is most extensive when an individual does not use words; that is, 94%. This brings home the overall message that over half the meaning that individuals send at 57% is nonverbal. Therefore, leader-managers need to have an awareness of the nonverbal communication.

The communication model will also vary by culture (Mehrabian, 1981). For instance, in one particular culture, certain hand gestures are entirely inappropriate and even simple eye contact can be a sign of aggression and sure disaster. In business, this could ruin a friendship or break a business transaction. Another exemplary cultural difference is proximity. Just how close can one person stand to another before it becomes uncomfortable or suggest inappropriate invasion of one's personal space. In one culture, this could be arm's length while in another this could very well be inches apart. In serious cases, this could be inappropriate conduct of a sexual nature and considered sexual harassment.

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GOVERNMENT AND FIRM DUOPOLY IN ECONOMIC GROWTH

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ABSTRACT

The Theory of the Growth of the Firm proposed a process theory of growth based on the pursuit of knowledge and unconstrained by government, hence applicable only to an economy where the corporation is the dominant form of industrial organization. In her subsequent studies of foreign direct investment by large firms in developing countries, Penrose considers government as an input to the growth process. This paper explores Penrose's process theory of firm growth when government decision-making is an input to the process. The findings are based on content analysis of Penrose's Theory of the Growth of the Firm, Large International Firm in Developing Countries, petroleum industry studies, and other writings from 1956 to 1973.

JEL: A1, O11, O12

KEYWORDS: Economic Growth, Government, Firm Duopoly

INTRODUCTION

While at Johns Hopkins University, Edith Penrose was assigned to work on a project funded by the Merrill Foundation. She chose as her topic not the interpretation or testing of an existing theory, but the creation of a new theory of the growth of firms. From January 1955 to November of that year, while on sabbatical at Australian National University, she developed "one long, logical construct, a single argument no step of which could be omitted without the risk of misunderstanding later conclusions" that became *The Theory of the Growth of the Firm* (Penrose, 1995 ed., p. xxxii). Thereafter in her long career, as she became more interested in developing countries, Edith Penrose began to consider the ways and reasons why government might be an actor in the growth process. As Penrose acknowledged in the foreword to the third edition of *The Theory of the Growth of the Firm*, her work on multinational enterprises (1956-1959, 1968, 1973) is an extension of her work on the growth of the firm. What *is* different is the presence of a second actor, government, in the growth process.

Why might governments of developing countries encourage foreign direct investment (FDI) to bring investment capital into their economies, but impose tariffs, taxes and other non-trade barriers if the incoming investment is insignificant in comparison with the repatriation of profits via dividends? The goal of this paper is to identify through the Penrose writings the steps governments of underdeveloped countries might take to direct, encourage or constrain foreign direct investment ---and why. To date, Penrose's post-*Theory* work has been analyzed far less thoroughly than her *Theory of the Growth of the Firm.* Never has this work and its contribution been explored in the context of economic growth theory.

After a review of the contemporary literature, we first examine the problem of growth by FDI for host countries; profit sharing bargaining between producing countries and oil companies in the Middle East, and national/international patent protection in developing countries. We then return to the goal of this paper, identify the limitations of content analysis and draw conclusions about the potential impact of government action on growth.

LITERATURE REVIEW

Government as an economic actor in the theory of the growth distinguishes Penrose's work on MNEs from the international business theory of Buckley and Casson, 1976; Rugman, 1981; Rugman and Verbeke, 1998; and Hennart, 1982, 1989. According to Pitelis (2002), Penrose was among the first theorists to discuss transfer pricing and repatriation of profits (Penrose, 1962). She is the first to introduce the notion of infant firms as a reason for protectionism (Penrose,
Considering Penrose an economic growth theorist (rather than a firm theorist), I examine the broader economic literature that emerged before and as she was writing. With few earlier exceptions, the literature reviewed here was published between 1950-1973.

One of the first economists to develop a theory of economic growth was Joseph Schumpeter, an acknowledged influence cited by Penrose in *The Theory of the Growth of the Firm*. Schumpeter (1934) argued that innovation was the key to growth, and that the entrepreneur was central to the process of innovation. Schumpeter recognized that innovation goes beyond invention. Invention creates new technology, but innovation applied it to the production and distribution of goods and services. Invention alone, according to Schumpeter, is not sufficient to spur economic growth. Citing Schumpeter's student Robert Triffin (1940, pp. 169-171), Penrose argues that the innovating firm is, for theoretical purposes, a new creation. "Each innovation modifies the level of profit opportunities attached to a firm or rather creates a new firm, provided with profit opportunities of its own." Nevertheless, "economists writing about the firm as an institution have often insisted on putting some of their own discussion in terms relevant only to a theory uninterested in institutional factors but asking and answering entirely different questions. For this reason, I have always looked askance at references to 'efficient markets' or even 'market failure' in relation to the behavior of firms as organizations in real markets and in relation to the firm/market dichotomy" (Penrose 1994, p. 1123).

It is important to note that Penrose's interest in government and firms as a duopoly in the growth process occurred when the world's economists were engaged in a struggle to reform the world financial system. G10 balance of payments deficits, particularly US deficits (largely caused by US foreign direct investment in Europe, NATO expenses and the war in Vietnam) were creating concern in Europe from 1959 through the decade of the 1960s. Penrose's teacher and mentor Fritz Machlup was organizing a group of non-governmental economists and officials of the G10 industrial countries to address solutions to US balance of payments deficits and world monetary system problems. A member of Machlup's group, economist Robert Triffin was arguing that G10 deficits (and restrictions on raw materials purchases) had their ultimate impact on underdeveloped countries (1960). Penrose would take the Triffin view herself arguing that the growth of foreign indebtedness, like the growth of domestic indebtedness, need not be of particular concern in a growing economy, if the net income out of which the indebtedness can be serviced also grows accordingly. The contribution of FDI to net domestic income must exceed the amount of profits repatriated by foreign firms. If not, Penrose argues, government would be wise to find an alternative route to new technology, skills improvement and overall productivity growth without the 'costs' of lost autonomy and control.

Charles Kindleberger, another member of Machlup's group and a frequent critic of Penrose, maintained that it is not the size of the profits or the issue of reinvestment versus new investment that raises difficulties for developing economies, but the fact that foreign investment encourages excessive spending and gives rise to an imbalance in the balance-of-payments (1965, pp. 270-271). Penrose and Kindleberger viewed the large international firm and host country government as engaged in a bilateral monopoly. However, Kindleberger took issue with Penrose's use of the term 'exploitation' in an assessment of the relation between oil companies and the countries in which they operate. It is significant that Penrose, who seldom deflected criticism in her published writings, rose to Kindleberger's challenge. Responding to Kindleberger's objection to her use of the word 'exploitation' in a discussion of FDI,

Penrose argues that the perception of 'exploitation' as 'disproportionate gain' ought 'to be treated as one aspect of a political attitude toward foreign investment in general, for the feeling of being exploited increases an existing resentment against foreigners, and the psychological disutility of having to put up with extensive foreign influence is intensified if it is felt that the bargain is not fair or, conversely, is reduced if it is felt that the foreigner is going out of his way to be fair' (Penrose 1970, p. 119).

Penrose was also influenced by the dynamic economics of Roy Harrod, another member of Machlup's group of non-governmental economists seeking reform of the world monetary system. She had read and cited Harrod's (1952 *Economic Essays* in *The Theory of the Growth of the Firm*, specifically in her discussion of the receding managerial limit, where the capacities of the firm's existing managerial personnel necessarily set a limit to the expansion of the firm in any given period. Like Penrose, Harrod was interested in the impact of entrepreneurs on growth—and in the limits to growth imposed by available entrepreneurial/managerial services (Harrod 1952, pp. 184-185). One implication of the growth model developed by Harrod is that the key problem for developing countries was to increase the share of resources devoted to investment.

During the 1940s and 1950s, economic theory focused on using foreign aid to top up savings with the "necessary" investment to promote growth. This focus arose from the Harrod-Domar model, based on the idea that GDP growth is proportional to the share of investment spending on buildings and machines. Evsey Domar, a friend of Penrose at Johns Hopkins, would later disavow his theory as inaccurate. Another friend of Penrose from Johns Hopkins, often cited in her work, was Simon Kuznets whose interest in economic growth focuses on the connection between socio-cultural conditions and modern economic growth. In his analysis, Kuznets emphasizes "the dominance of a single historical and cultural complex in the background of modern economic growth" (all G10 are European or European-originated, except Japan). Kuznets notes, "Even if it is assumed that economic growth itself, once initiated, would produce the necessary modifications in the social and cultural framework and thus clear the way for the next economic step forward, such an automatic sequence cannot be relied on. The identity and relative importance of the non-economic factors, especially those susceptible to direct policy action, must be established" (Kuznets 1968, p. 98). Similarly, Kenneth Boulding, Penrose's source for entrepreneurial "image" (1956). reflected on economic growth among the G10: "Growth in this case originates with that group at the top of the hierarchy which has control of the budgets of the whole society. In such a society the "success" of an organization depends, in part at any rate, on its ability to conform to the plan sent down from the central agency" (Boulding, 1959, p. 33).

Among Penrose's influences at the time was the French structural economist, Maurice Bye, who investigated the impact on the world economy of the interplay of flows and forces depending neither entirely on government nor on firms. Focusing on wasting assets (oil and mines), Byéwarned that, given the differential planning horizons of foreign investing firms and national governments, the latter cannot delay public welfare for long-term growth gains which might materialize only after the resource had been depleted, but must fund social programs in the short term via taxes, tariffs and other action directed at what he called the 'large multi-territorial unit' (Byé, 1958, p. 178).

Penrose read Kaldor (1934, p. 69) whom she cites approvingly in her 1994 retrospective article "Strategy/Organization and the Metamorphosis of the Large Firm." Kaldor's growth model is based, by his own admission, on Keynesian techniques of analysis and follows the well-known "dynamic" approach originally developed by Harrod. Kaldor's model differs from Harrod's in that it is assumed here that in a growing economy the general level of output at any one time is limited by available resources, and not by effective demand. It does not distinguish between changes in techniques (and in productivity) which are induced by changes in the supply of capital relative to labor and those induced by technical invention or innovation-i.e. the introduction of new knowledge. The use of more capital per worker (whether measured in terms of the value of capital at constant prices, in terms of tons of weight of the equipment,

mechanical power, etc.) inevitably entails the introduction of superior techniques which require " inventiveness " of some kind, though these need not necessarily represent the application of basically new principles or ideas. Finally, the prime mover in the process of economic growth is the readiness to absorb technical change combined with the willingness to invest capital in business ventures (Kaldor 1957, pp. 593-599).

Ragnar Nurske (1957) argued that poor nations remained poor because of a "vicious circle of poverty." Poor nations often have a malnourished workforce and insufficient saving to invest in modern technology. The lack of human and physical capital results in low labor productivity, preventing the economic growth that could bring these nations out of poverty. Two others known for their work on growth in developing nations shared a Novel prize. Arthur Lewis (1965) developed the two-sector model, which divided the economy into a rural subsistence sector and an urban industrial sector. Lewis argued that surplus labor from the rural sector could be moved to the urban sector to fuel the development of industry and economic growth. Theodore Schultz (1965) focused on investment in human capital to promote development and growth in poorer nations.
Raymond Vernon argued:

> As the governments of less developed countries sense a weakening in their need for the foreign investor, they can be counted on to press foreign investors for an increased share of the profits and an increased measure of control over the exploitation of raw materials…. If the [foreign]companies' share were to be reduced from 30 to 20 percent, for instance, sales would have to increase by as much as one-half in order to offset the effects of the declining share. Nevertheless, governments have a compelling political need to demonstrate to a domestic constituency their resoluteness and their independence in negotiations with foreign investors. For this reason, governments will find it necessary to push their demands from time to time, even if the consequences seem threatening to their national well-being (Vernon 1970, p. 125).

Penrose's viewpoint differed from that of her frequent source Vernon. Penrose would demonstrate that government intervention in a profitable market might not have a discouraging effect on investment.

METHODOLOGY

The research relies on content analysis of Penrose's T*heory of the Growth of the Firm, Large International Firm in Developing Countries*, petroleum industry studies, and other writings from 1956 to 1973.

DISCUSSION

The Problem of Growth by FDI for Host Countries

In 1955, while she was writing *The Theory of the Growth of the Firm*, Edith Penrose was also teaching at Australian National University and working on a study of the growth of General Motors – Holden's Ltd in Australia. In "Foreign Investment and the Growth of the Firm" (1956), Penrose finds two problems for the governments of underdeveloped countries: foreign control and balance of payments problems. The wholly-owned foreign subsidiary of a large international firm (GM) may make only a small initial dollar investment in the new market (Australia). Nevertheless, dividend remittances to foreign shareholders will be high compared with the original dollar investment (Penrose, 1956, p. 220). If the goal is protection of the local automobile industry, government might impose import tariffs, limit the remittance of dividends abroad, or put a ceiling on dollar export through a heavy progressive tax on foreign firms and their subsidiaries. Finally, government might buy out the foreign firm to avoid a recurrent balance of payments problem (Penrose, 1956, p. 224).

To pay for foreign investments, governments might reduce domestic consumption and investment to limit import demand for consumer and capital goods. To achieve stability, governments try to control inflation, avoid deflation and counteract recessions quickly. Governments limit direct exchange, impose import restrictions or use Central Bank credit to maintain financial liquidity (Penrose, 1959, p. 231).

What impact will these government actions have on business growth? Will they deter foreign firms from entering? What do foreign firms see when government begins to take these actions? Actually high levels of government activity mean the potential for high business profits. High potential profits are a magnet for foreign firms or for established firms looking to expand. So long as foreign firms retain the greater part of their earnings for reinvestment, the effect on the balance of payments is masked. In not exercising the right to export their profits, firms leave foreign exchange available to the country that would otherwise have gone into dividend remittances (Penrose, 1956, pp. 230-31). When the readjustments in the economy required to service foreign investment are difficult to make, they create a balance of payments problem. Government will restrict imports, impose tariffs or alter monetary policy to limit impact on income distribution and domestic investment.

Government will accept foreign investment if domestic income is raised to an extent equal to or greater than the foreign firm's return on investment. Government will limit or restrict foreign investment if the benefits of direct investment (skills, technology) can be achieved at lower cost in the marketplace.

The Role of National Companies and Independents

In "In Profit Sharing Between Producing Countries and Oil Companies in the Middle East (1959), Penrose explores the sharing of oil revenues between the oil companies and the producing countries, two interested parties who stand to gain from bargaining. Here, one of the parties invests capital to start the industry and runs it. The other supplies the raw material, a "wasting asset". Both are interested in promoting the most profitable long run expansion of the industry. However, the producing country governments are concerned with their own oil production. The oil companies are looking for the highest returns. From 1954 to 1966, 40-60% of profits were paid out to foreign investors through dividends. While profits continued to grow, benefiting the oil majors, the loss of income to the producing countries makes the case for government action to ensure profit sharing.

Penrose argues the part of its profit a company is willing to give up depends on its estimate of the cost of meeting the government's final demands compared with the cost of resisting them. Government demands depend on the loss it believes it can inflict on the company by denying or canceling the concession under negotiation. Another consideration is the amount the company is prepared to give up to avert political disturbances and maintain political good will (Penrose, 1956, p. 241). For established oil companies, the cost of acquiescing to government's demands is the additional profit lost. The company is in a strong position to precipitate an economic crisis, which may drive the negotiating government out of office.

Government's position will depend on oil revenues, competition or ability to run the oil industry. If the country is dependent on the continuance of oil revenues and the government cannot run the industry, then an existing oil company is in an extremely strong position vis-à-vis any single government. If there is competition among the oil companies for a concession, then the share of profits offered to the government will increase to the point where the company obtaining the concession retains only "normal" profit. In this case, the government will be able to extract nearly the full value of the concession. If the government can run the industry (nationalize) and obtain revenues not significantly below those previously obtained from the companies, then government would also be in an extremely strong position with respect to established oil companies.

To assess the value of nationalization, the government should consider the alternative product that could have been produced by its resources, had they not been directed into oil production. There are other bargaining chips available to producing country governments, specifically national companies, independents, through which industry concentration can be moderated, and public policy achieved. While a few large sellers dominate the international petroleum industry, they are surrounded by smaller independents and national companies whose activities have a significant influence on the industry, largely through government action. Wherever governments are fearful of losing control to foreign nationals, regulation will favor domestic competitors. While exploration is expensive, government subsidies or regulations make it impossible for foreign firms to operate without a domestic partner.

Patent Protection in Developing Countries

Having written and published her dissertation of the international patent regime in 1951, Penrose returned to patents in 1973, arguing the wisdom of domestic patenting to protect local inventors from having their ideas and inventions taken over by foreign firms without consent and compensation. She also addresses the cost to less-developed economies of awarding patents to foreign companies. Patents may not assist industrialization nor benefit local industry, but may enhance the monopoly position of foreign patentees. Since non-industrial countries may have few inventions worth patenting in developed countries, they cannot expect reciprocal advantages and may even lose from granting patents to foreigners on inventions developed, published and primarily worked abroad (Penrose, 1973, p. 784).

Will government action deter foreign investment and technology diffusion? If we are talking about compulsory licensing of the patent, in most cases, the expertise of the patentee is required to work the patent. The patentee can expect that potential users or collaborators will prefer to negotiate voluntary arrangements to ensure a smooth transfer of know-how. If, a government attempts to go substantially beyond the "customary" limitations and to provide for compulsory licensing on a widespread basis or to adopt unconditional licensing for foreign patents, the disadvantage of the country grows stronger.

CONCLUSIONS

The goal of this paper was to uncover in the writings of Edith Penrose what steps governments of underdeveloped countries might take to direct, encourage or constrain foreign direct investment. The method employed was content analysis of Penrose's published writings from 1956 to 1973.

In the Penrose's original *Theory of the Growth of the Firm*, a change in firm circumstance leads to a change in learning that is reflected in organization structure or growth. In her post-*Theory* work, Penrose devoted much of her research and writing to the role government in the theory of the growth of the firm. With government as an additional actor, the rate and amount of firm growth might be constrained, as firms consider altering their investment decisions.

Drawing on Penrose's writings, I have focused on the implications for firm growth of the actions of these two players. For the large international firm in developing countries, the firm is now large enough, and geographically diversified enough, to have a significant impact on the economy of a developing country. The host government will employ whatever measures necessary to assure that the developing economy benefits from the presence and investment of the large international firm. While some theorists see in Penrose's treatment of government in developing countries a normative approach, Penrose's analysis is largely positivistic: she is calling the plays on a chessboard, anticipating what each player may stand to gain or lose from the action of the other: a competitive options approach.

Nevertheless, an element missing from Penrose's investigation is the assessment of social impact. Penrose's arguments suggest room for a deeper discussion based on marginal costs, marginal social

productivity or marginal growth available given specific government actions. For example, when would the amount of foreign capital invested in a developing country reach a point when the risk of foreign control prompted government action to restrict or prevent FDI? Does foreign direct investment contribute more to increased use of domestic inputs and increased national product than would be gained by the imposition of taxes and other burdens on the foreign investor?

Penrose did not undertake a calculation of social benefit. Given that government and firms are engaged in a multiplayer game, there is room for a competitive options approach. Future research into the government firm duopoly might quantify the marginalist or competitive options impact of government and firms on economic growth.

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DO YOU KNOW WHERE YOUR DERIVATIVES ARE?

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ABSTRACT

This paper is designed to assist individuals and organizations in understanding the role and risks of derivatives in two specific areas -- debt management and investing. The various risks associated with derivatives are discussed in this article. Similar to collateralized debt obligations (CDOs) and CDOs squared, derivatives also have the potential to be the next financial engineering bubble to burst. The SEC is concerned that investors do not understand the risks with more complex ETFs and abbreviated disclosures. Institutions, including Harvard University, have already lost millions on interest rate swaps. Individuals and organizations should take the time to educate themselves as to the serious potential risks involved with these instruments.

JEL: G01, CR11, G15, G24

KEYWORDS: Derivatives, Exchange-traded Funds, Leveraged, Futures Contracts, Counterparty Risk, Tracking Errors, Lack of Transparency, Swaps, Counter Party Risk

INTRODUCTION

The 2,315-page Dodd-Frank Wall Street Reform and Consumer Protection Act has been hailed as the solution for preventing future financial meltdowns such as those currently experienced in this economy. Investors should not be lulled into complacency though. This legislation creates a division within the Federal Reserve designed to protect consumers. However, while its goal is to increase the transparency of complex financial products including the oversight of swaps and other derivatives, it is certainly not a substitute for individual and organizational prudence and due diligence. Furthermore, many of the changes in this bill are not expected to be fully enacted until 2015. Boards of directors, management, CPA firms, elected officials and even financial advisors should view this legislation as a tool to eventually help protect their respective organizations and not insurance against future problems.

Derivatives have the potential for huge losses due to their complexity and lack of transparency. Investors and their financial advisors who invest in financial products such as mutual or exchange traded funds (ETFs) that utilize derivatives should view the Dodd-Frank Act only as eventually providing them with better tools to protect themselves and their clients but not insurance against future problems. Warren Buffet is noted for stating that individuals should invest only in what they understand. Hence, it is imperative that individuals and organizations understand the role of derivatives in debt management and investing. Otherwise, they may be in for some startling surprises. Harvard University learned this lesson the hard way in 2009 when they paid $497.6 million to investment banks in order to terminate an interest rate swap on $1.1 billion of debt resulting in nearly a 50 percent penalty. They also agreed to pay another $425 million over the next 30 to 40 years to offset $764 million more in swaps. The literature is typically broken down into three areas with regard to derivatives. There are numerous articles discussing Harvard's loss from swap agreements, various Securities and Exchange Documents pertaining to their increasing concern with regard to the transparency of derivative products and the potential resulting risks to investors, and the third group of articles pertains to losses or potential losses from inverse and leveraged ETFs.

This article examines and discusses both sides (debt and investment) of the derivatives issue and strives to educate potential investors. The role and risks of derivatives in debt management will be discussed below followed by the role and risks of derivatives in investments. The concerns of this author is that we have a

serious potential to see a domino meltdown pertaining to interest rate swaps, and that the risks involved with leveraged and inverse ETFs are still not understood by all financial advisors even given various articles that have been written on this subject in recent months. The notional value of derivative swaps are currently disclosed in the prospectus. However, these existing disclosures are still not transparent. It would be very difficult, if not impossible, upon reading a prospectus to obtain details pertaining to a counterparty or evaluate a collateral position.

LITERATURE REVIEW

The literature contains various articles and SEC publications which discuss interest rate swaps that either turned out to be risky or concerns with regard to transparency. McDonald, Lauerman and Wee (2009) state that Harvard locked in interest rates using swaps on $2.3 billion of bonds for future construction but never anticipated that signing contracts which essentially bet on higher interest rates in the future would be so costly when interest rates dropped unexpectedly.

SEC Alert (2009) pertaining to leveraged and inverse ETFs stressing that there are extra risks for buy-and-hold investors in volatile markets. It provides two real life examples of tracking errors. SEC (2010) Staff Keynote Address at the ALI-ABA Compliance Conference in Washington, DC on June 3, 2010 and SEC Staff Evaluating the Use of Derivatives by Funds, (March 2010) which discuss the SEC's concern pertaining to the complexity of derivatives. A letter from Barry Miller, Associate Director for the Office of Legal and Disclosure for the SEC written to the attorney for the Investment Company Institute on July 30, 2010 also discusses SEC concerns pertaining to derivatives-related disclosures by investment companies.

Justice (2009) issues a warning to readers that "leveraged and inverse ETFs kill portfolios". He states that he was shocked to learn how many professionals in the industry did not fully understand how ETFs work. He explains that investors would be attracted to funds that promise double returns but do not understand tracking errors. With leveraged ETFs, however, he explains that compounding arithmetic and constant leverage causes these tracking errors. Hence, Justice argues that leveraged and inverse ETFs were never meant to be held as long-term investments. He states that typically one day should be a maximum for stock-based ETFs. Ludwig (2010) discusses the SEC's decision to explore whether more protections are needed surrounding the use of derivatives such as swaps, by mutual funds and exchange traded funds (ETFs).

Gustke (2010) states that investors have put $1 trillion into exchange traded funds. She quotes John Gabriel, ETF strategist at Morningstar as to not only what comprises ETFs but also the fact that ETFs have become so efficient that they led to the May 6th "flash crash" when the market dropped 1,000 points within 15 minutes. She further quotes Tom Lydon, editor for ETF trends, who stated that 70% of the trades that were cancelled on May 6, 2010 were ETFs when stop-loss orders were hit. Lydon indicated that 45% of the exchange volume in general comes from ETFs in Gustke's article. As a result the SEC recently approved new stock-trading circuit breakers.

Van Duyn (2010) argues that derivative transparency is a key battleground. She states that on one hand regulators particularly politicians are pushing for more disclosure. Credit derivatives serve as a form of insurance on the default of a company or country. She states that the safety issue of "counterparty risks" became apparent in 2008, after the collapse of Bear Stearns and Lehman Brothers when the United States government had to bail out AIG after they nearly collapsed because of unexpected risks resulting from the derivatives they had insured. Van Duyn further states that the big derivative dealers, which include the largest Wall Street banks, feel that the requirements to publish trading volumes and prices could drain liquidity in some derivatives and result in inaccurate or misleading price information. These dealers feel

that the need to make trades public could make trading corporate bonds more difficult because rivals could determine their positions.

Madigan (2010) questions whether the SEC, Commodities Future Trading Commission (CFTC) and the Federal Reserve are equipped for their new powers under the Dodd-Frank Act and argues that they may not be. He cites Bill Isaac, former chairman of the FDIC from 1978 to 1985 and chairman of the financial services group at LEGC, a consultancy firm in Washington, DC as stating that "the Act would not have prevented the last crisis and it will not prevent the next one." McCallion (2010) states that regulators have begun discussions with market participants pertaining to derivatives reform. She further states that market participants caution regulators to leave clearing decisions to market forces.

The literature contains Eileen Rominger's October 19, 2011 testimony before the Subcommittee on Securities, Insurance, and Investment Committee on Banking, Housing and Urban Affairs of the US Senate in her role as Director of the SEC Division of Investment Management on the topic of Exchange Traded Funds. She discusses the fact that exchange traded products have become an increasingly popular vehicle with investors resulting "in a proliferation of these products in the marketplace" which give rise to new and "increasingly complex products". Her testimony explains that "most leveraged, inverse, and inverse leveraged ETFs "reset" daily, meaning that they are designed to achieve their stated objectives on a daily basis" and explains that their performance can differ significantly over longer periods of time from the benchmark or inverse of the benchmark, particularly in the case of volatile markets. Rominger also points out that price fluctuations in a holding (such as stocks) result in price fluctuations in an ETF due to linkage between an ETF and its index. The SEC observed that under disorderly market conditions such as May 6, 2010, this linkage results in heightened volatility of ETFs which led to the "flash crash". After discussing tracking errors from an index further, she stated that the Commission would defer consideration of exemptive requests for ETFs seeking to register under the 1940 Act that make significant investments in derivatives. The SEC plans to do a broader review of the use of derivatives by all funds and is currently examining the adequacy of investor disclosure, liquidity levels and transparency of underlying instruments for exchange traded products.

Xydias (2011) states that ETFs which use swaps to clone stock, bond or currency returns have been criticized by regulators and firms including Fidelity Investors. They say that clients risk losing money if the banks writing the derivatives should become insolvent.

Condon (July 2011) states that Massachusetts' top securities regulator is suing RBC Capital Markets LLC over the sale of leveraged and inverse exchange-traded funds, saying they sold them to clients who didn't understand the investments. He cites the Secretary of the Commonwealth of Massachusetts stating that the complaint is not that the investors lost money but rather that the investors and even the agents soliciting their investment did not understand the workings of these funds. Shari (November 2011) argues that everything is called an ETF and discusses the differences between various exchange traded products and that investors do not typically understand these differences.

Kapadia (2010) cites Matt Hougan, editor of the ETF website, IndexUniverse.com as stating "investors must closely examine what they are getting when they invest in an ETF". Hougan is cited as arguing that appearances can be quite deceiving, and two ETFs that sound alike can yield completely different results. He states that it is important to know exactly what index the ETF is tracking and weigh the pros and cons of each fund.

Although the literature has various articles published on the risks and the increasing concern for transparency in interest rate swaps by the SEC and various articles on risky inverse or leveraged ETFs, there are still many educated financial professionals who do not fully understand the complexity and overall "big picture" as to why derivatives could easily be our next financial "bubble" to burst.

DEBT MANAGEMENT POLICIES

It is important for all debt issuing organizations, whether they currently use derivatives or not, to have formal written derivatives policies in place that assure appropriate due diligence procedures be conducted and require prescribed approval protocols for the acquisition and management of all types of derivatives.

Derivatives, which include futures, options, forwards and swaps (including credit default swaps), get their name from the fact that they derive their value from an underlying asset, typically an established index or another financial instrument or security. Interest rate swaps have been around for years and are quite prevalent in the governmental and non-profit world. There are many types of swaps. "The total notional value of interest rate derivatives including swaps reached nearly $450 trillion as of June 30, 2010" according to the Bank for International Settlements' June 2010 report.

The most common types of interest rate derivatives are:

1) Interest rate swaps are used to synthetically convert variable rate debt to fixed rate and vice versa. *For example*, if a university can efficiently issue variable rate debt but would prefer not to be exposed to potential future interest rate increases, the university could enter into an interest rate swap with another group, called a counterparty, to effectively convert their variable rate debt to fixed rate debt. (Kelley, 2011)

2) Interest rate caps are used to limit exposure to interest rate volatility. *For example*, an organization with variable rate debt may be willing to tolerate interest rate increases up to a certain level or believe that interest rates will remain low. However, the organization may wish to limit its interest rate risk by purchasing an interest rate cap, which assures that the organization will not pay an interest rate exceeding the rate prescribed in the cap. (Kelley, 2011)

3) Basis swaps are used to manage or change the "basis" on which variable interest rates are calculated. These are more commonly associated with revenue bonds where an organization's income may be dependent upon a particular interest rate index; yet the debt the organization has issued is based on a different index. *For example*, if revenues are based on the prime interest rate while the interest expense that must be paid is a function of the London Interbank Offered Rate (LIBOR), and the traditional correlations between these two indices digresses; a basis swap will protect the entity from market dislocations. LIBOR is used in determining the price of many financial derivatives, including interest rate swaps. This is the average short-term deposit rate that banks participating in the London money market exchange offer each other. (Kelley, 2011)

4) Rate locks, which are based on interest rate swaps, are used to hedge "lock in" a rate for an upcoming bond issue. These are really nothing more than institutional versions of an interest rate lock fee that one might pay to lock in an interest rate when applying for a home mortgage. (Kelley, 2011)

However, there are risks associated with derivatives. There are certain fundamental risks associated with the utilization of derivatives, which should be carefully considered by organizations and addressed in their Derivative Policy statement.

1) Counterparty/credit risk is that the entity on the other side of the transaction might not be able to fulfill their obligation. There is also a risk here to the financial system of a domino effect. For example, if an entity synthetically converted their variable rate debt to fixed rate debt and the counterparty defaulted, this could lead to further defaults. The buyer of the original entity's

interest rate swap may have also at least partially purchased an interest rate swap to protect itself. Thus, one default can easily lead to another default.

2) Basis risk is that the interest rate that an organization is trying to hedge does not track exactly with the derivative. Hence, the organization may not get the full benefit that they are anticipating from the derivative.

3) Termination risk is the circumstances under which either the buyer or seller of the swap can terminate as well as how are the termination costs calculated.

4) Credit downgrade risks are the consequences of a credit downgrade or default of either party.

There is another risk associated with interest rate swaps. While this risk is not strictly a financial risk, it has the potential to be a career risk and that is the mark to market of derivatives. Embedded in swap agreements may be the provision that if the swap liability owed to the counterparty exceeds a certain level, then your organization may have to "post collateral" to protect the counterparty against your organization's nonperformance. Management professionals should be, but unfortunately are not always, aware of this risk before signing agreements. It is very possible that an unfortunate CFO might have to report to his Board or Chairman that organizational assets must be unexpectedly placed with a third party trustee because of a derivative agreement. This would happen if the agreement had a typical clause stating that if the settlement amount exceeds a certain level then the parties may have to post collateral.

INVESTMENTS WITH EMBEDDED DERIVATIVES

Derivatives are not only used in debt management but can also be incorporated into investments which may not be as readily apparent. Many organizations believe that they are not exposed to derivatives in their investments because they do not directly purchase derivative contracts. Derivatives, however, are being incorporated into many investment products which are not being fully disclosed or understood by even many experienced financial advisors. Few people are aware that some mutual funds and many exchange traded funds (ETFs) use derivatives to hedge risk or to magnify market or security movements. Many of these ETFs have labels such as Short, Ultra, 2X, Double Long, or Inverse among others.

Derivatives are actually used in a number of ways in our economy, and for the most part they can be beneficial. Airlines often hedge the price of the fuel they are using for their jets by using futures contracts, a type of derivative. Hence, if fuel prices increase significantly, your favorite airline will not be at risk of losing money on passenger tickets that were sold months ago. Basically, they are locking in a price for their fuel cost using derivatives.

ETFs are not mutual funds. They trade on stock exchanges similar to stocks and may hold physical assets such as stocks, commodities or bonds. However, unlike mutual funds, ETFs typically range between two categories. The first category owns at least some of the physical assets they seek to track. The second category known as synthetic ETFs, are funds that earn a return by investing in derivatives. These derivatives are typically asset swap agreements with a counterparty which strive to replicate the performance of the index or asset it tracks. There are now more than 1,000 ETFs that track major indices such as the S&P 500, industry sectors, commodities and currencies. "Not everything is (a) suitable (investment for all people)," according to John Gabriel, Morningstar ETF analyst. "You need to understand what you own. People let research end with the name of the fund. That can get you into lots of trouble." For example, some ETFs are leveraged, meaning they invest with borrowed money, which makes them more risky. "Fund performance can be the opposite of what investors expect," Gabriel further stated. (Guste, 2010).

The SEC is also concerned that investors do not understand the risks associated with more complex ETFs and the "abbreviated" disclosures that provide a false sense of security to investors pertaining to the scope of a fund's reliance on derivatives. "… some funds employing this type of disclosure, in fact, appear to invest significantly in derivatives," wrote Barry Miller, an associate director in the SEC's division of investment management. According to Paul Justice, CFA, an ETF strategist, he commented in his January 22, 2009 Morningstar article after returning from an 'inside ETF conference', that he was "shocked to learn how many people have a misconception as to how these funds work. And this sampling was not of novice day traders –these are professionals and financial advisors."

This is such a huge potential problem that the SEC on October 19, 2011, has deferred consideration of new requests for ETFs that utilize significant investments in derivatives. Mary Schapiro, the current SEC Chairman, stated in an SEC press release dated March 25, 2010, that "It's appropriate to engage in a more thorough review of the use of derivatives by ETFs and mutual funds given the questions surrounding the risks associated with the derivative instruments underlying many funds". Existing ETFs and mutual funds that use derivatives are so far unaffected. While the SEC is studying the use of derivatives as of April 1, 2010, there were 151 US listed inverse and leveraged ETFs with assets of $29.9 billion according to investment bank Morgan Stanley. ETFs in the United States have grown to account for approximately $1 trillion in assets, or approximately 10 percent of the long-term U.S. open-end investment company industry, with U.S.-domiciled ETFs making up approximately two-thirds of global offerings. (Rominger, 2011).

One popular use of derivatives is to create *leveraged* or inverse ETFs. Inverse funds utilize a variety of strategies to achieve their investment objectives including short selling, trading derivatives such as futures contracts, and other leveraged investment techniques. Leveraged ETFs are marketed as a way of doubling or tripling returns on the movement of underlying indexes and benchmarks such as the S&P 500. Hence, if the S&P were to increase by 10%, one would expect a 2x leveraged ETF to increase 20%. Inverse ETFs supposedly provide investors with a vehicle to get a leveraged benefit if the targeted index declines.

Most investors understand that borrowing money creates leverage, which can be used to magnify returns, which is how they *think* a leveraged ETF operates. However, the 1940 Investment Company Act placed restrictions on how much investment funds could borrow. ETFs, consequently, obtain their leverage with the use of derivatives. The Investment Company Act could not have contemplated the use of these complex types of investments. **"…** the Act, while in fact being 70 years old, is being challenged and stretched in ways that were inconceivable when it was enacted, but which we in the Division of Investment Management are dealing with today" stated Andrew J. Donohue, Director of the SEC's Division of Investment Management in June 3, 2010 SEC Staff Keynote Address at the ALI-ABA Compliance Conference. It could be argued that leveraged ETFs are circumventing the intent of the Investment Company Act by using derivatives to achieve leverage that would otherwise be prohibited.

The popularity and complexity of these new ETF investment vehicles requires that investment policy statements be updated to specifically address their unique characteristics and their associated risks similar to the debt management example above.

RISKS OF EXCHANGE TRADED FUNDS

There are two primary risks associated with ETFs that utilize derivatives such as interest rate swaps or futures. The first major risk is reliance on a counter party to make good on their commitment. For a derivative to function there is reliance on the performance of the entity on the other side of the transaction. If that entity does not perform because of credit problems, legal issues or outright fraud, then the derivative and most likely the investment will suffer a loss. In this worldwide economy, it is easy to

imagine situations where systemic risk could cause such large losses that the counterparty no longer has the liquidity to pay. This counterparty risk also became painfully obvious with the collapse of Lehman Brothers and the AIG bailout. One way of mitigating much of this risk is for the derivative to be collateralized. However, it is not practical for an individual investor in an ETF to monitor the liquidity and market value of the collateral. "ETFs that use swaps to clone stock, bond or currency returns have been criticized by regulators and firms including Fidelity Investors, which say clients risk losing money should the banks writing the derivatives become insolvent." (Xydias, 2011)

The original prospectus of an ETF may state that the fund may use derivatives to carry out its investment objectives. To know if an ETF utilizes derivatives, and to what extent, it is important to go directly to the particular fund's website and click on the link for their daily holdings. Most funds will indicate if their holdings include swaps or other derivatives and the notational value of these derivatives.

The second primary risk of ETFs that use derivatives is commonly associated with leveraged ETFs, which are mainly managed by firms like Direxion, Rydex and ProShares. A popular example of a leveraged ETF is an *inverse* ETF which is engineered to deliver a positive return that is a multiple of any declines in the designated benchmark. The risk is a function of the daily compounding calculations of leveraged funds caused by the mark-to-market of derivatives on a daily basis. For example, one would expect a triple inverse ETF on the S&P 500 to increase 30% if over time the market declined by 10%. The unexpected reality in a volatile market might be that this ETF actually declines rather than increases. It should be pointed out that leveraged inverse ETFs should only be considered for very short-term daily investment purposes since the mathematical impact of *daily* compounding in a volatile market could result in the opposite of what an investor hopes to achieve. Over longer periods of time, such as weeks or months, results could be significantly different from what an investor is expecting particularly in volatile markets. "It pays to look beyond the cover," says Matt Hougan, editor of ETF Web site IndexUniverse.com. In August 2009 the SEC and the Financial Industry Regulatory Authority (FINRA) issued an Alert warning investors about extra risks involved with leveraged and inverse ETFs. Two "real-life" examples were provided in the August 2009 SEC Alert. Index "A" gained 2 percent between December 1, 2008, and April 30, 2009. However, a leveraged ETF seeking to deliver twice the daily return of "Index "A" fell by 6 percent. A different inverse ETF seeking to deliver twice the daily return of Index "A" fell by 25 percent.

Index "B" during that same period gained approximately 8 percent. However, an ETF seeking to deliver three times the daily return of Index "B" fell 53 percent. A different inverse ETF seeking to deliver three times the daily return of Index "B" declined by 90 percent over that same period.

There are a wide variety of ETF choices with different index compositions and methodologies. Not only do leveraged ETFs depend on the use of derivatives but certain types of commodity ETFs also rely on leverage to meet their investment objectives. On October 19, 2011 Eileen Rominger, director of the Securities and Exchange Commission's Division of Investment Management testified before a Senate subcommittee that a certain small group of so-called "inverse, leveraged ETFs" are made up of derivatives and other securities and can have an effect that that can be magnified in volatile markets. She further stated that leveraged, inverse, and inverse leveraged ETFs approximated $48 billion in assets.

With the future of the US economy in question, those investors seeking to purchase investments that move in the opposite direction of the market (inverse ETFs) or to hedge their existing investments should be cautious. Figure 1 provides an example of a 2x Inverse ETF that did not track its index. The actual index it was tracking started and finished at $100. The 2x Inverse ETF, however, due to daily compounding with volatility incurred a loss. As Figure 1 illustrates inverse ETFs may not necessarily deliver the results anticipated by investors. The problem is that many retail investors as well as many professionals do not understand that these leveraged and inverse ETFs compound daily and can produce

these skewed results. Leveraged ETFs should typically be held for less than one day and definitely not treated as index funds. This is because of the effects of compounding (sometimes called "beta slippage"). This issue has attracted much public attention now that these ETFs have been increasingly used by less experienced investors.

The Securities and Exchange Commission and FINRA had issued a warning on the leveraged and inverse ETFs. (2009). The SEC is seeking comments currently on ETFs that invest in derivative products to provide input as it evaluates the acceptable level of risks for investors. (2011) Figure 2 illustrates what would have happened if an investor had purchased ProShares ETF 2x Dow Jones U.S. Real Estate Index (SRS) in February 2007 and held it until August 2010. The investor would have expected an 88% gain based on the fact that the Dow Jones Real Estate Index decreased 44%. However, an unpleasant surprise would have been the realization that the ETF 2x would have instead actually decreased by 92% due to daily compounding in volatile markets. As an illustration, assume that an investor deposited $10,000 on March 1, 2007 into ProShares ETF 2x, which inversely tracks the Dow Jones Real Estate Index. There was a 44% decline in the Dow Jones Real Estate Index from February 2007 until August 2010. Given that his investment was a 2x inverse, this investor expected his ETF to INCREASE 88%. Inverse ETFs embed derivatives that are marked to market and are thus compounded daily. Therefore, mathematically, the 88% increase does not happen in actuality. This investor actually experienced a 92% *DECLINE*, resulting in his $10,000 investment *now only being worth $800* as of August, 2010. Hence, policies and guidelines must be in place for investors who invest in these products. They should also not be purchased by small individual day traders due to the risk involved. To illustrate how this mathematical compounding with volatility becomes a tracking error, consider the following example (Table 1):

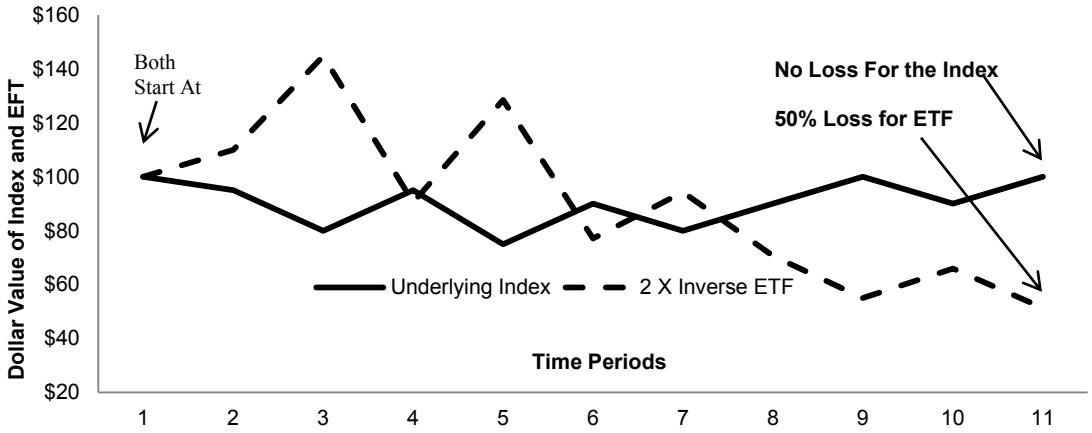
Table 1: Illustration

Leveraged ETFs are subject to daily compounding, which means every day is a new day. **Assume a 2x inverse index is purchased. Also assume that the index it is tracking starts at 100.**	
Day 1	Day 1: If the index goes up 10% to 110, then the 2x inverse ETF goes down 20% to 80.
Day 2	Day 2: The index goes back down to 100 (10/100 = a 9% decrease); then the 2x inverse goes up 18%, but an 18% increase (9% x 2) from 80 results in 94.4 (thus ETF losing money)
Day 3	Day 3: The index declines 10% to 90, then the 2x inverse goes up 20% to (94.4 x 1.20%) to 113.28
Day 4	Day 4: The index goes back to 100 (10/90 = an 11% increase), then the 2x inverse goes down 22% (113.28 x 22% = 24.92 decrease). At the end of Day 4, the 2x inverse ETF is 88.36 (113.28-24.92)
After the mathematical daily compounding, the index is back at a 100, but the 2x inverse ETF is 88.36	

A random internet search of lev7eraged and inverse ETFs will still show individuals touting leveraged ETFs as a way to bet against the market. Investors should be wary and educate themselves as to the risks of these leveraged and inverse ETFs. There are now lawsuits from misinformed investors. RBC Capital is being sued by Massachusetts for selling leveraged and inverse exchange-traded funds to clients who did not understand what they were buying and subsequently suffered losses. (Condon, 2011) Other law firms have received publicity for investigating FINRA brokerage firms who had advised customers to purchase leveraged and inverse ETFs including those issued by Direxion, ProFunds (ProShares) and Rydex. (De Veire, 2011)

Because of the inherent risks associated with ETFs that use derivatives, an organization's investment policy should state that every effort should be made to determine the extent of derivative use and its associated risks before investing in ETFs. Furthermore, if the organization does invest in ETFs, these ETFs should be constantly monitored to see if they are in fact actually performing as anticipated in relation to their benchmark. For leveraged or inverse ETFs, this monitoring should be done daily. Tracking errors for a variety of reasons are a significant risk for ETFs.

Figure 1: Example of a 2x Inverse ETF Not Tracking Its Index



This is an example of an Index which starts and finishes at $100 and is being compared to a 2x Inverse ETF, which was designed to track the underlying index. Note that due to daily compounding with volatility, the 2x inverse ETF did not track the original index.

Figure 2: ProShares ETF 2x Inverse of Dow Jones US Real Estate Index (SRS) vs the Actual Index Being tracked between February 2007 and August 2010

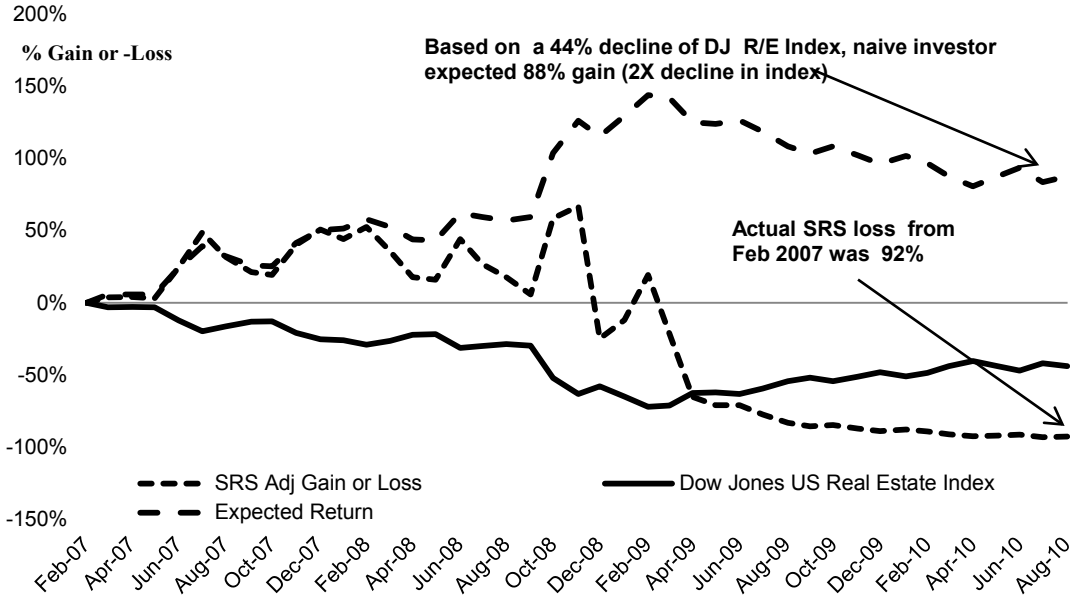


Figure 2 illustrates what would have happened if an investor had purchased ProShares ETF 2x Dow Jones U.S. Real Estate Index (SRS) in February 2007 and held it until August 2010. The investor would have expected an 88% gain based on the fact that the Dow Jones Real Estate Index decreased 44%. However, an unpleasant surprise would have been the realization that the ETF 2x would have instead actually decreased by 92% due to daily compounding in volatile markets.

CONCLUDING COMMENTS

The goal of this paper is to educate individuals and organizations about the role and risks of derivatives in both debt management and investments. Derivatives can be useful tools whether they are interest rate swaps or components of investments. However, they are products of complex financial engineering and borrowers and investors should fully understand how these financial instruments work before entering into agreements. Investors in complex instruments created from subprime mortgages like collateralized debt obligations (CDOs) and CDOs-squared found that they had some startling surprises. Derivatives

likewise could easily be the next financial bubble to burst. "Education, obviously, is always the key to being a successful investor," says Kevin Quigg, head of the ETF strategy and consulting group of State Street Global Advisors. "Investors need to ask questions and read carefully about the exact structure of any prospective exchange-traded product purchase." (Shari, 2011)

A limitation that borrowers and investors will face when they do attempt to educate themselves is the transparency of the products themselves. When looking at an investment, it is difficult, if not impossible, to tell what the collateral is and if a product is collateralized at all due to abbreviated disclosures for ETFs. The provider of swaps, the counterparty, to a fund is important information that cannot be easily obtained from reading a prospectus and even then how does a manager evaluate the strength of a given counterparty. One would have assumed that a 160-year-old firm like Lehman Brothers would be a safe counterparty. It will be interesting to see if the SEC and regulators do require more transparency in the future and what the market implications will be.

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BIOGRAPHY

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DEMOGRAPHIC PROFILE OF ADVENTURE TOURISTS IN PRETORIA

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ABSTRACT

It is difficult to examine different motivations and segment differentiations in niche markets such as adventure tourism seeing that it is not a well-defined segment in the discipline of tourism studies. In order to assist adventure tourism companies towards identifying and developing effective marketing strategies to attract or penetrate the adventure niche market, this study aims to contribute towards the current understanding of adventure tourists in Pretoria by compiling a demographic profile of such tourists. Two hundred and fifty adventure tourists participated in this study; however, the sample that realized was 234, providing a 93.6% response rate. The results gained from the self-completing questionnaire indicated that typical adventure tourists in Pretoria are generally Afrikaans speaking individuals born between 1960 and 1981. These individuals are mostly married with no children or have two children who are above the age of twelve years. Adventure tourists in Pretoria tend to be further educated Technicians and Associate Professionals whose gross individual income ranges between R10,001.00 and R29,999.00 per month. This study established that there is a need to further research comprehensive adventure tourist profiles in order to assist adventure tourism companies to promote and sell specific activities and experiences that will meet the specific needs and wants of identified target markets.

JEL: MOO

KEYWORDS: Tourism; Adventure Tourism; Market Segmentation; Demographic Profiles

INTRODUCTION

Tourism is the act of travel for predominantly recreational or leisure purposes and refers to the provision of services in support of this act. Tourists are people who travel to and stay in places outside their usual environment for not more than one consecutive year – for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited (World Tourism Organization [WTO], 1991).

Adventure tourism, according to Andrews (2007:21), is a type of tourism involving exploration or travel to remote, exotic and possibly hostile areas where the tourist should "expect the unexpected". Adventure tourism is rapidly growing in popularity because tourists increasingly look for different kinds of vacations. According to the Adventure Travel and Trade Association (2005) of the United States of America, *adventure tourism* may be any tourist activity that can include two of the following three components: a physical activity, a cultural exchange or interaction, and an engagement with nature. While these characteristics might constitute the motivation for participation in adventure activities for some, it can also be a deterrent for others not to participate in adventure activities.

An exhaustive search of existing literature did not reveal any profiles of adventure tourists – the search only identified general classifications or definitions used to attract all possible adventure tourism groups. Furthermore, Heyniger and Consulting (2008:2) suggest that adventure tourism is not a well-defined segment in the discipline of tourism studies. Therefore, it is difficult to examine the different motivations

and segment differentiations in niche markets such as adventure tourism. As a result, adventure tourism companies need to include target marketing as a core element of strategic marketing management in order to identify the parts of the market it can best serve, rather than trying to compete in an entire mass market. This could assist adventure tourism companies to promote and sell specific activities and experiences that will meet the specific needs and wants of their identified niche target market.

Against this background, the primary objective of this investigation was to develop a demographic profile of adventure tourists in Pretoria with a view to assist adventure tourism companies to promote and sell specific activities and experiences that will meet the specific needs and wants of their identified niche target markets. More specifically, the secondary objectives of this investigation were to explore the notions of market segmentation, market targeting, and market positioning in order to explain how these elements contribute towards profiling consumers; and to identify the demographic descriptors applicable to adventure tourists.

This investigation starts by reviewing the literature applicable to demographic segmentation. Thereafter, the research methodology and data analysis techniques are identified and the results presented. This investigation concludes with a discussion of the results and the managerial implications, research limitations, and recommended directions for future research.

LITERATURE REVIEW

Although tourism, as suggested by Kalbassi (2010:51), is one of the world's largest industries, it is still difficult to define its limits and decide what counts as tourism. As mentioned earlier, many tourism definitions derive within a leisure and recreational context. Therefore, tourism shares strong fundamental characteristics and theoretical foundations with the recreation and leisure field of study. The exact size of the adventure tourism market is still debated because of (1) the lack of a standard adventure tourism definition; (2) the fact that the phenomenon of adventure tourism is both new and complex; (3) the majority of available research on adventure tourism is kept confidential as it is collected for individual companies' marketing purposes; (4) government and industry awareness of adventure tourism is not equally developed worldwide; and (5) the available data on adventure tourism is difficult to use due to a lack of comparability.

Although it is difficult to measure the market, Fluker and Turner (2000:380) explain that the adventure tourism market is a newly emerging, fast-growing sector of tourism. Swarbrooke, Beard, Leckie and Pomfret (2003:55) further concur that although the adventure tourism market appeals to an expanding population who are seeking self-fulfillment and excitement through participating in physically and mentally stimulating activities, the patterns of consumer behavior are in a constant state of flux.

Loverseed (1997:93) suggested in the 1990s already that satisfaction and self-actualization appear to be crucial in understanding tourists' engagement with an activity or a product for a specific purpose to satisfy their specific interest and needs. However, Weber (2001:368-370) recommends that when analyzing the decision-making process, researchers should obtain information regarding tourists' characteristics and their consumer and travel behavior because anticipating and meeting tourists' needs are the key to success.

Adventure tourism research has received relatively little attention in academic literature and the focus of studies in this field tends to be on accidents or injuries. In addition, adventure tourism is mentioned in some texts of ecotourism, outdoor recreation and park management, but not explored in much detail. Authors such as Fennel and Eagles (1990), Fennel (1999), Page and Dowling (2001), as well as Weed (2008) include adventure tourism typologies within their publications. However, it appears only to be Hudson (2003), Swarbrooke et al. (2003), as well as Buckley and Cater (2007) whose publications

specifically focus on the concept of adventure tourism. In addition, research investigations with an adventure tourism focus have been published by Bentley, Page and Laird (2001), Beedie and Hudson (2003), Gyimothy and Mykletun (2004), Cater (2006), as well as Bentley and Page (2008). However, profiling adventure tourists does not form the focus of their research, as this investigation proposes to do.

Adventure tourism companies ought to recognize that they cannot appeal to all consumers in the same way (mass/undifferentiated marketing). Yang, Wall and Smith (2008:753) indicate that "consumers are too numerous, too widely scattered, and too varied in their needs and buying practices". Furthermore, different companies vary widely in terms of their ability to serve different segments of the market. As a result, Kurtz (2008:281) suggests that every company should implement differentiated marketing strategies.

In order to implement an effective target-marketing strategy, companies should follow the three major steps of target marketing. Target marketing, as set out by Kotler (2000:256) coincides with the model of Rudra (2008:48). The *first* step, market segmentation, involves: (1) dividing a market into distinct groups of consumers with different needs, characteristics, or behaviors who might require separate products/services or marketing mixes (segmentation bases), as well as identifying different bases to segment the market, and (2) developing profiles of the resulting market segments. The *second* step, market targeting, involves: (3) developing measures for every market segment's attractiveness and (4) selecting one or more of the market segments to enter. The *third* step, market positioning, involves: (5) developing the competitive positioning for the product/service and (6) developing a detailed marketing mix for every segment.

As developing profiles require the implementation of an identified segmentation basis, the following section will explore demographic segmentation as a sub-section of market segmentation, as well as how these elements contribute to developing a demographic profile of adventure tourists.

Market Segmentation

Markets consist of consumers and consumers, according to Waldfogel (2008:569-570), may differ in their wants, resources, locations, buying attitudes, and buying practices. Ideally, every consumer can be viewed as a potentially separate market because consumers have unique needs and wants (customization). The role of market segmentation, according to Kurtz (2008:281), is to divide the total market into smaller, relatively homogenous groups. This is necessary in today's business world because there are too many variables in consumer needs, preferences and purchasing power to attempt attracting all consumers with a single marketing mix.

This does not necessarily mean that adventure tourism companies should change their products/services in order to meet the needs of different market segments, but it does suggest that adventure tourism companies should attempt to identify the factors that affect consumers' purchase decisions; group consumers according to the presence or absence of these factors; and then adjust their marketing strategies in order to meet the needs of the selected group(s) of consumers. Market segmentation presents numerous advantages and disadvantages to adventure tourism companies. The *advantages* of using market segmentation, according to Musyoka, Mutyauvyu, Kiema, Karanja and Siriba (2007:633) are: easier marketing as it is simpler to address the needs of smaller groups of consumers if they have many characteristics in common; result niches (locating under-served or un-served markets will enable a new company or new product/service to target less contested marketplaces and helps a mature product/service to seek new consumers); and, efficiency (creating a more efficient use of marketing resources by focusing on the segments with the best potential). The *disadvantages* of using market segmentation, according to George (2001:121) are developing separate market products/services are expensive; it may be difficult for

the company to know how accurately or broadly to segment the market; and lastly, there is a tendency to appeal to markets that are not viable.

Taking the above into consideration it can be concluded that market segmentation is the process of breaking a larger target market into smaller groups with specific characteristics. Every group requires different promotional strategies and marketing mixes because every group has different wants and needs. An understanding of a group's characteristics such as personality, social class and lifestyle plays a vital role in developing a successful marketing strategy (Kurtz, 2008:283).

As previously indicated, there are two steps involved in market segmentation, namely: (1) identifying the bases for segmenting various markets; and (2) developing profiles of the resulting market segments. These steps formed the basis of this investigation and will now be further explored.

Bases of Market Segmentation

Companies can identify four different bases for segmenting markets, namely geographical, demographical, psycho graphical and behavioral. However, according to studies by Kotler, Bowen & Makens (2006:263), demographic characteristics should be known to assess the size of the market and to reach it effectively. Therefore, for the purpose of this investigation, the focus will be on exploring the demographical bases to segment a market. Following is a description of six demographic segmentation variables.

(1) *Gender*- Gender is a variable that helps define markets for certain products/services; yet, segmenting by gender can be tricky. Gender segmentation is in some cases obvious, according to Kurtz (2008:287). However, adventure tourism companies may have to segment their markets differently if a 'typical' male or female product/service is not clearly identifiable. Kotler, Bowen and Makens (2006:269) suggest that companies' marketing strategies should rather be aimed at consumer interests rather than gender as gender marketing is more effective when combined with lifestyle and/or demographics.

(2) *Age*- Age is another variable that adventure tourism companies could use to segment their markets. However, as with gender, age distinctions have become blurred as consumers' roles and needs change, as age distribution shifts, and as studied changes take place in every group. Adventure tourism companies can benefit from taking into consideration the sociological concept called the cohort effect. Kurtz (2008:288) describes this concept as "... the tendency of members of a generation to be influenced and bound together by significant events occurring during their key formative years."

The cohort effect helps to define the core values of the age group that eventually shape consumer preferences and behavior. In order for adventure tourism companies to be effective, they need to understand some basic characteristics of the cyber generation, generation Y, generation X, baby boomers and the silent generation.

(3) *Ethnic Group*- Companies are increasingly segmenting the market according to ethnic groups with a view to increase their market share. Companies then tend to target the largest and fastest growing ethnic groups (Kurtz, 2008:290-293), as well as ethnic groups with the most disposable income. The focus then is to inform and attract these groups as spending by these groups are rising at a faster pace than what is the case for general households.

(4) *Family Life Cycle Stages*- As people move from one life-cycle stage to another, they become potential consumers of different types of goods and services (Frash, Antun & Hodges, 2008:382). Therefore, adventure tourism companies should consider whether a consumer is a young single person, a young

couple, a full nester, an empty nester, a single parent, a blended couple or an older single person when developing their marketing approaches.

(5) *Household Type*-The average household size in South Africa, as indicated by the Health Systems Trust (2007), has decreased from 4.5 in 1995 to 3.9 in 2007. Hayami and Okada (2005:201) explain that the trend towards smaller households could include lower fertility rates, young people's tendency to postpone marriage, the frequency of divorce, and the ability and desire of many people to live alone. Today's households represent a wide range of diversity.

Households, according to Kurtz (2008:294), could include a household with a married couple and their children; a household that is blended through divorce, or the loss of a spouse and remarriage; a household with a single parent, same-sex parents or grandparents; couples without children; groups of friends; and single-person households. It is important for adventure tourism companies to identify household trends, should these be applicable, in order to modify their marketing approach, so that they will be able to meet the needs of different groups.

(6) *Income and Expenditure Rates*-Companies often target geographic areas known for the high incomes of their residents, and/or they might consider age or household types when determining potential buying power. In order to identify how expenditure patterns vary with income, adventure tourism companies could utilize Engel's Law. Ernst Engel, a German statistician, published what is known as the *Engel Curve*, or *Engel's Law*. This law states that the higher a family's income the smaller the proportion of it is spent on food; the percentage spent on housing, household operations and clothing remain constant; and the percentage spent on other items (education and recreation) increases (Engel, 2009). Engel's conclusion was based on a budget study of 153 Belgian families and was later verified by a number of other statistical inquiries into consumer behavior. It is evident that adventure tourism companies could utilize Engel's Law when segmenting their markets according to income and expenditure rates.

To conclude the discussion on demographic segmentation, it is important to keep in mind that demographic segmentation as a basis can be helpful, but it can also lead to stereotyping, as indicated by Kurtz (2008:287). Furthermore, it can alienate a potential market or cause adventure tourism companies to miss a potential market altogether. The idea is to use demographic segmentation as a starting point and not as an only alternative. The discussion on market segmentation addressed the first step of the market segmentation process; the next section will elaborate on how to develop profiles of the resulting market segments.

Profiles of Resulting Market Segments

Profiling is the second and last step of the market segmentation process and this concludes the first step of the target marketing process. Before a marketing program aimed at a specific market segment (differentiated marketing) can be developed, adventure tourism companies should understand the typical consumer in that market. According to Czinkota et al. (2000:225), a detailed picture of a market segment is called a *profile.* A profile, according to Hanson, Rauniyar and Herrmann (1994:303), should paint a clear picture of the typical consumer by using applicable segmentation variables. For the purpose of this investigation, the demographic variables were identified and discussed above. Although a profile is a generalized average of the typical consumer in a segment (Mostafa, 2009:11034), profiling is very important because the usefulness of market segmentation is precipitated upon accurate profiling. Relatively low accuracy in forecasting segment membership will result in ineffective marketing programs and may have a potential negative impact due to targeting unintended segment members.

As the primary research purpose of this investigation was to develop a demographic profile of adventure tourists, step one and two of the market segmentation (step one of the target marketing process) forms the

basis of this investigation. The resulting information gained through implementing this process will address the research problem of this investigation. In order to identify how this investigation's resulting information can be utilized by adventure tourism companies, companies should implement market targeting and market positioning strategies. Detailed discussions of these strategies fall outside the scope of this investigation but could form part of future research.

METHODOLOGY

This paper is based on applied research in order to attain the stated objectives and find a solution to the research problem. This paper is based on the descriptive research approach because of the specific information requirements. A quantitative methodology is used because the methodology of this paper is grounded in the positivist social sciences paradigm.

The target population consisted of all adventure tourists within Pretoria, and the sample consisted of adventure tourists using the products/services of adventure tourism companies within Pretoria. Non-probability sampling in the form of quota and convenience sampling was used to select the sample members. Quota sampling with predetermined parameters was used to ensure data comparability. The sample consisted of 250 adventure tourists of whom 50.0% were male and 50.0% female. However, because of incomplete questionnaires that could affect the outcome of this paper, the sample that actually realized was 234, providing a 93.6% response rate. Lastly, convenience sampling was applied because the selection of sample members was based on their proximity to the researcher and the ease with which participants could be accessed.

A list of adventure tourism companies presenting adventure tourism activities at their premises within Pretoria was compiled with the assistance of the Gauteng Tourism Authority (GTA), the GSA (industry magazine), the Indaba traders' catalogue, the Internet and personal interviews. The list consisted of 35 adventure tourism companies; however, due to a lack of cooperation by some of these companies, the final list comprised of 20 adventure tourism companies. The sample size was divided into the number of adventure tourism companies to ensure that an equal number of responses were obtained when these companies were visited. The aim was to include as many as possible adventure tourists participating at adventure tourism companies, in order to obtain a representative sample.

Prior to distributing the questionnaires, 30 first and second year adventure tourism students at the Tshwane University of Technology completed a pilot questionnaire in order to determine the analytical capability and the effectiveness of the questionnaire as a research instrument. Based on the feedback received from the pilot paper, adjustments were made to the questionnaire before it was distributed. Self-completing questionnaires were distributed among adventure tourists using the products/services of adventure tourism companies in Pretoria. To ensure that these tourists have participated in at least one adventure activity, the researcher approached them to participate in the study after they have completed their activities. This approach was necessary because the purpose of this paper was to profile *adventure* tourists and not tourists in general. The researcher administered the pilot and fieldwork.

The questionnaire was specifically designed for the purpose of this paper. Questionnaires used in previous profiling studies were consulted as a guideline during the construction of this questionnaire, such as (1) the questionnaire used by Tassiopoulos and Haydam (2008) for profiling golf tourists attending an international golf event in South Africa, and (2) the questionnaire used by Muthaya (2009) for segmenting the international market. Furthermore, the literature review served as a guideline to ensure that all the demographic variables were included in order to address the objective of this paper. The questionnaire followed a positivistic approach and consisted of closed-ended, dichotomous, multi-choice and two ranking scale questions that required the participants to rank their personality, social class and lifestyle.

The guidelines for constructing questions (Babbie, 2009:262-270) and the Code of Ethics (Jennings, 2001:98) were followed to aid the success of data collection and analysis.

Reliability is a complex issue in the social sciences because the fact that human nature changes over time and space means that consistency with previous research results is by no means a guarantee of reliability. The reliability of the questions in the questionnaire posted to the sample was tested by using the Cronbach Alpha Coefficient. According to the Cronbach Alpha Coefficients for all the items tested in the questionnaire, 0.7388 indicated raw variables and 0.7302 indicated standardized variables, which were more than the acceptable level of 0.70. Therefore, the questionnaire used for the purpose of this paper proves to be reliable and consistent.

Data validation is the process of ensuring that a program operates on clean, correct and useful data. Each variable was tested to fall within these boundaries. These boundaries were pre-programmed into the Microsoft Access database on which the pre-coded data was captured. Thereafter, the data was imported into the SAS (Statistical Analysis Software) format through the SAS Access module to perform a univariate and bivariate analysis. Data accuracy and correctness were ensured by capturing the data twice and comparing the two data sets for errors. Errors could be in the form of an invalid code or an unexpected missing value. By referencing back to the original questionnaires, all errors were traced in the data file and corrected. However, construct validation can only be taken to the point where the questionnaire measures what it is suppose to measure. As the questionnaire was suppose to develop a demographic profile of adventure tourists, construct validity was assured during the planning and development stage of the questionnaire. The final data outputs were validated and checked by the research statistician.

RESULTS

Demographic descriptors are those innate economic, geographical and social attributes that constitute an individual and describe the location of that individual in his or her social environment. Demographic characteristics provide the impetus for both tangible and intangible variations among the ways consumers think, feel and act. This study used pre-determined demographic descriptors in order to provide an overall picture of the respondents' gender, age, ethnic group, family life cycle stage, household type as well as their income and expenditure rates. The primary objective of this investigation was to develop a demographic profile of adventure tourists in Pretoria. In order to achieve this objective the demographic descriptors applicable to adventure tourists within this area were identified. A univariate and bivariate analysis was performed on all variables; displaying means, standard deviations, frequencies, percentages, cumulative frequencies and cumulative percentages. The univariate and bivariate statistics for the demographic variables enabled the development of the demographic profile of adventure tourists.

Gender- An equal number of respondents are male (49.4%) and female (49.4%), whereas 1.2% of the respondents did not stipulate their gender. This is an important factor to mention as it facilitated the comparison of adventure tourists' profiles.

Age-The age descriptors were divided into the sociological concept of the cohort effect. 32.1% of the respondents are part of the generation Y age group (born 1982-2001), 57.3% are from the generation X age group (born 1960-1981), 9.8% are from the baby boomers age group (born 1943-1960), and 0.4% are from the silent generation age group (born 1925-1942).

Ethnic Group- More than half of the respondents (51.7%) belong to the Afrikaans-speaking (linguistic) ethnic group, 23.9% of the respondents are from the English-speaking (linguistic) ethnic group and 24.4% of the respondents are from other ethnic groups. Not all the ethnic groups are specified because many companies tend to target the largest and/or fastest growing ethnic groups (Kurtz, 2008:290-293).

Family Life Cycle Stage- The majority of the respondents comprise of families (41.9%) and pre-families (26.9%) as they are married (49.6%) or single (30.8%) with no children (38.0%) or two children (35.0%) older than twelve years of old (64.1%). However, 17.1% of the respondents have one child that is under the age of twelve, 14.5% have two children under the age of twelve, 3.4% have three children under the age of twelve and 0.4% has four or more children under the age of twelve. This is an important factor to identify seeing that most adventure tourism companies provide special activities and discounted prices for children under the age of twelve.

Household Type-Adventure tourism companies should identify household trends in order to modify their marketing approach, so that they will be able to meet the needs of different groups. It is important to note that there are various household types within Pretoria, for example foster parents/children, but for the purposes of this study, the ten most common household types have been used. A large percentage of the respondents (24.4%) are married with children (the children would select the same option if their parents were married), and this exceeds single person households with only 9.0%.

Furthermore, a large number of households (25.6%) consist of two people and households consisting of four members (25.2%) closely follow this segment. This coincides with the results obtained in the family life cycle stage.

Income and Expenditure Rates-In order to identify how expenditure patterns vary in terms of income, adventure tourism companies should consider the level of education, current occupation, individual income and the number of income earners within a household of their target markets. For the purpose of this study, the respondents' responses to their education level are divided into the three levels of education used in South Africa. The *general* level of education comprises an NQF (National Qualification Forum) Level 1 (Grade R to Grade 9 school grades). The *further* level of education comprises the NQF Level 2 (Grade 10), NQF Level 3 (Grade 11) and NQF Level 4 (Grade 12). The *higher* level of education comprises the NQF Level 5 (Certificate, Higher certificate and First diploma), NQF Level 6 (Bachelor's degree, Professional first-degree post-graduate, General first degree), NQF Level 7 (Postgraduate diploma, Honors degree, Master's degree), and NQF Level 8 (Doctoral degree).

Based on the results, the respondents are normally *further* (67.1%) or *higher* (30.8%) educated Technicians and Associate Professionals (27.8%) or Legislators, Senior Officials and Managers (24.4%) whose gross individual income ranges between R10,001.00 and R19,999.00 per month (26.5%) or R20,000.00 and R29,999.00 per month (20.9%). Their households generally consist of one (32.5%) or two (58.6%) income earners per household.

To conclude, numerous adventure tourism companies should view marketing as a major tool to reach their target markets who in return needs to understand the nature and benefits of the adventure tourism companies' products and/or services. Adventure tourism companies should also use different marketing methods and techniques to meet the varying levels of understanding tourists. Moreover, they should further consistently analyze, plan, develop, deliver, evaluate and update their marketing campaigns to meet their marketing objectives whilst meeting the demand of their target markets.

DISCUSSION

The primary objective of this paper was to develop a demographic profile of adventure tourists in Pretoria; more specifically, the secondary objectives of this paper were to explore the notions of market segmentation, market targeting, and market positioning in order to explain how these elements contribute towards profiling consumers; and to identify the demographic descriptors applicable to adventure tourists.

Summary of Results and Managerial Implications

Technical definitions of tourism are commonly used by companies seeking to define their target markets. Although, the WTO definitions are applied by the majority of users to define tourism-related terms, Page and Connell (2006:12) indicated that there are different interpretations between countries where tourism statistics are gathered. They suggest that international comparisons can only be made if statistics are equally defined, collected and analyzed. This exemplifies a need for a tourism classification that can evolve and accommodate more complex forms of tourism, such as adventure tourism. According to Page and Connell (2006:16), a robust system is required to classify and measure tourism-related terms.

The importance of implementing target-marketing strategies when developing consumer profiles were identified. This study's empirical research identified that adventure tourism companies cannot appeal to all consumers in the market and they cannot successfully approach all consumers in the same way. It is recommended that adventure tourism companies should identify sections of the market they can serve best – niche target markets. This approach contributes towards identifying market opportunities and developing products/services that are more appealing.

The first step of target marketing, namely market segmentation is the act of dividing the market into distinct consumer groups who might merit separate products/services or marketing mixes. Markets can be segmented using different bases and adventure tourism companies should try several approaches, and even combinations of these, in order to determine which will yield the best opportunities. This addressed the second secondary objective, seeing that the development of demographic profiles require the implementation of the mentioned demographic segmentation bases, namely gender, age, ethnic group, family life cycle stage, household type, as well as their income and expenditure rates. In order for adventure tourism companies to utilize the profile, the last two steps of the target marketing strategy (market targeting and positioning) should also be implemented.

The steps of this process are reliant on the success of each other, in other words, every step needs to be implemented effectively in order to proceed and successfully complete the systematic process. Therefore, adventure tourism companies should consistently analyze, plan, develop, deliver, evaluate and update their marketing campaigns to meet their marketing objectives whilst meeting the demands and/or preferences of their target markets.

Limitations and Directions for Future Research

The structural limitations of this investigation include the limited available literature associated with adventure tourism. Adventure tourism has been industry-driven; therefore, the importance of theoretical constructs might not have been fully recognized as greater attention was paid to empirical applications. Adventure tourism studies are usually performed from a social science perspective, therefore exchanging research terms or application practices may violate assumptions across these two fields.

In addition, regarding the research methodology, the sample might raise the following concerns in terms of representativeness and the fact that the results of this investigation cannot be generalized. *Firstly*, this investigation could not be extended to include more or all provinces in South Africa, nor a bigger sample. *Secondly*, due to a lack of cooperation from some adventure tourism companies, all the adventure tourism companies based in Pretoria could not be included in this study. *Lastly*, non-probability sampling was used. Nevertheless, the target population of this investigation was not the public in Pretoria; rather, it comprised adventure tourists utilizing the products/services of adventure tourism companies within Pretoria.

Future research could include more extensive research to gain further insight into profiling adventure tourists; more geographic, demographic, behavioral and psychographic components (such as needs, motivations or benefits) should be considered. Further research is needed in terms of adventure tourism marketing because the full effect of this type of marketing will be beneficial to the entire adventure tourism industry.

CONCLUSION

An adventure tourism company's success is based on satisfying the specific needs and wants of a selected target market; however, it is difficult to target selected market segments as individuals' motives, behaviors, and experiences differ and change over time. The objective of this study was to develop a demographic profile of adventure tourists in Pretoria, South Africa. This profile included the gender, age, ethnic group, family life cycle stage, household type as well as income and expenditure rates of the respondents. The sample size was two hundred and fifty adventure tourists and the realized sample was 234, providing a 93.6% response rate. The research instrument used was a self-completing questionnaire.

The results indicated that the majority of the respondents are Afrikaans speaking individuals born between 1960 and 1981. These individuals are mostly married with no children or have two children who are above the age of twelve years. Adventure tourists in Pretoria tend to be *further* educated Technicians and Associate Professionals whose gross individual income ranges between R10,001.00 and R29,999.00 per month. This study presented a challenging but worthy task, particularly when little systematic research has previously been reported on the subject to date. Therefore, future research could include more comprehensive adventure tourist profiles that is equally accepted and interpreted. These results will help adventure tourism companies to be knowledgeable about adventure tourists and to conduct effective target marketing.

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ASSESSING INDIVIDUAL PERFORMANCE ON INFORMATION TECHNOLOGY ADOPTION: A NEW MODEL

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ABSTRACT

This paper aims to propose a new model in assessing individual performance on information technology adoption. The new model to assess individual performance was derived from two different theories: decomposed theory of planned behavior and task-technology fit theory. Although many researchers have tried to expand these theories, some of their efforts might lack of theoretical assumptions. To overcome this problem and enhance the coherence of the integration, I used a theory from social science literature, particularly from Blumer's theory of symbolic interactionism. This theory indicates, as Blumer himself noted, "The symbolic interactionist approach rests upon the premise that human action takes place always in a situation that confronts the actor and that the actor acts on the basis on defining this situation that confronts him." Symbolic interactionism may have theoretical strengths on the basis that reality is understood as a social production; interaction is symbolic; humans have the capacity to engage in self-reflexive behavior; interactionism regards society as ongoing process; and social and physical environments set limits on behavior, but do not determine behavior. In this essence, normally, humans use technologies not for the sake of technologies but for supporting their primary tasks, being job related or entertainment oriented. Thus, there is an interaction between human and his/her technology. In this paper, I suggest some propositions that can be tested later using experimental research design or longitudinal survey research.

JEL: M15

KEYWORDS: Individual Performance, Human-technology Interaction, Decomposed Theory of Planned Behavior, Task-technology Fit Theory

INTRODUCTION

The interaction between information technology and individual performance has been an ongoing concern in Information System (IS) research. Since information technology adoption is related with human, researchers use psychology theory to predict human behavior on that regard: Theory of Reasoned Action/TRA (Fishbein and Ajzen 1975), Theory of Planned Behavior/TPB (Ajzen 1985, 1991), Technology Acceptance Model/TAM (Davis, 1989), and recently, Decomposed Theory of Planned Behavior/DTPB (Taylor and Todd 1995, Hsu and Chiu 2004, Koeder et al. 2011). As to predict individual performance, IS researcher uses the concept of "fit" to investigate the interaction of task and system characteristics and their effects on information system usage and task performance: Task-Technology-Fit/TTF theory (Goodhue and Thompson 1995, Dishaw et al. 2002, Klopping and McKinney 2004, McGill and Hobbs 2006, Usoro et al. 2010).

This paper proposes a new model of the linkage between information technology adoption and individual performance by drawing on insight from these two streams of research (user behavior as predictors of system usage and task-technology-fit as predictors of performance). The core content of this new model, called Human-Task-Technology Interaction and Performance Model (HTTIP), is the deposition that for information technology has a positive impact on individual performance, not only the technology must be accepted and used, but also the technology must be a good fit with the task it supports.

To develop a new model, I focus on the DTBP (Taylor and Todd 1995) and TTF (Goodhue and Thompson 1995). The DTBP has advantages over other acceptance models in that it identifies specific prominent beliefs that may influence information technology usage. The model has better predictive power compared to the initial TPB and TAM. Likewise, the TTF theory defines a model that has been used to explain information system utilization. Goodhue and Thompson's (1995) research describes the relationship between the task requirements of the user and the functionality of the system and their impact on utilization. Performance impacts will occur when the technology meets the users' needs and provides features that support the fit of the requirements of the task. In their research, Goodhue and Thompson suggest that utilization ideally be measured as the proportion of times users choose to utilize or use system. Hence, to enhance the coherence of integration of these two models (DTPB and TTF), I employ a theory from social science literature, particularly Blumer's theory of symbolic interactionism. The paper will proceed as follows: I will provide literature review that describes theory of information technology acceptance; task technology fit theory, and theory of symbolic interactionism. Based upon these theories I will propose a new model of information technology acceptance and performance (human-task-technology-interaction and performance model) and finally the paper ends with a conclusion.

LITERATURE REVIEW

Two-board stream of research on information technology adoption have dominated the investigation of the linkage between information system and individual performance. First are researchers that based their research on theory of behavior (Fishbein and Ajzen 1975, Ajzen 1985, 1991, Davis 1989, 1993, Taylor and Todd 1995, Hsu and Chiu 2004, Muthusamy et al. 2010, Koeder et al. 2011). Second that based on the importance of fit between technology and task, that individual must perform (Venkatraman 1989, Goodhue and Thompson 1995, Dishaw et al. 2002, Klopping and McKinney 2004, McGill and Hobbs 2006, Usoro et al. 2010). In this literature review section, I investigate various theories of information technology acceptance, task-technology-fit theory, and theory of symbolic interactionism (Blumer 1969, Dillon and Morris 1996, Tan et al., 2003, Zang and Li 2004) to develop a new model to assess individual performance on information technology adoption.

Underpinning Theory of Acceptance

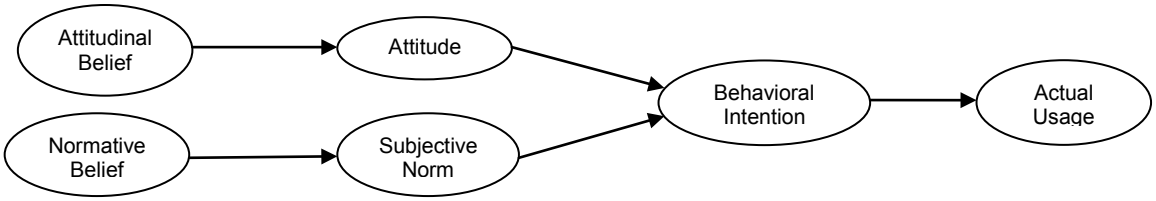
Researchers and practitioners have a strong interest in understanding why human accept information technology so that better methods for designing, evaluating, and predicting how users will respond to new technology can be constructed. Lack of user acceptance is a significant obstacle to the success of new IS. Some facts indicate that users are often unwilling to use information system when if it used, it will troublesome or the outcome will not reached his/her expectation. Therefore, user acceptance has viewed as the important factor in determining the success or failure of any information system project (Davis 1993).

Several underpinning theories have been developed to examine and understand the factors effecting acceptance of information technology application in organization. Although each model has a different insight towards the acceptance process and each theory has different construct, there are some similarities in them. For example, while TRA includes usage behavior, behavior intention, attitude, and subjective norms, TPB uses the same construct as TRA with additional construct of perceived behavior control. Meanwhile, TAM includes different antecedent of behavior intention, such as external variables, perceived ease of use, perceived usefulness, and attitude. DTPB as an extension of TPB, includes some construct from Diffusion of Innovative theory (DOI): usage behavior, behavior intention, attitude, subjective norms, perceived behavior control, perceived ease of use, perceived usefulness, attitude,

compatibility, peers influence, superior influence, self-efficacy, resource facilitating conditions, and technology facilitating conditions.

Theory of Reasoned Action : TRA was proposed by Fishbein and Ajzen (1975) and was a well-established model in social psychology research that can explain nearly any human behavior. This theory suggests that person's performance of specific behavior (e.g. use of technology) is determined by his/her intention to perform the behavior and behavioral intention is jointly influenced by his/her attitude and subjective norm with relative weights that estimated by regression (Figure 1). Attitude is equated by the salient belief about the consequences of performing the behavior and the affective evaluation of those consequences. Beliefs are defined by the person's subjective view that performing a given behavior will result to a given consequences. Subjective norms are determined by normative beliefs and motivation to comply with perceived norms.

Figure 1: Theory of Reasoned Action (Fishbein and Ajzen 1975)



This figure shows the construct of TRA and explains that actual usage influenced by behavioral intention and behavioral intention both influenced by attitude and subjective norm, the antecedent of attitude is attitudinal belief, while subjective norm is normative belief.

A meta-analysis of TRA, performed by Sheppard et al. (1988), showed that TRA carried out well in the predictions of human behavior and intention towards information technology. TRA also offered strong predictive utility in a situations such as non-voluntary behavior and even when used to investigate intentions even before the individual had all the information necessary to form a completely confident intention (Dillon and Morris 1996).

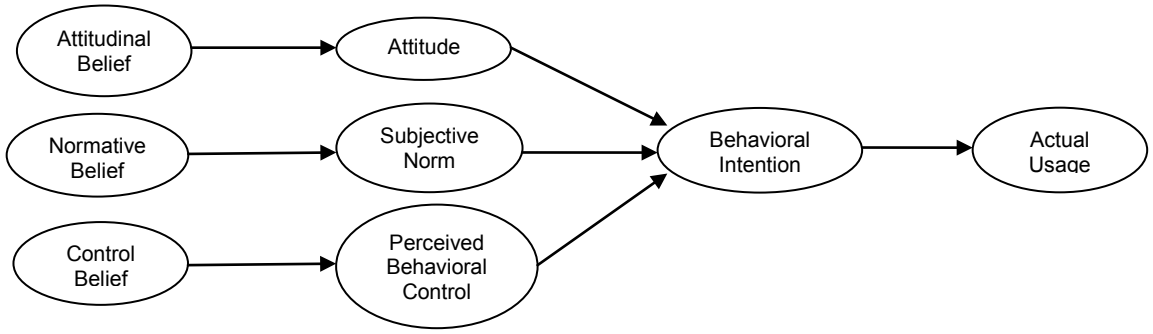
Besides that, Sheppard et al. (1988) pointed out three problems of TRA. First, one must differentiate between behavior and intention. This could be a problem because avidity factors in addition to one, that is intention, determined how the behavior is performed. Second, there is no provision in the model for considering whether the probability of failing to perform is due to ones behavior or due to ones intention. Third, irrational decision, habitual actions or any behavior that is not consciously considered cannot be explained.

Theory of Planned Behavior: TPB was developed from the TRA by adding an additional construct, namely perceived behavioral control (PBC) to consider situations where an individual control or lack of the necessary resources to perform the target behavior (Ajzen 1991) as seen in Figure 2. PBC is determined by the availability of skills, resources, and opportunities. Since TPB consider the behavioral control, TPB assumed to be more general than the TRA.

Taylor and Todd (1995) pointed out that TPB is not without criticism. The relationship between the belief structure and the determinant of intention: attitude, subjective norm, and perceived behavior control are not essentially well understood. Although TPB introduced one variable, perceived behavior control, as an answer to all uncontrollable elements of behavior, the beliefs set and construct may be difficult to employ the TPB and may not be consistently related to attitude, subjective norms, and perceived behavioral

control. Furthermore, Taylor and Todd (1995) suggest that TPB model still requires individuals to be motivated to perform certain behavior.

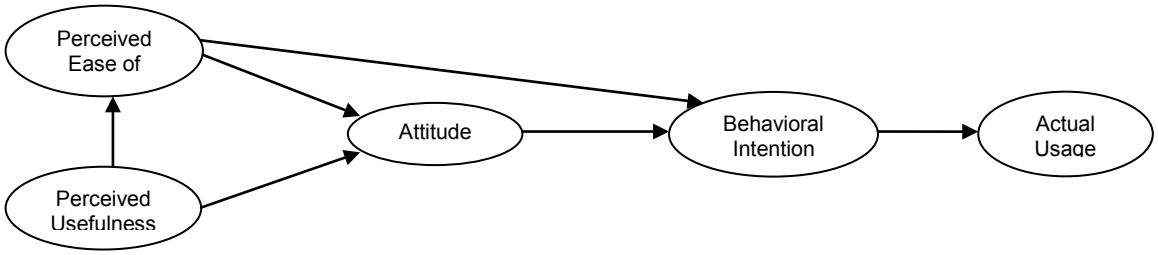
Figure 2: Theory of Planned Behavior (Ajzen, 1991)



This figure shows the construct of TPB and explains that actual usage influenced by behavioral intention and behavioral intention not only influenced by both attitude and subjective norm, but also influenced by perceived behavioral control, and the antecedent each constructs are attitudinal belief, normative belief, and control belief, respectively.

Technology Acceptance Model: TAM (Davis 1989) shared with the TRA on the general explanation that links attitude to behavioral intention but differ in drafting TAM attitude and behavioral intention. According to TAM, behavioral intention is jointly determined by attitude and perceived usefulness and together with the perceived ease of use explains the attitude. Broadly, the TAM indicates the general determinants of individual acceptance of technology, can therefore been used, and has been applied to explain and predict individual behavior across a broad range of technologies, end user computing and user groups (Davis et al. 1989). Because of its focus on technology, TAM appropriately use to observe the technology acceptance by individual professionals, but may still require theories or other models, because of its general and simple model.

Figure 3: Theory of Acceptance Model (TAM)



This figure shows the construct of TAM and explains that actual usage influenced by behavioral intention and behavioral intention is jointly influenced by attitude and perceived ease of use, perceived ease of use and perceived usefulness reflect the beliefs about the value and user's friendliness of information system, respectively.

Some studies indicate that TAM represents a parsimonious model because many researchers have proved it in a different context and diverse technologies, such as in education (Teo et al. 2011, Sheikhshoaei and Oloumi 2011), public service organization (Bouwman and Winjgaert 2009), and internet banking (Suh and Han 2002). Some researchers have also integrates TAM with TTF to obtain a more comprehensive explanation of human behavior associated with the use of information systems (Dishaw et al. 2002, Klopping and McKinney 2004, Usoro et al. 2010, Schrier et al. 2010). Although there have been considerable amount of studies to support TAM model, TAM still need to be investigated for its inconsistent pattern; in some studies the relations were statistically significant, while other studies showed

the opposite. Legris et al. (2003) found that perceived usefulness and perceived ease of use are not the only predictors of technology acceptance and lack of many significant factors that influence adoption. TAM provides only limited guidance on technology usage (Lin 2007) and substantially ignores external and situational influences particular to a given circumstance, such as mandatory or non-mandatory (voluntary) usage (Taylor and Todd 1995).

Decomposed Theory of Planned Behavior: DTBP is an extension of TPB, was proposed by Taylor and Todd (1995) to overcome some of the limitation of TPB. Taylor and Todd (1995) extended TPB by decomposing the attitudinal belief, normative belief, and control belief into several dimensional constructs to provide higher descriptive power and a more accurate understanding of the antecedents of behavior (Figure 4a). They claimed that DTBP provides some advantages: first, by decomposing belief, the relationship between belief and the antecedents of intention should become clearer and more readily understood. Second, decomposition can provide a stable set of beliefs, which can be applied across a variety of settings, and third, by focusing on specific beliefs, DTPB more managerially relevant. Because of the larger number of factors that may influence adoption and usage, DTPB should provide a more complete understanding of IT usage.

Several researchers have examined the validity of DTPB in understanding behavioral intentions (Taylor and Todd 1995, Hsu and Chiu 2004, Koeder et al. 2011). Hsu and Chiu (2004) studied electronic service continuance using DTPB. They indicated that even though DTPB provides better diagnostic value than original TPB model, it is still more complex because it introduced numbers of factors that may influence usage. Koeder et al. (2011) developed their model to identify the factors that encourage consumer to purchase e-book reader in Japan, with the focus on normative factors. They found that attitude towards connected e-book readers were the most important factor contributing to purchase behavior. Koeder et al. (2011) study differed from Taylor and Todd (1995) and Hsu and Chiu (2004) because they developed new constructs in decomposing attitude with relevance advantage and decomposing subjective norm with normative influences.

Task-Technology Fit Theory

TTF theory is seen as an important development in information system theory. TTF theory assumed that information technology is more likely to have a positive effect on individual performance and be used if the capabilities of information technology match the task that the user must performed (Goodhue and Thompson 1995), see in Figure 4b. To explain the linkage between information technology utilization and individual performance, they developed a conceptual model of technology-to-performance chain. This conceptual framework was based on two separate research streams: first, the utilization of information technology with its antecedent of attitude and behavior, and second, the "fit focus" evident in research investigating the performance of individual information technology user.

Venkatraman (1989) has discussed the concept of "fit" assessment in strategy research comprehensively with six alternative perspectives and approach of fit. 1) Fit as moderation perspective; effect of fit as a moderating variable of an independent variable (predictor variable) on dependent variable (criterion variable). 2) Fit as mediation perspective; an existence of intervening (indirect) effects between an antecedent variable and its consequent (criterion) variable. 3) Fit as matching perspective; fit is a theoretically defined match between two related variable. 4) Fit as gestalts; gestalts could be defined as the degree of internal coherence among a set of theoretical attributes (fit as on the identification of different group). 5) Fit as profile deviation; the degree of adherence to a specified profile. 6) Fit as co-variation; a pattern of co-variation or internal consistency among a set of theoretically related variables.

The first two perspectives are more commonly used than the remaining four perspectives (McGill and Hobbs 2006, Teo and Men 2008). Goodhue and Thompson (1995) use the concept of fit as moderating variable, as they proposed: "information system (systems, policies, staff of IS, etc) have a positive impact on performance only when there is a correspondence between their functionality and the task requirements of users." Their study found supportive evidence of TTF as a function of system characteristics and task characteristic, and strong evidence of performance in which TTF and utilization must be included.

Even if TTF has some supporting evidences, some researchers have extended TTF with TAM in varying areas; conceptualization perspective (Dishaw et al. 2002), consumer of e-commerce (Klopping and McKinney 2004), education (Strong et al. 2006), e-Tourism (Usoro et al. 2010), hotel industry (Schrier et al. 2010). They done that to obtain a more comprehensive explanation of human behavior associated with the use of information systems. This new model of individual performance is trying to integrate TTF with DTPB, because even though TAM has a robust model, but TAM is a simple model, while DTPB assumed to provide a complete and more understanding of IT usage. To enhance the coherence of the two models, I use the sociology theory of symbolic interactionism.

Sociology Theory of Symbolic Interactionism

Social theory has a substantial part to play in the development of the discipline of IS, particularly in helping to understand and interact with the societal, organizational and personal contexts without which the technology is meaningless. Blumer has made a substantial contribution to that theory, and his theory of symbolic interactionism has been taken up by a number of IS researchers (Tan et al., 2003).

Blumer (1969) invented the term symbolic interactionism. He sees human action toward social objects as individual terms in describing the object, rather than the characteristics of the object. Blumer divided symbolic interaction into three premises of: a) People behave according to their understanding of objects and events that happen to them; b) An understanding of the individual objects and events rooted in the individual's interactions with others; and c) Understanding more about interpretation than just a mere literal sense that has been standardized.

He defined interpretation in two ways, first is the identification of the actor on an object in a situation that has meaning. The second is the internal communication within the actor's self and decide which objects that have meaning to the situation. Blumer (1969) identified interactions as an interpretation of language and symbolic gestures, and the determination of the understanding or the meaning of the actions performed by others. Humans should be able to understand one another, because social life is a "flow and process" of negotiation. Reasonable for individuals to try to adjust their actions and behaviors with those in which the individual interacts.

Symbolic interactionism theory refers to the character that goes between people. Actor does not merely react to other actions, but he interprets and defines those actions. Human interaction is bridged by the use of symbols to find a meaning. Actor will select, examine, think, organize and transform meaning in relation to the circumstances in which and toward which his actions. Blumer (1969) says that an environment of potential objects does not surround the individual, but he is the one who formed objects. Individuals designing different objects, giving meaning, assessing compliance with the act, and making decisions based on those assessments. Thus, humans are actors who are aware and reflective, which unites the objects known through what is Blumer referred to as self-indication. Self-indication is the ongoing process of communication where individual know something, evaluate it, give it a meaning, and decided to act on that meaning. Human excellence is if he understood where he was going, what is his obstacles, and what would he earn.

Thus, this theory indicates, "the symbolic interactionist approach rests upon the premise that human action takes place always in a situation that confronts the actor and that the actor acts on the basis on defining this situation that confronts him." Symbolic interactionism may have theoretical strengths on the basis that reality is understood as a social production; interaction is symbolic; humans have the capacity to engage in self-reflexive behavior; interactionism regards society as ongoing process; and social and physical environments set limits on behavior, but do not determine behavior (Tan et al. 2003). In this essence, normally, humans use technologies not for the sake of technologies but for supporting their primary tasks, being job related or entertainment oriented. Thus, there is an interaction between human and his/her task-technology.

Dillon and Morris (1996) pointed out that interaction between human-technology has been addressed by human-computer interaction (HCI) researches. They explained that HCI research has moved from its original concern with hardware ergonomics and screen design to user issues of interest. They also indicated that even if HCI is not equivalent with the concept of acceptance, most HCI researchers assume that the more usable a technology, the greater it chances in proving the acceptable to users. Zang and Li (2004), in their assessment of HCI research in management information system (MIS), casted light upon the research studies that HCI concerned with the ways human interact with information, technologies, and task, especially in business, managerial, organizational, and cultural contexts.

They synthesized a framework indicating a board HCI issues and concerns. They concluded that the interaction of human and technology alone is still incomplete, since nothing happens in a vacuum. The interaction experience is relevant and important only when humans use technologies to support their primary tasks within certain contexts, being organizational, social or societal.

A NEW MODEL: HUMAN-TASK-TECHNOLOGY INTERACTION AND PERFORMANCE

The new model is an integration of DTPB and TTF. I selected DTPB in this new model because it provides fuller understanding of the determinant of behavioral intentions (Taylor and Todd 1995, Lin 2007). Both researchers compared three theories and model of usage behavior: TAM, TPB, and DTPB. They examined the trade-off between parsimony and understanding associated with decomposition and showed that even if DTPB is more complex than the pure TPB because of its additional construct, by decomposing the belief structure of TPB increases the explanatory power and a better, more precise understanding of the model for behavioral intentions. Particularly they emphasized that the unidimensional belief constructs of DTPB provides better understanding of behavioral antecedents (figure 4a). Thus, I selected DTPB for its capability to understand human behavior and a good predictor for system usage.

Likewise, I chose TTF because of its theoretical assumption that information technology is more likely to have a positive effect on individual performance and be used if the capabilities of information technology match the task that the user must perform (Goodhue and Thompson 1995) as seen in Figure 4b.

Symbolic interaction occurs not only among subjects, but could also occur between subject and object. An example is the interaction between people and objects in the form of information and technology. The rapid developments in information and communication technology have driven the development study of the interaction between people and technology. Eason (1991) model divides human interaction with computers (technology) at three levels.

Level one related to human-computer interaction; expanded by a factor of two levels of users, tasks, and environments that may affect job performance, and level three, IT and between human-computer

interaction impact on social life in the changed of nature of work, the way how the organization operates, and how humans interact with one another.

In HTTIP model, the main components are human. Although there are many ways to understand human beings and their interactions with technology, e.g. in terms of demographics, physical skills and ergonomics, cognitive and effective, but in this model focused on human behavior intentions (cognitive aspects). For that, I use DTPB model because of its comprehensiveness in predicting human behavior.

Decomposing Attitudinal Belief

Ajzen (1985) revealed two kinds of differences in attitudes, which are attitude toward object and attitude toward behavior. Attitude toward the behavior is degree in which a person has pleasant or unpleasant evaluation. Ajzen further stated that attitudes are related to the behavior intention has a direct effect on behavior, while attitudes toward object has an indirect relationship. Thus, there are many factors that affect the consumer interest to use and adopt information technology. In HTTIP model, attitude is decomposed to three constructs: perceived ease of use, perceived usefulness, and perceived risk. Perceived ease of use and perceived usefulness originated from TAM model (Davis 1989). Teo, et al. (2011) provided evidence to support TAM as a viable and efficient model to explain the intention to use technology. Fisbein and Ajzen (1975) extended TAM model and proved that the differences in attitudes, perceived usability, perceived risk, and perceived playfulness is an attitude associated with the usage that are categorized as attitudes on behavior.

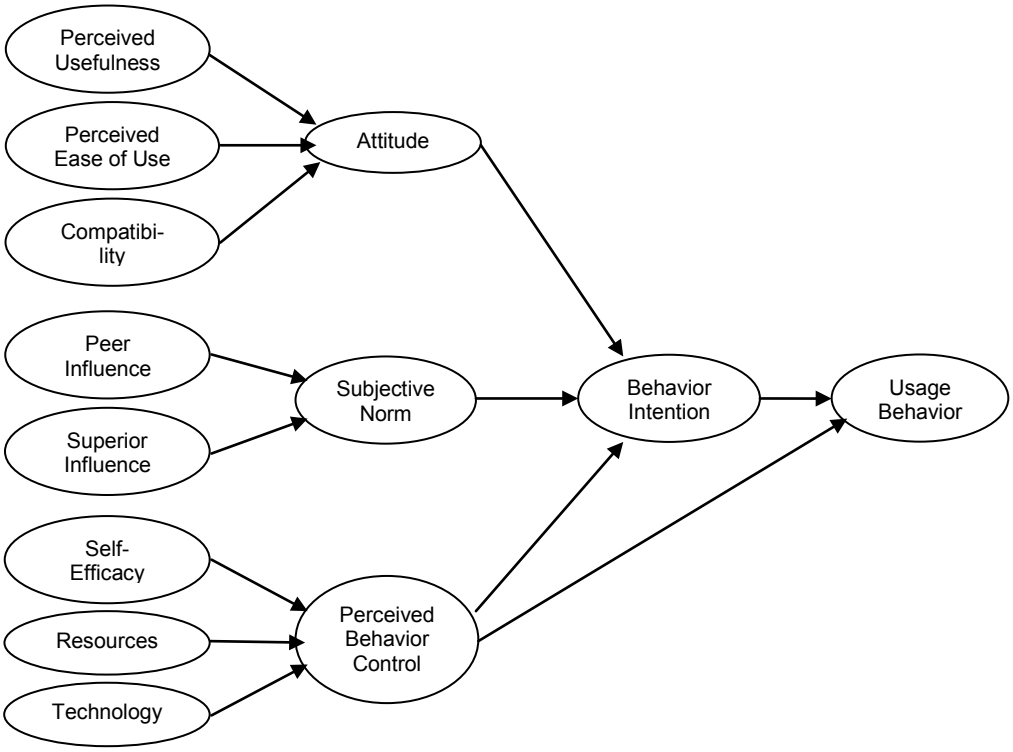
Proposition #1 : Perceived ease of use, perceived usefulness, and perceived risk will have a significant influence on attitude towards technology use.

Decomposing Subjective Norm

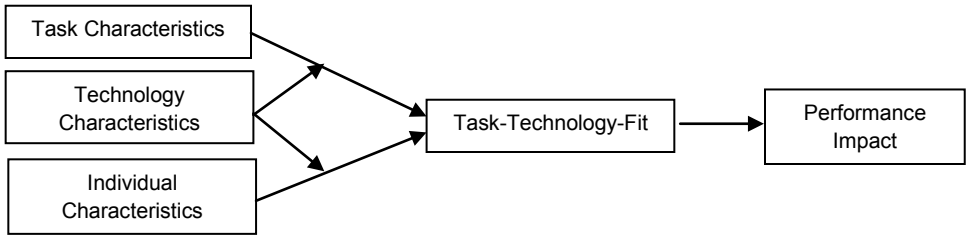
In the TPB, subjective norm is the perceived social pressure to perform or not perform the behavior or belief in a person that someone or something important will approved or not approved if it performs the behavior (Ajzen, 1991). Relative interests of subjective norm in predicting the expected interest varies according to the behavior and situation. Hsu and Chiu (2004) found the influence of subjective norm on behavioral intentions; contrary Tan and Theo (2000) found no significant effect of subjective norms on individual intention to adopt internet banking. Bhattacherjee (2000) stated that subjective norm is an important predictor of interest to use an electronic brokerage service. In his research, Bhattacherjee (2000) showed that subjective norm include two forms of interpersonal influence and external influences. Therefore, in this study, subjective norm decomposed into two components, namely interpersonal influences and external influences.

Figure 4: The Decomposed Theory of Planed Behavior, Task-Technology-Fit Theory, and Human-Task-Technology Interaction and Performance.

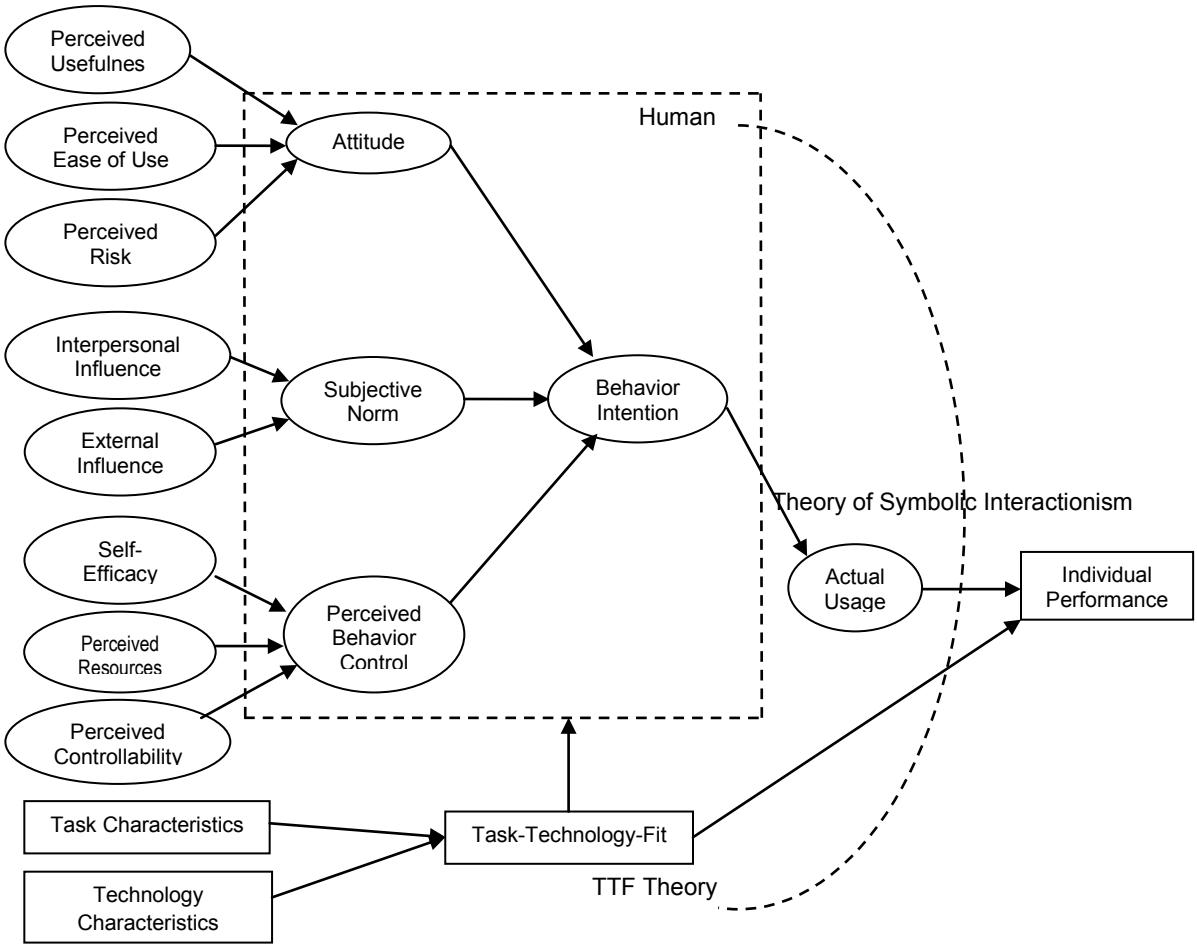
a) Decomposed Theory of Planned Behavior Model



b) Task-Technology Fit Model



c) A New Model: Human-Task-Technology Interaction and Performance



This figure shows the construct of DTPB, TTF, and HTTIP. Figure 4a explains that attitude, subjective norm, and perceived behavioral control will influence the behavioral intention towards usage behavior. Attitude, subjective norm, and perceived behavioral control are decomposed into multi-dimensional belief constructs. Figure 4b indicates task, technology, and individual characteristic that effects task-technology fit towards individual performance. Figure 4c, as a new model, integrated DTPB and TTF as a more comprehensive model to explain the relation between human-technology and performance.

Proposition #2 : Interpersonal and external influence will have a significant influence on subjective norm towards technology use.

Decomposing Perceived Behavior Control

Perceived Behavior Control (PBC) tend to be a means as the individual's perception of ease or difficulty in performing the behavior and it assumed there was a reflection of experience such as the availability of resources and opportunities (Ajzen, 1991). In his subsequent study in 2002, Ajzen suggested two-level hierarchical model in which the PBC is the holding of the construct of self-confidence (self-efficacy) and controllability. Several studies applying the TPB to predict the behavior of interest and prove that the self-confidence (self-efficacy) and controllability significantly associated with intentions.

Self-efficacy is the ease or difficulty to perform the behavior, or beliefs of individuals to perform the behavior, whereas controllability is control of the behavior or beliefs about how far do the behavior is a

will of its own behavior (Ajzen, 2002). Associated with self-efficacy, individuals will feel more satisfied with the behavior that they feel able to do so or vice versa (Bandura, 1998).

One component of PBC is a condition that facilitates (facilitating condition) which reflects the availability of the necessary resources to perform a behavior, such as money, time and other resources. Zang and Guttierez (2007) states that perception resources (perceived resources) have a significant influence on perceived behavioral control (PBC). Thus, in this study PBC was decomposed into three components, namely the self-assurance (self-efficacy), perceived controllability and perceived resources

Proposition #3 : Self-efficacy, perceived resources, and perceived controllability will have significant influence on perceived behavior control toward technology use.

Proposition #4 : Attitudes, subjective norm, and perceived behavior control towards technology use will have significant influence on behavior intention to use technology.

Proposition #5 : Behavior intention to use technology will have a significant influence on actual use of technology.

Human-Task-Technology Interaction and Performance

The second component of the HTTIP model is task-technology fit which include task, technology, and a fit between both. Goodhue and Thompson (1995) define tasks as "action carried out that turn inputs into outputs." Gebauer and Shaw (2002) differentiate three different tasks within the organization, namely operational tasks, management tasks, and information tasks. Meanwhile, technology is the making, usage, knowledge of tools, machines, techniques, systems of method in order to solve a problem or perform a specific function. Includes in technology are hardware, software, applications, data, knowledge, and supporting procedures.

Goodhue and Thompson (1995) indicate that the fit between task characteristics and features of information systems provide a conceptual basis for testing the quality of individual decision-making. System information helps users by providing information that can be used individually to carry out their duties. Therefore, the strong relationship between information technology and individual performance (McGill and Hobbs 2006, Teo and Men 2008) or utilization (Strong et al. 2006) is the fit between information technology that provides information to users and information needed to the task that must be done. This TTF theory proposes that a better fit between technology and task will lead to better performance.

Proposition #6 : Task characteristic and technology characteristic will have a significant influence on task-technology fit towards individual performance

The TTF model, as a fit between task and technology, has been used as moderating variable within TAM model. Usoro et al. (2010) argued "TAM and TTF model are individually effective in their explanation of the different factors affecting user acceptance and utilization of IT systems and the impact of their adoption on individual performance from two different perspectives. TAM focuses on user attitude while TTF focuses on the correspondence between the user's task and the functionalities of the system." Thus, integration of both TAM and TTF will be more effective than the individual models in its explanation and prediction of the adoption and utilization process for an IT system by the user (Klopping and McKinney, 2004). In this new model, I integrated DTPB with TTF, since DTPB is more comprehensive than TAM in predicting human behavior of information technology usage. Theory of symbolic interactionism indicates that reality is understood as a social production; interaction is symbolic; humans have the capacity to

engage in self-reflexive behavior; interactionism regards society as ongoing process; and social and physical environments set limits on behavior, but do not determine behavior. In this essence, normally, humans use technologies to support their primary tasks with purpose in enhancing his/her performance.

Proposition #7 : The integration of DTPB and TTF predicts the actual use of information technology and individual performance.

Proposition #1 – #7 are derived particularly from the new model of HTTIP and from the results evidenced from the previous researches. These propositions have to be tested to provide and prove the parsimonious theoretical HTTIP model in assessing individual performance on information technology adoption.

CONCLUSION

The aim of this paper is to propose a new model in assessing individual performance on information technology adoption. The theoretical significance of this paper is that it draws from the literature on TAM, TRA, TPB, DTPB, TTF, and the theory of symbolic interactionism in developing comprehensive and parsimonious theoretical model to investigate the antecedents of behavior intention to use information technology. It is also a preliminary attempt to provide a comprehensive model in determining individual performance within information technology adoption. The integrative approach using the theory of symbolic interactionism in combining DTPB that proved to have more explanatory power than other behavioral theory and TTF for its theoretical assumption that information technology is more likely to have a positive effect on individual performance if it gives a more complete view of this intention.

This integrated new model, called HTTIP model, and its propositions could be used statistically in future research to confirm the predictors of human behavior intention in accepting information technology and assessing individual performance. The model and propositions can be examined in different settings such as in a workplace or student setting. Taylor and Todd (1995) suggested that since perforance measurement and effort expended by students are perceived to be related, the actual strength of linkages to behavior might be stronger in the student setting than in the workplace. A multi-phased and mixed-method approach comprising both qualitative and quantitative methods could be used to verify this new model and propositions (Muthusamy et al., 2010). A qualitative method would strengthen and clarify the antecedents of human behavior with real life perspectives; while quantitative method such as structural equation modeling (SEM) or partial least square (PLS) approach could test the propositions derived from the new model. To test the validity of the model and propositions future research can employ short-term or longitudinal survey research or experimental research design. Goodhue and Thompson (1995) mentioned that it is important to go beyond perceived performance by constructing a laboratory environment in which the model and propositions can be tested with objective measures of performance.

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