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Information Regarding:

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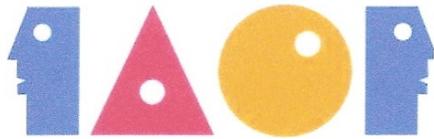
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TROUBLE IN THE MIDDLE: AMERICAN - CHINESE BUSINESS RELATIONS, CULTURE, CONFLICT, AND ETHICS

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Abstract

This article is excerpted from *Trouble in the Middle*, a book on ethical and cultural issues in American-Chinese business relations. Based on interviews of American business executives in the United States, American and Chinese business executives in China, and visits to American and Chinese operations in China, the research focuses on challenges to doing business in China. The Chinese economic reforms are analyzed in detail to determine the type of business system that is emerging. Specific attention is given to the different ethical and cultural assumptions that American and Chinese executives bring to doing business with each other. A concept of the cultural middle is developed to help managers do business in foreign cultures. Several chapters focus on the role of corruption in the China market, both business-government corruption and business to business corruption. Two chapters deal with intellectual property rights issues and the thorny process of addressing them in China. Running through the entire book are detailed discussions of the role of the Chinese middleman in American-Chinese business relations, especially in regard to facilitating bribe payments. The middleman is seen as a key to understanding Chinese culture. The research is related to broader issues concerning China's historical struggle to modernize its economy and globalization.

Keywords: American-Chinese business relations, Guanxi, Chinese economic reform

Introduction

Western businesspeople face a dilemma. China's growing role in international business means it is nearly impossible not to do business in China. This article discusses the importance of the Chinese middleman, explores ethical conflict, and suggests that when comparing Western and Chinese cultures there is much to respect in both.

It is an interesting irony that *guanxi*, the socially intense system of informal relationships that undercuts and reverses formal Chinese institutions, is itself a subcategory of the central principle of Chinese culture, *hierarchy*. *Guanxi*, in a word networking, connects the individual to a social network of "friends" who can be called upon for favors when needed. These social networks, however, pay tribute to the status of their members. The social status of each member in the broader community is respected within the social network. Yet the exact purpose and function of *Guanxi* is to bypass formal hierarchical systems, institutions, and demands for obedience in the broader society. These intense obligations of respect, required and mapped out in detail in innumerable interpersonal rituals and mannerisms, make efficient action difficult. *Guanxi* addresses this problem by enabling relationships to develop new types of bonds based on trust and mutual advantage and thus new channels for action. *Guanxi*, then, is an outgrowth of hi-

erarchy that simultaneously turns back against it, undermining its directives while maintaining its integrity. It maintains its integrity by both respecting hierarchical status within *guanxi* networks and contributing efficiency to rigid hierarchical structures.

"The purpose and function of guanxi is to bypass formal hierarchical systems for obedience in the broader society."

Western business people walking into this system find it difficult to master because they see only two opposite extremes. Many times they experience only chaos. On one hand, the Confucian principle of hierarchy is nowhere more observable than in the government-society relationship. The government is authoritarian and makes extensive if not enormous demands on business, some portion of which can be classified as abuse of power. On the other hand, every rule the government passes, every demand it makes, can be gotten around with the right connections. So simultaneous with the enormous power of the state is a system of relationships that regularly ignores state edicts. Indeed, state officials are right at the center of this system, playing both sides as loyal bureaucrats, "friends," and rent-seeking individuals.

Western Businesses and Chinese Middlemen

Some of the main disadvantages Westerners face in this situation are their language, culture, and outsider status, leaving them less than expert players in the *guanxi* system, which, for all practical purposes, is an escape hatch in a hierarchical society. Here enters the third party, the *Chinese middleman*. Westerners, especially big companies that can put steep incentives into play, work with Chinese middlemen, utilizing their already developed networks. So, for example, if an SOE is not paying its bills, a Western firm can ask its middleman “friend” to contact his friend in the provincial ministry to put pressure on the SOE to pay its bills. If the minister sees the Western firm as potentially helpful to his own goals, all the better. In this way, the Western firm, through the middleman, has entered a *guanxi* network. Without the middleman this would have been nearly impossible. The fact that the Western firm is able to utilize the *guanxi* network shows the utilitarian aspect of *guanxi*. It is not all bonding, brotherhood, and obligation.

Perhaps the most important aspect of this situation is the *rule of three*. There is the Western firm, the middleman, and the government official. The dyad, a direct relationship between the Western firm and the official, is highly unlikely. An essential aspect of *guanxi* is that for A to win a favor from B, many times a third party, C, is needed. This need for a third party demonstrates the intense personalization and informalization of collective

action in China; it also highlights the lack of trust and fear of dishonesty.

The rule of three grows out of the collectivist nature of Chinese society. Individuals attach themselves to groups and work through groups. This is a corollary to the *guanxi* principle. The hierarchical nature of Chinese society strongly limits individualism in the Western sense, instead channeling individual effort informally into groups and networks. Both hierarchy and its resistant child, *guanxi*, are forms of collectivism. The difference is that hierarchy, in pursuing collective goals as decided upon by top leaders, gives rise to informal, secretive *guanxi* networks to accommodate individual and out-group interests, though these networks still operate collectively and hierarchically.

It cannot be otherwise because all Chinese cultural forms emanate from the principle of hierarchy, even *guanxi*, which directly challenges it. Hierarchy infiltrates *guanxi* through the principle of face. Face is the status one has in the network. It is extremely important in regulating interpersonal relations. A person of a certain status has expectations for how he should be treated. If these expectations are not met, conflict will result.

This is why the rule of three is so important in Chinese culture. A third party can enter into a dyadic relationship, separating the two parties and damping

down the emotions, helping to manage and safeguard delicate and sensitive issues of face. Face is the blood of collectivism, infusing and enforcing hierarchical status throughout the social body. The middleman too is thus part of the hierarchical and collectivist system, ensuring its smooth functioning by creating distance and indirectness, social forms badly needed in the rigid and conflict-prone nature of hierarchy.

For Westerners, profoundly dependent on the use of middlemen in Chinese business, middlemen do more than offer connections and translations, they also manage issues of face to avoid an escalation of conflict between Westerners and Chinese. Westerners are typically ill equipped to be sensitive to the face needs and expectations of Chinese executives. The middleman can take the intention of the Westerner and formulate it such that it is acceptable to the Chinese, in terms of not just economic value but also social form. Western culture and Chinese culture are so different that both sides are typically made anxious by the ambiguity and foreignness of the other. The middleman, speaking both languages and having familiarity with both cultures, reduces this vulnerability to miscommunication and stress.

Ethical Norms

One area of particular importance and especially liable to conflict is that of

ethical norms. The middleman is hired to take the Western firm into a guanxi network that exists exactly for the purpose of avoiding rules, laws, taxes, and regulations. The legally minded Westerners are disinclined to enter the Chinese no-rule-unbent universe directly for several reasons, not least of which is liability to prosecution under the Foreign Corrupt Practices Act. Bribery, the central form of corruption in China, is handed off to the middleman so American executives can wash their hands of it.

The middleman, then, is a bit of a magician. He can involve American firms in business transactions that require bribery even though the American firms have specific laws and policies against paying bribes. The expectations of Chinese officials or managers are met even though they directly and fully contradict the requirements of the Americans. The middleman operates between two cultures and, in a sense, in no culture. His specialty is having no cultural allegiance while participating in two different cultures. Thus American and Chinese business cultures are paradoxically connected and remote. From the American side, the paradox makes apparent the breakdown of American ethics, because at the end of the day the bribes are paid. The “magical” middleman in the “middle” transforms American business values into Chinese business practices. In reality, he creates a social conduit through which money flows but the law does not follow.

Thus when American firms utilize the rule of three, which they regularly do, they are participating deeply in Chinese culture. This is evidence, contrary to the view of Guthrie for example, that Western firms in China are more influenced by Chinese business culture than the reverse. This is an empirical question that requires more research and also time to answer. In any case, the rule of three has Western firms adapting to and participating in Chinese business culture. Using middlemen is accepting a teacher, someone who instructs and educates Western firms on how to do business in China. Using a middleman is not merely an impersonal transaction. It is a dependent, appreciative, and many times long-term relationship. In other words, it involves social and psychological elements of Chinese culture.

If ascribed guanxi, relations based on goodwill and compassion, and achieved guanxi, relations based in calculation and self-interest, are seen as two ideal end points by which to evaluate informal business relationships, Western relations with middlemen usually will mark out closer to the achieved pole. Given that guanxi relations are often used to avoid formal rules or change them, it is difficult to see how achieved guanxi can be morally justified. Indeed, Snell and Tseng lament that the large increase in achieved guanxi during the “privatization” process in the 1990s was dishonorable—that is, based merely on self-interest

while hurting the broader society. Unlike ascribed guanxi, which builds community by bringing moral values like benevolence, reciprocity, and caring into the relationship, achieved guanxi does not have any such moral counterweight to offset its self-interested, antigovernment, and anti-community intentions. Western involvement in guanxi relations, since they are seldom of the ascribed guanxi sort, therefore raises moral questions.

Guanxi and Universal Rights

But even if Westerners were to develop ascribed guanxi relations, can these relationships really be morally justified given that they operate only on the subgroup level? In the West, core values—freedom of speech, equal opportunity, the right to vote, privacy, equality before the law, and so on—are considered “human” rights and thus are considered morally universal. Guanxi, on the contrary, is exactly designed to give insiders more rights than others. Thus, guanxi and universal rights are incompatible. Hence even ascribed guanxi cannot be morally justified according to the principle of universalization.

In practice, however, the principle of universalization does not work perfectly even in the West. Clearly, people with money or power have better opportunities in the marketplace or better chances in court, for example. Is there really such a big difference between guanxi and “hu-

man rights” as they are practiced in the West? Yes, there is. In the West, failures to honor human rights are continually debated and efforts are made to improve them; in the guanxi system, honoring relationship over principle is the nature of the system.

“Neither a culture developed around the core category of individualism or one developed around the core category of collectivism is superior to the other. Indeed, all cultures must have both categories. In this regard, both China and the United States can learn from each other.”

This is the difference between a democratic culture and a hierarchical one. The individualism inherent in a democratic culture pushes toward universal rights; this tendency is missing in a hierarchical society, which puts a much stronger emphasis on the whole. The problem is that guanxi, hierarchy’s other half, undercuts and hurts the whole in favor of the subgroup. Though guanxi can lead to the development of strong bonds, bonds often missing in the West as individualism becomes an end in itself (narcissism) and leads to impersonalization and selfishness, the cost of guanxi is high, as is evident in widespread corruption and damage to public goods such as water and air in China. Even though guanxi addresses the evils of unchecked power, it merges with power and creates its own abuses.

Western Values and Chinese Values

It has often been noted that individualism too is prone to abuse, but, unlike hierarchical society, a democratic society is hedged around with checks and balances so that both public and private action are more subject to public, political, and legal review. In a hierarchical society, all processes of review are subordinate to one, the political. Hence, Western businesses operating in hierarchical societies cannot morally justify full participation in hierarchical culture without violating their own values. When they enter into guanxi relations, they may easily be entering into unethical activities according to their own beliefs.

This is not to say Western values are superior to Chinese values. The Chinese have low trust in impersonal relations and high trust in personal relations, while the West has higher trust in contracts and the ability to enforce them when they fail, and less reliance on personal relations. Is the latter “modern” and the former feudal or less developed? Is universalization the test of development and ethical superiority? Maybe so in the economic sphere, where the single criterion of efficiency can be used as a universal measure to evaluate action. But it is less true in the political sphere, where complex goals involving diverse values make universal (rational) criteria less relevant because continuously shifting contexts and multivalued actions make it impossible to universalize the criteria of evaluation.² Hence, since the economic and po-

litical spheres are interrelated, not to mention the value-laden religious, cultural, esthetic, and personal spheres, it is impossible to judge a social system merely according to its “modernization.” Profound moral choices and trade-offs are involved in any life order, requiring moral evaluation to be multilayered.

“The Chinese have low trust in impersonal relations and high trust in personal relations, while the West has higher trust in contracts and the ability to enforce them when they fail.”

In addition, it is important to keep in mind, when comparing Western and Chinese cultures, that there is much to respect in both. In hierarchal culture, the emphasis on social harmony and respect for others—especially parents, teachers, leaders, and elders—is noble and has good consequences. But, as was mentioned, hierarchical culture often leads in practice to abuse of power. Western culture relies more on formal structures such as laws and rules, not personal relations, to provide order in society. But just as *guanxi* can benefit the subgroup at the expense of the community, the expensive and overused legal system in the United States is evidence of a destructive (selfish) individualism that concerns itself little for the good of society. Neither Chinese collectivism nor American individualism lives up to its own ideals of the good society, particularly the need to care for the whole. Each society in its own

way evidences an imbalance toward benefiting subgroups and individuals at a cost to others and the whole.

In the West, however, legal competition to address the imbalance works more effectively than does reliance on the good character of leaders in hierarchical culture. Institutionalized checks and balances have proven more reliable than the good graces of absolute power. On the other hand, hierarchical (Confucian) culture has made possible huge and densely populated cities, such as Shanghai and Beijing, where the crime rate is relatively low compared with that of New York, Chicago, or Los Angeles.

In the abstract, neither a culture developed around the core category of individualism or one developed around the core category of collectivism is superior to the other. Indeed, all cultures must have both categories. It is a question of emphasis. In this regard, both China and the United States can learn from each other.

Moral Challenges

This conclusion does not remove the moral challenges faced by Western businessmen working in China. There is widespread corruption on the different levels of Chinese government, and the government represses its own citizens. Western businesspeople cannot morally ignore these facts if they are committed to the democratic values upon which West-

ern societies are based. The argument that it is morally justifiable to do business in China because Western businessmen cannot do anything about the behavior of the Chinese government is not valid. One cannot support unethical activities without sharing some responsibility for them.

Western business is, at a minimum, required to express its own values and protest values it finds unethical. One cannot benefit from business activities in China without taking some moral responsibility for them. Otherwise, Western business is caught in a contradiction between its own values and its behavior in China, undermining Western values for itself and others. Considering the risks of protesting is valid, but it is not sufficient. Moral deliberation involves multiple aspects; in addition to risks, responsibilities to and consequences for others must be considered.

Western businesspeople face a dilemma. China's growing role in international business, and the opportunities for and threats to Western business in China, make it nearly competitively impossible

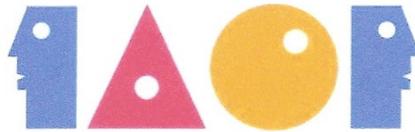
not to do business in China. Yet the moral challenges cannot morally be ignored. Ethics is not just a nice thing we should do if we can afford it. It is part of social reality and has concrete consequences. Ignoring Chinese government transgressions strengthens these transgressions at the same time that it weakens Western ethics. It encourages both the Chinese government and other governments to violate human rights and exercise unrestricted power, which can only contribute to the suffering of its people and a more dangerous world for everyone else. Poisoned food products and medicines coming out of China are not unrelated to government corruption in that they are the model for other types of corruption.

Complete resolution of the dilemma is not possible; thus a compromise is called for. It should be worked out both collectively and individually by Western businesses. It should involve, at the least, a statement of principles that expresses Western business values, defines what practices are acceptable and what ones are not, and outlines sanctions for Western businesses that violate these principles.

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THE ROLE OF WORK PLACE SPIRITUALITY AND EMPLOYEE
ENGAGEMENT TO ENHANCE JOB SATISFACTION AND
PERFORMANCE

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Abstract

Workplace spirituality is defined as work situation by which leader and follower have high spirit toward work completion and achievement of organization objectives. The family planning programme in Indonesia evolved from a private endeavour in the 1950s to become a government programme in 1970. One of the determinants of this successful program is the role of field workers as service employees implementing the family programme. These employees have a role as mediators between government office and community. They serve as government officers who are required to communicate effectively with the community regarding the program. This study discusses the role of creative process engagement between leader-fieldworkers-community to enhance job satisfaction and performance of field workers. Drawing from spiritual leadership theory, we examine the role of workplace spirituality and creative process engagement to enhance job satisfaction and performance. Results indicated that workplace spirituality and creative process engagement is requirements to create job satisfaction which then lead to employee performance to implement the government program.

Keywords: spiritual workplace, creative process engagement, job satisfaction, task performance

Introduction

It has been widely argued that most of leaders are coming to realize that they have to be engaged in a harmonized way with their followers to achieve mutual goals. Considerable evidence indicates that a unique engagement between leader and employee can fundamentally contribute to organizational innovation, effectiveness, performance and survival (Zhang and Bartol, 2010). Leader - employee relationship refers to an exchange process about ideas, vision and mission to work together. It includes the production of novel and useful ideas by a leader or by a group of leader and their followers for collaborate successfully (Amabile, 1988; Madjar, Oldham, & Pratt, 2002; Shalley, Gilson, & Blum, 2000; Zhou & Shalley, 2003). For a good and trustable relationship to occur between leader and member in organizations, leaders need to support and promote it, as they are the individuals who are most knowledgeable about their follower. Moreover, employees have considerable influence over the context within which a good engagement can occur.

The existing discussion in the literature on how to improve the performance of employee in an organization receives high attention. This is because employees are one of key element in the achievement of the vision and mission of the organization. Some old-fashion human resource strategy to improve the employee performance are compensation design, leadership styles, motivation, job satisfaction, etc.. However, some literature states that under conditions of organizational change, old-fashion strategy should be further developed into creative strategy. Creative Strategy is defined as the search for business ideas that leads to the involvement of all stakeholders involved to achieve common goals (Amabile, 1983). This strategy is believed to accommodate all the needs of stakeholders in accordance with mutual agreement with. One of the

creative strategy for improving the employee performance is a creative process engagement (Zhang and Bartol, 2010). Creative process engagement is defined as the level of employee involvement in creativity relevant to the cognitive (knowledge) with indicators: (1) be able to identify the problem, (2) be able to find information relevant to the completion of the work, and be able to look for alternative ideas in solving problem, (Amabile, 1983; Zhang and Bartol, 2010).

Creative engagement process will have an impact not only on performance but also the effectiveness of creative work as a whole. The strategy is to develop a view-based strategy, which recognizes the limited ability of the stakeholders to make decisions. Kahneman (2001) states that each individual has the capacity of attention and cognitive resources are limited. It is often also inhibit the ability of human to focus on a job simultaneously. The spirit of the individual to provide the best in work is also influenced by a stimulus that results from a concern.

Based on the existing literature, the performance will increase, if the creative engagement process is applied in order to encourage individuals stimulus to work better. The low level of involvement in the creative process works tend to reflect low activation of individual businesses. In contrast, the level of creativity that is too high will cause individuals have difficulty focusing on business ventures throughout the task demands. Such a situation would lead to a reduction in overall performance.

Therefore, the balance between creative process engagement facilitated by the organization will balance the needs of creative individuals. Creative engagement process is also rooted in the theory of the role of identity (Zhang and Bartol, 2010). The theory states that individual's role identity mapping individual about proper behavior in the sharing of roles and inter-

nalize them as a component of identity or role. In the next phase, the individual will review by themselves, or extracting meaning ascribe themselves in relation to a particular role. The role of self-identity is related to 'how self' is further defined as a hierarchical ranking of identity. Employee was carrying out a dual role in the order of importance, assessing the number of identity becomes more important than the other. Labianca, Gray and Brass (2000) concluded that in the context of organizational change, employee is required to take creative initiative to cultivate an action in accordance with the role of employee rather than personal interests.

On the other hand, in addition to trying to cultivate employees in order to understand its role in the organization as a key stakeholder in the achievement of the vision, the organization should also pay attention to the welfare of intrinsic motivation. Employee welfare intrinsic motivation was also identified as an effective strategy for improving human performance. In conjunction with efforts to increase the employee performance, attention to the spiritual well-being to be something that should be considered. Spirituality in the workplace (workplace spirituality) is a framework of organizational values that realized with the creation of culture through the work routine. The work process is used to facilitate the individual to connect with other individuals that bring a feeling of peace and fun when it works (Giacalone and Jurkiewicz, 2003). Spiritual well-being in the workplace result in benefits in terms of individuals and organizational outcomes (Eisler and Montouri, 2003).

One of the sense in employee spiritual is '*calling*' by which individuals who feel that the work done by employee to make other people's lives changed. Sense of care to the other is the feeling that this job is very meaningful to the individual. In the context of service employee,

they have spirit to finish their works, it is believed they will have a strong commitment to the welfare of society. Spiritual wellbeing is often generated from applying the existence of spiritual leadership and articulate a vision in a group based on altruistic love. Altruistic love is the true love of a leader or co-worker to co-worker to co-worker to another. The process of leadership that could encourage workplace spiritual existence is spiritual leadership (Fry, 2003). When spiritual leadership in the present work in order to produce a genuine spirit of an organization's human resources, the creative process engagement is supporting facilities. This is because the creative process engagement, human resource development and the process of appreciation and respect of human resources within an organization is something that is vital. Thus, the creative process is the facilitation of the process of engagement with leaders of employee engagement will result in spiritual well-being.

Furthermore, spiritual wellbeing is measured from calling and membership degree of employees within the organization (Fry, 2011). Calling is the individual who felt it was a matter of conscience are then issued in the form of devotion and commitment to the organization. Membership is a sense of organization and co-workers regard themselves as in need of love and affection as a fellow. Fry (2011) suggests that the meaning / calling and membership succeeded in increasing productivity of human resources and organizational commitment. Hence, we argue that a spiritual leadership needs to exist in an organization. Spiritual leadership is defined as a leader with high spirit toward his employee to achieve organizational vision and mission. The theory of spiritual leadership (Fry, 2003) is grounded in an intrinsic motivation model that incorporates vision, hope/faith, and altruistic love, theories of workplace spirituality, and spiritual well-being. Operationally,

spiritual leadership draws from an inner life or spiritual practice to develop the values, attitudes, and behaviors that are necessary to intrinsically motivate one's self and others so they have a sense of spiritual well-being.

The purpose of spiritual leadership is to tap into the fundamental needs of both leader and follower for spiritual well-being through calling and membership, to create vision and value congruence. In this research, therefore, a major purpose is to build and test theory that addresses the connection between workplace spirituality as determined by spiritual leadership and spiritual wellbeing and creative process engagement to enhance job satisfaction and employee performance. The rest of the paper is organized as follows: section 2 discusses theory and hypotheses, section 3 presents research method, section 4 describes result of analysis and section 5 provides discussion and conclusion.

In this section, we discuss the development of our overall research model by first exploring the general nature of spiritual leadership as it relates to creative process engagement and task performance. We next investigate how job satisfaction mediates relationship between spiritual leadership towards task performance. We then examine the mediating role of creative process engagement in relationship between spiritual wellbeing and task performance and in relationship between spiritual wellbeing and job satisfaction. As part of these arguments, we incorporate leader spirit to encourage spiritual well being by which it will lead to creative process engagement and will help on explaining how spiritual leaders can affect task performance via spiritual wellbeing, creative process engagement and job satisfaction. The hypothesized model is depicted in Figure 1.

Theory and Hypotheses

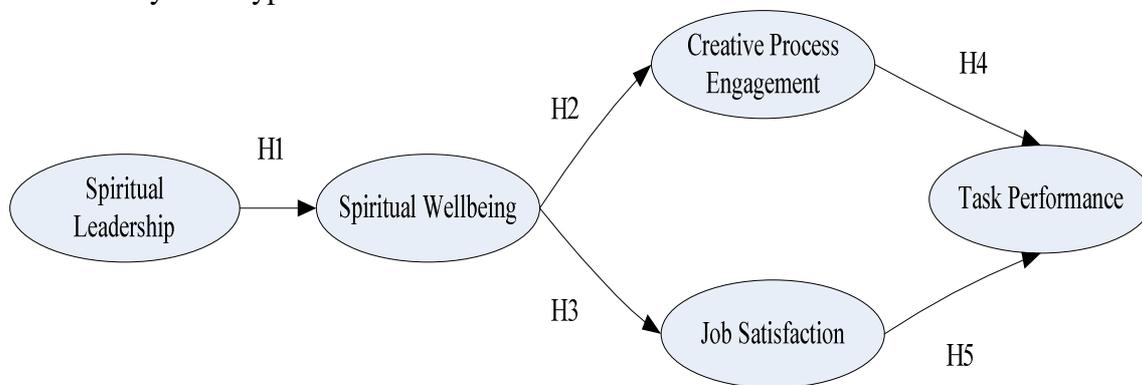


Figure 1. Hypothesized Model

Spiritual leadership and spiritual wellbeing

Spiritual leadership positively influences spiritual well-being as group members model the values of altruistic love to one another. They jointly develop a common vision, which generates hope/faith and a willingness to “do what it takes” in pursuit of a vision of transcend

ent service to key stakeholders (Fry, 2003, 2005a). This in turn produces a sense of calling which gives one a sense that one's life has meaning, purpose and makes a difference. Concurrently, as leaders and followers engage in this process and gain a sense of mutual care and concern, members gain a sense of membership and feel understood and appreciated in organization. In conjunction with efforts to increase

the performance of service employee, attention to the spiritual well-being is something that should be considered. Spirituality in the workplace (workplace spirituality) is a framework of organizational values that realized with the creation of culture through the work routine. The work process is used to facilitate an employee to relate and communicate with others which can bring a feeling of peace and joy (Giacalone and Jurkiewicz, 2003). The creation of a spiritual workplace will result in spiritual well-being. It will influence individual and organizational outcomes (Eisler and Montouri, 2003).

One result of encouragement work spirit by leader is sense of calling by which an employee feels his/her finished work can change or improve other people's lives. In this case, employees will have a feeling that their job is very meaningful to others. In the context of service employee, if the spirit to serve community is owned by them, it is believed that they will have a strong commitment to the welfare of society. Spiritual wellbeing is often generated from applying the existence of spiritual leadership and articulate a vision in a group based on altruistic love. Altruistic love is the truth of love in relationship between leader and employee or between co-workers. The process of leadership that could encourage the existence of spirituality in workplace is spiritual leadership (Fry, 2003). Hence, we formally form the following hypothesis:

*Hypothesis 1. Spiritual leadership is positively related to spiritual wellbeing
Spiritual wellbeing and creative process
engagement*

If spiritual leadership presents in workplace in order to produce a genuine spirit of an employee, the creative process engagement will easily occur. This is because in creative process engagement, the development and appreciation of others and respect of employees within an

organization is something that is vital. Thus, a creative process is the facilitation of engagement process between leader and employee in setting goal and determining plans accordingly. Furthermore, spiritual wellbeing is measured by calling and membership degree of employee in organization (Fry, 2011). Calling is an individual feeling that was a matter of conscience issued as form of devotion and commitment to the organization. Membership is a degree of attachment or similarities between individual vision and organizational vision. It will create a sense of part of organizational member by which they themselves is in need of love and affection.

Moreover, people seek not only competence and mastery through their work but also a sense that work has some social meaning or value (Pfeffer, 2003). The term calling in spiritual wellbeing has long been used to define the characteristics of a professional employee. Professionals in general have expertise in a specialized body of knowledge, ethics centered on selfless service to clients/customers, an obligation to maintain quality standards within the profession, calling to their field, dedication to their work, and a strong commitment to their careers (Follett, House, & Kerr, 1976). The challenge for organizational leaders is how to develop the same sense level of calling within employees through task involvement and goal identification (Galbraith, 1977). Membership encompasses the cultural and social structures we are immersed in through a completion of job. A sense of being understood and appreciated largely stems from interrelationships and connections through social interaction with and membership in groups. Indeed in organizations, people value their affiliations and sense of interconnection or belonging to part of a larger community (Pfeffer, 2003), which in turn create high level of engagement.

In the context of engagement relationship in workplace, Harvey and Kou (2011) explores the creative process in a group or team. The creative process is designed based on the collective engagement. Creative participation is usually based on the conceptualization of a process consisting of the preparation stage, the identification of the problem, develop ideas and ultimately select ideas (Amabile, 1988; Jackson and Poole, 2003). Creativity in the organization of groups associated with the production of ideas that occurred in the group agreed. There are four types of creative process that can be used to increase the involvement of community members in a participatory methods are: (a) Brainstorming, Brainstorming is a session in which community members exchange information. The result of this is brainstorming of creative ideas for constructive purposes. (b) Sequential, in sequential, a group introduced an idea in the discussion, while the second group elaborate this idea and then discuss these ideas in detail. The results of this sequential appearance is similar to brainstorming activities. The difference is in sequential, members of the discussion board often agree on an idea and a member of the group then discussed the ideas that might be revised. Elaboration and combining ideas is essential in creativity (Finke, Ward & Smith, 1992) (c) Parallel, the third form is a parallel discussion about an idea at a time. In a parallel discussion, the group cultivate a small idea and then discuss it together and (d) Iterative, this happens where members of the group involve in a creative process. Forms of this iterative process usually starts from the introduction and discussion of an idea, followed by the introduction of new ideas without comparing with previous ideas, then go back to the original idea. The group may discuss some of the ideas in this stage, introducing each point of difference and run the iterative process to reach agreement.

On the other hand, leader encouragement of creativity is defined as the extent of a leader's emphasis on being creative and on actively engaging in processes that may lead to creative outcomes. Such emphasis is likely to prime employee attention and facilitate effort toward trying to be creative (Scott & Bruce, 1994; Wyer & Srull, 1980). Several studies have suggested that when individuals know the importance of creativity in their jobs, they are more likely to actually be creative (e.g., Carson & Carson, 1993; Speller & Schumacher, 1975). For example, Shalley (1991, 1995) found that assigned creativity goals effectively enhanced employee creative performance, whereas assigned performance goals (e.g., production quantity) actually detracted from creative performance. Similarly, Pinto and Prescott (1988) concluded that a clearly stated mission by a leader enables a greater focus on new idea development and subsequent successful innovation. Moreover, employee participation as a part of goal setting negotiation is a significant process to maintain leader-employee engagement. Setting goal together with employees in their task description would support availability of creativity and confidence, increase satisfaction, and inspire motivation that yields lasting results and achieves goals (Yui-Tim Wong 2003; London, Mone et al. 2004; Vigoda-Gadot and Angert 2007). Most of employees will accept manager imposed goals if the person assigning them (supervisors) is trusted and well respected. Employees who involve in setting their own goals have a tendency to try harder to accomplish those goals. They have an ownership of this goals which in turn to goal commitment. Participation also increase acceptance of the goal itself as a desirable one to work toward and more likely to accept the responsibility of accomplishing those goals. In the perspective of expectancy theory, participation and rich communication in goal setting may increase volition, which in turn, may in-

crease goal commitment and trust toward people who gives task (managers).

On the other hand, supervisor supportiveness is another variable that also important in leader-employee engagement especially in goal setting process. Supervisor supportiveness is defined by (Klein, Wesson et al. 1999) as some resources that dedicated by supervisors to their employees as friendliness and listening employee opinion. Difficult goals setting that agreed by supervisor and employee would be perceived as fairer and more realistic, causing goal commitment to be higher. (Medlin and Green Jr 2009) directly showed that a measure of supervisor trust was positively correlated with goal commitment. (Anderson, Dekker et al. 2009) provided indirect evidence in that supportive supervision was positively associated with selected goal level for subjects in participative conditions. Providing performance feedback helps employee understand what they should continue doing, stop doing, or start doing to attain goal. Managers cannot assume that their employee can perform better in any type of task. Therefore, it cannot argue that all employees need to control in the same ways in all task. As consequence, setting goal in each task description should be done and agreed between supervisor and employee. Perhaps even more important is giving employees the opportunity to contribute ideas and opinions before the manager makes a decision. This adds dignity and meaning to the task in the views of most employees. As creative supportive environment in leader-employee engagement will work better if leader facilitate a spiritual wellbeing in workplace, thus, we expect spiritual wellbeing mediated relationship between creative process engagement and service employee performance. Formally, we propose:

Hypothesis 2. Spiritual wellbeing is positively related to creative process engagement

Spiritual wellbeing and job satisfaction

Spiritual wellbeing becomes an important aspect in today's business organizations. Those aspects are used to encourage employees to complete the work in accordance with the organizational's expectation. Spiritual wellbeing indicated by the feeling perceived by the employee that the valuable work being done in accordance with their ideal job, the level of importance of job to them, and they feel that the work they have done so far has brought changes for the benefit of others, contributed to their profession, and they feel appreciated and cared by their leader. Chand and Koul (2012) explores the consequences of organizational emotional ownership, workplace spirituality, and job satisfaction among IT (Information Technology) professionals of India. This study was designed to analyze the influence of workplace spirituality, organizational emotional ownership and job satisfaction as predictors to cope up with job stress. It reveals that workplace spirituality, organizational emotional ownership and job satisfaction are negatively correlated with job stress.

We have also found that workplace spirituality emerged as the strongest predictor to cope up with job stress. Robert, et al (2006) indicated that *spiritual wellbeing*, *religious well-being*, and *existential well-being* had impact to job satisfaction. [Clark L](#) et al, examined the prevalence of spirituality among hospice interdisciplinary team (IDT) members and observe whether spirituality is related to job satisfaction. An individual's attitude about his or her job should have meaningful implications about how he or she does it. Many human-relations era researchers sought to establish job satisfaction as a driver of performance (e. g. McGregor, 1960). They examined the structural path relationships among four variables; spiritual belief, integration of spirituality at work, self actualization and job satisfaction. The study sur-

veyed 215 Hospice IDT members who completed the Jarel Spiritual Well-Being Scale, the Chamiec-Case Spirituality Integration and Job Satisfaction Scales. Multiple regression and structural path modeling methods were applied to explain the path relationships involving all four variables. In multiple regression, spirituality, integration and self-actualization explained 22% of the variation in job satisfaction ($R = 0.48$; adjusted $R^2 = 0.218$; $df = 3,175$; $F = 17.2$; $p = 0.001$).

Structural path models revealed that job satisfaction is more likely to be realized by a model that transforms one's spirituality into processes of integrating spirituality at work and self actualization than a model that establishes a direct path from spirituality to job satisfaction. Hospice IDT member's integration of their spirituality at work and greater self actualization significantly improve job satisfaction. Duggleby, et al (2009) showed that using linear regression analysis of the results that the spiritual well being has a significant positive effect on job satisfaction and organizational performance. Hence, it can be derived that values of spirituality in today's environment have proven a great source of competitive advantage for any organization. According to Wong (2003) strongly held spiritual values i.e. altruistic, love, care affection, and meaning creation lead to high organizational outcomes. The importance of work spirituality is consistently growing as the spiritual cause leads to strategic benefits to the business units. (Gogoi, 2005) argued that due to the significant contribution of work spirituality, a spirituality interest group is specially created by the renowned academy of management for modification of concept and precision of spiritual and God's values. Spirituality aids in the enhancing the level of job satisfaction and fulfilment with an overall organizational accomplishment.

Hypothesis 3. Spiritual wellbeing is positively related to job satisfaction

Creative process engagement and task performance

In an organization, services employee and non-services employee give a significance difference. Employee services relate and communicate directly with the client or customer of an organization that expected to have a skill of serving behavior. Serving behavior will impact on customer satisfaction and customer satisfaction will affect organizational performance as measured by the performance of the operating and financial performance. The model proposed Peccei and Rosenthal (2001) consider the function of 'employee willingness' and 'employee capacity' to conduct continuous improvement and more work for the client. Employee Willingness is the conceptualization of affective, normative, calculative commitment (Myer, 1988) and altruistic orientation (equivalent to organizational commitment) on customer service. 'Employee Capacity' is measured by seven variables related to the knowledge of the employee (employee knowledge) and competence of employees (employee competence), empowerment (empowerment) and the availability of resources. The results of this study indicate support for the model of affective commitment, normative and altruistic factors are the main influence on the 'employee willingness' to act. Calculative orientation was not found to be a good predictor in employee willingness.

Furthermore, the convenience of employee (employee wellbeing) is fundamental practice of HR policies in an organization. Basically this is because the thought is not realistic to ask employees convey their ideas, hard work and commitment without some hope on employees wellbeing and focus on their future careers. Higher contribution to the psychological contract makes the relationship between the organization and the

employees to be close and trustworthy (Holman et al., 2003). However, only few organizations that demonstrate attention to the wellbeing of their employees. Employees wellbeing does not mean employees should be hired for life, nor by maintaining low performers. Focus attention on the wellbeing of employees who are highly committed into HR practice which is an attempt to avoid the 'job reduction', and employees are expected to manage their involvement in the organization - through internal transfers -. Employee wellbeing can be enhanced by - well devised - and sustainable system of human resource planning. Convenience is also an employee intention in its organization which can be encourage to achieve flexibility. This requires organizations view that employee is not as a variable cost, but as a critical asset in long-term viability and successful organization. For example, employees will feel the high involvement and information sharing if they enjoy the wellbeing of employees and workplace wellbeing. Similarly, they will be happy to work together as a team if their efforts are appreciated with incentives based on performance, share ownership, and get an opportunity to participate in training. Instilling a sense of concern for subordinates in every work will contribute greatly to the success of a service organization, in contrast with little involvement and concern for subordinates in the work will make people less creative and productive. Therefore, it needs a creative-based strategies to increase the productivity of personnel service employee in an organization.

According to Amabile's (1983) componential conceptualization of creativity, intrinsic motivation is a necessary but not sufficient condition for creative outcomes. Engaging in creative activities has an equal, if not more important, role in promoting employee performance. Recently, several scholars (e.g., Mainemelis, 2001; Mumford, 2000; Shalley et al.,

2004) have suggested that a promising direction for creativity research would be to focus on achieving a better understanding of the process that eventually leads to creative outcomes. As mentioned earlier, we define creative process engagement as employee involvement or engagement in creativity relevant cognitive processes, including (1) problem identification, (2) information searching and encoding, and (3) idea and alternative generation (Amabile, 1983; Reiter-Palmon & Illies, 2004). Simple solutions that may not be novel and useful emerge when individuals minimally engage in the process. On the other hand, when an individual spends effort to more fully identify a problem, obtains as much information as possible, and generates numerous ideas and alternatives, solutions that are both novel and useful are more likely to be produced. This line of reasoning is congruent with research findings that the first ideas generated tend to be routine and less creative, whereas ideas identified later in a process of idea generation tend to be more creative (Runco, 1986). We theorize that creative process engagement may have important influences on an employee's performance. Specifically, when an employee perceives that his or her job requirements are meaningful and personally important, the employee will spend more effort on understanding a problem from multiple perspectives, searching for a solution using a wide variety of information from multiple sources, and generating a significant number of alternatives by connecting diverse sources of information (Gilson & Shalley, 2004; Jabri, 1991). In addition, when an employee believes that he or she has the ability to perform a task successfully, has a certain degree of self-determination over job execution, and can shape desired outcomes through his or her behaviors, the employee is likely to focus on an idea or a problem longer and more persistently (Deci & Ryan, 1991; Spreitzer, 1995). Such an employee is also more likely to take risks, explore new cognitive pathways, and be playful with ideas (Am-

abile et al., 1996). Accordingly, we propose:

Hypothesis 4. Creative process engagement is positively related to task performance

Job satisfaction and task performance

Recent research indicates that different forms of leadership are related to employee engagement (e.g., Zhang and Bartol, 2010). For instance, Tierney et al. (1999) found that effective leader-member exchange (LMX) relationships are positively associated with employee creativity, a finding supported by related research (e.g., Scott & Bruce, 1994). In considering broader leadership approaches, some studies have shown support for a positive impact of transformational leadership on employee participation (e.g., Howell & Avolio, 1993; Jung, Chow, & Wu, 2003; Keller, 1992; Shin & Zhou, 2003; Sosik, Kahai, & Avolio, 1998), but others have produced contrary results (e.g., Basu & Green, 1997; Jaussi & Dionne, 2003; Kahai, Sosik, & Avolio, 2003). Surprisingly lacking research attention is a leadership approach with considerable promise of influencing employee engagement: spiritual leadership.

In view of evidence that leaders can affect employee vision and involvement in organization, several creativity scholars have argued for a closer look at leadership behaviours or styles that might fundamentally address the nature of creative engagement process. Such work tends to involve complicated, ill-defined problems for which novel and useful solutions are far from obvious (Ford, 2000; Mumford et al., 2002; Reiter-Palmon & Illies, 2004). As a result, leaders cannot rely on predefined structures that spell out means or even precise ends. Instead, they must encourage employee spirit and well being to solve these problems and yet enable considerable employee latitude. We pro-

pose that one approach to doing so is spiritual leadership.

According to Fry et al's conceptualization (2005, 2008, 2012), spiritual leadership involves highlighting the significance of the work, providing spiritual wellbeing, conveying confidence that performance will be high, and removing bureaucratic constraints. These behaviours are conceptually highly relevant to the degree of involvement which we termed it as creative process engagement. For instance, it is clear from the leadership literature that altruism, vision, calling and meaning and perceptions of spiritual wellbeing are vital preconditions for creative process al., (2004). Inherent in the combination of spiritual leadership behaviors is making vision more clear and delegating authority to an employee, so as to enable the employee to make decisions and implement actions without direct supervision or intervention (Bass, 1985; Jung et al., 2003). Given the nature of creativity, such delegation helps establish a work context wherein an employee is encouraged and empowered to explore diverse creative alternatives before (perhaps) settling on a viable creative solution (Ama-bile et al., 1996).

Hypothesis 5. Job satisfaction is positively related to task performance.

Method

Research setting and participants

This study was conducted in an Indonesia government office which has a responsibility to the successful implementation of national family program in one region. It called as Bapermas KB (Badan Pemberdayaan Masyarakat dan Keluarga Berencana) which headquartered in Demak, Indonesia. We used a questionnaire to collect the data. Participants were field workers who have to serve as work field or service employees. Their main task

is to give presentation and consultation to the community about the importance of contraception to manage Indonesian birth rate. In order to finish their job successfully, they have to be engaged with the community as well as their direct supervisor. Additionally, they need to have a high level of spirit, vision and passion to their job.

The family planning program in Indonesia evolved from a private endeavour in the 1950s to become a government programme in 1970. One of the determinants of this successful program is the role of field workers as service employees implementing the family programme. These employees have a role as mediators between government office and community. They serve as government officers who are required to communicate effectively with the community regarding the programme. As their role involves influencing community members to participate in the program, these field workers need to perform in an appropriate and creative manner. We argue that the office needs to support their well-being to make them engage with the community to ensure the success of a program. Therefore, field workers have to be creative in their role so that supply matches the demand; in other words, that what they offer (supply) meets the requirements of the community (demand).

1 With community participation concept, each community member has a freedom to make a decision to involve in family planning programme or not. Previous researches (e.g. Arnstein, 1969; Chambers, 1995; Oakley and Marsden, 1984) argue that the concept of 'participation' includes community member's opinion in decision making process. It starts from giving choices, opinion, supporting the programmes and monitoring such result. Researches also suggest that it is part of empowering process, which make community to analyse several choices and make the decision based on their opinion.

For example, community members are free to make decisions regarding the number, time distance between one child to another child, and age for giving birth. However, an institutional regulation or formal approach will make accessible information about safe and effective methods for the welfare of our future generation (Population and Development Review, 1995).

2 The decision, by community members, to participate in a family planning programme is influenced by many factors (Islam et al., 2001). The couple's perceptions, evaluations, norms and attitudes towards contraception choices are formed and shaped by social interaction within the community setting. In this line of thinking, the decision to have children might not be influenced only by individual families, but by other individuals and groups including relatives, neighbours, colleagues, community leaders, professionals, and state authorities. Additionally, a couple's decision-making could be influenced by a field worker acting as an education agent in the community. Moreover, there are government programmes which not only make modern contraceptives available, but also actively encourage couples to limit their number of children (Easterlin, 1978; Freedman, 1979; Lesthaeghe, 1980; Simmons and Phillips, 1992; Watkins, 1987). Since the government endorses and encourages participation in these programmes, this affects the social climate within which individual contraceptive decisions are made (McNicoll, 1975; Watkins, 1987). The family planning program emphasises 'accessibility' and a 'community-based distribution system' in order to encourage couples' participation. Although mass media facilitate awareness and provide basic information about contraception, acceptance itself is more likely to be encouraged or discouraged by the opinion of leaders 'closer to home' who share many of the same characteristics as the couples (Retherford and Palmore, 1983).

Given the above, the government is coming to realize that field workers have to be creative if they are to create community engagement and ensure the success of the programme. It is also clear from the discussion above that a field worker as service employee needs to be creative and engage with the community to increase the number of participants in the family planning programme.

The participants were chosen by the head office and also the office secretary to determine whom field workers or which area that required substantial creativity in order to be effective in create a service toward community. After several consideration and discussion with the head officer, 82 field workers were participate in this study. The 82 usable employee survey responses received constituted a 94.5 percent response rate. The average age of the participants was 50 years. The average organizational tenure was 26 years. Among the 82 respondents, 44 percent were male; 43 percent female, 13 percent leaves the question blank. Regarding their education, 33 percent held high school degrees, 12 percent diploma, 32 percent undergraduate and 9 percent postgraduate. 15 percent of them leaves the questions without answer.

Measures

All the variables were measured by participant responses to questions on a five-point Likert-type scale ranging from “strongly disagree” to “strongly agree.” The specific measures are described below, along with the results of calculation of Cronbach alpha coefficients for the various measures. When a measure is described as having dimensions, the dimensions (items averaged) were used as indicators for their construct in structural equation modeling. Otherwise, items were averaged into an overall scale score. Measures were completed by field workers as our respondents.

Spiritual leadership. We used Fry et al.’s (2005) to measure Spiritual Leadership. This 12-item measure has multi-item sub-scales corresponding to three dimensions: (1) Vision, (2) hope/faith, (3) altruistic love.

Spiritual Wellbeing. This 8 indicators were derived from Fry et al’s (2011) as a degree of calling and membership in organization. Calling is defined as degree how they put a meaning about their job. It is a perceived value that their role in organisation is very important. Calling refers to the experience of transcendence or how one makes a difference through service to others and, in doing so, derives meaning and purpose in life.

Creative process engagement. An 11-item scale was developed for this study on the basis of the conceptual work of Amabile (1983) and Reiter-Palmon and Illies (2004). Creative process engagement is defined as a process by which leader and employee working together to set their mutual goal or organizational goal that needs to be achieved.

Task Performance. We used the official periodic performance rating system. This rating is given to every field service worker at the end of each year and is given based entirely on their performance such as quantity, quality and work load as determined by leader.

Job Satisfaction. Job satisfaction is defined as pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences" (Locke, 1976 p. 1300). A 15 item scale from JDS (Job Dimension Scale) was used to measure this variable. It includes employee satisfaction toward compensation, leader, co-worker, work facilities and task itself.

Data analysis

Partial Least Square (PLS) was used to examine the hypothesized model. The advantage of PLS is that it offers a simultaneous test of an entire system of variables in a hypothesized model and thus enables assessment of the extent to which the model is consistent with the data. PLS has the advantage that it “involves no assumptions about the population or scale of measurement” (Fornell & Bookstein, 1982) and consequently works without distributional assumptions and with nominal, ordinal, and interval scaled variables. However, one has to bear in mind that PLS, like any statistical technique, also requires certain assumptions to be fulfilled. Apart from the standard ones (i.e., Gaussian classical linear ordinary least squares) regression model (see, e.g., Gujarati, 1995), the most important assumption is predictor specification (Chin & Newsted, 1999). According to this strategy, the measurement model was first confirmed using confirmatory factor analysis (CFA), and we then performed PLS based on the measurement model to estimate the fit of the hypothesized model to the data. To gauge

the model fit, chi-square (X^2) values are reported as the index of absolute fit, which assesses the extent to which the covariances estimated in the model match the covariances in the measured variables (Kline, 1998).

Results

Table 1. provides the descriptive statistics, correlations and scale reliabilities for the main study variables prior to analysis. Prior to testing the measurement and structural models, we averaged items into dimensions for spiritual leadership, spiritual well-being, and creative process engagement and treated the different dimensions as separate indicators of their corresponding construct in our PLS analyses. For all other variables in our model, we averaged the items into single indicators. The favorable indicator is greater than 0.5 and all validity indicators are greater than 0.5 (in parentheses).

Table 1. Summary of Descriptive Statistics

No.	Variables	Mean	s.d	1	2	3	4	5
1	Spiritual Leadership	3.99	.55	(.863)				
2	Spiritual Wellbeing	3.93	.58	.468	(.865)			
3	Creative Process Engagement	3.86	.56	.456	.559	(.884)		
4	Task Performance	3.8	.57	.377	.642	.528	(.861)	
5	Job Satisfaction	4.14	.46	.331	.293	.285	.507	(.865)

Measurement Model and Hypothesis Testing

Outer model

Measurement model with reflective indicators is evaluated with convergent and composite reliability indicator for the block of each variable. On the other hand, convergent validity of the measurement

model with deflative indicators is assessed by the correlation between the item score to construct score which calculated by PLS. Indicators is stated as valid when loading factor values greater than 0.5 or the value of the t-statistic is greater than t-table of 2.00 ($\alpha = 5\%$). The result of this measurement is presented in Table 2.

Table 2. Composite Reliability

Variable	Composite Reliability
Spiritual Leadership	0.863
Spiritual Wellbeing	0.865
Creative Process Engagement	0.884
Job Satisfaction	0.865
Task Performance	0.861

We tested the unidimensionality of each construct convergent validity by looking at each indicator constructs. An indicator is categorized as reliable the value is greater than 0.70, while if loading factor is between 0.5 to 0.6, it can still be maintained for a model as they are still in the development stage. Based on the value of composite reliability, each construct was very reliable because it has a high value of composite reliability (greater than 0.70). This means that the instrument of all variable is considered to be used as re

search instruments. According to the table 2, we can see that each indicator is significant at 0.05.

Inner model

An inner model describes the relationship between latent variables by obtaining the output of the model structure of the construct loading factor Graphical relationship between all empirical variables. The inner model of this study is shown in Figure 2.

Structural modelling results suggested that the hypothesized model fit the data well. Table 3 provides coefficient parameter, t-statistic f value and R-Square. Moreover, Table 4. summarizes all the model fit indexes.

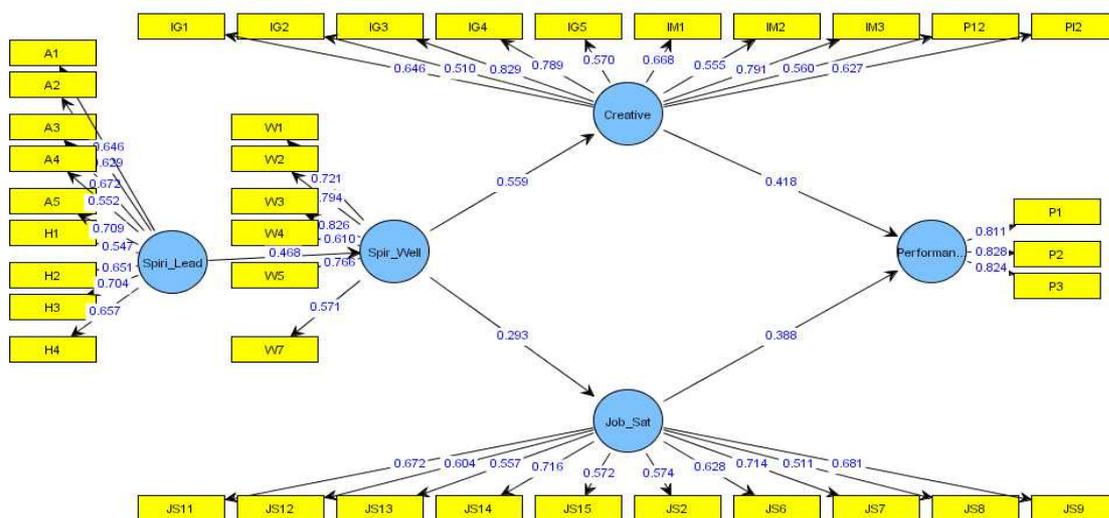


Figure 3. Structural Model

Table 3. Coefficient Parameter, T-Statistic value, and R-Square

Variable	Original Sample Estimate	Mean of subsamples	Standard Deviation	T-Statistic	Hypothesis	R-square
					Test Result	
Spiritual Leadership → Spiritual Wellbeing	0.491	0.590	0.099	4.974	Supported	
Spiritual Wellbeing → Creative Process Engagement	0.526	0.595	0.098	5.337	Supported	
Spiritual Wellbeing → Job Satisfaction	0.414	0.477	0.111	3.750	Supported	
Creative Process Engagement → Task Performance	0.436	0.461	0.120	3.643	Supported	
Job Satisfaction → Task Performance	0.329	0.343	0.158	2.086	Supported	
Spiritual Wellbeing						0.219
CPE						0.312
Job Satisfaction						0.086
Performance						0.418

Hypothesis 1 states that spiritual leadership is positively related to spiritual wellbeing. Our results supported this view ($\beta = .486, p < .05$). It means that if the employees properly understand organizational's vision and mission, they committed to carry out the vision and mission, they strive to achieve its vision and mission. Moreover, they supported leader behaviors that always gives credence to them to optimize their creativity in performing duties as an educator as well as give attention to their welfare. With this situation, employee will then feel that the work they do is very meaningful to them, and can bring about change for others, in this case gives public awareness about family planning programme.

Hypothesis 2, which states that spiritual wellbeing is positively related to creative process engagement, was also supported ($\beta = .559, p < .05$). It can be conferred that if organization is able to create spiritual wellbeing toward their employees, they will have the ability to identify a problem, able to watch it from different points of view to create solutions, identifying gradually and carefully, looking for information to support problem solving. Moreover, if leader always provide the opportunity for employee to looking for new ideas from a variety of sources, then employee will feel that the work they do is very meaningful. Finally, once they have great membership with their work, they can make a difference for others, in this case gives an unique way to engage with the community to create

public awareness about family planning programme.

Similarly, hypothesis 3, which states that spiritual wellbeing is positively related to job satisfaction, received support as well ($\beta = .293, p < .05$). It can be derived that spiritual wellbeing which characterized as degree of calling and membership create a job satisfaction. Employees who feel that their work is part of their own life, their organization is their own home and organizational vision and mission is their own life vision, will put a high value to their job and organization. It leads to the high degree of job satisfaction.

Moreover, hypothesis 4 says that creative process engagement is positively related to performance, also supported ($\beta = .418, p < .05$). Creative process engagement means that employee has the ability to identify a work problem, look at it from different points of view, careful identification, finding information to support problem solving, then their work performance will increase. Moreover, employee engagement toward their leader and community provides employee with

opportunity for employees to seek new ideas from a variety of sources which turns out the capability to reach out the standard of work quality and work quantity. Ability and creativity of employees in solving problems experienced during performing their duties and functions will lead toward high task performance.

Finally, hypothesis 5 argues that spiritual wellbeing is positively related to performance. Our results supported this hypothesis ($\beta = .388, p < .05$). The impact of spiritual wellbeing to employee performance does not occur directly rather through a process of self-formation of attitudes in each employees. Active spiritual leadership will create spiritual wellbeing. With the achievement of organizational goals, through vision, hope / faith, and altruistic love, it encourages individual positive attitudes, both in meaning / calling and membership. Once employee has high meaning and membership in their organization, their performance will likely to be high as well. In view of Anderson and Gerbing's (1988) suggestions, we also examined four alternative models that we believed were

Table 4. Summary of Model Fit Indexes

Model Test	X2	R Square	AVE
Alternative Model 1 : Direct path from spiritual leadership to job satisfaction ($\beta = 0.414, p < 0.05$)	0.865	0.086	0.393
Alternative Model 2 : Direct path from spiritual leadership to creative process engagement ($\beta = 0.526, p < 0.05$)	0.884	0.312	0.440
Alternative Model 3 : Direct path from spiritual leadership to performance ($\beta = 0.436, p < 0.05$)	0.861	0.418	0.674
Alternative Model 4 : Remove direct path from job satisfaction to performance ($\beta = 0.388, p < 0.05$)	0.861	0.418	0.674

less likely to fit the data but were nevertheless plausible on the basis of theoretical arguments.

Model 1 proposed to test the direct path from spiritual leadership to job satisfaction. It results in significant

relationship ($\beta = 0.414$, $p < 0.05$) with R Square 0.086 which is lower than through spiritual wellbeing. Hence, we can say that spiritual wellbeing mediated the relationship between spiritual leadership and job satisfaction. As discussed earlier, spiritual leadership which can be measured with degree of love and caring of the leader will create spiritual wellbeing by means calling and membership. Once employee has high meaning of their work they will enjoy with their work and finally it leads to job satisfaction. In model 2, A case could also be made that spiritual leadership directly influence creative process engagement, because a high spirit of leader tends to help a follower gain confidence, emphasize the importance of his or her work, and provide freedom to complete the task. As a result, an employee may become more involved in his or her job by engaging in processes likely to lead to creative outcomes.

Therefore, in the second alternative model, we added a direct path from spiritual leadership to creative process engagement. This model provided an adequate fit to the data but was not significantly better than the hypothesized model ($\beta = 0.526$, $p < 0.05$). Relying on similar arguments, we added a direct path from spiritual leadership to employee performance. This model provided an adequate fit to the data but was not significantly better than the hypothesized model ($\beta = 0.436$, $p < 0.05$). We also considered an additional alternative model that focused on relationships among spiritual wellbeing, job satisfaction, creative process engagement and employee performance. In one of these (alternative model 4), we tested the possibility that creative process engagement might fully mediate the relationship between spiritual wellbeing and employee performance by removing the direct link between job satisfaction and employee performance. We found that this model had a significantly poorer fit than our hypothesized

model ($\beta = 0.388$, $p < 0.05$). Overall, the hypothesized model was more consistent with the data than any of the four alternative models.

Discussion and Conclusion

It is gratifying that this research has been able to make several distinct contributions. First, our overall contribution is that we have built and tested a conceptual model that uniquely integrates spiritual leadership theory in employee performance and job satisfaction. Second, our study contributes to both the leadership and the creativity engagement literatures by examining and confirming spiritual well-being as a mediating mechanism through which creative process engagement ultimately influences spiritual well-being (Zhang & Sims, 2005). Our findings are congruent with past research pointing to a positive association between spiritual leadership and spiritual well-being (Fry et al., 2003, 2010). However, there has been a need to empirically test the specific relationship between spiritual leadership and creative process engagement. We also introduced a promising mediating variable, spiritual well-being. Results of our study support the notion that spiritual well-being is likely to mediate a relationship between spiritual leadership and creative process engagement and job satisfaction. Future research might determine a means of influencing spiritual well-being, as it appears to be an important boundary condition with respect to the influence of spiritual leadership on job satisfaction and employee performance.

Third, our study is only one of its kind in explain the relationship of creative process engagement with employee performance. More specifically, our study shows that, as expected, creative process engagement was positively related to employee performance. It has been suggested the need for research on the process of how individual follows in

producing creative outcomes, however, to the best of our knowledge, this is the first research that analyze the relationship between spiritual leadership and employee engagement in decision making process. These results not only support previous indications that an employee tends to be more creative when he or she involves in the beginning process until end on how to finish the work (e.g., Carson& Carson, 1993; Speller & Schumacher, 1975), but also demonstrate the important role that leaders can play in directing employee attention to effective processes for achieving targeted performance.

Our recommendation for future research is to examine the extent to which degree of participation may strengthen the impact of spiritual well-being on the propensity to engage in such processes. Yet another area of interest is the extent to which spiritual leadership behaviors over time might strengthen an employee's performance, potentially leading the employee to accelerate the pace of creative idea production as an outcome of creative process engagement. Like any study, this research has several limitations. First, this study had a cross-sectional design. We explained the results in simultaneous manner although it is possible to run simultaneously through PLS. Second, data on many of the major constructs were collected with self-reports questionnaire, which possible to same-source bias problem. Since these constructs (spiritual leadership, creative process engagement, spiritual well-being, job satisfaction and employee performance) address individuals' internal states, hence we argue that it is logical to collect the data from participants themselves.

Thirdly, all data were collected within a single organization, which may limit the observed variability and decreases external validity. Undoubtedly however, conducting this study in a single organiza-

tion did provide the advantage of controlling for potential organization-level confounding variables. Future research in multiple organizational settings or another kind of employee may increase the generalizability of the findings. Finally, the model, derived from Western theories, was tested in an Indonesian organization. Thus, this study provides initial support for the notion that Western spiritual theories can be applied to other cultural contexts (e.g.Indonesia). Future work that includes other cultures can help verify the generalizability of our findings.

This research model also has implications for managers. First of all, in encouraging employee job satisfaction and performance, engagement between leader and member is significant. Specifically, our results suggest that spiritual leadership has the capacity to positively influence workplace spirituality which means employee well-being, an important element that affects creative outcomes and performance. However, managers are likely to find differences in the extent to which service employees wish to be influenced in their desire to perform and engage with leader in the workplace. If they are able to engage with the leader, it will be easy to disseminate information. Hence, managers may find that their efforts to influence employees are more successful in engendering cognitions of motivation in those who view spirituality as part of their role identities.

Acknowledgment

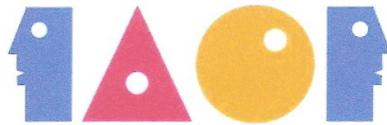
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References

- Ahearne, M., Mathieu, J., & Rapp, A. 2005. To empower or not to empower your sales force? an empirical examination of the influence of leadership empowerment behavior on customer satisfaction and performance. *Journal of Applied Psychology*, 90: 945–955.
- Aiken, L. S., & West, S. G. 1991. *Multiple regression: Testing and interpreting interactions*. Newbury
- Ali Usman and Rizwan Qaiser Danish (2010), "Spiritual Consciousness in Banking Managers and its Impact on Job Satisfaction", *International Business Research*, Vol. 3, No. 2; April 2010
- Amabile, T. M. 1985. Motivation and creativity: Effects of motivational orientation on creative writers. *Journal of Personality and Social Psychology*, 48: 393–399.
- Amabile, T. M. 1987. The motivation to be creative. In S. Isaksen (Ed.), *Frontiers in creativity: Beyond the basics*: 223–254. Buffalo, NY: Bearly.
- Amabile, T. M. 1988. A model of creativity and innovation in organizations. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior*, vol. 10: 123–167. Greenwich, CT: JAI Press.
- Amabile, T. M. 1993. Motivational synergy: Toward new conceptualizations of intrinsic and extrinsic motivation in the workplace. *Human Resource Management Review*, 3: 185–201.
- Amabile, T. M. 1996. *Creativity in context*. Boulder, CO: Westview Press.
- Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. 1996. Assessing the work environment for creativity. *Academy of Management Journal*, 39: 1154–1184.
- Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. 2004. Leader behaviors and the work environment for creativity: Perceived leader support. *Leadership Quarterly*, 15: 5–32.
- Arnold, J. J., Arad, S., Rhoades, J. A., & Drasgow, F. 2000. The Empowering Leadership Questionnaire: The basics: 223–254. Buffalo, NY: Bearly.
- Bass, B. M. 1985. *Leadership and performance beyond expectation*. New York: Free Press.
- Bentler, P. M. 1990. Comparative fit indexes in structural models. *Psychological Bulletin*, 107: 238–246.
- Bentler, P. M. 2005. *EQS for Window 6.1*. Encino, CA: Multivariate Software.
- Berry (Eds.), *Handbook of cross-cultural psychology*, vol. 2: 349–444. Boston: Allyn & Bacon.
- Bollen, K. A. 1989. *Structural equations with latent variables*. Newbury Park, CA: Sage.
- Brislin, R. W. 1980. Translation and content analysis of oral and written material. In H. C. Triandis & J. W.
- Brown, R. L. 1997. *Assessing specific meditational effects in complex theoretical models*. Working paper.

- Burke, P. J., & Tully, J. C. 1977. The measurement of role identity. *Social Forces*, 55: 881–897.
- Carson, P. P., & Carson, K. D. 1993. Managing creativity enhancement through goal setting and feedback. *Journal of Creative Behavior*, 27: 36–45.
- CBS, NFPCB, MOH & Macro International. 1998. Trends in Demographic, Family Planning, and Health Indicators in Indonesia: 1971-1997. Jakarta.
- CBS, NFPCB, MOH & ORC Macro. 2003. Indonesian Demographic and Health Survey 2002-2003. Jakarta
- Clark L, Leedy S, McDonald L, Muller B, Lamb C, Mendez T, Kim S, Schwitter R (2007), "Spirituality And Job Satisfaction Among Hospice Interdisciplinary Team Member", LifePath Hospice and Palliative Care, Inc. USA
- Duggleby W, Cooper D, Penz K (2009), "Hope, Self Efficacy, Spiritual Well-being and Job Satisfaction", College of Nursing, University of Saskatchewan, Saskatoon, Canada
- Finke, R. A., Ward, T. B., & Smith, S. M. (1992). *Creative Cognition: Theory, Research, and Applications*, Cambridge, MA: MIT Press.
- Fry, L. W. (2003). "Toward a theory of spiritual leadership." *The Leadership Quarterly* 14, 693–727.
- Fry, L. W., S. T. Hannah, et al. (2011). "Impact of spiritual leadership on unit performance." *The Leadership Quarterly* 22: 259 - 270.
- Gogoi, P. (2005). *A little bit of corporate soul*. Retrieved March 30, 2006, <http://www.businessweek.com>.
- Harvey, S. and C.-Y. Kou (2011). Collective Engagement: Exploring Creative Processes in Groups. Academy of Management Annual Meeting Proceedings, p 1-6.
- Herartri, R. (2004). Family planning decision-making: Case studies in West Java, Indonesia. 12th Biennial Conference, Population and society: issues, research, policy. A. P. Association. Canberra, Australia.
- Islam, M. A., M. M. Islam, et al. (2001). "Community Participation in Family Planning in Bangladesh: Prospects and Strategies." *Journal of Health & Population in Developing Countries* 4(2): 35 - 42.
- Jackson, M. H. P., M.S. (2003). Idea generation in naturally occurring contexts: Complex appropriation of a simple group procedure. *Human Communication Research*, 29(4), 560-591.
- Labianca, G., B. Gray, et al. (2000). "A grounded model of organizational schema change during empowerment." *Organization Science*, 11: 235–257.
- Piar Chand and Hemanage Koul (2012), "Organizational Emotional Ownership, Workplace Spirituality and Job Satisfaction As Moderators Of Job Stress", *International Journal of Humanities and Applied Sciences (IJHAS)* Vol. 1, No. 2.
- Quinn, J. B., P. Anderson, et al. (2005). "Leveraging Intellect." *Academy of Management Executive* 19(4): 78 - 94.

- Robert, Tracey E.; Young, J. Scott; Kelly, Virginia A (2006), Relationships Between Adult Workers' Spiritual Well-Being and Job Satisfaction: A Preliminary Study", *Academic Journal*, Vol. 50 Issue 3, p165
- Smalls, Elsie Wallace (2011), "The Impact of Spiritual Well-Being on Job Satisfaction and Performance for Nonprofit Employees", Dissertation, Walden University.
- State Ministry of Population/NFPCB. 1995. 25 Years Family Planning Movement. Jakarta.
- Wong, P. T. P. (2003). *President's column, September 2003: Spirituality and meaning at work*. Retrieved March 1, 2006, <http://www.meaning.ca/articles>.
- Zhang, X. and K. M. Bartol (2010). "Linking Empowering Leadership and Employee Creativity: The Influence of Psychological Empowerment, Intrinsic Motivation, and Creative Process Engagement." *Academy of Management Journal* 53(1): 107 – 128.



PERFORMANCE APPRAISALS BETWEEN FAMILY BUSINESSES AND NON-FAMILY BUSINESSES

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Abstract

The main purpose of this study is to compare and evaluate the operating performances between family businesses and non-family businesses using the Meta-frontier DEA. With the respect to the meta-technology ratio (MTR) in each year, the empirical results show that the ratio in family firms is much lower than that in non-family firms. In other words, non-family firms are much more efficient than family-firms. The Mann -Whitney test presents a significant difference between family and non-family businesses, displaying that the difference of ownership structure and management style between family and non-family businesses do effect production efficiency.

Keywords: S&P 500, Data Envelopment Analysis, Meta-frontier

Introduction

Family members are often involved in the operations of their family business in some capacity. In fact, in smaller companies usually one or more family members are the senior officers and/or general managers. Many businesses that are now public companies started out as family businesses. Poza's (2007) book classifies a family business as one in which family

members control more than 15% of ownership.

Family firms have long been recognized as being an important governance structure of business organizations in both developed and developing economies, substantial impacting the development of national economies. Family-owned and family-controlled firms account for approximately 90% of all incorporated businesses in the United States. They generate 64% of

U.S. GDP, make up 85% of private-sector employment, and are responsible for about 86% of all jobs created in the past decade. The performance implication of family-owned firms has gained increased attention lately in the business strategy and financial economics literature. In academic research, the topic of family business is often aggregated with the general area of entrepreneurship, essentially viewing family firms as having an amicable environment for entrepreneurial activities.

Most studies in the literature adopted the DEA (Data Envelopment Analysis) method to discuss performance evaluation and assumed that all companies have the same technology set without considering the difference of ownership structure. Therefore, this study employs the Meta-frontier concept and Slack-Based Measure (SBM) to evaluate and compare the operating performances between family and non-family firms from the view of resource management and usage. Through such an analysis, we shall present distinct results for the performance appraisals of these two types of businesses.

The remainder of this paper is organized as follows. Section II is Literature Review. Section III is Empirical Model. Section IV is Empirical Results. Section VI is Conclusions.

Literature Review

Traditional research on family business organizations mainly focuses on the negative influence of family ownership (Poza 2007). In general, there are two different categories of research. The first category is based on the agency theory and emphasizes the wealth expropriation behaviors pertaining to the concentration of family ownership. The second category concerns the institutional overlap within family firms, which invites family shareholders and family managers to place fam-

ily goals before business goals.

From the agency theory perspective, ownership structure and its implications on firm performance have been extensively debated and examined. Berle and Means (1932) introduced the separation of ownership and management, which further results in agency problems. Agency problems can be mitigated through the process of effective monitoring by concentrated or controlling shareholders, but the combination of ownership and control also allows such shareholders to change profit into private rent by several means, such as superior voting shares or special dividends.

Thomsen and Pedersen (2000) argued that the identity of large owners, such as family, banks, institutional investors, government, and other companies, has important implications for corporate strategy and performance. Moreover, the existence of long-term large shareholders also reduces the probability of control by other agents and thereby lessens the efficiency of the market for corporate control and the value of the firm (Barclay and Holderness 1989). A considerable number of research studies also suggest that managerial entrenchment and expropriation behaviors of concentrated family shareholders over minority shareholders lead to a corporate governance issue for family firms, further undermining their performance (Demsetz 1983; Gomez-Mejia et al. 2001).

Rettab and Azzam(2011) find that family businesses outperform non-family businesses in trading and construction sector. However, Performance of family businesses is weakest in manufacturing and services sector.

As to the second category of research, Lansberg (1983) argued that the “institutional overlap” nature of family firms may cause a managerial dilemma. Institutional overlap refers to the co-

existence of two qualitatively different institutions: the family institution and the business institution. All family-owned firms comprise the family and the business, and each has its own set of values, norms, principles, and rules of conduct. Initially, family-owned firms benefit from the overlap of family and business functions, but as the business matures, this overlap generates conflicts, concerning selection compensation and equity, appraisal, training and development, and promotion, often resulting in ineffective management.

Although the traditional literature emphasizes the setbacks of family firms and predicts a negative relationship between founding-family ownership and firm performance, family ownership also has a positive effect. A growing amount of empirical studies reports that founding-family ownership positively influences firm performance (Bonilla et al. 2010; Berent-Braun and Uhlener 2012; Cassia et al. 2012). Based on the empirical study of Chu (2009), this study elaborates upon some of the characteristics of founding-family ownership that have been proposed in the literature as potential sources of competitive advantages under the following classifications: (1) combination of ownership and control, (2) information advantages, (3) sustained presence of family shareholders, (4) entrepreneurship, and (5) investment efficiency.

First, Demsetz and Lehn (1985) noted that combining ownership and control can be advantageous, because family shareholders and family managers are viewed as the owners and residual claimants who control firms that largely belong to their own families.

Second, Smith and Amoako-Adu (1999) argued that, compared with other shareholders, family shareholders may have superior information and better

knowledge associated with their business, because they have been in contact with their business from childhood, hence making the control and monitoring of family firms easier than non-family firms. The information advantages held by family shareholders also create other advantages in disciplining the possible opportunistic behaviors of managers and in minimizing the free-rider problem inherent with small, automatic shareholders (Demsetz and Lehn 1985; Bonilla et al. 2010; Cai et al 2012).

Third, the sustained presence of family shareholders also creates potential benefits. Poza (2007) presented that, from the resource-based view of the firm, the sustained presence of family shareholders represents an intangible and specific resource that enable firms to develop long-term relations with stakeholders, such as buyers, employees, suppliers, banks, and other transactional parties. Such long-lasting, repeated ties help create trust between transactional parties and result in certain long-term economic consequences for family firms relative to non-family firms.

Fourth, Astrachan et al. (2003) maintained that family firms have been widely viewed as a major source of entrepreneurship and technological innovation. Since entrepreneurship requires combining tangible and intangible resources to ensure innovativeness and a proactive approach through a company's diverse operations, coordination, integration, and a risk-taking culture are thus important (Sathe 2003; Stopford and Baden-Fuller 1994). Given that family firms have advantages of combining ownership and control, compared with outside managers, owner-managers are expected to invest in building the firm's operations and pursue promising entrepreneurial opportunities. Owner-managers are also expected to support innovations that enhance organizational

growth (Zahra 2005). Therefore, some scholars argue that family firms represent an organization form that supports entrepreneurial activities, further leading to competitive advantages of firms (Astrachan et al. 2003; Zahra 2005; Berent-Braun and Uhlaner 2012).

Fifth and finally, with regard to investment efficiency, because founding families are likely to see firms as assets to pass on to their succeeding generations, family firms are expected to have longer investment horizons than non-family firms. This suggests willingness by them to invest in long-term projects relative to shorter managerial horizons. Stein's (1989) economic model clearly shows how maximizing short-term profits leads to different actions than maximizing long-term profits and how this short-term focus leads to ex ante losses for shareholders.

Empirical Model

The non-parametric approach has been traditionally assimilated into Data Envelopment Analysis (DEA). DEA is a mathematical programming model applied to observed data that provides a way to construct production frontiers as well as calculate efficiency scores relative to those on the constructed frontier.

The model developed by Charnes, Cooper and Rhodes (1978), known as the CCR model, imposes three restrictions on frontier technology: constant returns to scale, convexity for the set of feasible input-output combinations, and strong disposability of inputs and outputs. The basic assumption of the CCR model is that a DMU has constant returns to scale (CRS), but a DMU could have increasing returns to scale (IRS) or decreasing returns to scale (DRS) in reality. As a result, the inefficiency of a DMU might result not only from the inappropriate configuration of inputs and outputs, but also from the as-

sumption of CRS. Therefore, Banker, Charnes and Cooper (1984) set up the concept of the distance function and loosened the restriction of the variable possibility. The new DMU using variable returns to scale (VRS) is called the BCC model.

Tone (2001) provided an SBM model that considers the slacks of the input item and output item to estimate the efficiency value. The estimated efficiency value in the SBM model is between 0 and 1. The SBM model also uses a non-radial method to estimate an efficiency value. Thus, the puzzle in which the efficiency value cannot be achieved in the CCR model and in the BCC model does not happen in the SBM model.

Following the Tone (2001) model, Battese and Rao (2002), Battese et al. (2004), Moreira and Bravo-Ureta (2010), and Zhou et al. (2011) specified the non-stochastic frontier estimation, based on the Meta-frontier concept, to calculate the technology gap, and O'Donnell et al. (2008) calculated the technology gap through the radial DEA model. The advantage of the Meta-frontier model enables the calculation of comparable technical efficiencies for firms operating under different technologies. Moreover, the technique includes building a global technology production frontier (or a Meta-frontier) and then separating the countries in the sample into relatively homogeneous (or regional) groups and then estimating group-specific frontiers.

This study further develops the SBM technology gap measurement, based on the DEA model, to analyze the differences between various operational technologies. Suppose that the overall DMU can be classified into I groups that employ different operating technologies. The sample size of the i th group is J^i

and satisfies $\sum_{i=1}^I J^i = J$. The formula can be rewritten as:

$$\begin{aligned}
 & \text{Min:} \\
 & \theta, \phi, \lambda, s^{NR-}, s^{NR+} \\
 \rho^* &= t - \frac{1}{I+J} \sum_{i=1}^I \sum_{j=1}^J \frac{ts_{ij}^-}{X_{en}} \\
 & \text{s.t.} \\
 & \sum_{i=1}^I \sum_{j=1}^{J^i} x_{jin} \lambda_{ji} \leq \theta \cdot x_{en}, \\
 & n = 1, \dots, N \\
 & \sum_{i=1}^I \sum_{j=1}^{J^i} y_{jip} \lambda_{ji} \geq y_{ep}, \\
 & p = 1, \dots, P \\
 & \sum_{i=1}^I \sum_{j=1}^{J^i} \lambda_{ji} = 1, \\
 & i = 1, \dots, I \\
 & \theta \leq 1, \lambda_{ji} \geq 0.
 \end{aligned}$$

The optimal objective value of ρ^* is identified as meta-efficiency following the definition of O'Donnell et al. (2008). We compute the efficiency score of DMU_e (labeled as ρ^i) evaluated based on i th group (namely group-efficiency) by solving the following mathematical program:

$$\begin{aligned}
 & \text{Min:} \\
 & \theta, \phi, \lambda, s^{NR-}, s^{NR+} \\
 \rho^i &= t - \frac{1}{I} \sum_{j=1}^J \frac{ts_j^-}{X_{en}} \\
 & \sum_{j=1}^{J^i} x_{jin} \mu_j \leq \theta^i \cdot x_{en}, \\
 & n = 1, \dots, N \\
 & \sum_{j=1}^{J^i} y_{jip} \mu_j \geq y_{ep}, \\
 & p = 1, \dots, P \\
 & \sum_{j=1}^{J^i} \mu_j = 1,
 \end{aligned} \tag{2}$$

$$\theta^i \leq 1, \mu_j \geq 0.$$

Here, θ^i represents the group-efficiency score measured from the radial inputs, and μ_j represents the composed weight of benchmarks for DMU_e . In order to distinguish the differences between technologies, we define the technology gap ratio (TGR) of efficiency for i th group's j th DMU (i.e., DMU_{ij}) as:

$$TGR_{ij} = \rho^* / \rho^{i*}$$

The TGR in terms of utilization of inputs and generation of outputs of an individual DMU is defined as follows:

$$\begin{aligned}
 & \text{input TGR of } DMU_{ij} : \\
 & RITGR_{ij} = \theta^* / \theta^{i*}
 \end{aligned} \tag{4}$$

The TGR in terms of utilization of inputs and generation of outputs of individual groups is defined as follows:

$$\begin{aligned}
 & \text{input TGR of } i\text{th group: } RITGR_i = \\
 & \sum_j^J RITGR_{ij} / J^i \tag{5}
 \end{aligned}$$

Empirical Results

The objective of this study is to compare the performances between family and non-family businesses. According to U.S. Securities and Exchange Commission data and MSN Money data in 2011, the research samples cover 111 S&P500 firms, including 83 non-family firms and 29 family firms. Every company has five years' worth of data, from 2006 to 2010, and thus this study contains 555 types of data.

Input and Output Variables

This study separates the firms into family and non-family businesses. The four variables encompass two input varia-

bles: employees and fixed assets. The others are output variables: total revenue and goodwill.

Table 4-1 shows the descriptive statistics of the input and output variable data for each group's results from 2006 to 2010 as follows: for the input variables, the average employees in family firms is 492, whereas it is 513 in non-family firms; the maximum employees are 3,102 and 3,510 in family and non-family firms, respectively. The average fixed assets are US\$6,318.33 million and US\$7,513.99 million, and the maximum amounts are US\$107,878 million and US\$103,196 million in family and non-family firms, respectively. Thus family firms and non-family firms are similar in company scale, but the former have more employees than non-family firms.

For the output variables, the trends of total revenue between family firms and non-family firms are comparable with the averages being US\$27,502.83 million and US\$24,809.39 million, respectively. However, the amount of goodwill in family firms is less than that in non-family firms. The average and maximum goodwill are US\$2,621.62 million and US\$16,763 million in family firms, whereas for non-family firms they are respectively US\$6,310.44 million, which is more than two times that of family businesses, and US\$81,759. Therefore, non-family firms have a relative advantage in applying goodwill compared with family-firms.

Result Analysis

Family and non-family businesses differ in the composition of their stockholders. In order to clarify whether different stockholder structures present different product efficiency, we first calculate technical efficiency with respect to the group frontiers - that is, family and non-family firms respectively. Second, we calculate

the technical efficiency with respect to the Meta-frontier. In other words, the technical efficiency here does not make a distinction between family and non-family firms.

Third, by the technical efficiency from the group frontiers and Meta-frontier, we are able to compute the meta-technology ratio.

Table 4-2 presents the reorganized data of the meta-technology ratio in family firms from 2006 to 2010. The average meta-technology ratios for the years in order are 0.783, 0.797, 0.797, 0.711, and 0.615, and the 5-year average is 0.740. The data show that family businesses have a lower possibility of approaching the Meta-frontier, revealing that family businesses are relatively less efficient.

Table 4-3 presents the reorganized data of the meta-technology ratio in non-family firms from 2006 to 2010. The average meta-technology ratios for the years in order are 0.942, 0.928, 0.934, 0.969, and 0.958, and the 5-year average is 0.946. The data show that non-family businesses have a greater possibility to approach the Meta-frontier, revealing that non-family businesses are relatively more efficient.

In order to verify whether the frontiers of family businesses and non-family businesses are the same, we examine the significance of these two groups by Non-parametric Statistics as in Table 4-4. Since Asymptotic Significance, which is exactly the same as p-value, in each year is approaching zero, this proves that the two groups have significant differences. In other words, with two groups of the sample from different populations, the result of this study is effective.

Compared with family businesses in Table 4-5, non-family businesses perform better in the average meta-technology ratio, not only in each year, but also in the annual average. This shows that non-

family firms are more efficient in taking advantage of their resources.

Conclusions

The traditional DEA model assumes that all DMUs share the same production frontier. However, family businesses and non-family businesses should have different production technology resulting from different ownership structures and management style. This research analysis employs by the Meta-frontier model proposed by O'Donnell et al. (2008) and assumes family businesses and non-family business are two separate groups with different production frontiers. First, we separately calculate the technical efficiency with respect to the group frontier and Meta-frontier. Second, the meta-technology Ratio (MTR) is the ratio of the technical efficiency with respect to the group frontier and the Meta-frontier. Third, the most appropriate input and output are acquired by the slack variable analysis.

The data in this research are taken from the U.S. Securities and Exchange

References

- Astrachan, J. H. & Sharma, P., "Family-sponsored ventures", Kansas, MO: Kauffman Foundation, 2003.
- Banker, R.D. & Charnes, A.C., "Some models for estimating technical and scale inefficiencies in data envelopment analysis," *Management Science*, 30, 1078-1092, 1984.
- Battese, G.E. & Rao, D. S. P., "Technology Gap, Efficiency, and a Stochastic Meta-frontier Function", *International Journal of Business and Economics*, 1, pp. 87-93, 2002.
- Berent-Braun, M M, & Uhlener, L M. "Family governance practices and teambuilding: paradox of the enterprising family", *Small Business Economics*, 38(1), pp 103-119, 2012.
- Berle, A., & Means, G., *The modern corporation and private property*, New York: Harcourt, Brace, & World, 1932.
- Bonilla, C. A., Sepulveda, J., & Carvajal, M. "Family ownership and firm performance in Chile: A note on Martinez et al.'s evidence", *Family Business Review*, 23(2), pp 148-154, 2010.
- Commission and MSN Money. The sample covers 111 S&P500-listed firms, including 83 non-family firms and 29 family firms, during 2006 to 2010. The input variables include the labor amount and the fixed assets, and the output variables are total revenue and goodwill.
- Based on the descriptive statistics, non-family businesses have much more advantage on goodwill, which is a variable that has never been used in previous literature. Because non-family businesses have better performance on goodwill, this variable can be noteworthy in future research. With the respect to the MTR during 2006-2010, the ratio in family firms is 0.783, 0.797, 0.797, 0.711, and 0.615 and which in non-family firms is 0.942, 0.928, 0.934, 0.969, and 0.958, those ratio proves that non-family firms are more efficient than family-firms.
- The empirical result also shows that non-family firms are more efficient than family-firms in the average meta-technology ratio. It is consistent with Rettab and Azzam (2011).

- Cai, Di , Luo, Jin-hui , & Wan,Di-fang ,
“Family CEOs: Do they benefit
firm performance in China?” *Asia
Pacific Journal of Management*,
29(4),pp 923-947, 2012.
- Chu, Wenyi, “The Influence of Family
Ownership on SME Performance –
Evidence from Public Firms in Tai-
wan”, *Small Business Economics*,
33, pp. 353-373, 2009.
- Demsetz, H., “The structure of ownership
and the theory of the firm”, *Journal
of Law and Economics*, 26(2), pp.
375-390, 1983.
- Demsetz,H.&Lehn,K.,“The structure of cor-
porate ownership: Causes and con-
sequences”, *Journal of Political
Economy*, 93(6), pp. 1155-1177,
1985.
- Gomez-Mejia, L., Nunez-Nickel, M. &
Gutierrez, I., “The role of family ties
in agency contracts”, *Academy of
Management Journal*, 44(1), pp. 81-
95, 2001.
- Lansberg, I. S., “Managing human resources
in family firms: the problem of insti-
tutional overlap”, *Organizational
Dynamics*, 12(1), pp. 39-46, 1983.
- O’Donnell, C. J. & Battese,G. E., “Meta-
frontier Frameworks for the Study of
Firm-level Efficiencies and Tech-
nology Ratios”, *Empirical Econom-
ics*, 34, pp. 231-255, 2008.
- Poza, E. J., *Family business*, New York:
Thomson South-Western, 2007.
- Sathe,V.,*Corporate entrepreneurship: Top
managers and new business creation*,
Cambridge, UK: Cambridge Univer-
sity Press, 2003.
- Smith, B. F., & Amoako-Adu, B., “Man-
agement success and financial per-
formance of family controlled
firms”, *Journal of Corporate Fi-
nance*, 5(4), pp. 341-368, 1999.
- Stein, J., “Efficient capital markets, ineffi-
cient firms: A model of myopic cor-
porate behavior”, *Quarterly Journal
of Economics*, 104(4), pp. 655-669,
1989.
- Rettab, B.,& Azzam, A. “Performance of
Family and Non-family Firms with
Self-Selection: Evidence from Du-
bai”, *Modern Economy*, 2(4),pp 625-
643, 2011.
- Stopford, J. M., & Baden-Fuller, C. W. F.,
“Creating corporate entrepreneur-
ship”, *Strategic Management Jour-
nal*, 15, pp. 521-536, 1994.
- Thomsen, S. & Pedersen, T., “Ownership
structure and economic performance
in the largest European companies”,
Strategy Management Journal, 21(6),
pp. 689-705, 2000.
- Tone, K., “A Slacks-based Measure of Effi-
ciency in Data Envelopment Analy-
sis”, *European Journal of Operation-
al Research*, 130, pp. 498-509, 2001.
- Zahra, S. A., “Entrepreneurial risk taking in
family firms. *Family Business Re-
view*”, 18(1), pp. 23-40, 2005.
- Zhou, Xianbo, Kui-Wai Li & Qin Li, “An
Analysis on Technical Efficiency in
Post-reform China”, *China Econom-
ic Review*, forthcoming, 2011.

Table 4-1. Descriptive Statistics

		Family Firms (Sample: 145)	Non-Family Firms (Sample: 415)
Employees (people)	Maximum	3,102.00	3,510.00
	Minimum	186.00	219.00
	Average	492	513
	Standard Deviation	282.76	328.19
Fixed Assets (millions dol- lar)	Maximum	107,878.00	103,196.00
	Minimum	181.73	27.00
	Average	6,318.33	7,513.99
	Standard Deviation	17,785.00	13,925.28
Total Reve- nue (US\$ million)	Maximum	421,849.00	181,581.00
	Minimum	2,095.39	1,474.90
	Average	27,502.83	24,809.39
	Standard Deviation	71,096.67	27,843.18
Goodwill (US\$ million)	Maximum	16,763.00	81,759.00
	Minimum	51.71	2.50
	Average	2,621.62	6,310.44
	Standard Deviation	3,433.87	13,298.69

Table 4-2. Yearly Family Firms' Meta-technology Ratio

	2006	2007	2008	2009	2010	5-yr Avg.
Average	0.783	0.797	0.797	0.711	0.615	0.740

Table 4-3. Yearly Non-family Firms' Meta-technology Ratio

	2006	2007	2008	2009	2010	5-yr Avg.
Average	0.942	0.928	0.934	0.969	0.958	0.946

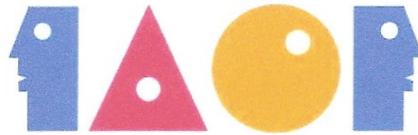
Table 4-4. Mann-Whitney Test

Family/Non-Family Firms	2006	2007	2008	2009	2010
Mann-Whitney U	623.000	653.500	630.000	348.500	291.000
Z	-4.028	-3.769	-3.939	-6.173	-6.455
Asymptotic Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000

Source: Authors' collection.

Table 4-5. Descriptive Statistics of the Meta-technology Ratio

		Average	Standard Deviation	Maximum	Minimum
2006	Family Firms	0.783	0.225	1.000	0.117
	Non-Family Firms	0.942	0.103	1.000	0.471
	Average	0.863	0.164	1.000	0.294
2007	Family Firms	0.797	0.195	1.000	0.244
	Non-Family Firms	0.928	0.128	1.000	0.243
	Average	0.862	0.161	1.000	0.244
2008	Family Firms	0.797	0.206	1.000	0.191
	Non-Family Firms	0.934	0.130	1.000	0.152
	Average	0.866	0.168	1.000	0.172
2009	Family Firms	0.711	0.242	1.000	0.082
	Non-Family Firms	0.969	0.110	1.000	0.215
	Average	0.840	0.176	1.000	0.149
2010	Family Firms	0.615	0.230	1.000	0.203
	Non-Family Firms	0.958	0.129	1.000	0.154
	Average	0.786	0.179	1.000	0.179



RELATIONAL BENEFITS, CUSTOMER SATISFACTION, AND CUSTOMER LOYALTY IN CHAIN STORE RESTAURANTS

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Abstract

This study aims to investigate the structural relationships among relational benefits, customer satisfaction, and customer loyalty in the chain store restaurants. Based on a theoretical background literature review, three types of customer relational benefits were determined: psychological, social, and special treatment benefits. Theoretical relationships among relational benefits, customer satisfaction, and customer loyalty were derived from the review of literature, and a theoretical model was proposed. The proposed model was then tested employing data collected from 267 customers of chain store restaurants. The results of subsequent analysis of the data indicated that relational benefits influence customer loyalty, and customer satisfaction with employees influence customer loyalty. In addition, the impact of which is partially mediated by satisfaction with employees. The managerial implications of these findings are discussed in the latter part of this article.

Keywords: relational benefits, customer satisfaction, customer loyalty.

Introduction

The core tenet of relationship marketing is the creation and maintenance of long-term customer relationships through the provision of both tangible and intangi

ble relational benefits, such as psychological benefits, social benefits, and special treatment benefits (Chen & Hu, 2010; Hennig - Thureau, Gwinner, & Gremler, 2002). From a company's perspective, the most important outcome of providing such relational benefits is the maximization of customer satisfaction (Berry & Parasura-

man, 1991; Kim, 2009). Satisfied customers not only provide a company with financial resources through continued transactions, they are also an integral factor in creating a company's positive brand image, thus performing valuable marketing functions (Lee, 2001; Pappu & Quester, 2006).

In addition, customer satisfaction is associated with the formation of customer loyalty (Hyun, 2010; Oliver, 1999), and increased repeat purchase behaviors (Bodet, 2007; Chi & Qu, 2008). Such customer behavior in relationship marketing is a significant asset to a service firm. Since customers can enhance service production and delivery efficiency (Youngdahl & Kellogg, 1997), service organizations can benefit from understanding the factors that lead to voluntary customer participation. In doing so, they can take advantage of this 'hidden asset': the customer. There is growing interest in the customer's role in relationship marketing; however, little empirical research exists that addresses the antecedents of customer behavior (Bettencourt, 1997).

Since interactions with the enterprises make customers decide their loyalty to, and relationship with, the company (Rogers, 2005; Sirdeshmukh, Singh, & Sabol, 2002). If the corporation cannot raise the quality of total customer experiences, then customers will not stay with it (Seybold, 2001). In order to provide a total customer experience, enterprises need to have a favorite and an identifiable brand name, develop a trust system and build an interaction model of customer drivers (Payne & Frow, 2005; Uncles, Dowling, & Hammond, 2002).

In summarizing the existing literature, it has been shown that satisfaction has been widely used as an overall measure of customer relational benefits, which are a key determinant of longterm market-

ing success (Gwinner et al., 1998; Hennig-Thurau et al., 2002). In addition, from the previous statement, we can infer that satisfaction impacts customer loyalty; therefore, it is also a consequence of relational benefits (Keh & Teo, 2001; Reynolds & Beatty, 1999). That is, the sequential process: relational benefit → satisfaction → customer loyalty. However, while existing studies emphasize the importance, our understanding of how these factors interrelate is relatively weak.

In recent years, the development of chain store restaurants is rapid and the business volume is rising year by year in Taiwan. The market is hence getting into a severe competition. Therefore, more and more restaurants try to expand market shares by running business in chain store form to reduce cost and increase profits. The operation of chain store can reach the large-scale production in terms of economic efficiency. Furthermore, in order to survive in low-price competitive environment, the restaurants would provide new products for meeting customers' requirements. Therefore, from the concepts of customer relationship management, this study would test the relationships of relationship benefits, customer satisfaction, and customer loyalty.

Literature Review

Relational Benefits

Customers not only purchase products but also receive and expect to receive relational benefits from a service provider (Chen et al., 2010; Chen & Hu, 2010). For instance, the product in a dining experience is the food and drink consumed by the customer. The relational benefits of this experience may include a pleasant atmosphere, an enjoyable interchange with the service providers and with other customers, and personalized service.

According to previous studies, relational benefits help to maximize customer satisfaction and revisit intention, thus playing a key role in revenue maximization (Berry & Parasuraman, 1991; Chen et al., 2010). The personal nature of relational benefits places a priority on emphasizing the service provider's customer relationships (Hennig-Thurau et al., 2002). Customers benefit in numerous ways from ongoing relationships with service providers and thus are motivated to continue such relationships (Kim, 2009).

From the existing literature review, three types of customer relational benefits were determined: psychological, social, and special treatment benefits (Gwinner et al., 1998; Hennig-Thurau et al., 2002; Reynolds & Beatty, 1999). Psychological benefits include feelings of comfort, security, and reduced anxiety as a result of the relational experience. Social benefits generally describe feelings related to the fraternization and friendships facilitated by the relational experience. Special treatment benefits are broadly concerned with the implementation of additional services and considerations for 'preferred' customers. It has been strongly believed that positive experiences in these key relational benefit dimensions are associated with increased customer satisfaction (Hennig-Thurau et al., 2002; Reynolds & Beatty, 1999).

Customer Satisfaction

Customer satisfaction is the key mediator considered in relationship marketing and service quality theory (Hennig-Thurau et al., 2002; Reynolds & Beatty, 1999). In the history of marketing, many definitions of customer satisfaction have been postulated. Customer satisfaction can be defined generally as a positive affective reaction to the favorable appraisal of a consumption experience (Babin & Griffin, 1998). A favorable reaction is primarily

associated with benefits that meet or exceed customer expectations (Ofir & Simonson, 2007; Parasuraman, Zeithaml, & Berry, 1985). In relationship marketing, it has been argued that a customer's appraisal of his or her level of satisfaction can be made across multiple dimensions, including judgments of both the service employees and the service setting itself (Singh, 1991; Westbrook, 1981). For example, in a healthcare setting, satisfaction judgments are driven by assessments of both the medical staff and of the facility (Singh, 1991). Consequently, an owner or manager can closely understand and act upon the different types of customer satisfaction or dissatisfaction (Wong & Sohal, 2002).

Since employees play a key role in creating an emotional connection with customers, and are charged with recognizing customers' desires for special treatment and fulfilling their customers' preferences. For this reason, service employees are critical in providing psychological, social, and special treatment benefits. Given the importance of the employee role in creating relational benefits for consumers, existing studies (e.g. Reynolds & Beatty, 1999) have postulated that consumer satisfaction with service employees fully mediates the relationship between relational benefits and overall satisfaction. Previous research suggests that relational benefits can influence consumer satisfaction (Chen et al., 2010; Hennig-Thurau et al., 2002). Psychological benefits indicate feelings of comfort, security, and reduced anxiety as a result of the relational experience (Gwinner et al., 1998; Hennig-Thurau et al., 2002; Reynolds & Beatty, 1999), which lead to perceptions of trustworthiness of the service provider (Morgan & Hunt, 1994). On a more practical level, psychological benefits indicate customers' confidence in what they will derive from the relationship with a service provider. These positive emotions cause customers to perceive fewer risks in relationships with a

service provider, thus enhancing customer satisfaction (Berry, 1995). In a service setting such as a chain store restaurant in particular, the customers prefer to visit a chain store restaurant with a positive brand image as well as one that offers close interactions with service employees (Hyun, 2009). On this basis it is hypothesized that:

H1: Consumer perceptions of psychological benefits are positively related to satisfaction with employees.

Another important dimension of relational benefits is social benefits (Chen et al., 2010; Chen & Hu, 2010). Social benefits are feelings related to the fraternization and friendships that are facilitated by the relational experience (Reynolds & Beatty, 1999). Social benefits focus on the relationships themselves rather than on outcomes, and can be expected to be positively related to customer satisfaction (Hennig-Thurau et al., 2002). Wilson & Jantrania (1996) postulated that the social bond/social benefit is a concept of mutual friendship, which helps to form a personal interaction, thus positively influencing customer satisfaction. Based on the theoretical and empirical backgrounds, the following hypothesis is derived:

H2: Consumer perceptions of social benefits are positively related to satisfaction with employees.

The other important dimension of relational benefits, special treatment benefits, is broadly concerned with additional services and considerations for 'preferred' customers, and a positive relationship between special treatment benefits and customer satisfaction has been reported in related studies (Chen et al., 2010; Yen & Gwinner, 2003). It is the service employees who fulfill an organization's promises and deliver the perceived benefits to the customers. From the customer's perspec-

tive, therefore, special treatment benefits can be considered an aspect of service performance. On this basis it is hypothesized that:

H3: Consumer perceptions of special treatment benefits are positively related to satisfaction with employees.

Customer Loyalty

Customer loyalty describes "customer behaviors indicating allegiance to and promotion of the organization's interests beyond individual interests" (Bettencourt, 1997). Customer satisfaction aids in the creation of customer loyalty (e.g., repurchase, positive word-of-mouth, and recommendation) (Sun & Lin, 2010; Lin et al., 2009). The satisfaction-customer loyalty relationship is documented in numerous consumer service contexts (Anderson & Sullivan, 1993; Roig, Garcia, & Tena, 2006). On this basis it is hypothesized that:

H4: Satisfaction with employees has a positive effect on customer loyalty.

The Mediating Effect of Satisfaction

Based on the existing theoretical and empirical backgrounds in these areas, a series of hypotheses was proposed. After integrating the hypotheses, a model was developed that describes the full mediating role of satisfaction. During the model development process, it was suspected that customer relational benefits could bear a direct impact on customer loyalty. Customer loyalty occurs when customers believe that their expectations for relational benefits have been satisfied in the service delivery process (Rosenbaum & Massiah, 2007). However, in the chain store restaurant context, patrons show customer loyalty not only when they feel satisfied with relational benefits, but also when they are dissatisfied with specific service interac-

tions and point out problems to employees. For this reason, theoretically, customer satisfaction should exist between relational benefits and customer loyalty.

There are several empirical studies from the theoretical and empirical backgrounds that have examined the direct relationships between customer relational benefits and customer loyalty, the majority of which support the full mediating role of satisfaction in the relationship between two conceptual constructs (e.g. Reynolds & Betatty, 1999). In accordance with the existing theoretical and empirical backgrounds, this study posits that relational benefits influence customer loyalty, but that their impact is fully mediated by customer satisfaction. On this basis it is hypothesized that:

H5: Psychological benefits has a positive impact on customer loyalty through the mediating effect of satisfaction with employees.

H6: Social benefits has a positive impact on customer loyalty through the mediating effect of satisfaction with employees.

H7: Special treatment benefits has a positive impact on customer loyalty through the mediating effect of satisfaction with employees.

Methodology

Quantitative Data Collection

Sampling and Data Collection.

The sample of this study focuses on the customers of chain store restaurants. Questionnaires were used to collect the data for this study. A questionnaire was submitted as a pre-test to determine possible shortcomings in comprehension and to confirm its suitability. A pilot test of the survey was conducted with 40 cus-

tomers within one of the largest chain restaurants in the Taipei area. Based on the results of the pre-test, some revisions of items on the questionnaire were made. Questionnaires were administered with the sample being randomly selected from a certain college in Taipei. Students from all areas of Taiwan respond to the questionnaire by their own actual consuming experience within the chain restaurants. The questionnaires finally yielded 291 finished questionnaires. Out of these, 267 were usable.

Measuring Tools.

The measurement instrument was designed based on various previous studies. All the questionnaire items were measured on a five point scale. Respondents were asked to indicate their level of agreement toward each statement, from 1 (strongly disagree) to 5 (strongly agree).

Psychological benefits.

Psychological benefits in this study include feelings of comfort, security, and reduced anxiety as a result of the relational experience. We use and adjust the measuring scales developed by Gwinner et al. (1998), Garbarino and Johnson (1999), and Hennig-Thurau et al. (2002).

Social benefits.

Social benefits in this study generally describe feelings related to the fraternization and friendships facilitated by the relational experience. We use and adjust the measuring scales developed by Gwinner et al. (1998), and Hennig-Thurau et al. (2002).

Special treatment benefits.

Special treatment benefits in this study are broadly concerned with the implementation of additional services and considera-

tions for ‘preferred’ customers. We use and adjust the measuring scales developed by Gwinner et al. (1998), and Hennig-Thurau et al. (2002).

Customer satisfaction.

Customer satisfaction in this study can be defined generally as a positive affective reaction to the favorable appraisal of a consumption experience. We use and adjust the measuring scales developed by Reynolds and Beatty (1999).

Customer Loyalty.

Consistent with the relevant literature (Ho et al., 2010; Lee et al., 2008; Zeithaml et al., 1996), the customer loyalty scale consisted of four items.

Purification and Reliability of Measurement Variables

To purify the measurement scales and to identify their dimensionality, principal components reliability test with varimax rotation was applied to condense the collected data into certain factors. After reliability test, we used item-to-total correlation and internal consistency analysis to confirm the reliability of each research factor. The reliability of five latent variables was investigated by calculating

Cronbach’s alpha. The range of the values was between .78 and .89, which indicated all measures were quite reliable.

Structural Equation Model

In order to find out the relationship in the whole research model in this study, a structure equation model (SEM) was used. The criteria of Chi-square, GFI, AGFI, CFI, RMR, and RSEMA were used to evaluate the overall goodness of fit of the model. According to Hair et al. (2010), the value of overall fit of a hypothesized model can be regarded as appropriately significant when each criteria Chi-square is small (p value>.05), and fit indices such as the ratio of Chi-square to degrees of freedom (Chi-square/d.f.≤2); goodness of fit index (GFI>.9), and adjusted goodness of fit index (AGFI>.9); root mean square residual (RMR<.1), and root mean square error of approximation (RMSEA<.08) are all fulfilled. The result of confirmatory factor analysis (CFA) produced evidence of an acceptable fit of the model (Chi-square= 153.72; df =84; p=.00; Chi-square/df=1.83; RMR=.04; GFI=.90; AGFI = .92; RMSEA = .07). Parameter estimates of the final model were inspected and no problematic occasions were found. And the correlations between latent variables ranged from .21 to .37 (see Table 1).

Table 1 Correlation matrix and discriminant validity analysis of latent variables

Constructs	1	2	3	4	5
1. Psychological benefits	0.73				
2. Social benefits	0.23**	0.76			
3. Special treatment benefits	0.24**	0.21**	0.81		
4. Customer satisfaction	0.31**	0.30**	0.35**	0.89	
5. Customer loyalty	0.33**	0.34**	0.36**	0.37**	0.89

M: Means, SD: Standard deviations, *p < 0.05, **p < 0.01, n=267

The square roots of average variance extracted (AVE) are given on the diagonal. The correlation coefficients of constructs are given under the diagonal.

Results

Quantitative Data Analysis

The results showed that the typical respondent was male (47.35%), between 30-39 years of age (38.7%) or 20-29 years of age (34.5%), and had completed university degree (72.4%); female (52.65%), between 20-29 years of age (39.1%) or 30-39 years of age (34.2%), and had completed university degree (76.1%). Moreover, the majority of respondents worked in professional jobs (32.4%), and earned a monthly income of 40,000 to 50,000 NT (34.6%) or 50,000 to 60,000 NT (27.6%).

Assumption Tests

Hypotheses H1-H3 proposed that relational benefits influence consumer satisfaction with employees. In particular, psychological benefits bear a positive effect on satisfaction with employees ($\gamma_{11} = .28, p < .01$), thus supporting H1. Meanwhile, social benefits bear a significant effect on satisfaction with employees ($\gamma_{12} = .25, p < 0.01$), and the result support H2. Furthermore, we hypothesize that special treatment benefits are associated with satisfaction with employees (H3). With regard to satisfaction with employees, this prediction suggests a stronger positive coefficient ($\gamma_{13} = .32, p < .01$). Satisfaction with employees ($\beta_{21} = .41, p < .01$) has a significant positive effect on customer loyalty, thus supporting H4.

Additional analyses of indirect effects were conducted to investigate whether relational benefits bear an effect on customer loyalty through the mediating roles of satisfaction with employees. Relational benefits were found to be positively associated not only with customer satisfaction, but also were found to influence consumer loyalty (Hennig-Thurau et al., 2002). As the result, psychological benefits have an indirect, positive effect on customer loyalty

(.33, $p < .01$). Although social benefits have a positive effect on customer loyalty (.05, n.s.), it did not affect customer loyalty. The empirical results indicate that special treatment benefits have a positive and significant effect on customer loyalty (.42, $p < .01$). The results of subsequent analysis of the data indicated that relational benefits influence customer loyalty, and customer satisfaction with employees influence customer loyalty. In addition, the impact of which is partially mediated by satisfaction with employees.

Conclusion

From the theoretical standpoint, this study makes some contribution to chain store literature by providing insights on the factors that affect loyalty. First, the results of data analysis indicate that all sub-dimensions of relational benefits bear strong positive impacts on customer satisfaction with employees. The results of data analysis also indicate that customer satisfaction bears a significant impact on customer loyalty. This means that, when customers are satisfied with employees through service exchanges, they become favorable supporters of the service providers and of the service firm. Therefore, patrons' satisfaction is a critical factor for service firms in stimulating customer loyalty. In addition, in accordance with the existing theoretical backgrounds (e.g. Kim, Ok, & Gwinner, 2010), relational benefits bear a positive effect on creating customer loyalty; however, the effectiveness of these benefits is mediated by satisfaction with employees.

Beyond the theoretical implications, the findings of this study possess critical practical implications for restaurant marketers and managers. As data analysis revealed, when patrons felt relational benefits from service providers, they showed a high level of satisfaction. Therefore, in order to provide greater relational benefits

to patrons, restaurant managers should conduct appropriate employee training and efficient marketing strategies that maximize these benefits. In light of the fact that a thorough understanding of the relationships between relational benefits, customer satisfaction, and customer loyalty is critical in improving the marketing competency of a service firm, the model developed in this study can be utilized chain store restaurants in retaining customers over the long term and in maximizing the shareholder value of the company.

Limitations And Future Directions

Despite its theoretical and practical implications, two limitations of this study

should be addressed. First, the proposed model in this study was tested with data collected from chain store restaurants patrons in Taiwan. For this reason, the ability to cross-culturally generalize the results is therefore limited to some extent. Future research may attempt to further verify or extend the proposed model with different study populations. Second, in the data analysis, it was suspected that the sample size or the number of parameters involved in the model. Future research may attempt to test the proposed model with a smaller or larger sample size, or with a more parsimonious or complicated model.

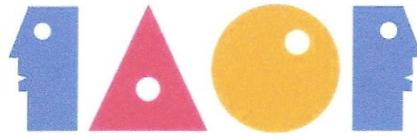
References

- Anderson, Eugene W. and Mary W. Sullivan (1993). The Antecedents and Consequences of Customer Satisfaction for Firms. *Marketing Science*. 12 (1), pp. 125-43.
- Babin, B.J. & Griffin, M. (1998). The nature of satisfaction: an updated examination and analysis. *Journal of Business Research*, 41 (2), 127-36.
- Berry, L.L. (1995). Relationship marketing of services: growing interest, emerging perspectives. *Journal of the Academy of Marketing Science*, 23 (4), 246-51.
- Berry, L.L. & Parasuraman, A. (1991). *Marketing Services: Competing Through Quality*. New York: The Free Press.
- Bettencourt, L.A. (1997). Customer voluntary performance: customers as partners in service delivery. *Journal of Retailing*, 73 (3), 383-406.
- Bodet, G. (2007). Customer satisfaction and loyalty in service: two concepts, four constructs, several relationships. *Journal of Retailing and Consumer Services*, 15 (3), 156-162.
- Chen, K.Y. Dai, Y.D. & Fang, S.R. (2010). A Study on Relationship Benefit, Relationship Quality, and Customer Voluntary Behavior of the Domestic Airline Industry. *Journal of the Chinese Institute of Transportation*, 22(4), 447 -480.
- Chen, P.T. & Hu, H.H. (2010). The effect of relational benefits on perceived value in relation to customer loyalty: An empirical study in the Australian coffee outlets industry. *International Journal of Hospitality Management*, 29, 405-412.
- Chi, C. G. & Qu, H. (2008). Examining the structural relationships of destination image, tourist satisfaction and destination loyalty: an integrated approach. *Tourism Management*, 29 (4), 624-636.

- Gwinner, K.P. Gremler, D.D. & Bitner, M.J. (1998). Relational benefits in services industries: the customer's perspective. *Journal of the Academy of Marketing Science*, 26 (2), 101-114.
- Hair, J.F., W.C. Black, J.B. Babin, R.E. Anderson and R.L. Tatham, (2010). *Multivariate Data Analysis*. 7th Ed., Pearson Education Inc., Upper Saddle River, New Jersey.
- Hennig-Thurau, T. Gwinner, K.P. & Gremler, D.D. (2002). Understanding relationship marketing outcomes: an integration of relational benefits and relationship quality. *Journal of Service Research*, 4 (3), 230-47.
- Ho, L-H., Chung, C-W., Lin, S-P, and Chen, L-F. (2010). Visitors' involvement, perceived value, satisfaction and behavioural intention on tourist express trains in Taiwan, *Int. J. Services Technology and Management*, 13(3/4), pp.305–322.
- Hyun, S. (2009). Creating a model of customer equity for chain restaurant brand formation. *International Journal of Hospitality Management*, 28 (4), 529-539.
- Hyun, S. (2010). Predictors of relationship quality and loyalty in the chain restaurant industry. *Cornell Hospitality Quarterly*, 51 (2), 251-267.
- Keh, H.T. & Teo, C.W. (2001). Retail customers as partial employees in service provision: a conceptual framework. *International Journal of Retail & Distribution Management*, 29(8), 370-8.
- Kim, W. (2009). Customers' responses to customer orientation of service employees in fullservice restaurants: A relational benefits perspective. *Journal of Quality Assurance in Hospitality and Tourism*, 10 (3), 53-174.
- Kim, W., Ok, C., & Gwinner, K. P. (2010). The antecedent role of customer-to-employee relationships in the development of customer-to-firm relationships. *The Service Industries Journal*, 30(7), 1139-1157.
- Lee, Y. (2001). The impact of customers' perceived prosocial behaviors of customer-contact employees on the evaluation of service quality, customer satisfaction, and customer voluntary performance. *Korean Marketing Review*, 16 (3), 105-25
- Lee, Y., Lee, Ch., Lee, S. and Babin, B. (2008). Festival scapes and patrons' emotions, satisfaction, and loyalty. *J. Bus. Res.*, 61(1), pp. 56-64.
- Lin, N., Tseng, W., Hung, Y., & Yen, D. C. (2009). Making customer relationship management work: evidence from the banking industry in Taiwan. *The Service Industries Journal*, 29(9), 1183-1197.
- Morgan, R.M., & Hunt, S.D. (1994). The commitment–trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20–38.
- Ofir, C. & Simonson, I. (2007). The effect of stating expectations on customer satisfaction and shopping experience. *Journal of Marketing Research*, 44 (1), 164-174.
- Oliver, R.L. (1999). Whence consumer loyalty? *Journal of Marketing*, 63, 33-44.

- Parasuraman, A., Zeithaml, V.A., & Berry, L.L. (1985). A conceptual model of service quality and its implications for further research. *Journal of Marketing*, 49 (4), 41-50.
- Pappu, R. & Quester, P. (2006). Does customer satisfaction lead to improved brand equity? An empirical examination of two categories of retail brands. *Journal of Product and Brand Management*, 15 (1), 4-14.
- Payne, A., & Frow, P. (2005). A strategic framework for customer relationship management. *Journal of Marketing*, 69(4), 167–176.
- Reynolds, K.E. & Beatty, S.E. (1999). Customer benefits and company consequences of customer-salesperson relationship in retailing. *Journal of Retailing*, 75 (1), 11-32.
- Rogers, M. (2005). Customer strategy: observations from the trenches. *Journal of Marketing*, 69(4), 262–263.
- Roig, J. C. F., Garcia, J. S., & Tena, M. A. M. (2006). Perceived value and customer loyalty in financial services. *The Service Industries Journal*, 29(6), 775-789.
- Rosenbaum, M. S. & Massiah, C. A. (2007). When customers received support from other customers. *Journal of Service Research*, 9 (3), 257-270.
- Singh, J. (1991). Understanding the structure of consumers' satisfaction evaluations of service delivery. *Journal of the Academy of Marketing Science*, 19 (3), 223-44.
- Sirdeshmukh, D., Singh, J., & Sabol, B. (2002). Consumer trust, value, and loyalty in relational exchanges. *Journal of Marketing*, 66(2), 15–37.
- Sun, P. & Lin, C. (2010). Building customer trust and loyalty: an empirical study in a retailing context. *The Service Industries Journal*, 30(9), 1439-1455.
- Uncles, M.D., Dowling, G.R., & Hammond, K. (2002). Consumer loyalty and customer loyalty programs. *The Journal of Consumer Marketing*, 20(4), 294–316.
- Westbrook, R.A. (1981). Sources of satisfaction with retail outlets. *Journal of Retailing*, 57 (3), 68-85.
- Wilson, D. & Jantrania, S. (1996). Understanding the value of a relationship. *Asia-Australia Marketing Journal*, 2 (1), 55-66.
- Wong, A. & Sohal, A. (2002). An examination of the relationship between trust, commitment and relationship quality. *International Journal of Retail & Distribution Management*, 30(1), 34-50.
- Yen, H.J.R & Gwinner K.P. (2003). Internet retail customer loyalty: the mediating role of relational benefits. *International Journal of Service Industry Management*, 14 (5), 483-500.
- Youngdahl, W.E. & Kellogg, D.L. (1997). The relationship between service customers' quality assurance behaviours, satisfaction, and effort: a cost of quality perspective. *Journal of Operations Management*, 15 (1), 19-32.

Zeithaml, V.A., Berry, L.L. & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, 60 (2), 31-46.



KEY SUCCESS FACTORS IN B & B LODGING SERVICES: FROM
THE PERSPECTIVE OF AFFECTIVE COMMITMENT, INTERAC-
TIONAL JUSTICE, AND PARENT-CHILD PARTICIPATION

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Abstract

With the popularity of family members experimenting travelling and sightseeing activities together in Taiwan, this study aims to identify the key success factors that contribute to affective commitment, interactional justice, parent-child participation and their satisfaction and loyalty in B & B lodging service. The authors propose a model, in addition to the factors in which affective commitment and interactional justice is assumed to increase the extent to which parent-child participation in the service delivery. Furthermore, parent-child participation may increase satisfaction and loyalty. From the literature review, the major findings of this study are as the following: Firstly, affective commitment and interactional justice relate positively to parent-child participation. Secondly, parent-child participation enhances satisfaction and loyalty. Meanwhile, satisfaction has a positive effect on loyalty. Thus, the findings provide early childhood educators and tourism managers in the B & B lodging services with valuable insights that affective commitment and loyalty play the important role in contributing in satisfaction and loyalty; furthermore, firms can increase their competitive advantage through enhancing parent-child participation; early childhood educators can add parent-child participation activities into their training courses for early childhood education students during their college curriculum.

Keywords: affective commitment, interactional justice, parent-child participation, satisfaction, lodging service.

Introduction

The popularity in B & B lodging service have become the hot issue in Taiwan, especially in the Ping-Tung area, where the National Kenting Park is located and family members are interested in visiting the wonderful sightseeing places in Southern Taiwan. Especially for B & B lodging services in Ping Tung County, in order to make travel-related decisions, customers make use of travel sites and on-line communities to obtain practical information. Through knowledge from themselves and from social communities, customers are taking an initiative to communicate with service providers.

These changes correspond to what Prahalad and Ramaswamy stated (2000) "the market has become a platform where consumers actively participate in value creation". In other words, the marketing philosophy is transformed from "market to" to "market with" (Vargo & Lusch, 2004). Under the concept of "market to", consumers are passive receivers of value. They are segmented and then enticed to purchase the products that producers design for them. In this case, the roles of buyers and sellers are clear-cut. In contrast, the notion of "market with" means those consumers go along with the firms to create value (Lusch et al., 2007).

Customers are more capable, willing and motivated to exercise power to get involved in the service. In contrast, firms play the role as facilitators of value creation, rather than producers of standardized value (Payne et al., 2008). Some empirical researches

have identified the benefits that customer participation brings about for consumers and firms. When customers take part in the process of decision-making, they gain more control of the service creation and delivery. Hence, the service quality is better and customers obtain more customized service (Xie et al., 2008). For the firms, their productivity increases and their customers prone to be more satisfied, when they perceive more value from their service encounters during participation (Sharma & Patterson, 1999). Based on these findings, many researchers support the view that firms should embrace the concept of customer participation, because it is the means to achieve competitive advantage (Prahalad & Ramaswamy, 2004) and the next frontier in competitive effectiveness (Bendapudi & Leone, 2003).

As for the factors that enhance customer participation, prior studies showed that the extent to which customers participate in the service delivery depends on the resources that customers have. In terms of value creation, customer participation offers greater opportunities for services that require high degrees of customer contact and high interdependence between customers and service providers for favorable outcomes (Auh et al., 2007). B & B tourism is a service that emphasizes the human touch attributes and requires frequent interpersonal interaction. It serves as an appropriate context to explore the role of customer participation. In addition, owing to the importance of the relationship between parents and children, this study assesses how parent-child participation interacts with its ante-

cedents and decedents from the perspective of the B & B service.

Based on the discussion above, research direction focuses on under which circumstances customers would be motivated to engage in service delivery. However, while reviewing related literature, we found some gaps. First, there is limited empirical research for the factors that contribute to parent-child participation. So far most of the research concerning customer participation focuses on the effects that it brings about, like service quality (Ennew & Binks, 1999), satisfaction (Bendapudi & Leone, 2003; Chan et al., 2010; Wu, 2011) and loyalty (Ennew & Binks, 1999). Little attention is paid to the factors that enhance parent-child participation.

Furthermore, most of the works that address its antecedents provide only theoretical review (Li & Petrick, 2008; Lusch et al., 2007; Payne et al., 2008). Empirical support is rarely explored (Wu, 2011). Second, in the tourism literature, parent-child participation is less associated with service relationship. The concept of relationship marketing was not introduced to tourism literature till 1996. Thus the theoretical and empirical literature development concerning relationship marketing is quite limited (Yuksel et al., 2010). Satisfaction and loyalty are often associated with corporate image (Richard & Zhang, 2011), commitment (Moline et al., 2007) and service quality (Ennew & Binks, 1999). There has been little work that addresses firm-customer relationships from the perspective of customer participation (Bloemer &

De Ruyter, 1999; Ennew & Binks, 1999; Wu, 2011). According to Li and Petrick (2008), relationship marketing and customer as value co-creator are two paradigms that need to be more researched. Therefore, in this study we combine parent-child participation and relationship marketing together and then examine the factors that enhance parent-child participation and how parent-child participation effects satisfaction and loyalty.

Literature Review

Parent-Child Participation

From the family education perspective, family members who plan their tourism and travelling are in accordance with their psychological and physical motivation, including combining education and entertainment, experimenting interesting activities with family members, and relax for a vacation. Customer participation emphasizes the participative role of consumers in the service context. Dabholkar (1990) defined customer participation as "the degree to which the customer is involved in producing and delivering the service". According to Lengnick-Hall et al. (2000), customer participation means "engaging customers as active participants in the organizations' work". Under this concept empowered consumers take part in the design, execution and delivery of the service (Ertitnur, 2008). Customer's role as active participants requires mental and physical efforts and involvement (Cermak, File, & Prince, 1994). Namely, customers need to be physically present to get the service or provide information as a prerequisite. In-

creasingly, customers engage themselves in value creation, either by serving themselves, cooperating with service providers (frontline employees vs. customers) or with other customers (tourists in the same travel group).

Customer participation is essential to the services that are complex, long term, or both. In these services it has the characteristics that it takes customers long time to wait for the result and the service outcome is highly uncertain. In addition, the service offer is typically customized. In this study, we mainly focus on the relationships between parents and children, and assess how parent-child participation interacts with its antecedents and decedents from the perspective of the B & B service. Indeed, parents can understand their children's thoughts and feelings, and can further communicate with them through the interaction. Ru-an's research (2002) on the relevant factors of the parent-child interaction in play situations concluded that there are at least seven functions in parent-child's play interaction. Therefore, in the B & B tourism industry, front-line employees or managers provide customers with travelling information and jointly choose the travelling tour that best suits parent-child's needs. Both parent - child and service providers have to make conscious efforts to interact with each other to ensure that the service is appropriately delivered. Through participation, parent-children are able to reduce uncertainty and avoid service failure, when the service is long term in nature and is perceived high-risk. In the literature review customer participation

is widely accepted to be an important factor that enhances service quality (Ennew & Binks, 1999), because perceived quality is significantly influenced by the interaction between customers and service providers. Thus, parent-child participation becomes the indicator for an effective relationship and perceived service quality. Besides, successful relationships furthermore contribute to satisfaction, loyalty and retention.

Despite these concerns, we believe that when parent-child contribution is performed in a helpful and cooperative way, its benefits outweigh costs. Customers obtain timely service with better price but gain greater control of service quality with satisfaction. For firms, parent-child participation raises productivity (Fitzsimmons, 1985), efficiency (Jones, 1990), service performance (Mills et al., 1983), and contribute to service quality and satisfaction. The engagement of parent-children in the service process benefits not only themselves but the service providers. Both parties experience win-win situation through reciprocal cooperation, which enhances the relationship. Bendapudi and Leone (2003) pointed out that the process of customer involvement is "the next frontier of competitive effectiveness". The firms that provide customers with service co-production opportunities and resources are able to improve competitive advantage (Lusch et al., 2007).

Affective Commitment

Commitment is a key psychological force that relates cus-

tomers to the relationship (Bansal et al., 2004). Garbarino and Johnson (1999) recognized commitment as an 'an essential ingredient for creating and maintaining successful long-term relationships. Moorman et al. (1992) defined it as an enduring desire to maintain a valued relationship. Commitment implies the willingness to develop a stable relationship (Iniesta, 2000). Commitment has been studied in areas, including psychology, economics and marketing and has been interpreted differently. However, marketing researchers have pointed out three major dimensions of commitment that dominated the literature: affective commitment, calculative commitment and normative commitment.

Affective commitment refers to the sense of liking, emotional attachment and belongingness. Individuals with affective attachment show a favorable attitude toward the relationship and want to stay in it. The critical feature of this dimension of commitment lies in that the customers stay in the relationship, because they want to (Cichy et al., 2009). This self-driven desire motivates thus the customers to contribute meaningfully to maintain durable associations with their partners.

According to Meyer and Herscovitch (2001) when a customer decides to stick to a relationship out of his own will, he tends to demonstrate favorable behavior towards the relationship party voluntarily. In comparison, calculative commitment is based on instrumental reasons. Namely the force that binds a customer to a service provider lies in economic motives,

like switching costs and sacrifice. The customer is compelled to choose the collaboration partner out of economic need and is left with limited alternatives. Compared with affective and calculative commitment, normative commitment derives from social pressure. The customer feels obliged to attach to the service provider. Among the three dimensions of commitment, affective commitment is far more likely to arouse customer participation in the delivery of service.

Consequently, the focus of this study is primarily on affective commitment. It represents a situation in which customers demonstrate an affective and emotional attachment to the relationship with the service providers. When individuals have high affective commitment, they may perceive themselves as part of the company (Iun & Huang, 2007) and therefore are prompted to actively take part in behavior that helps the firm to achieve its goals (Mayer & Schoorman, 1992). Empirically Morgan and Hunt (1994) demonstrated that commitment had a positive effect on cooperation between buyer and supplier in the B2B setting. The same result also held true in the customer-service firm relationship, namely, B2C setting. The findings of Kim et al. (2010) supported the view that affective commitment enhanced the customers' cooperative behavior. Thus, the following hypothesis is proposed:

Proposition 1: Affective commitment relates positively to parent-child participation.

Interactional Justice

Interactional justice refers to the fairness that customers perceive during interpersonal interaction in the service encounter (Tax et al., 1998). Bies and Moag (1986) stated that customers' judgment of fairness is based on the quality of interpersonal treatment during the service delivery. The judgment if the interaction is fair requires frequent communication between the two parties. During this communication both sides expect to be treated with respect. When the individual carries out the communication considerately, kindly and respectful, the communication is viewed as correspondent to interactional justice.

Social exchange theory helps to understand more about the relationship between customers and service providers. According to Blau (1964), through mutual exchanges the two parties in the service develop a relationship that both sides are obliged to each other. In other words, whenever one party makes contributions to the other party, he also expects a return in the future. The receiver party is at the same time develops a sense of obligation to reciprocate. To make participation in the service relationship work, it requires investment from both parties. For customers they invest monetary and nonmonetary costs, such as time, effort and other psychic access costs, so that they are knowledgeable about the issue they are handling with. While the customers pay price for the success of the service, they expect to gain some benefits from the firms as well (Ennew & Binks, 1999). Interactional jus-

tice is one way they evaluate whether the participation is worthwhile.

Interactional justice is often used to explain complaining behavior and customer expectations of a firm's recovery efforts. Following a service failure, customers expect compensation for their losses. Under interactional justice, customers evaluate fairness through the way how employees of the firm resolve the conflicts. Sincere and trustworthy attitude of employees are important indicators that complaints are fairly handled. Interactional justice is "up close and personal" (Cruceu & Macaescu, 2009), unlike distributive and procedural justice. Customers perceive the service recovery as fair when the problem is timely resolved. Bies and Moag (1986) proposed that customers' perception of interactional justice would affect their attitude and behaviors toward the individual that carries out the treatment. The higher the fairness customers perceive during the service, the more contributions that they are willing to make. Therefore, we hypothesize that:

Proposition 2: Interactional justice relates positively to parent-child participation.

Customer Satisfaction

Satisfaction has been long the discussion topic in the marketing literature. Diverse definitions are identified. Satisfaction has been observed as the gap between expectation and perception, cognitive and affective state of mind, and process or outcome. Despite its multifaceted dimensions, satisfac-

tion is generally interpreted to be the post-consumption evaluation after a consumption experience. Chang (2006) pointed out that satisfaction is comprised of emotional and cognitive components and is an attitude based on needs and desires for services.

No matter defined as a cognitive or affective reaction, in the service context customer satisfaction can be seen as response to a single or prolonged set of service encounters (Hu et al., 2009). As a result, we can say that satisfaction is based on one single experience or the sum of several service experiences (Oliver, 1997). Customer satisfaction reflects that the service quality is appropriately delivered to the customers. It is essential for the survival for any types of businesses (Neal & Gursoy, 2008). When a firm is able to deliver high quality service that results in satisfied customers, the firm gains competitive advantages. It also helps to raise the firm's image and reputation, and decrease marketing costs (Choi & Chu, 2001). Satisfied customers are very likely to generate positive feedback through repeat purchase, recommendations and WOM.

Previous research has identified that the quality of the interaction between customers and firms and the extent to which customers participate in the relationship are possible antecedents of customer satisfaction (Ennew & Binks, 1999). In the service, where customer's presence is a prerequisite, the service outcome depends highly on customer participation, as customers are part of the service. Unless customers perform their role effectively, the desired out-

come is not possible. In addition, Schneider and Bowen (1995) pointed out that customers who are offered the chance to participate are more likely to be satisfied regardless of whether they actually participate in the service or not. Therefore, we hypothesize that:

Proposition 3: Parent-child participation relates positively to satisfaction.

Customer Loyalty

Beatty et al. (1988) pointed out that when a customer is highly involved in the service delivery, he tends to contribute some of his time to do service-related information search. Once he is satisfied with the service, he will repatronize and hence form loyalty. As the frequency of repurchasing intensifies the chance of searching for alternatives decreases. In the tourism context, many believe that novelty and experience seeking is the main motive for travelling, which leads to the tendency of switching brands, like visiting different destinations, restaurants and hotels (Galloway & Lopez, 1999). However some researchers argued that relaxation seekers demonstrate a different attitude. They show a higher propensity of repeated visit (Fyall et al., 2003). In addition, the novelty-seeking mentality may not hold true for all other businesses in the B & B tourism industry. Thus, we hypothesize that:

Proposition 4: Parent-child participation relates positively with customer loyalty.

Customer Satisfaction and Customer Loyalty

It is long acknowledged in the marketing literature that satisfaction and loyalty are related. Ball et al. (2004) identified that in the bank service, satisfaction along with communication, complaints and trust are variables that positively effect loyalty. Among the four factors, satisfaction was confirmed to be the most important variable to explain loyalty. A study by Howat et al. (2008) examined the relationships between service quality, overall satisfaction and loyalty at Australian public aquatic centers. Their results showed that overall satisfaction is highly correlated with loyalty.

However, the relationship between satisfaction and loyalty is not straightforward but non-linear (Oliva et al., 1992). When satisfaction exceeds a certain point, customer loyalty will increase rapidly. Bloemer and De Ruyter (1999) stated that in the service delivery where low customer involvement occurs due to short service encounter, the effect of satisfaction on loyalty is weaker than that where high customer involvement occurs. In addition to the level of customer involvement, switching cost also influences the satisfaction-loyalty relationship. In the industry where switching cost is low, like amusement park or fast food, the link between satisfaction and loyalty is lower than those where switching cost is high, like opera house (De Ruyter et al., 1998). In these cases switching costs refer to physical access, time, psychological costs, associated with uncertainty of making contact with different staff. Due to the nature that tourism is highly customer-involved and risky, we propose that:

Proposition 5: Customer satisfaction relates positively to customer loyalty.

Conclusion

From the parent-child participation perspective, the key success factors in meeting customers' satisfaction and gaining their loyalty lies in the providing conceptual framework that incorporates motivation as facilitating factors for effective parent-child experimenting during the activities. The analysis shows that customer satisfaction and customer loyalty can be enhanced by encouraging customers to participate in service. In addition, this study offers an insight on the antecedents that promote customers participation, especially from the perspective of parent-child interrelationship. Our study benefits the existing marketing literature concerning parent-child participation in that it proposes some factors that contribute to customer's participative role in the service delivery. It serves as the empirical support for the S-D logic proposed by Lusch and Vargo (2004).

At last, we believe this study provides valuable insights into the customer's participative role in the service delivery as value co-creator. As customers become more knowledgeable and demanding due to experience-seeking and modern technology, including the application of technological service before, during and after their lodging, managers should map the whole experience process and open up more opportunities to include parent-child participation into ser-

vice delivery. In B & B home-stay service, what the parents care about in enhancing parent-child interrelationship lies in offering the hands-on experience in which parent and children can experiment the activities during their staying in B & B home-stay hotels. Hence, for early childhood education perspective, early childhood educators can add parent-child participation activities into their training courses for early

childhood education students during their college curriculum. This also guides us the direction that in the further research direction, in order to elevate parents-customers' satisfaction and loyalty, the understanding in parents' and children's psychological and physical motivation in choosing B & B service would be a very practical and invaluable topic.

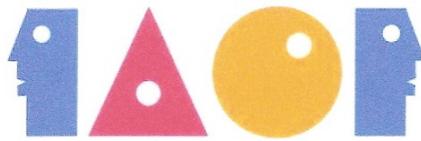
References

- Auh, S., Bell, S. J., McLeod, C. S., & Shih, E. (2007). Co-production and customer loyalty in financial services. *Journal of Retailing*, 83(3), 359-370.
- Ball, D., Coelho, P. S., & Machas, A. (2004). The role of communication and trust in explaining customer loyalty: An extension to the ECSI model. *European Journal of Marketing*, 38(9/10), 1272-1293.
- Bansal, H. S., Irving, P. G., & Taylor, S. F. (2004). A three-component model of customer to service providers. *Journal of the Academy of Marketing Science*, 32(3), 234-250.
- Beatty, S. E., Homer, P., & Kahle, L. R. (1988). The involvement-commitment model: Theory and implications. *Journal of Business Research*, 16(2), 149-167.
- Bendapudi, N., & Leone, R. P. (2003). Psychological implications of customer participation in co-production. *Journal of Marketing*, 67(1), 14-28.
- Bies, R. J., & Moag, J. S. (1986). Interactional justice: Communication criteria of fairness. *Research on negotiation in organizations*, 1(1), 43-55.
- Blau, P. M. (1964). *Exchange and power in social life*. New York: Wiley.
- Bloemer, J., & De Ruyter, K. (1999). Customer loyalty in high and low involvement service settings: the moderating impact of positive emotions. *Journal of Marketing Management*, 15(4), 315-330.
- Cermak, D. S. P., File, K. M., & Prince, R. A. (1994). Customer participation in service specification and delivery. *Journal of Applied Business Research*, 10, 90-90.
- Chan, K. W., Yim, C. K., & Lam, S. S. K. (2010). Is customer participation in value creation a double-edged sword? Evidence from professional financial services across cultures. *Journal of Marketing*, 74(3), 48-64.
- Chang, J. C. (2006). Customer satisfaction with tour leaders' performance: A study of Taiwan's package tours. *Asia Pacific Journal of Tourism Research*, 11(1), 97-116.

- Choi, T. Y., & Chu, R. (2001). Determinants of hotel guests' satisfaction and repeat patronage in the Hong Kong hotel industry. *International Journal of Hospitality Management*, 20(3), 277-297.
- Cichy, R. F., Cha, J. M., & Kim, S. H. (2009). The relationship between organizational commitment and contextual performance among private club leaders. *International Journal of Hospitality Management*, 28(1), 53-62.
- Cruceru, R., & Macarescu, C. (2009). Interactional Justice: The Link Between Employee Retention And Employment Lawsuits. *Romanian Economic Business Review*, 4(4), 95-102.
- Dabholkar, P. (1990). How to improve perceived service quality by improving customer participation. *Developments in Marketing Science*, 483-487.
- De Ruyter, K., Wetzels, M., & Bloemer, J. (1998). On the relationship between perceived service quality, service loyalty and switching costs. *International Journal of Service Industry Management*, 9(5), 436-453.
- Ennew, C. T., & Binks, M. R. (1999). Impact of Participative Service Relationships on Quality, Satisfaction and Retention: An Exploratory Study. *Journal of Business Research*, 46(2), 121-132.
- Ertitnur, B. (2008). The Role of Perceived Control in Co-Production. *Advances in Consumer Research European Conference Proceedings*, 8, 334-335.
- Fitzsimmons, J. A. (1985). Consumer participation and productivity in service operations. *Interfaces*, 15(3), 60-67.
- Fyall, A., Callod, C., & Edwards, B. (2003). Relationship Marketing: The Challenge for Destinations. *Annals of Tourism Research*, 30(3), 644-659.
- Galloway, G., & Lopez, K. (1999). Sensation seeking and attitudes to aspects of national parks: a preliminary empirical investigation. *Tourism Management*, 20(6), 665-671.
- Garbarino, E., & Johnson, M. S. (1999). The different roles of satisfaction, trust, and commitment in customer relationships. *Journal of Marketing*, 63(2), 70-87.
- Howat, G., Crilley, G., & McGrath, R. (2008). A focused service quality, benefits, overall satisfaction and loyalty model for public aquatic centers. *Managing Leisure*, 13, 3(4), 139-161.
- Hu, H. H., Kandampully, J., & Juwaheer, T. D. (2009). Relationships and impacts of service quality, perceived value, customer satisfaction, and image: an empirical study. *The Service Industries Journal*, 29(2), 111-125.
- Iniesta, M. (2000). *Commitment in consumer-retailer relationships*. Unpublished doctoral dissertation, University of Almeria, Almeria.
- Iun, J., & Huang, X. (2007). How to motivate your older employees to excel? The impact of commitment on older employees' performance in the hospitality industry. *International*

- tional Journal of Hospitality Management*, 26(4), 793-806.
- Jones, P. (1990). Managing foodservice productivity in the long term: strategy, structure and performance. *International Journal of Hospitality Management*, 9(2), 143-154.
- Kim, W., Ok, C., & Gwinner, K. P. (2010). The antecedent role of customer-to-employee relationships in the development of customer-to-firm relationships. *Service Industries Journal*, 30(7), 1139-1157.
- Lengnick-Hall, C. A., Claycomb, V. C., & Inks, L. W. (2000). From recipient to contributor: examining customer roles and experienced outcomes. *European Journal of Marketing*, 34(3/4), 359-383.
- Li, X. R., & Petrick, J. F. (2008). Tourism marketing in an era of paradigm shift. *Journal of Travel Research*, 46(3), 235.
- Lusch, R. F., Vargo, S. L., & O'Brien, M. (2007). Competing through service: Insights from service-dominant logic. *Journal of Retailing*, 83(1), 5-18.
- Mayer, R. C., & Schoorman, F. D. (1992). Predicting participation and production outcomes through a two-dimensional model of organizational commitment. *The Academy of Management Journal*, 35(3), 671-684.
- Meyer, J. P., & Herscovitch, L. (2001). Commitment in the workplace: Toward a general model. *Human Resource Management Review*, 11(3), 299-326.
- Mills, P. K., Chase, R. B., & Margulies, N. (1983). Motivating the client-employee system as a service production strategy. *The Academy of Management Review*, 8(2), 301-310.
- Moliner, M. A., Sánchez, J., Rodríguez, R. M., & Callarisa, L. (2007). Relationship quality with a travel agency: The influence of the post purchase perceived value of a tourism package. *Tourism and Hospitality Research*, 7(3-4), 194-211.
- Moorman, C., Zaltman, G., & Deshpande, R. (1992). Relationships between providers and users of market research: the dynamics of trust within and between organizations. *Journal of Marketing Research*, 29(3), 314-328.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20-38.
- Neal, J. D., & Gursoy, D. (2008). A multi-faceted analysis of tourism satisfaction. *Journal of Travel Research*, 47(1), 53.
- Oliva, T. A., Oliver, R. L., & MacMillan, I. C. (1992). A catastrophe model for developing service satisfaction strategies. *Journal of Marketing*, 56(3), 83-95.
- Oliver, R. L. (1997). *Satisfaction: A behavioral perspective on the customer*. New York.
- Payne, A. F., Storbacka, K., & Frow, P. (2008). Managing the co-creation of value. *Journal of the Academy of Marketing Science*, 36(1), 83-96.

- Prahalad, C. K., & Ramaswamy, V. (2000). Co-opting customer competence. *Harvard Business Review*, 78(1), 79-90.
- Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, 18(3), 5-14.
- Richard, J. E., & Zhang, A. (2011). Corporate image, loyalty, and commitment in the consumer travel industry. *Journal of Marketing Management*, 99 (1), 1-26.
- Schneider, B., & Bowen, D. (1995). *Winning the Service Game*, Boston, MA: Harvard Business School Press.
- Sharma, N., & Patterson, P. G. (1999). The impact of communication effectiveness and service quality on relationship commitment in consumer, professional services. *Journal of Services Marketing*, 13(2), 151-170.
- Tax, S. S., Brown, S. W., & Chandrashekar, M. (1998). Customer evaluations of service complaint experiences: implications for relationship marketing. *Journal of Marketing*, 62(2), 60-76.
- Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68(1), 1-17.
- Wu, H. J. (2011). A re-examination of the antecedents and impact of customer participation in service. *Service Industries Journal*, 31(5/6), 863-876.
- Xie, C., Bagozzi, R. P., & Troye, S. V. (2008). Trying to prosume: toward a theory of consumers as co-creators of value. *Journal of the Academy of Marketing Science*, 36(1), 109-122.
- Yuksel, A., Yuksel, F., & Bilim, Y. (2010). Destination attachment: effects on customer satisfaction and cognitive, affective and cognitive loyalty. *Tourism Management*, 31(2), 274-284.



THE SUPERINTENDENT AND SCHOOL BOARD RELATIONSHIP: FUNCTIONING AS A GROUP

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Abstract

This article examines the school board-superintendent working relationship in the area functioning as a group. In this quantitative research method, surveys were mailed to Texas public school board presidents and superintendents. Descriptive statistical analyses were used to determine any differences in the perceptions of the school board presidents and the superintendents in their working relationship. Each survey question was analyzed to discover any questions with a five percent or greater difference in the participant's response. The research concluded that a difference does exist in the perceptions of the school board presidents and the superintendents in their working relationship.

Key Words: Education Administration, Superintendent, Board of Trustees, Relationship, Teamwork

Introduction

Public school boards and superintendents play a critical role in the well-being of four million young people in the state of Texas in the United States of America. How they work together strongly impacts the quality of our children's schools. The school board-superintendent relationship is vital to increasing student achievement in the twenty-first century (LaMonte, 2009). Armed with unprecedented technological, scientific, and education advances, a school board-superintendent relationship that embraces proactive leadership, genuine collaboration, honest and open communication, and unwavering trust is poised to embark on team building that fosters high performing schools (Eadie, 2009; Goodman & Zimmerman, Jr., 2000).

In recent years the working relationship of the board of trustees and the superintendent has been characterized as more complex and stressful due to educational reform and high expectations (Stellar, 2011; Wright, 2002). The National Commission on Excellence in Education, chaired by Secretary of Education T. H. Bell, undertook the task of examining the quality of education in the United States (National Commission of Excellence in Education, 1983). Secretary Bell's report, *A Nation at Risk*, served as a catalyst in a paradigm shift for the board - superintendent relationship, influenced especially by the issue of accountability (1983). This document decried the mediocre condition of education in American by substantiating and addressing systemic educational failure and adamantly advocated sweeping and immediate changes in educational

leadership and for the educational system (1983). John Hoyle (2002) noted that specific challenges emerged by heightened public awareness, as well as demands for excellence in schools and improved student performance. Consequently, intense pressure has been brought upon the relationship of the superintendent and the board of trustees.

Superintendent-School Board Relationship

The school board president holds a unique relationship with the superintendent. The relationship is not a matter of individual strength but one of partnership and teamwork (Ellingson, 2010; Richards, 1997). Richards asserts “the stronger the partners, the greater the progress potential” (p. 86). The school board president serves as a liaison between the board and the superintendent (Smoley, 1999). Specifically, Smoley portrays the school board president as a person who informs both the board and the superintendent of the amount of support for issues, develops compromises, and attempts to ensure that there are no surprises in the working relationship. Mountford (2004) notes that this relationship reflects how the board delegates power and authority to the superintendent. Additionally, this relationship underscores the need to better understand how each school board president and superintendent perceive the effectiveness of their operations and the need to develop relationships that will foster high achieving schools.

Leadership emphasizes a collaborative relationship rather than an adversarial one (Duffy, 2003). In this atmosphere, Duffy advances that trust, respect, and results flourish. Members of school boards and superintendents must genuinely address the status of their relationship.

Theoretical Framework

The superintendent and the school board are spotlighted as key players in implementation and governance of the educational reform movement. Each entity is challenged to demonstrate transformation in their roles and relations in the quest for high expectations for schools in a post-modern era. During the twentieth century, Muth (2002) notes a shift of thought concerning learning, which is viewed as an active process rather than an industrial model of acquiring knowledge and communicating knowledge. Muth emphasizes that the shift focuses on interaction, collaboration, problem solving, and critical thinking and thereby, transforms educational leadership.

Additionally, Muth (2002) advances the notion that transformation of education leadership and practice is the framework that liberates stakeholders to new possibilities, knowledge, and methods of education. Anderson and Saavedra (2002) contend that the theory of transformative leads learners to constantly transform the realities of their everyday lives into meaningful educational experiences. Transformation leadership expects that the school board and superintendent team commitment will develop trust, respect, and interdependence upon one another.

Statement of the Problem

In this study the problem is that adverse actions and operations by school boards negatively impact the effective working relationship of school board and the superintendent. Bickering between superintendents and members of the board of trustees harms many school administrators’ careers and serves as a deterrent to the education of children (Ellingson, 2010; Goodman, Fulbright, & Zimmerman, 1997). Micro-management by school boards results in a battle for the day-to-day operations of the school districts (Clift & Reese, 2004; Glass, 1992). Additionally, trustee with single agenda issues and su-

perintendent “witch hunts” have received priority at the expense of a positive school climate and high student achievement (Clift & Reese, 2004).

Current research, then, is needed to determine the impact of the school board - superintendent relationship upon high student achievement. Intense and persistent pressure is brought about by educational reform for superintendents and school boards to perform well in the accountability system (Mongford, 2004; Goodman, Fulbright, & Zimmerman, 1997; Porch & Protheroe, 2003). High expectations by stakeholders place pressure on school districts to increase student learning at all grade levels (Goodman & Zimmerman, 2000; National Commission of Excellence in Education, 1983). Superintendents are held to a very high level of accountability for improving student achievement. Success in the accountability expectations is achieved when the board of trustees and the superintendent work in tandem (Texas Association of School Boards, 2003).

Purpose Statement

The purpose of this research was to explore the perceptions of Texas school board presidents and superintendents regarding their working relationship. A better understanding of the school board-superintendent relationship allows them to better serve their students and community at large. Tallerico (1989) contends, “The functional relationship between the school board and the superintendent is a critical connection which stands at the apex of the organizational pyramid in education” (p.1). Herein lies the significance of this study; the examination of the school board-superintendent working relationship in the area of functioning as a group. Such an examination can produce solutions for increased relationship in teamwork, cooperation, collaboration, and communication (Smoley, 1999).

Research Question

This research focuses on the school board-superintendent working relationship as perceived by superintendents and the school board presidents from Texas school districts. This research is guided by the question: Is there a difference in Texas school board and superintendents’ perceptions regarding the school board - superintendent working relationship? The sub-question that relates to this overriding question is: Is there a difference in the perception of the school board president and the superintendent in functioning as a group (team)? Functioning as a group relates to the cohesiveness of the board. Members must understand that it is the group, not individual members, which possess the power. It involves the group agreeing on operating procedures. The intended results include an increase in respect and trust, and recognition of each individual’s contributions. Leadership in this area resides with the board president (Smoley, 1999).

The data from this research contributes to the understanding of the school board-superintendent relationship by examining the perceptions held by school board presidents and superintendents on the subject. Specifically, this research endeavors to examine the school board-superintendent working relationship in the area functioning as a group (Smoley, 1999).

Research Methodology

In an attempt to answer the research question, a quantitative study employed descriptive design methodologies. By utilizing these methods, the researcher produced both a detailed description and analysis of the population sample, which consisted of school board presidents and superintendent from a listing of all Texas public school districts, grade levels kindergarten through 12, who received a 2005

accountability rating. The list of school board presidents, who had served in that capacity for the 2004 and 2005 school years, was obtained from the Texas Association of School Boards. A list of school districts was secured from the Texas Education Agency by means of a public information request. This information included the accountability rating, the number of economically disadvantaged students, and superintendents who had been in the district in that capacity for two or more years. The object for this criterion was to pair school board presidents and superintendents.

This research sought two responses from each of the school districts. One was solicited from the superintendent and one from the school board president. The sample for this study was selected from the name of the schools as listed by the Texas Education Agency. Although charter school data was available in this search, these schools were not included in the sample for this study. Participation was entirely voluntary. All participants were given the option to withdraw from the study at any time.

Instrumentation

Permission was obtained to use an existing survey, the Board Self-Assessment Questionnaire (BSAQ), to gather data on six topics related to school board-superintendent relations. The BSAQ was developed by Eugene Smoley. He utilized material originally created by the Center for Higher Education Governance and Leadership at the University of Maryland through a project funded by the Lilly Endowment. Smoley used data from this questionnaire to create his Model for School Effectiveness. The survey is a self-assessment tool that analyzed school board effectiveness through a series of 73 questions. School board performance in six areas of board operations were assessed as follows: making decisions, functioning as

a group (team), exercising authority, connecting to the community, working toward board improvement, and acting strategically. Question responses were ordinal-scaled into four categories consisting of strongly agree, agree, disagree, and strongly disagree. Superintendent and school board president questionnaires were tabulated separately with the results used for comparisons.

Data collection and analysis

Data collection took place over a two-month period during the fall of 2006. Data from returned surveys was entered into the Microsoft Office Excel (2003) software program and then transferred to the Statistical Package for the Social Sciences (SPSS, 2003) software for tabulation. Data from surveys were sorted into a two groups: school board president and superintendent. Data were entered and coded from the returned questionnaires. A combination of descriptive and inferential statistics, regression analysis, was utilized in this study. The combination of these two statistical treatments enabled the researcher to describe the data in full detail, while addressing the specific statistical significance of the influences of certain dependent variables on the resulting equity measures. The Microsoft Office Excel (2003) and SPSS (2003) statistical software were used to describe and analyze the data.

Surveys were scored using the criteria that Smoley (1999) developed to assess the actions of effective school boards. Functioning as a group was scored from twelve questions based on Smoley's Model for School Board Effectiveness. Underlined questions were scored in reverse: Functioning as a Group – 3, 17, 30, 32, 36, 37,49, 53, 59, 64, 68, 72 (p.137).

Responses were arranged on a Likert scale (Carroll & Carroll, 2002) with replies consisting of strongly agree, agree,

disagree, and strongly disagree. The questions will be scored as follows: Strongly Agree – 4; Agree – 3; Disagree – 2; Strongly Disagree – 1. Measures of central tendency were performed on the results to determine the distribution of the scores. A table was for the Functioning as a group category and the results were presented. Lastly, additional analysis of the scores was accomplished through the use of SPSS.

Descriptive Statistics

The first step in data analysis was to describe or summarize the data, using descriptive statistics (Gay & Airasian, 2000). Measures of central tendency, measures of relationships, measures of variability, and measures of relative position are among the most common descriptive statistics. Measures of variability include variance, while the relationship between variables was evaluated using correlation statistics (Gall, Borg, & Gall, 1996). Central tendency was evaluated utilizing mean, median, and mode. Gay and Airasian (2000) defined mean as the arithmetic average, while mode is a frequency statistic that defines the value that is most common among the sample being evaluated.

Exploring differences

Descriptive statistical analysis involved the determination of any difference of five percent or greater that existed between the school board presidents and the superintendent responses for each of the 73 questions. All ratings of the respondents were sorted into the two major groups: 1) school board president and 2) superintendent. Within each group, ratings for each question were sorted into two categories. One category included the strongly disagree and disagree (SD-D) and the other category included ratings strongly agree and agree (SA-A). The sum of the SD-D ratings was divided by the total

number of school board presidents. This same procedure was applied to the SA-A ratings. This process was repeated for the group of superintendents. Once percentages were determined for the SD-D and the SA-A categories for the school board president group and the superintendent group on each question, the mathematical process of subtraction was applied to determine if any difference of five percent or greater existed. The stated difference represented a noteworthy perspective.

Findings

The analysis and resulting findings, which included descriptive statistics for the sample population and the survey responses, were utilized to accept or reject the research hypotheses. The purpose of this research was to explore the perceptions of Texas school board presidents and superintendents regarding their working relationship. This research was guided by the following question: Is there a difference in Texas school board and superintendents' perceptions regarding the school board-superintendent working relationship?

Summary of Descriptive Population Statistics

The population data utilized in this study was a combination of data elements provided by the Texas Education Agency, the Texas Association of School Boards, and the demographic data furnished with the BSAQ. The accountability ratings and data for school count, economically disadvantaged, and ethnicity were obtained for the 2005 school year. The superintendents and school board presidents surveyed were individuals who were in their position for the 2004 and 2005 school years. Forty-six school districts were invited to participate in the study.

Of the school board presidents, 32.61 returned their surveys while 56.52

percent of superintendents returned their surveys. Paired survey returns were 26.09 percent. The mean of the student count was 6,076 students with the smallest school having an enrollment of 155 students and the largest school with an enrollment of 34, 649 students. The mean for the ethnicity of the schools revealed a student body of 47.05 percent non-white and 52.95 percent of white students. The mean for the economically disadvantage student count was 53.52 percent.

The education level of the school board presidents surveyed was 26.67 percent with a bachelor's degree and 33.33 percent with a master's degree. Twenty percent of the school board presidents surveyed had only a high school diploma. Of the school board presidents surveyed, 67.67 percent had two years of service as a school board president and 33.33 percent had three to seven years of experience.

The education level of the superintendents surveyed reveals that 53.85 percent held a master's degree while 46.15 held a terminal degree. Sixty-one percent of the superintendent's age fell within the range of fifty to fifty-nine years. Of the superintendents surveyed, 57.69 percent had served as a superintendent for three to seven years in their current position.

Descriptive Survey Response Analysis: Factor Analysis

Factor analysis is a statistical technique that may be used to explain variability among variables in terms of fewer variables known as factors. A factor analysis was conducted on the BSAQ for the purpose of determining if the questions factored together to measure what the inventory and the sub-sections within the BSAQ intended to measure for the study. Written permission was obtained from Dr. Eugene Smoley, Jr. to use the BSAQ in this study. Surveys were scored using the criteria that Smoley (1999) developed to assess the ac-

tions of effective school boards. Questions were divided into six sub-sections or categories based on Smoley's Model for School Board Effectiveness. Underlined questions were scored in reverse.

Functioning as a Group – 3, 17, 30, 32, 36, 37, 49, 53, 59, 64, 68, 72

The factor analysis revealed that the indexes were not unidimensional. Since indexes must be unidimensional, a description analysis of each question was utilized to analyze the survey responses instead of the planned regression analysis.

Each question was treated as an individual variable and each question was treated in the same fashion. Responses are presented as percent and are grouped into categories of strongly agree-agree and strongly disagree-disagree. This grouping was purposefully decided for clarity of distinguishing the response differences. A five percent difference of statistical analysis was considered worthy of notation. Inferential statistics were not used because the sample sizes for both the school board presidents and superintendents were too small for such calculations (Neuman, 2003). Of the 12 questions in the sub-section, *Functioning as a Group*, seven or 58.33 percent, met the criteria establishing a difference between the school board presidents' and superintendents' perceptions. The greatest difference, which was 42.31 percent, in school board presidents' and superintendents' perceptions were in question 3, which stated: "There have been occasions where the board itself has acted in ways inconsistent with the district's deepest values" (Smoley, 1999, p. 131).

The results of this study indicated that data suggests that there was a difference in Texas school board and superintendents' perceptions regarding the school board-superintendent working relationship.

Conclusions

The research data suggested that there is a difference in Texas school board and superintendents' perceptions regarding the school board - superintendent working relationship. The question studied the difference in the perception of the school board president and the superintendent in functioning as a group (team). As indicated in the 58.33 percent difference between the school board president and superintendent responses, the findings suggested that there is a difference in the perception of the school board president and the superintendent in functioning as a group (team). The differences were in the areas identified as inconsistent actions of the board with district values, public disagreement, and the lack of discussion on values. These differences represented a disparity in group dynamics and communication (Glass, Bjork, & Brunner, 2000). I conclude that inconsistent actions by board members create a degree of uncertainty and trust in the working relationship of the school board and superintendent.

Conclusions are formulated from this research. First, I conclude that the relationship of the superintendent and school board is very complex. Second, I conclude that the superintendent and school board relationship is not static but rather changing and transforming. Third, I further conclude that the issue of change is an element that must be continually factored into

the updating and revising of the training topics and material.

Fourth, I conclude that school boards develop a meaningful self-evaluation process that addresses the functioning board members. Fifth, I conclude that school board conduct affects tenure. A healthy school board-superintendent relationship is more likely to exist when lengthy tenures of superintendents and board members are expected and encouraged.

Sixth, I conclude that school boards and superintendents must develop processes and practices to connect with the community in a meaningful manner. The concept of effectively connecting with the community holds the prospect for significant benefits, which will result in student achievement. The vision and voice of the community must have a viable, convenient, and credible avenue for expression.

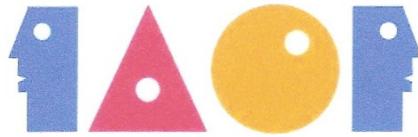
In summary, this study continues to reveal that a significant breach exists between the school board and superintendent when acting as a group. Too often a reluctance on the part of school board members is evident in the effort to realistically deal with conflict in the superintendent-school board relationship. The resulting frustration, which is experienced by the superintendent, can be eliminated when a spirit of teamwork on the part of superintendent and school board exists to focus on student outcomes and achievement.

References

- Anderson, G. L. & Saavedra, E. (2002). School-based reform, leadership, and practitioner research: Mapping the terrain. *Scholar-Practitioner Quarterly*, 1(1), 23-52.
- Carroll, S. R., & Carroll, D. J. (2002). *Statistics made simple for school leaders: Data-driven decision making*. Lanham, MD: Scarecrow Press.

- Clift, C., & Reese, P. (Eds.). (2004). Sept. 17-20 TASB/TASA Dallas convention highlights. *Texas Education News*, 21(30).
- Duffy, F. M. (2003). *Courage, passion, and vision: A guide to leading systemic School improvement*. Maryland: Scarecrow Publishers.
- Eadie, D. (2009). The partnership tango. *American School board Journal*, 196(12), 42-43.
- Ellingson, Jason M. (2010). A matter of trust: My quick transition to the Superintendentcy. *School administrator*, 003664391, 67(9).
- Gall, M. D., Borg, W. R. & Gall, J. P. (1996). *Educational research: An introduction* (6th ed.). White Plains, NY: Longman Publishers.
- Gay, L. R., & Airasian, P. (2000). *Educational research: Competencies for analysis and application, sixth edition*. Upper Saddle River, NJ: Prentice-Hall, Inc.
- Glass, T. E. (1992). *The 1992 study of the American school superintendency*. Arlington, VA: American Association of School Administrators.
- Goodman, R. H., Fulbright, L., & Zimmerman, Jr., W. G. (1997). *Getting there from here*. Arlington, VA: Education Research Service.
- Goodman, R. H., & Zimmerman, Jr., W.G. (2000). *Thinking differently: Recommendations for 21st century school board superintendent leadership, governance, and teamwork for high student achievement*. Arlington, VA: Education Research Service.
- Hoyle, J. R. (2002). *Superintendents for Texas school districts: Solving the crisis in executive leadership*. Fort Worth, TX: Sid W. Richardson Foundation.
- LaMonte, H. (2009). Seeing the light. *American School Board Journal*, 196(8), 27.
- Microsoft Office Excel. (2003). Microsoft Office Student and Teacher Edition 2003 [Computer software]. Redmond, Washington: Microsoft Corporation.
- Mountford, M. (204). Motives and power of school board members: Implications for school board-superintendent relationships. *Educational Administration Quarterly*, 40(5), 704-741.
- Muth, R. (2002). Scholar-practitioner goals, practices, and outcomes: What students and faculty need to know and be able to do. *Scholar-Practitioner Quarterly*, 1(1), 67-87.
- National Commission of Excellence in Education. (1983). *A nation at risk: The imperative of school reform*. Washington, DC: U.S. Office of Education.
- Neuman, W. (2003). *Social research methods: Qualitative and quantitative approaches* (5th Ed.). Boston, MA: Allyn & Bacon.
- Porch, S., & Protheroe, N. (2003). School board-superintendent relations in support of high student achievement. *The Informed Educator Series*. Arlington, VA: Education Research Service.

- Richards, R. (1997). *How to build an effective board*. Washington, D. C.: American Society of Association Executives.
- Smoley, Jr., E. R. (1999). *Effective school boards: Strategies for improving board performance*. San Francisco: Josey-Bass Publishers.
- SPSS Base 12.0 [Computer software]. (2003). Chicago, IL: SPSS, Inc.
- Stellar, A. (2011). Welcome to the jungle. *School Administrator*, 68(11), 28-33.
- Tallerico, M. (1989, March). *Superintendent-school board relationships: A Continuing challenge*. Paper presented at the American Educational Research Association at Annual Meeting, Syracuse.
- Texas Association of School Boards. (2003). *Policy manual*. Austin: Publication Department.
- Wright, E. K. (2002). *A study of Texas public school superintendents' perceptions of board/ superintendent relations*. Unpublished doctoral dissertation, Stephen F. Austin State University, Nacogdoches, Texas.



CLOTHING MATCHMAKER: AUTOMATICALLY FINDING APPOSITE
GARMENT PAIRS FROM PERSONAL WARDROBE

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Abstract

The research aims to develop a knowledge-based system which functions as a personal dressing advisor to help women choose apposite attire for attending a specific occasion and fitting demanded look from their own closets. Matchmaker is to search for apposite garment suits from person digital wardrobe according to the user demand. For building a personal digital wardrobe, what a user needs to do is taking garment images and input to the system. The physical feature detector is then invoked to automatically extract essentials, such as feature points and major color. Afterwards, several expressive features (e.g., cold degree, fancy degree, soft degree) are obtained using the expressive feature converter. Impression category indicator is exploited for assigning appropriate category terms to garments. At run time, Matchmaker is activated after receiving user demand, and several matched pairs will be shown. We present an efficient interactive automatic schema for mixing-and-matching

clothes, based on expert knowledge of fashion, to advise impressive appearances for individuals. All what garment essentials and fashion knowledge are from garment images. Personalization and Automation are the main features of the system. The work is to provide such a user-centric services system that functions as a personal fashion advisor for general users to choose proper attires from their own wardrobe for different occasions.

Keywords: Clothing combination, Expert system, Database, Fashion, Color match, Dressing Advisor, recommendation

Introduction

According to clothing history, the principal task of clothing has been changed from protecting human body for survival to presenting impressive image for identification [1]. What you wear is what will start the impression you make on others. People thus always want to give an impressive outlook through their apparel at the first sight when they meet. "What shall I wear?" becomes a popular daily question for most people before dating. People might have experienced the situation when standing in front of their wardrobe and finding their mind goes blank. Additionally, there was a study by onepoll.com commissioned by Matalan, UK clothes retailer, on hours women spend choosing clothes. The study found that 10 minutes a morning will be taken up trying to find an acceptable outfit while on holiday, with another 10 minutes spent picking evening clothes. Dinner parties, Christmas parties and black tie events take up about 36 minutes a time, six times a year - adding up to 3 1/2 days. It shows that picking up

apposite clothes to present an impressive and fit outlook for a specific occasion is a big challenge for the general, especially for women. It might be difficult for people who are not sensitive to fashion to pick out a decent outfit to perfectly present a specific image for a specific occasion. Hence, having a personal fashion recommender would be a benefit to individuals for perfectly dressing.

With computer technology rapidly growing, researchers keep working hard on innovating computer applications which can interact with of human beings and further enhance our daily life easily and conveniently. A decision support system, for example, always helps people analyze business data and make businesses decision easily, such as market selecting strategies. A recommender system, another example, can provide advice to users about information they might be interested in, such as MovieLens system recommends movies (<http://movielens.umn.edu/login>), based on the ratings of objects from its users. The proposed clothes search system in [2] helps user to search for garment piece

based on impression category. Similarly, through the help of computer technology, a fashion mix-and-match module to coordinate clothing is useful for people who are clueless to fashion. The research thus proposes an integrated methodology to digitalize mix-and-match dressing scheme for providing women an efficient interface to obtain clothing recommendations using their own wardrobe. It uses computer technology to process vague knowledge concerning fashion mix-and-match, and creates effective visualizations and intuitive user interactions. Specialized areas, such as digital image processing as well as database technologies, have all been taken into account. The main goal of the research is related to mix-and-match fashion and automation. The following are significant contributions of this work:

Content Analysis: Physical and expressive features of garments are automatically extracted from digital photos through the feature detector.

Content Retrieval: Digitalize personal wardrobe - an efficient database schema for quick search users' clothing based on the queries (impression, weather, and occasion).

User interface interactions: Design intuitive and friendly user interface interactions.

This article describes the mix-and-match fashion framework of Clothing

Matchmaker for the Intelligent Dressing Advising System. The remainder of the paper is organized as follows. Section 2 reviews some relevant works. Section 3 gives an overall description of the proposed framework. Section 4 briefly describes the implementation. Section 5 presents the experimental results and discussions. Finally, Section 6 draws a conclusion and suggests future works.

Related Work

Recommender System

People always ask for suggestions when they cannot make their choices on something they are interested. For example, Google is a common way to search for others' experience of accommodation when making traveling plan. Hence, recommender systems (RSs) have been a popular research area and also successfully applied to many different practical domains, such as recommending books, music, movie, videos, and so on. RSs are usually exploited to identify web pages that will be of interest for the user, or suggesting alternate ways of searching for information. Recently, a growing number of companies, including Amazon.com, CDNow.com and Levis.com, employ or provide recommender system solutions.

Generally, RSs can be categorized into three main categories: content-based, collaborative filtering, and hybrid [3]. In the case of content-based RS [4-5], objects

will be recommended based on the content of the objects the user is examining or has examined in the past. A set of products is viewed as a set of attribute (feature) lists in recommender systems. Attribute lists are always used to construct and store the history of user preference. Whether a product item is recommended to a user is according to the similarity between the two attribute lists. For example, in an art domain, a content-based RS tries to understand user preferences by analyzing commonalities among the content of the artifacts. These commonalities could be based on features such as the style, the creator, and the place of manufacturing. The artifacts that have a high degree of relevance to the user's profile are recommended [3]. Collaborative filtering RS collect ratings of objects from many individuals and make recommendations based on those ratings to a given user. The quality of recommendation is completely based on the user rating, instead of the information content. MovieLens system, for example, recommends movies based on the ratings made from the nearest neighbors. Although collaborative filtering technology has been widely exploited, it cannot recommend new items to users without any history in the system and completely denies any information that can be extracted from contents of items. For this reason, hybrid recommender systems are developed, which can exploit both user preferences and contents.

Unlike other recommender systems that require users to provide specific prod-

uct attributes, [6] introduces a novel recommendation technique, Scenario-Oriented Recommendation, which analyzes users' goals and maps them to possible characteristics of relevant products. It proposes a system for giving suggestions that matches the clothes' styles and functions with the concepts needed for the context based on commonsense reasoning accordingly, and further provides a useful interface for users to make decision of getting suitable outfit for specific occasions. However, their works are mainly based on the commonsense reasoning technology, automatically combining matched tops and bottoms are not taken into consideration. It is tough for people who are not sensitive to mix-and match fashion to pick out a decent outfit.

Our work aims to develop a fashion mix-and-match module to coordinate clothing for people who are clueless to fashion. As mentioned previously, a content-based RS collects features present in or extracts from the content descriptions of the objects to create the data structure. The retrieval of objects is then based on the data structure. According to [2], garment is divided into several visual features and a specific image category is automatically assigned to each garment item. However, image (e.g., seductive and casual) of a garment is what we feel through its visual elements, such as color and shape. Various presentations of visual elements may bring the same image. Hence, based on the concepts of recommender system and human

categorization behavior, the research develops a method for assigning an appropriate impression category to a specific garment through visual perceptions and further makes proper clothing combination according a specific occasion and desired image for women.

Classifiers

Basically, classifiers have been dealt with in the literature on data mining and machine learning for decades. There are lots of systems for learning classifiers, such as decision tree learners, rule learners, neural networks, support vector machines, ensemble methods, and so on.

Most classifiers are developed for classifying data with definite target values. Decision tree learners, for instance, whose primary purpose is to predict the value of a target variable based on several input variables [7][8][9]. It is simple to understand and interpret, and also performs well with large data in a short time. However, it will produce a huge tree structure if all situations affected by human emotions are considered. Rule learner is another system for learning classifiers, which is popular and well researched for discovering interesting relations between variables in data mining [9][10]. However, most classical rule learners consider all examples equally important, thus they are weak on highly skewed or hybrid datasets. Some specific feel of a garment is strongly shown based on a particular garment feature. For in-

stance, if the value of the sensation of sexiness is higher, the garment presents stronger seductive feel.

Additionally, neural networks (NN) and support vector machines (SVM) both are mathematical structure, which are reliable and have a high predictive accuracy. Basically, in the case of support vector machines, a data point is viewed as a n-dimensional vector, and a n-dimensional hyperplane is found to separate such points. Kernel parameter setting in SVM training process, along with the feature selection, significantly affects classification accuracy [11]. Neural networks are non-linear statistical data modeling tools, which have been studied for many years in the hope of achieving human-like performance in many fields. There are numerous algorithms available for training NN models [12]. Kuroda and Hagiwara, for example, proposed a method in 2002 using neural network to classify image regions into sky/earth/water categories. The proposed NNs used in their method were trained by back propagation algorithm.

Human category learning is affected by how the learner interacts with the stimuli, the learner's goals, and the nature of the stimuli, under either supervised or unsupervised learning condition, that is reminiscent of what NN models do in learning categories. Hence, in psychology, neural network based model is often applied to category learning. As proposed by social psychologists, receivers try to make

sense of the world around them, including the people with whom they interact. Consequently, perceivers gradually develop cognitive structures to represent the world in an organized fashion. These structures are part of a network of thought that enables perceivers to respond to stimuli such as the appearance of a person [13]. Perceivers tend to assume that the attributes or qualities assigned to others on the basis of appearance are interrelated. In other words, there is a tendency to “cluster” or group person-attributes or person-qualities. As the description presented by Kruschke on 2004, category learning is critically important because it underlies essentially all cognitive activities. Yet it is very difficult for machine to be able to perform like real people on categorization. Moreover, categorization occurs on different dimensions and at different levels of abstraction simultaneously. However, researchers in cognitive science have addressed plenty of models for human category learning which are worth applying to the field of machine learning. One of the famous approaches is referred to the exemplar-based model (e.g. the Generalized Context Model proposed by Nosofsky in 1986) [14], in which categorization is thought to be achieved by assigning an object to the category to which it is relatively more similar than other categories. Kruschke’s ALCOVE (Attention Learning COVERing network) embodies this idea in an RBF (Radial Basis Function) NN and successfully accounts for many human categorization phenomena [15].

In ALCOVE, the training instances are assumed to be stored in the hidden layer as the hidden nodes, each of which will be activated to the extent of how much the input item is similar to the corresponding exemplar, and then the activation of the hidden nodes will be weighted and summed to the output nodes in order to generate the probabilities to classify this item to different categories. The original ALCOVE can represent continuous and binary-valued dimensions, but not nominally-valued dimensions. As proposed by Cheng and Liu in 2007, an ALCOVE based model is explored to classify the major color tone of a garment [16]. The input nodes of their ALCOVE model are RGB color elements; hidden nodes are 600 training exemplars (one exemplar is a set of input values and one output color tone) given by stylists; output nodes are twenty tones pre-selected from color researches. A specific color name is given after user inputs a combination of RGB, via the similarity computing process for the training examples stored as hidden nodes and the inputs. In addition, it is also the model explored to develop the impression categorization model in the project proposed by Cheng and Liu in 2008 [17]. They defined ten impression categories, and used ALCOVE to classify garment to one of the ten. However, exemplar models expand their internal representations with every training example, so large amount of training examples are needed for learning the behavior of styling cognition.

SUSTAIN (Supervised and Unsupervised STRatified Adaptive Incremental Network) is another well known model of how humans learn categories from examples. Its learning involves unsupervised and supervised processes, and affords a great deal of sensitivity to different task goals in category learning that matches the flexibility observed in human categorization [18]. It is a three-layered NN model. In the input layer, the input perceptual information is translated into a set of features that are organized along a set of dimensions. In the hidden layer, a number of hidden nodes which are called clusters are formed dynamically during learning and will compete to respond to the input stimulus on each trial. The cluster closest to the input in a representational space wins. In the output layer, the output nodes correspond to the attributes defining the stimuli, namely the perceptual dimensions (e.g., color) as well as the category label. The output nodes are activated by the signals from the winning cluster solely, thus making the prediction to the value on queried dimension (e.g., category label). Although adopting the same classification principle as ALCOVE does, SUSTAIN further makes the hidden nodes more flexible than ALCOVE does, in that it will recruit a new cluster whenever the prediction fails on a trial or when the current item is not sufficiently similar to any existing clusters. The project proposed in [2] is such an application of visual-based knowledge extraction and representation which functions as an apparel style consultant to provide sup-

ports for assigning an apposite impression adjective to a garment. The process of category learning using examples is the key component to make the system possessed of cognitive capability for apparel styles. However, in SUSTAIN, the measurements of input dimensions are assumed to be independent mutually. This assumption might not be satisfied for the dimensions of subjective measurements (e.g., adjectives suitable to describe the feeling of a garment). All visual features of a garment, actually, are integrated to give an overall impression when people look at a specific garment, suggesting that the features used to describe our impression to a garment might be very likely to be correlated. Since SUSTAIN has been evident to be good to account for many human categorization phenomena yet it apparently cannot handle well the natural category stimuli (e.g., garment), the objective of this study is hence to base on SUSTAIN and develop a learning algorithm to simulate the human behavior of obtaining garment outlook image. Instead of the classification accuracy, classifying items like what people do is the major purpose of the research.

Relevant Applications

Life becomes efficient and convenient because of computer technology rapidly grows. Researchers keep working hard on innovating computer application to enhance our daily life. Many applications of clothing are developed in the recent

decade. Six clusters of clothing application are shown as below.

A. **Outfit Synthesis System.** It is proposed in 2013[18], and the authors present an automatic optimization approach to outfit synthesis. Given the hair color, eye color, and skin color of the input body, plus a wardrobe of clothing items, the system suggests a set of outfits subject to a particular dress code. However, it focuses on obtaining suitable outfits by optimizing a cost function that guides the selection of clothing items to maximize the color compatibility and dress code suitability. The situation of weather and occasion is not taken into consideration. The proposed Clothing Matchmaker concerns with personalized and cognitive search for specific occasions and weather.

B. **Magic Closet.** It is a practical system for automatic occasion-oriented clothing recommendation [19], mainly targets at two clothing recommendation scenarios, clothing suggestion and clothing pairing. Given a user specified occasion, it is able to automatically recommend the most suitable clothing by considering the wearing properly and wearing aesthetically principles. In particular, magic closet is based on a latent SVM model, which is learned from the visual features of the given clothing photos with full annotations on occasions and attributes. However, the match rules are learned through exemplar photos, and the proposed model heavily relies on the human annotations of clothing attrib-

utes. It might return unsuitable clothing pairs while the exemplar photos are not creditable. The work proposes a knowledge-based system which functions as a personal dressing advisor to help women choose apposite attire for attending a specific occasion and fitting demanded image from their own closets. The match rules in Clothing Matchmaker are directly defined and updated by fashion editors for obtaining upcoming fashion rules.

C. **Magic Mirror.** It is an intelligent mix-and-match system, proposed by the Hong Kong Polytechnic University in 2006, using smart fitting room and smart dressing mirror. This system uses the technology of Radio Frequency Identification (RFID) to detect items brought into a fitting room or placed in front of a dressing room. The intelligent mix-and-match database of the system then delivers recommendations on what looks good with the item to the customer [20]. However, the process of identifying garments and determining whether they are matched is relying on the hardware, RFID. It is one of the important issues in textile industries. Nevertheless, the proposed system aims to achieve that the system swiftly finds out some clothes matched user's desired image from own closet. It concerns with personalized and cognitive search. Thus RFID does not suit the proposed system.

D. **Social Retailing Mirror System.** It was developed by IconNicholson, a digital design and services firm, in 2007, which lets

consumers try on clothing at a store and enables other people, wherever they are, to watch and make comments via the Internet. The system could also show viewers other clothing that is in stock or in a catalog and could recommend items that might look better or go well with the clothes the shopper has tried on [21].

E. Virtual Stylist Project. It was proposed in 2003 by Masataka Tokumaru, helping users to find out their favorite clothes from Web server in clothing shops on the Internet. The system searches through clothes database for clothes on the basis of the harmony and sensation of colors that are used in them. In the case that a user requires a jacket and pants which she might wear with her own shirt, the system searches for some jacket and pants whose colors are in harmony with image sensation seems to fit her imagination of dressing [22]. However, color is not the only one factor affecting clothing sensation when people first see. Clothing image is usually affected by its outline shape, print types, major color, and fabric material. People often feel a top with chiffon material soft and relax even though the color is dark. Hence, a knowledge-based clothes matching advising system, which works as a real personal fashion consultant to general users, is a useful application in the modern fashion society.

F. Virtual Try-on. This is mainly applied on virtual shops. Surfing the virtual shop online, customers can see their virtual twin

wearing clothes they choose and can then decide whether to put the items in shopping cart [23]. It focuses on modeling and clothing simulations.

Schematic Structure

The Intelligent Dressing Advising System is to provide such a user-centric services system that functions as a personal fashion advisor for general users to choose proper clothing to show demanded image for different occasions from their own wardrobe. It utilizes clothing mix-and-match scheme to provide some nicely matched recommendations while user submits the condition, such as how the weather is, where the occasion is held, and what the personal image she wants. Clothing Matchmaker is the core for automatically finding apposite clothing pairs from user's personal wardrobe. Figure 1 shows the overall schematic procedure. Firstly, a personal digital wardrobe is built by user using garment photos. Each submitted garment photo is divided into four physical features and stored in the database. User submits the conditions through the friendly graphic user interface. Clothing Matchmaker is then invoked for seeking suitable garments from personal wardrobe and obtaining clothing match recommendations.

As shown in Figure 2, Clothing Matchmaker is activated while receiving the inquiry from user. It firstly processes a search with weather condition in garment database to get a group of garments which

match current climate. Next, it sifts out a new clothes group from the first group with appearance image category which user expected. Clothing Matchmaker then chooses a top within the last group as the basis to search a matched bottom for each object based on the matching rules, such as color harmony rules. It then eliminates bottoms which do not match based on attire harmony principles in the order of print style harmony principle, color harmony principle, fabric material harmony principle, and outline shape principle. A group of clothes may match to the basis garment is sift out. It then evaluates the coordination of each garment pair according to harmony principles. The weight of color harmony is the highest since color affects visual image most. Print style is the second factor affecting clothing image, so the weight of print style harmony principle is the second highest one. And then the weight of fabric material is lower than the

weight of print style principle since the current trend is towards mixing fashion. Matched garment pairs are divided into pantsuits and skirt suits, and shown in 3D Show Room. User can browse matched garment pairs and select one as the most favorite, and then send back to the system to update the user preference information.

Implementation

As proposed in the research done by in 2001, nearly seven in ten (69%) Americans believe clothing, hair and makeup are very or extremely important for a woman to make a good appearance on the job [24]. Eicher and his colleagues also indicated that both wearers and observers perceive characteristics of any individual's total dress through all five senses: sight, touch, smell, sound, and taste.

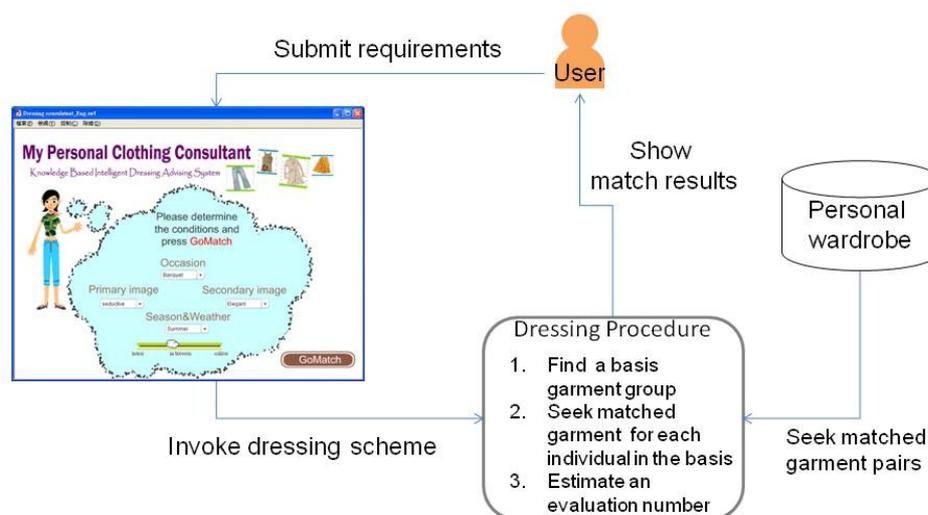


Figure 1. The overall schematic procedure.

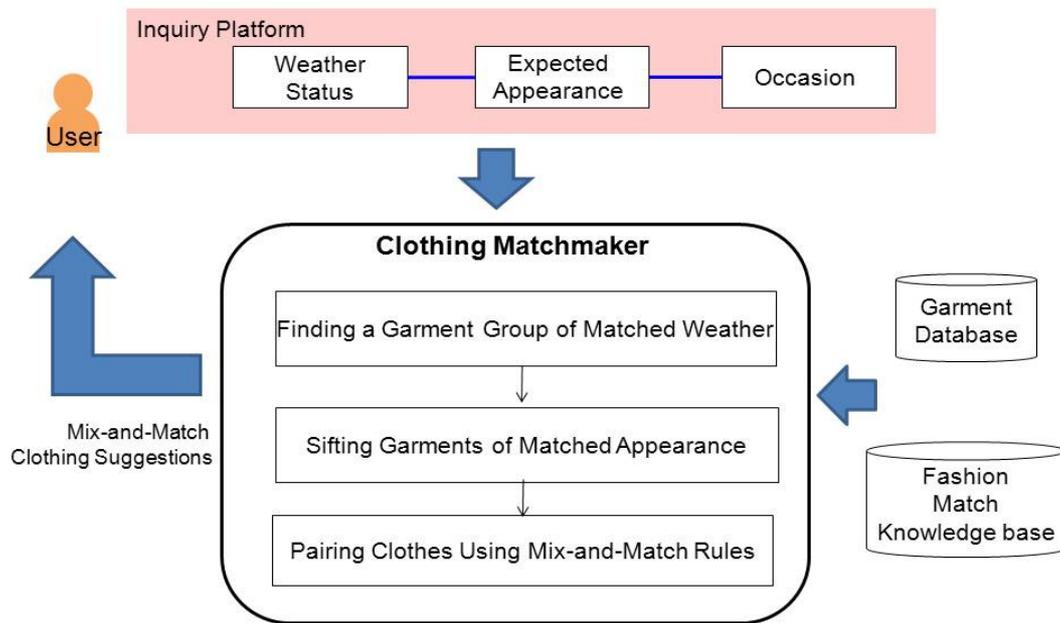


Figure 2. The detailed procedure of *Clothing Matchmaker*.

Besides, fashion trend and style cognition in recent two decades were considered and found that color tone, print formation, outline shape and fabric material are main visual factors affecting clothing image [25-28]. However, some people may have difficulties on combining appropriate garments for showing proper image to a specific occasion. Hence, a creditable garment match inference engine is the significant core of our project. In addition, the physical property of textile can be extended in clothing psychology. The feel of softness, for example, is usually a representation of feminine and romance. Thus, a feature detector is exploited in the work to extract garment features, and further a clothing image category is assigned through an image category indicator. A

garment is then transformed into several numerical attributes and stored in a database, namely the digital personal wardrobe. In the following subsections, the descriptions of harmonization principles definition, mix-and-match dressing scheme evaluator, and building personal virtual wardrobe are given.

Definition of Harmonized Principles

People always tend to give a good image to the public when attending a specific occasion. However, some may make disharmony of clothing combination when getting dressed. The project aims to provide appropriate and trendy dressing scheme to users. Hence, garment match rules have to be acquired from fashion lit-

eratures and trends for developing a creditable match engine. There are many principles for gathering harmony garment pieces, such as color harmony, printed pattern harmony, and fabric material harmony. A simple brief about fabric harmony is that coordinate garments with similar softness. The current trend, however, towards mixing and matching fashion. People can develop their creativity on mixing fashion. For combing fabrics of different softness, there is a principle that fabric of bottom must be harder than fabric of top.

According to color researches and the art of color harmony [29-31], when

two or more colors are brought together to produce a satisfying affective response, they are said to be harmonized. Combining colors with different degrees of brightness in the same hue gamut is a common principle to show color harmonization while applying to clothing. Generally speaking, a color scheme based on analogous gives pleasant impression, and a color scheme based on complementary gives active impression. Analogous colors are any three colors which are side by side on a hue wheel, whereas complementary colors are any two colors which are directly opposite to each other (Figure 3).

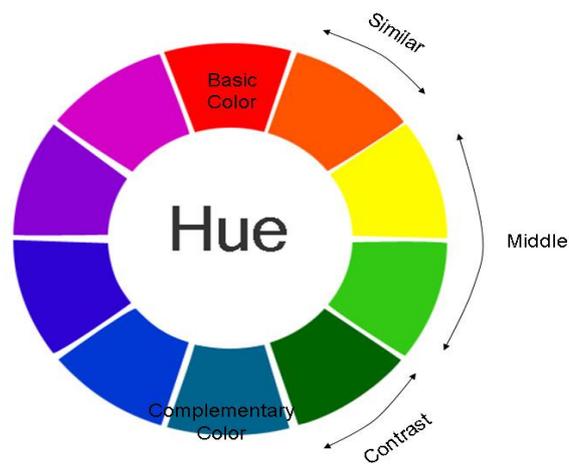


Figure 3. A diagram of color wheel of hue. Any color which is side by side on a color wheel is similar, whereas any color which is directly opposite to each other is complementary color.

In addition, women tend to dress either entirely neutral tones or in full on color assault. Light and shade are an integral part of style and fashion. One of the most successful examples of this is the color combination of pink and brown. These seemingly unrelated colors perfectly

compliment one another because the quiet but rich brown acts as a basic form which the vibrant pink can shine. It forms a classic color combination that exudes a real sense or freshness but at the same time lashings of sophistication. Further, Virtual Stylist Project, done by Masataka Toku-

maru and his colleagues, focuses on harmony and image sensations of color combination of clothes [32]. The method of Matsuda's Color Coordination proposed by Yutaka Matsuda is useful to compose the color scheme harmony evaluation part of the system. In his research, color schemes are classified into 8 hue types or 10 tone types. A color scheme type is composed based on the relationship between a hue type and a tone type. Our project hence employs and modifies the color harmony evaluation process in Virtual Stylist Project.

Moreover, printed pattern is one of the important visual factors affecting clothing image. Different print style lends different visual image. Small floral print, for instance, brings into sweet feel, and bold stripes lend a nautical feel. The challenges get more intense when attempts are made at coordinating three or four different print styles at the same time. Bringing various printed pattern into harmony is tough. Hence, there are many harmonized rules to make an integral balance of garments with different printed patterns. Generally speaking, the major principle of mixing and matching printed patterns is not to allocate many colors together. Therefore, our project takes the common color harmony and printed pattern harmony principles for the Matchmaker to get further garment combinations. There are six harmony schemes defined as below.

Harmony scheme 1: Harmony within the same hue section.

The scheme is similar to monochromatic color scheme. It uses only one hue section and all values of it for a unifying and harmonious effect. The hue of the basis garment is used as the primary color to find appropriate matched garment group which has hue value ranges in 36 degrees. The combination brings gentle, soothing, and tranquil mood.

Harmony scheme 2: Harmony of analogous hue.

Analogous color scheme uses colors that neighbor each other on the color wheel. The neighboring color means the distance between the two color hue ranges from 36 to 72 degrees. For example, one set in red, red-orange, and red-violet is analogous color. They are more peaceful, less jarring than complementary schemes. The combination brings young, vivid, and cheery mood.

Harmony scheme 3: Harmony of opposite hue.

Complementary color scheme uses two colors opposite one another on the color wheel. For example, violet and yellow are complementary colors. It creates a high-energy, vibrant look. However, using complementary color scheme needs carefully consider the contrast of brightness and chromatics.

Harmony scheme 4: Harmony of achromatic color.

This scheme relates to light and dark, only white, grays, and black are used. Achromatic color can be combined with all other color schemes. Dressing in many colors looks unstable, so achromatic color is usually exploited for making every outfit go further. Additionally, according to modern researches on color psychology [29], Black is popular as an indicator of power and also associated with unhappiness, sexuality, formality, and sophistication; White always represents purity or innocence.

Harmony scheme 5: Harmony of printed pattern and plain color.

Putting different printed pattern together looks garish. The safe way is that not wearing floral print on upper body and lower body at the same time. Putting a plain bottom and a printed pattern top together makes harmonious. In this case, the major color of the bottom is the major color of the printed pattern of the top. Find out the major color of the blouse, and then put a plain bottom together which color is in the same hue gamut. Note that it will be imbalance while the blouse is with large floral print. Wearing a plain bottom with opposite color or white lends balance when the blouse is with large floral print or large abstract.

Clothing Image

Image is what we feel about something we contact with. People in modern society generally use various adjectives, such as brilliant, elegant, and so on, to describe images for apparel. Cheng and Liu have concluded six specified adjectives, namely apparel image categories, in [2] (Table 1). Furthermore, apparel image might be affected by outline shape of dressing. The outline shape is defined as the clothing body based on the boundary of shoulder, waist, hip, and bottom points (Figure 4 A). The length of shoulder line, waist line, hip line, and bottom line are denoted as s , w , h , and b respectively. As shown in Figure 4 B, there are 5 shape types, namely H, A, X, O, and V, defined by fashion experts in the research. As shown in Table 1, the shape type is determined using the ratio of s , w , h , and b . The ratio, for example, is nearly 1 represents the loose shape H. Table 2 shows the lookup table of outline-suits-image effecting coefficients. The value ranges from 0 to 1, '0' means the shape is totally not suitable to show the image and '1' means the image is completely suitable to show a specific image. Type X, for instance, is good to show seductive image, and type O generally shows casual image. Through the help of computer technology, a cognition module to recognize acknowledged images of clothing is useful for people who are clueless to fashion. With computerized cognition module, selecting a fit garment to present a specific image becomes easy. Hence, we extend the work

proposed in [2] to develop a digitalized personal image consultant.

The garment image cognition module is developed based on inductive learning concept. Some garment photos indicated with an expected image category (“girlish”, “seductive”, “classic”, “casual”, “elegant”, and “sporty”) are learning examples, and some garment photos without any image category indicated are testing examples. A garment is then divided into four feels (coldness, loudness, hardness, and sexiness) in order to do numerical

computation. The module is developed through a learning-and-testing process and thus gain knowledge from visual image, and has the capability of assigning an apposite impression category to a new garment. At the beginning of runtime process, Image Analyzer is firstly activated to extract physical features of the new instance. The corresponding expressive features are obtained using Sensation Transformer. Eventually, apposite impression category is assigned according to the resemblance value.

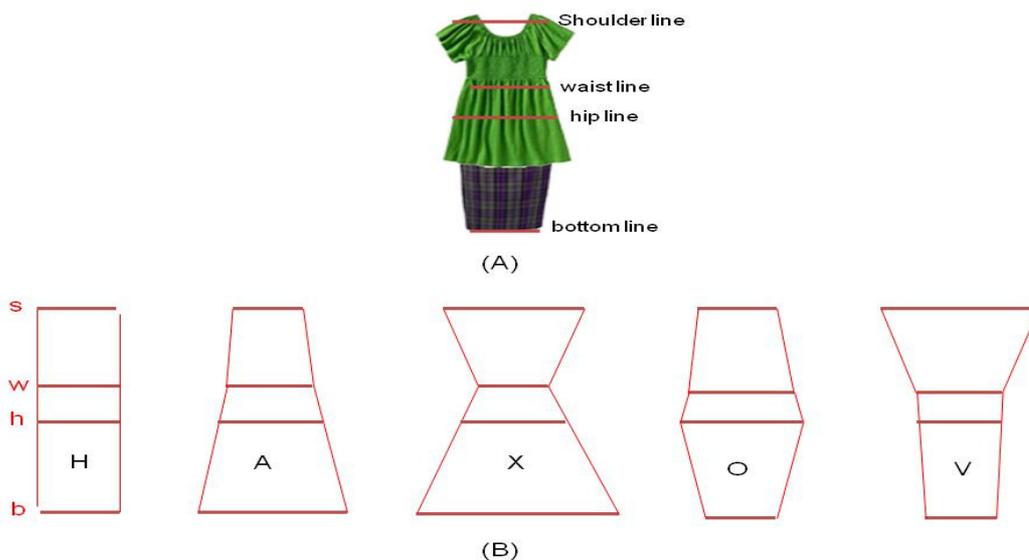


Figure 4. (A) The outline shape is defined based on the boundary of shoulder, waist, hip, and bottom points. (B) There are H, A, X, O, and V types defined by s, w, h, and b (the length of shoulder line, waist line, hip line, and bottom line).

Clothing Matchmaker

Garments are generally classified into three basic types, i.e., tops, skirts and pants, for combinations. Except facial expression, tops usually make the most

visual impression for people at personal communication. People thus always choose a specific top for attending a specific occasion and then use skirts or pants to make further combinations to show out-

standing image. Generally, the process of outfit combination is going with the harmonized principles described in Section 4.1.

According to a study of MATA-LAN (a UK fashion company), women spend much time on choosing outfits for

work, nights out, dinner parties, holidays, gym and other activities. In addition, as indicated in [24], four in ten Americans believe casual clothing (81%) and heavy makeup (80%) are not acceptable for a woman's first day on the job, followed by

Table 1. Definition of outline shape, H, A, X, O, and V using the length of shoulder line, waist line, hip line, and bottom line, denoted as s, w, h, and b.

Outline shape	Definition
H	$s \doteq w \doteq h \doteq b$
A	$s \doteq w$ $w < h < b$
X	$s > w$ $w < h < b$
O	$s \doteq w$ $w < h$ $h > b$
V	$s > w$ $w \doteq h \doteq b$

Table 2. Outline-suits-image lookup table is used to indicate how fit the outline shape is to a specific image category. The highest number means that the specific outline shape (H, A, X, O, V) is the most suitable for presenting the image (seductive, classic, girlish, elegant, sporty, casual).

Image	H	A	X	O	V
Seductive	0.8	0.6	0.9	0.3	0.5
Classic	0.7	0.3	0.5	0.1	0.8
Girlish	0.3	0.8	0.6	0.2	0.1
Elegant	0.7	0.8	0.6	0.3	0.4
Sporty	0.9	0.5	0.1	0.7	0.2
Casual	0.9	0.7	0.1	0.4	0.5

three in four who cite large clunky jewelry (77%) or a short or tight skirt (76 %). Despite of general color harmony principles, fashion researchers believe that some color

combinations are not suitable for some specific occasions and some color combinations are straighten a specific image for specific occasions. Several fashion con-

sultants were thus invited to define coefficients of image-suits-occasion and color-scheme-suits-occasion. As shown in Table 3, the coefficients of image-suits-occasion are defined as a lookup table. The value ranges from 0 to 1, '0' means the image is totally not suitable for the occasion and '1' means the image is completely suitable for

the occasion. For instance, seductive image completely suits for attending a banquet and night party, but it might not suit for outdoor activity. Moreover, Table 4 lists the effecting coefficients of the occasion and the four color schemes mentioned in Section 4.1 Table 5 indicates the effecting coefficient of outline- suits-occasion.

Table 3. Image-suits-occasion lookup table is used to indicate how fit the image is to a specific occasion. The highest number means that the image fits to the specific occasion most.

Occasion	seductive	classic	girlish	elegant	sporty	casual
Banquet	1	0.8	0.6	0.9	0.2	0.3
Night party	1	0.5	0.8	0.6	0.1	0.2
Official meeting	0.5	1	0.4	0.7	0.1	0.2
Professional meeting	0.4	1	0.5	0.8	0.1	0.2
Friends' dating	1	0.6	0.6	1	0.6	0.8
Sweet dating	1	0.7	0.8	0.9	0.4	0.5
Outdoor activity	0.1	0.3	0.4	0.6	1	0.8

Table 4. Color-scheme-suits-occasion lookup table is used to indicate how fit the color harmony scheme is to a specific occasion. The highest number means that specific scheme is the most suitable to the occasion.

Occasion	Scheme	Scheme	Scheme	Scheme	Scheme
	1	2	3	4	5
Banquet	0.8	0.3	0.4	0.6	0.5
Night party	0.2	0.8	0.6	0.4	0.7
Official meeting	0.8	0.2	0.3	0.6	0.2
Professional meeting	0.6	0.2	0.4	0.8	0.1
Friends' dating	0.4	0.8	0.6	0.5	0.3
Sweet dating	0.8	0.7	0.6	0.5	0.8
Outdoor activity	0.2	0.7	0.8	0.3	0.7

A dressing scheme is developed to seek for several pairs of garments (top and bottom) from the customized virtual closet. And an evaluation number is estimated for indicating how much degree the pair matches to the requirements user submitted. The dressing scheme is basically involved two stages, (1) finding basis and (2) searching for matched. At the stage of finding basis, a group of tops is obtained according to the user's demand. The

detailed process of this stage is described as below:

1. Find a group of clothes, G1, based on the season type the user given. Every garment in the database has an attribute, season, which is prescribed by user when building the personal closet.

$$G1 = \{glg.season = season_type\}$$

Table 5. Outline-suits-occasion lookup table is used to indicate how fit the outline shape is to a specific occasion. The highest number means that specific outline shape (H, A, X, O, V) is the most suitable to the occasion.

Occasion	H	A	X	O	V
Banquet	0.8	0.7	0.6	0.2	0.5
Night party	0.6	0.4	0.8	0.3	0.7
Official meeting	0.7	0.7	0.4	0.3	0.8
Professional meeting	0.7	0.6	0.4	0.3	0.8
Friends' dating	0.8	0.6	0.4	0.4	0.8
Sweet dating	0.6	0.8	0.8	0.3	0.4
Outdoor activity	0.3	0.2	0.3	0.9	0.6

2. Sift a group of clothes, G2, from G1, according to the weather_status the user given (a numerical value ranged in 0-1, means very cold to very hot) and clothing psychology (wear warm/cold color in cold/warm day).

$$G2 = \{glg.coldness = weather_status\}.$$

Meanwhile, Mw is calculated for each piece to indicate how the clothes math to the weather. Additionally, fabric material has to be taken into consideration since

people always choose thin fabric for hot weather. Thus, attribute hardness is used to gain Mw. $Mw = (1 - g.coldness) + (1 - g.hardness)$. Thus, the value of Mw is higher, the match degree is higher.

3. Sift a group of clothes from G2, namely G3, in which every garment has an image category matched to the user desired.

$$G3 = \{glg.image = desired_majorImage \parallel desired_secondImage\}.$$

Mi is then calculated to indicate how the individual garment math to the image user desired.

4. According to the image-suits-occasion lookup table (as shown in Table 3), the coefficient M_{io} is then obtained for each corresponding garment in G_3 . The coefficient M_{io} is to show how suitable the image is for attending a specific occasion.

At the stage of searching for the matched bottom, every garment in G_3 is used as basis to search for matched bottoms (skirts, pants, and trousers) in the database according to the prescribed harmony schemes (as shown in Section 4.1). For each combination, M_{ro} is obtained according to the lookup tables of color-scheme-suitis-occasion (Table 4). After the overall outline shape is determined (H, A, X, O, V), M_{oo} and M_{oi} are obtained for each pair according to the occasion and image user desired (Table 2 and Table 5). An evaluation number, E , is eventually obtained using equation 1. Matchmaker eventually ranks all pairs according to the corresponding E , and the first three pairs will be shown on response page.

$$E = ((M_w + M_i + M_{io}) * 1.2 + M_{ro} + M_{oo} + M_{oi}) * type \quad (1)$$

Building Personal Virtual Wardrobe

Clothing Matchmaker is to provide users a friendly interface to search for matched garment pairs within their personal wardrobe according to a specific occasion and desired image. Hence, the first requirement of the work is to build a digital personal wardrobe for individuals with

less user interaction. The digital personal wardrobe is a garment database, every garment the user owns is one record in which. In order to simplify user input, the only one job for user is to prepare photos of each flatten garment in her real closet. Besides, for clearly representing a garment and reuse in the system, we need to find some specific garment attributes. But, how those attributes are extracted from garment images? Several challenges are raised correspondingly. Techniques of digital image processing are employed to gain physical garment attributes, such as major color, outline shape, and so on. On the other hand, computer would not know what outlook image is without training and learning process. Thus, a cognition module is used to recognize what outlook style of a garment is. Neural network is explored to learn psychological attribute, such as outlook impression.

Traditional CAD application for the apparel industry uses feature points to cut the garment shape within a cloth grid, smoothing the surface of patterns, positioning patterns with face vector, seaming patterns to be a garment, resizing and collision handling to make it real on a virtual actor [33]. All information needed for sewing patterns is from CAD pattern file. However, the project here is to provide general users a personalized dressing advice. It is not able to get specific CAD file for each garment in the users' real closets. Hence, for simplifying the process of building garment database for users, [2]

integrates several image processing techniques, including edge detection with Sobel filter, corner detection and chain code processing, to analyze garment images for getting feature points and outline. And a technique of color histogram is applied to gain color distribution of a garment. Furthermore, Cheng and Liu defined “color”, “print style”, “outline shape”, and “material” as the physical essentials of a garment. Membership functions are then performed to translate those physical essentials into

sensations. Finally, a reasoning process for assigning impression categories to each garment is applied after having the essentials of each garment. Those physical and cognitive characteristics are the attributes of the garment database. A garment record is created in the garment database while the essentials have been gathered. Figure 5 illustrates how user builds a customized wardrobe. The detail technologies for gaining garment

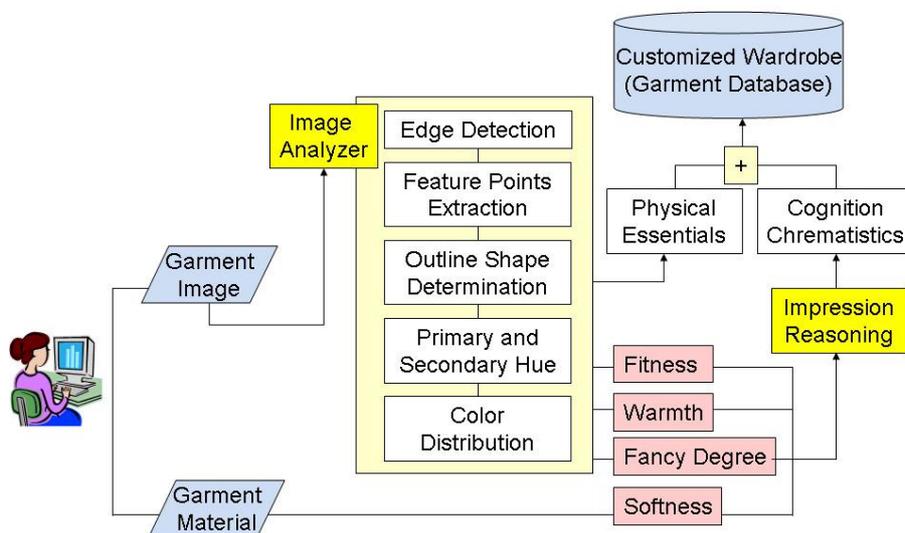


Figure 5. The processing flow of building a customized wardrobe.

essentials are described in [2] proposed by Cheng and Liu in 2008.

Experimental Results and Discussion

The goal of this study is to develop a knowledge-based intelligent dressing advising system for those who might lack of fashion match knowledge. It is a novel user oriented fashion recommendation

tool, all what a user need to do is to take a flatten photo of each garment and submit to the system. Further, it provides nicely matched recommendations for dressing up according to the conditions user submitted, such as how the weather is, where the occasion is held, and what the personal image she wants. Clothing Matchmaker is hence needed indeed for computing well-

matched coefficient being as the match criteria for each combination.

In the research, there are three subjects in the experiment, all of which are office ladies in Taiwan. Each of them has a personal digital closet, which contains at least 60 tops and 20 bottoms (including skirts and trousers). They are all invited to inquiry for what to wear by simply submitting several conditions, and the matched garment pairs are then returned on the result page (Figure 6). Table 6 shows several experimental results based on the inquiry of user. Finally, they are asked to fill a questionnaire for obtaining the satisfactory. The questionnaire has 10 questions in 5 point Likert scale. Figure 7 shows the statistical results with regard to study goals. The numbers on the x-axis are corresponded with the numbered questions in Table 7.

The numbers in the y-axis, on the other hand, are the subjects' average agreements to the questions (strongly disagree:1, strongly agree:5). Generally speaking, the subjects agreed that the system is useful for choosing garment combinations properly, but is weak on helping users to learn more about outfit images and occasions.

In summary, this research shows that the system provides useful clothing combination under specified conditions, makes the decision-making process easier, and is desirable in either online and physical stores. Nevertheless, it is only a pilot, meaning that subjects of more diversity (e.g. gender, age, race, and so on), and more complicated experiment setting need to be involved in order to investigate more into the problem.



(A)

(B)

Figure 6. (A) The enquiry page for submitting the conditions, and (B) the results are returned after processing mix-and-match process.

Conclusion and Future Works

The proposed approach of developing Clothing Matchmaker for an intelligent dressing advising system applied well-known principles of mix-and-match fashion. A domain expert is involved to give the definitions of harmonization principles and definition of outline shapes. Additionally, the system applies well-known techniques of image processing for extracting physical features of garments. Category learning with neural network is used to train the system to enable it to do personal image classification for the submitted

garments. Garments are thus decomposed into several attributes and stored as records in the database, namely personal digital wardrobe. With Clothing Matchmaker developed, the project has the capability to automatically find suitable garment pairs from users' wardrobe according to the submitted requirements. This helps users to get proper outfit easily for attending a specific occasion and showing apposite image, and to make the most available out of each garment in user's personal closet. In conclusion, the system gain knowledge from photos, and has the capability that allows people to find suitable harmonized garment pairs easily.

Table 6. Experimental results of user enquiry.

Results	Enquiry conditions	Garment pairs -Top	Garment pairs-Bottom
1	Impression: Classic/Elegant Occasion: Official Meeting Weather: Autumn		
2	Impression: Classic/Elegant Occasion: Official Meeting Weather: Autumn		

3	Impression: Casual/Seductive Occasion: Outdoor Activity Weather: Summer		
4	Impression: Seductive/Classic Occasion: Banquet Weather: Summer		
5	Impression: Seductive/Classic Occasion: Banquet Weather: Summer		

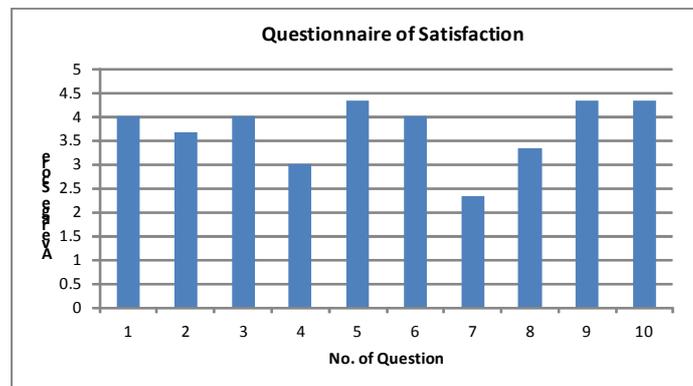


Figure 7. The average deviation of the answers to the questions in the questionnaire. The participants all agreed that the system is useful for choosing a proper garment combination to show a specific image, but they do not agree that the system is a good tool to understand more about outfit image and occasion.

Table 7. The questions listed in the questionnaire.

No.	Questions
1.	Generally speaking, you like the recommendation that the system provides.
2.	Generally speaking, you find the recommendation useful.
3.	The recommended clothing combinations are appropriate to show the image.
4.	The recommended clothing combinations are appropriate for the occasion.
5.	You have never seen or heard of any systems that can give recommendation based on the image and occasion.
6.	The system makes the decision making process more efficient.
7.	The system helps you to understand more about the outfit image and occasion.
8.	It is easier to decide on the clothing combinations with the recommendation.
9.	It is fun to use the recommendation system.
10.	All in all, you would like to use this system when you need to find clothes to show specific image for certain occasion.

However, clothing is affected by gender, culture, age, and social relations. The principles of female mix-and-match fashion are unsuitable for males. For female mix-and-match fashion, the same garment might bring different meaning in different cultural regions. White color, for example, is the main tone in a Japanese wedding but is considered unlucky in a Chinese wedding. A mini-cut skirt for an eighteen-year-old school girl presents a cute and fresh style, but is a sexy style for a thirty-year-old office lady. Thus, the project could not be applied in general to everyone in the world. The framework is focusing on the age of twenty-five to thirty-five office ladies. In the future, a module for age classification which employs different categories and match rules for different age will be added.

In addition, via mobile network users can know immediately whether she has anything match in the closet while shopping in a store by transmitting a photo, which is taken at the shop, to the system. It makes shopping efficient and economic. People will not waste a penny on buying something they never wear. Moreover, ontology is a mechanism between the user and the database to pick out appropriate results from the database by semantic information supplied by the user. With an ontology structure embedded, it helps categorize the garments in the database in a class hierarchy, supporting multiple inheritances, drawing relations between instances of the database, allowing for properties to be assigned to instances and classes, bringing ease to finding garments that fit the user's specific requirements. Then the system has the capability to do seman-

tic searches through the database and pick out garments that fit the semantic meaning of the input given. With the help of ontology, it is able to automatically find suitable

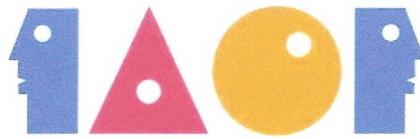
garments by submitting the semantic requirements to the system. This will be the main work of our further research.

Reference

- [1] B. Cosgrave. A complete history of costume & fashion: from ancient egypt to the present day, Checkmark Books. 2001.
- [2] C.I. Cheng and D.S.M. Liu. An intelligent clothes search system based on fashion styles, In Proc. International Conference on Machine Learning and Cybernetics, Kunming, China, 1592-1597. 2008.
- [3] Admavicius, Gediminas, Sankaranarayanan, Ramesh, Sen, Shahana, and Tuzhilin, Alexander. Incorporating contextual information in recommender systems using a multidimensional approach. ACM Trans. on Information Systems, 23, 1, 103-145. 2005.
- [4] A. Ansari, S. Essegaiier, and R. Kohli. Internet recommendation systems. Journal of Marketing Research, 37, 3, 363-375. 2000.
- [5] Raymond J. Mooney and Loriene Roy. Content-based book recommending using learning for text categorizations. In: Proc. The fifth ACM conference on Digital libraries. 195-204, New York, USA. 2000.
- [6] Shen, H. Lieberman, and F. Lam. What am I gonna wear? scenario-oriented recommendation. In IUI '07: Proc. of 12th International Conference on Intelligent User Interfaces, Honolulu. 365–368. 2007.
- [7] S. Rasoul Safavian and David Landgrebe. A survey of decision tree classifier methodology. IEEE Trans. Systems Man Cybernetics, 21, 3, 660-674. 1991.
- [8] Tao Wang, Zhoujun Li, Yuejin Yan, and Huowan Chen. A survey of fuzzy decision tree classifier methodology. In Proc. 2nd International Conference of Fuzzy Information and Engineering, vol. 40 of Advances in Soft computing, Berlin, 959-968. 2007.
- [9] Ian H. Witten and Eibe Frank. Data mining: practical machine learning tools and techniques. Morgan Kaufmann. 2005.
- [10]

- [11] Monika Zakova and Filip Zeleznu. Exploiting term, predicate, and feature taxonomies in propositionalization and propositional rule learning. In Proc. 18th European Conference on Machine Learning, Lecture Notes In Artificial Intelligence, 4701, Poland, 798-805. 2007.
- [12] Vojislav Kecman. Learning and soft computing — support vector machines, neural networks, fuzzy logic systems. MIT Press, Cambridge, MA. 2001.
- [13] J.A. Freeman and D. M. Skapura. Neural networks-algorithm, applications, and programming techniques. Addison-Wesley. 1991.
- [14] Daniel M. Wegner and Robin Vallacher. Implicit psychology: an introduction to social cognition. Oxford University Press, USA. 1977.
- [15] R. M. Nosofsky. Attention, similarity, and the identification-categorization relationship, *Experimental Psychology: General*, 114, 39-57. 1986.
- [16] J. K. Kruschke. ALCOVE: An exemplar-based connectionist model of category learning, *Psychological Review*, 99, 22-44. 1992.
- [17] C.I. Cheng and D.S.M. Liu. Discovering dressing knowledge for an intelligent dressing advising system, In Proc. 4th International Conference on Fuzzy Systems and Knowledge Discovery, 4, Haikou, China, 339-343. 2007.
- [18] B.C. Love, D.L. Medin, and T.M. Gureckis. SUSTAIN: a network model of category learning, *Psychological Review*, 111, 309-332. 2004.
- [19] Lap-Fai Yu, Sai-Kit Yeung, Demetri Terzopoulos, Tony F. Chan. DressUp! Outfit synthesis through automatic optimization. *ACM Trans. on Graphics*, 31, 6, 134, 2012.
- [20] Si Liu, Jiashi Feng, Zheng Song, Tianzhu Zhang, Hanqing Lu, Changsheng Xu, Shuicheng Yan. Hi, Magic closet, tell me what to wear! In Proc. 20th ACM international conference on Multimedia, 619-628.
- [21] Institute of Textiles and Clothing, The Hong Kong Polytechnic University, <http://www.itc.polyu.edu.hk>.
- [22] IconNicholson. High-tech mirror helps shoppers reflect on their purchases, *IEEE Computer*, 40, 8, 21, Aug. 2007.
- [23] M. Tokumaru, N. Muranaka, and S. Imanishi. Virtual stylist project-examination of adapting clothing search system to user's subjectivity with interactive genetic algorithms.

- In Evolutionary Computation, 2, 1036-1043, 2003.
- [24] Welcome to My virtual Model(TM), <http://www.landsend.com/>, accessed on July 2006.
- [25] Yankelovich partners, Inc. "Work your image: The importance of appearance on the job", 2001.
- [26] C.C.-H. Lin. Explore the differences of cognitive between fashion Style and image from consumer standpoint. In Journal of Tainan Technology University, 22, 1-4, 2003.
- [27] K. McKelvey. Fashion source book. Blackwell Science. 1996.
- [28] S.R. Lee. Details & fashion design collection. Munymadang, Korea. 1998.
- [29] Toby Fischer-Mirkin. Dress code: understanding the hidden meanings of women's clothes. Gladys Perint Plamer. 1995.
- [30] Faber Birren. Color psychology and color therapy: A factual study of the influence of color on human life. Kessinger Publishing, LLC. 2006.
- [31] Jenn-Yang Lin, Ming-Shi Chen, and Jui-Yang Kao. Harmonious visibility to colors combination with letters and backgrounds in Digital Contents by Neural-Fuzzy Study. Applied Art and Design, 1, 31-41, July 2006.
- [32] T. W. Lee. Art of color combination. Publishing House of Electronics Industry. 2005.
- [33] M. Tokumaru, N. Muranaka, and S. Imanishi. Virtual stylist project-examination of adapting clothing search system to user's subjectivity with interactive genetic algorithms. In Evolutionary Computation, 2, 1036-1043, 2003.
- [34] Arnulph Fuhrmann, Clemens Gross, Volker Luckas, and Andreas Weber, Interaction-free dressing of virtual humans, Computer & Graphics, 27, 1, 71-82, January 2003.



THE PROSPECTS OF APPLING THE INTERNATIONAL
FINANCIAL REPORTING STANDARDS IN VIETNAM –
AN EMPIRICAL STUDY OF ACCOUNTING PROFESSIONALS

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Abstract

The purpose of this study is to investigate the implications of applying International Financial Reporting Standards (IFRSs) in Vietnam. A survey was conducted to identify issues of applying IFRSs in Vietnam. The results indicate that: (1) the information of IFRSs in Vietnam is not really adequate and not diversified enough, (2) a large percent of respondents tend to agree with the benefits of applying IFRSs, such as better comparability with other businesses, lower cost of capital, and less reporting transform cost, (3) the lack of knowledge and the complexity of IFRSs and the training of accounting staffs are important challenges in applying IFRSs, and (4) a large majority of respondents believe that convergence to IFRSs is consistent with the conditions of Vietnam and the best time to introduce convergence to IFRSs is the period 2015 to 2016.

Key Words: International Financial Reporting Standards (IFRSs), Vietnamese Accounting Standards (VASs), Convergence to IFRSs

Introduction

Accounting, as a tool of economic management, has also been experiencing major changes in recent years. Abell, et al. (2008) asserted that the issuance and adoption of International Financial Reporting Standards (IFRSs) around the world is now a special concern of most national and professional organizations. Vietnam plan to complete the integration in the field of accounting and auditing before 2020. Vietnamese Accounting Standards (VASs) is generally based on IFRSs updated in 2003 while “a formal date for the full adoption of IFRSs has not yet been accounted”. The purpose of this study is to identify the most suitable timing and the best way to apply IFRSs in Vietnam. The findings present that a majority of respondents believed that convergence IFRSs is consistent with the conditions of Vietnam. Convergence means Vietnam should update, amend, supplement, and refine VASs to fit with IFRSs. This research enhances the accounting practical for assessment and reflects the general perception about IFRSs, which identify the possible way available to Vietnam for using IFRSs smoothly.

Literature Review

For the strong development of capital markets and multinational enterprises, the financial transactions are great and growing in complexity worldwide. Jauffret (2010) claimed that the biggest advantage of using IFRSs is a common reporting language all over the world. Additionally, the application of IFRSs will bring many benefits to stakeholders such as enterprises, investors, nations and also accountants and auditors.

According to Jermakowicz and Gornik-Tomaszewski (2006), Tweedie

(2006) and Fajardo (2007), adopting IFRSs would remove barriers to cross-border transactions in the securities market, increase trade and investment and help enterprises integrate easily into the capital markets, and also result in a lowered cost of capital. The application of an accounting language worldwide will increase comparability of financial information (Tweedie, 2006) which allows investors to see different companies from different countries in the same way, thereby increasing abroad investment opportunities. Secondly, as a single set of high quality accounting standards, IFRSs increases financial disclosure “to ensure the transparency of financial reporting” (Nobes, 2001), reduce misunderstanding and risks in making investment decisions. Additionally, the adoption of IFRSs would reduce development and maintenance costs for national accounting standards. Investors will be more confident in the transparency and reliability of financial information so contribute to the development of national stock market. Implementing IFRSs would help to attract more foreign investments (Sikidar and Das, 2008) and also to easier access to loans and capital from international organizations to develop national economic (Gyasi, 2010). Applying IFRSs worldwide will take advantage as the global network of accountant and auditor. When accounting standards and audit procedures are consistent from country to country, it would be easier for training and shifting accountants and auditors around the world (Tweedie, 2006).

One of research questions in this study is: What are the implications for Vietnam if it applies the International Financial Reporting Standards? When business activities become increasingly complex, the rapid application of IFRSs becomes more urgent than ever.

Applying IFRSs means a new accounting environment to be formed, and it requires providing full information about IFRSs. To provide prospects of the application of IFRSs in Vietnam, this study would like to evaluate the sources of IFRSs in Vietnam. Therefore, the first hypothesis was proposed as following:

H1: The information of IFRSs in Vietnam is adequate and diversified.

When joining the WTO, the Vietnam's goal is to complete the integration in the field of international accounting and auditing before 2020. In which, the period 2010 - 2020, dynamic phase of integration: Vietnam's comprehensive integration and equality with other countries in the field of accounting and auditing, we can both import and export accounting and auditing services. Thus, the rapid update and refine VASs to fit with IFRSs is as inevitability. Therefore, the second hypothesis would be:

H2: The update and refine VASs to fit with IFRSs is indispensable.

Next, the current globalization of the world economy has made business activities more standardized (Epstein, 2009). Along with the strong development of capital markets and multinational enterprises, the financial transactions are great and growing complexity worldwide. According to Nobes (2001), Carroll (2003), Jermakowicz et al. (2006), Epstein (2009), Gyasi (2010), and Jauffret (2010), the application of IFRSs to record and report on the economic activities of enterprises will bring many benefits. This content was presented as advantages of IFRSs in literature review. To reevaluate of the benefits from applying IFRSs to Vietnam, the third hypothesis would be:

H3: The benefits of applying IFRSs in Vietnam are clear.

Finally, besides the benefits of IFRSs, the application of IFRSs takes many challenges for many countries including Vietnam. According to Kannan (2009), most enterprises faced a lack of practical experiences about IFRSs. In the present period of transition to IFRSs in Vietnam, it will be difficult not only because there are the differences between IFRSs and VASs, but also IFRSs is considered to be very complex, even for developed economies. So the fourth hypothesis is as follow:

H4: The challenges of applying IFRSs in Vietnam are clear.

Methodology

This study uses an email survey through questionnaire to solicit responses from the population as Vietnamese accountants and accounting lecturers. The first section of the questionnaire requires the respondents to circle or highlight the appropriate answer, either "yes" or "no" or choose the best answer for multiple-choice questions in the column provided, based on their understanding of IFRSs. The next section is to identify the time and best way to apply IFRSs in the future. The third section covers a list of expected benefits of the adoption of IFRSs to enterprises, investors, State/nation, accountants and auditors in Vietnam.

Respondents were asked to indicate their opinions based on a five-point Likert scale for measurement of the answers which range from "1" (strongly disagree) to "5" (strongly agree). The fourth section includes five items of expected challenges of applying IFRSs in Vietnam. Here respond-

ents are asked to indicate how agree on each challenge by using a five-point Likert scale from “1” (strongly disagree) to “5” (strongly agree). The final section was designed to acquire demographic data of respondent such as gender, age, level of academic qualification, job, and years of experience in teaching and working as an accounting professional.

To test the above four hypothesis, the data were subjected to one samples t-tests. Also, to investigate the relationship between the demographic variables and the evaluation of IFRSs resource, the ways and the reasons to contacting the IFRSs information, the suitable time and way in applying IFRSs, the benefits and challenges, a cross tabulation analysis with Chi-Square test, an independent sample t-tests and one way ANOVA were applied. The demographic variables were the independent variables, and the others items were dependent variables. In addition, a logistic regression statistics was applied to measure the direction of the association between the way for applying IFRSs and the expected benefits of using IFRSs. The logistic regression equation is:

WAY = f (α , benefit for enterprises factors; benefit for investors factors; benefit for nation factors; benefit for accountants and auditors factors)

In which the assumption that the approach to apply IFRSs (WAY) is assigned 1 means convergence, 0 means full adoption. The results obtained from the analysis are reported in the next section.

Result and Discussion

148 people including 80 lecturers, 62 accountants and 6 auditors is the sample of the study. More than a half

of respondents have invested in the stock market. The sample seems to be represented not only the accounting lecturers and the accountants but also the investors in Vietnam. The key findings and discussion are explicated in the followings based on Table 1-4.

The first hypothesis that “the information of IFRSs in Vietnam is adequate and diversified” is rejected. According to responses, lecturers show a greater satisfaction with IFRSs resource than accountants. The reason is that the lecturers have high levels of scientific research and usually study in theoretical accounting, as well as helping to apply this knowledge practically. They also have many more opportunities to attend conferences, to read books, newspapers and magazines. Generally, almost all of the young respondents (less than 45 years old) reported that they know IFRSs from the internet. People, who have master's or doctor's degree and have invested in the stock market, have higher opportunities to know IFRSs from conferences, newspapers and magazines. Moreover, the findings show that even now twenty six respondents have no knowledge of IFRSs. Then, to increase the accuracy of analytical results, people who have never known about IFRSs will be excluded from continued analyses.

Regarding the frequency of contacting IFRSs resources, the most common frequency response is several times a month with the average time if 2.94 hour. The primary reason for contacting the IFRSs information was the necessary for the respondent's job. Improving accounting ability and respondent's interest were cited in turn as the second and the third most important reason. Furthermore, some of the respondents reported one of their reasons for contacting the IFRSs in-

formation was their attendance at a conference, congress, or other forms of education. Finally, there are some respondents who have business reasons for contacting the IFRSs information. The above results suggest that a large part of accountants in Vietnam has not yet had urgent needs for using IFRSs so they pay little attention to these standards. These results may be interpreted as showing that some of respondents have no real motivation or lack the conditions necessary for learning about IFRSs.

As a consequence, if the demand for IFRSs is not large enough then the supply of IFRSs' resources may not be abundant or diverse is understandable. Therefore, the second hypothesis "the update and refine VASs to fit with IFRSs is indispensable" is accepted. Moreover, the findings suggest that lecturers have a tendency to convergence IFRSs higher than accountants and they believe that the best time to apply (by the way of convergence) IFRSs in Vietnam is period 2015 to 2016. Explaining the reason for choosing convergence IFRSs, Prof. Dang Van Thanh, the chairman of VAA and accounting faculty of Hanoi University of Business and Technology says that: "Vietnam's economy is in conversion so the characteristics and development level are different with other countries". Therefore, we need to select the appropriate steps to Vietnam during the application of IFRSs. Furthermore, others who choose convergence IFRSs also gave some reasons that include: IFRSs is relatively complex because it covers all transactions in the developed economies. While Vietnam is a developing country where there may not be many complex transactions. Besides, the ability for accountants to take a shortcut to apply IFRSs in Vietnam may not be enough. Hence, Vietnam should be careful in choosing the way

to apply IFRSs, and also should amend the standards (if necessary) to suit the conditions.

The findings from this study confirm that a large percent of respondents believe that the change in accounting and reporting under IFRSs as the benefits for enterprises, including (1) easier access to capital (2) greater reporting transparency, and (3) improved quality and timeliness of management information. The expected benefits of the change, such as (1) better comparability with other businesses, (2) lower cost of capital and (3) reduce reporting transform cost are questioned by most respondents. Likewise, the change as increase cross-border listings and investment opportunities for investors is also questioned by many. Fortunately, there is general consensus that the other expected benefits for investors, nation, accountants and auditors in Vietnam are clear. Then taken together, these findings suggest that the third hypothesis – namely, "the benefits of applying IFRSs in Vietnam are clear" is accepted. On the other hand, the results of logistic regression analysis show that respondents who agreed more strongly with the changes under IFRSs including: (1) lower cost of capital, (2) increase cross-border listings and investment opportunities for investors, (3) create the confidence for investors, contributing to the development of stock market, (4) create the global network of accountants and auditors, who more tend to convergence IFRSs. While of those who agreed more that using IFRSs will make (1) greater reporting transparency, (2) reduce reporting transform cost, (3) easier compare the financial results of companies operating in the different jurisdictions, (4) reduce the cost of accounting standards development and maintenance, (5) easier provide accounting and auditing services in dif-

ferent countries, those more tend to adoption IFRSs.

There is general consensus that IFRSs are so complex to apply IFRSs, the training of accounting and management staff is the most important challenge. Besides, almost respondents have limited knowledge of IFRSs and the barrier of language (in English). The findings then suggest that the fourth hypothesis – namely, “the challenges of applying IFRSs in Vietnam are clear” is accepted. Finally, the findings here suggest that to be successful in applying IFRSs, Vietnam’s MOF should make a clear step-by-step plan that includes increasing accountant’s awareness of IFRSs, issuing the standards lacking compared to IFRSs, and quickly bringing IFRSs into education.

Conclusion

The results have important implications, especially for the best way and the timing to apply IFRSs in Vietnam. Specifically, this study indicates that the convergence IFRSs is consistent with the conditions of Vietnam and the best time to convergence to IFRSs is period 2015 to 2016. The findings of this study provided the suggestion that Vietnam’s MOF must build an integration roadmap with each step in detail. This roadmap requires effort on the MOF, enterprises, professional asso-

ciations, education and the accountants and auditors.

Besides completing the legal framework, strengthening the activities of professional associations have also played an important role in the success of applying IFRSs. VAA will carry a heavy responsibility in disseminating new knowledge. To accomplish its mission, VAA should continue to improve its role in the transmission and dissemination of knowledge from theory to practice. Accounting schools need quickly to renew the program, content, and training methods of accounting and auditing at all levels. Training program requires not only conform to the existing standards, but also need to gradually prepared pre-conditions for convergence with international accounting. Furthermore, the schools should become a bridge between enterprises and the application of new standards with the role as a guide.

For the urgent need to improve the transparency of accounting information, Vietnam accounting professionals are not only having great opportunities but also facing so many challenges. In order to achieve the success in converging to IFRSs, they need to develop a specific roadmap for raising awareness, training and improving the legal framework.

Reference

- Abell, C., Corley, J. & Fiore, M. (2008). IFRS conversion: 10 reasons why tax should be involved. *International Tax Review*. London. Available at: <http://proquest.umi.com/pqdweb?did=1590529891&sid=1&Fmt=3&clientId=48072&RQT=309&VName=PQD>.
- Carroll, N. (2003). Thought required before the IFRS plunge. *Australian CPA*. Vol. 73, Iss.10, pg. 76.
- Epstein, J. B. (2009). The Economic Effects of IFRS Adoption. *The CPA Journal*. New York, Vol.79, Iss.3; 26-31, 6 pgs.

- Fajardo, C. L. (2007). The Move Towards Convergence of Accounting Standards World Wide. *Journal of American Academy of Business, Cambridge*. Vol. 12, Iss. 1; 57-62, 6 pgs.
- Gyasi, A. K. (2010). Adoption of International Financial Reporting Standards in Developing Countries - The Case of Ghana. *Business Economics and Tourism, University of Applied Sciences*. Variable: <http://publications.theseus.fi/handle/10024/15526>.
- Jauffret, P. (2010). Asia needs better voice on IFRS. *International Financial Law Review*. London.
- Jermakowicz, E. K. & Gornik-Tomaszewski, S. (2006). Implementing IFRS from the perspective of EU publicly traded companies. *Journal of International Accounting, Auditing and Taxation*. Volume 15, Issue 2, 2006, 170-196, 27pgs.
- Kannan, R. (2009). Reporting of the committee on IFRS compliance in India Insurance industry. Insurance regulatory and development authority. 203pgs.
- Nobes, C., ed. (2001). GAAP 2001: A survey of National Accounting Rules Benchmarked against International Accounting Standards by Andersen, BOD. Deloitte Touche Tohmatsu. Ernst & Young, Grant Thornton, KPMG, PricewaterhouseCoopers. New York, NY: J Wiley & Sons.
- Sikidar, S. & Das, A., (2008). Convergence of Accounting Standards with IFRS: A Comparative Analysis. *Management Accountant*. Vol. 43, Iss. 12; pg. 905.
- Tweedie, D. (2006). Prepared standards of Sir David Tweedie, Chairman of The International Accounting Standards Board before the Economic and Monetary affairs Committee of European Parliament. Available at: <http://www.iasplus.com/resource/0601tweedieeuspeech.pdf>.

Table 1. Job vs. Vietnam's IFRSs Resource is Adequate

	Vietnam's IFRSs resource is adequate					Mean	F Sig.	Mean dif. Sig.
	Strongly disagree	Disagree	Partly Agree	Agree	Strongly agree			
Accountant	22	29	11	0	0	1.82	13.221	-0.627
Lecturer	5	38	34	2	1	2.45	.000***	.000***
Auditor	1	3	1	1	0	2.33		
Total	28	70	46	3	1			

Table 2. Job vs. The Way in Applying IFRSs

	The way in applying IFRSs			X2 (p)	F (p)	Mean Dif. (p)
	Others	Adoption	Convergence			
Accountant	0	26	21	32.901	8.043	-.585
Lecturer	6	7	60	.000***	.001***	.001***
Auditor	0	0	2			
Total	6	33	83			

Table 3. The Way in Applying IFRSs vs. The Best Time to Apply IFRSs

	The best time to apply IFRSs in Vietnam					Mean	t - value (2-tailed)
	2012-2014	15-16	17-18	19-20	After 20		
Adoption	1	3	12	14	3	3.45	6.309
Convergence	23	34	18	5	3	2.17	.000**
Total	24(19.7%)	37(33.6%)	30(26.2%)	19(15.6%)	6(4.9%)		

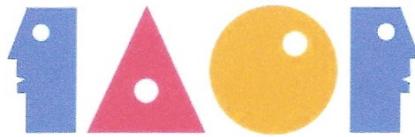
Table 4. Tests of Independence and Association between the Ways to Apply IFRSs and the Expected Benefits for Accountants and Auditors

WAY = $\alpha + b1 * aCACALATW + b2 * aANABMC + b3 * aATABATQ + b4 * aESTSIDC + b5 * aCTGNOAAA$					
<i>Benefit factors</i>		<i>B</i>	<i>S.E.</i>	<i>df</i>	<i>Sig.</i>
	aCACALATW	-.254	.401	1	.526
	aANABMC	.498	.499	1	.319
	aATABATQ	- 1.130	.493	1	.022 **
	aESTSIDC	- 1.237	.450	1	.006 ***
	aCTGNOAAA	.737	.358	1	.039 **
	Constant	7.154	2.446	1	.003 ***
Chi-square		23.791 ***			
Overall Percentage		78.4 %			

Note 1: **, *** indicate significance at the 0.05, and 0.01 levels, respectively.

Note 2: WAY equal 1 means convergence, 0 means adoption.

Note 3: Benefit factors included benefits for accountants and auditors which aCACALATW means create a common accounting language around the world, aANABMC means accountants and auditors become more competitive, aATABATQ means standardize training and better assure the quality of their work on a global basis, aESTSIDC means easier sell their services in different countries, and aCTGNOAAA means create the global network of accountants and auditors



ANALYZING INNOVATION POLICY DIMENSIONS AND CONTEXTS: IN THE EMPIRICAL CASES OF TAIWAN AND SINGAPORE

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Abstract

Taiwan and Singapore are both relatively small countries that have transformed into successful, competitive economies and leaders in high-tech industries. National innovation systems are important in their development of a country's economic performance. This research explores the practice of the innovation policies of Taiwan and Singapore, and focuses on supply side, environment side and demand side. In a comparative analysis of innovation performance between these two countries, Taiwanese public institutes take an active role in innovation/R&D and focus their policies on specific industries, a top-down approach, while the Singapore Government promotes innovation by public enterprises establishments.

Keywords: Innovation policy, national innovation systems, comparative analysis, Taiwan, Singapore

Introduction

As small countries within the "Asian Tiger" economies, Taiwan and Singapore have both been recognized for performing economic miracles. In recent decades, as economic activities in both nations have grown more knowledge intensive, increasing attention has been paid to the economic role of innovation. The ability to innovate will gain greater prominence in driving future economic growth, so the national governments of both Tai

wan and Singapore have accelerated policy efforts aimed at strengthening their national innovation systems. These efforts include the introduction of broad measures to improve performance in areas such as research and development, education, entrepreneurial activity, and knowledge flow; all of which are key determinants for innovative activity (Merges and Nelson, 1990).

Innovation as a driver of growth theory is derived from the economic theory of creative destruction advanced by Jo-

seph Schumpeter (1942), which states that long-term economic growth is generated by the creation of the new, and the displacement of the old, in a capitalist society. As nations achieve higher levels of gross domestic product per person, the main source of this change becomes innovation.

Recognizing the relationship between innovation and economic performance, we can then separately explore how genuine innovation-related factors drive the competitiveness of these two small, but relatively fast-growing, economies. This paper is devoted to the task of assessing and analyzing the innovation policies of Taiwan and Singapore, highlighting their specific strengths and weaknesses, and their effectiveness in the specific economic and institutional context in which they operate, with a core focus on national innovation systems. The existing literature related to these systems primarily emphasizes the active role played by government policy and specific institutions, including the university system (Nelson and Rosenberg, 1994), the extent of intellectual policy protection (Merges and Nelson, 1990), and the evolution of the industrial research and development (R&D) organization (Mowery, 1984).

Literature Review

Innovation Policy

Traditional innovation policy has often focused on promoting science and technological policies, which have typically believed in the science push effect in the radical innovation process. The new innovation environment then sets new demands for regional innovation policies and strategies. Therefore, innovation cannot be viewed as a property of science- or technology-based firms; it is the basis of competitiveness in all types of economic activities (Pekkarinen and Harmaajorpi, 2006). The following discussion portrays how

national innovation policy can be evaluated using various approaches.

Numerous system perspectives on innovation performance have been used to examine the classification and role of innovation policies. Rothwell and Zegveld (1981) developed a comprehensive classification system for innovation policy employment, in which they grouped innovation policy tools into supply-side, demand-side, and environmental-side. Supply-side tools are those that provide the basic resources for innovation, such as provision of financial, manpower and technology assistance, including educational institutions or universities, trained technicians, information networks, and technical advice. In addition, they include direct innovation by government-owned agencies and state industries, as well as research directly supported by government funds, such as research grants. Environmental-side tools regulate the operating environment of firms, and include the means by which the government impacts the financial aspect of innovation. This classification also includes not only the legal environment in which firms operate, but also the legal environment for innovation. Demand-side tools have an effect on the stimulation of invention by the demand for new products and services created by public spending and public services. These also include the stimulation or suppression of innovation by regulation of demand from overseas, and the ability of overseas competitors to operate in the national market.

This paper uses the policy analysis denotations originally derived from Rothwell and Zegveld (1981) as a guideline in facilitating a more insightful national innovation policy assessment. The reason we chose this framework as an analysis base is that it rests on the premise that understanding the links between the policy actors involved in innovation is the key to improving technology performance (Shyu and Chiu, 2002). Furthermore, it is more feasi-

ble and applicable than other indicator systems, from the perspective of comparability and comprehensiveness.

However, we believe that the policy field of promoting network and entrepreneurship on the supply side may be a missing link in the innovation policy assessment framework first proposed by Rothwell and Zegveld (1981). Frenken (2000) contended that successful innovation depends on complementary competencies in networks of producers, users, and governmental bodies. Moreover, networks have become understood as important organizational forms for coordinating the efforts of heterogeneous actors without restricting their individual goals. More specifically, technological incubators have assumed a growing role in R&D research and innovation management, and their importance has not escaped the attention of researchers (Lumpkin and Ireland, 1988; Mian, 1996). Science parks, such as technology incubators, are property-based initiatives designed to provide a conducive environment in which high-tech businesses can be established and can develop (Roper, 2000). Venture capital funds provide not only capital, but also management assistance; once the enterprise has become a success, they sell off their holding in the company to make a profit. Support of this is somewhat beneficial for entrepreneurship promotion (Tsai and Wang, 2005). Importantly, inter-firm collaboration and inter-organizational learning are central to the innovation process (Roper, 2000).

In consideration of the discussion above, the revised innovation policy assessment model of general roles for each grouping is depicted in Table 1.

National Innovation Systems

The concept of national innovation systems (NIS) can be traced back to the mid-1980s in the context of debates involved in industrial policy in Europe. One

of the notable antecedents of the concept of NIS is Christopher Freeman (1982). Since then, an international body of literature has documented the growing influence of the NIS approach (Sharif, 2006).

The concept of NIS can be perceived as a historical grown subsystem of the national economy, in which various organizations and institutions interact with, and influence, one another in carrying out innovative activity and generating innovation performance. The NIS approach implies that innovative activity encompasses the input processes of R&D efforts by private and public sectors, as well as the determinants influencing national technological capabilities, for instance, learning processes, incentive mechanisms or the availability of skilled labor (Nelson and Rosenberg, 1993; Balzat and Hanusch, 2004). Therefore, the NIS approach focuses on the analysis of nationwide structures of innovation activities, their institutional determinants, and their economic effects (Balzat and Pyka, 2006).

Lundvall et al. (2002) indicated that the NIS concept provides a new perspective from which to examine a country's innovation processes through different types of policy. A wide set of policies, including labor market policy, education policy, industrial policy, energy policy, environmental policy, and science and technology policy, affect a country's competence-building. Moreover, a systematic analysis of comparative studies of different NIS helps to obtain a critical understanding of the limits and the benefits of specific national policy strategies (Edquist and Lundvall, 1993; Lundvall et al., 2002).

Assessing National Innovation Policy

Supply-Side of Innovation Policy Taiwan.

Five Taiwanese state-owned enterprises have been established to meet the strategic and tactical needs of the government and to protect certain industries by the construction of large-scale businesses, through direct operation of upstream, heavy industry, which the private sector was unable or unwilling to undertake (Nolan and Wang, 1999). The Taiwanese government is attempting to make these more competitive through privatization, but this has yet to materialize.

To encourage entrepreneurship, the Taiwanese government adopted an incubator tool, foreign direct investment (FDI), and deregulation. Since 1996, the Small and Medium Enterprise Administration (SMEA) of Taiwan has continued to promote the establishment of incubators, through the use of financial support available from the Small and Medium Enterprise Development Fund for office equipment, personnel, and related costs. The inflow of FDI has also helped to establish small and medium enterprises SMEs in Taiwan. Those multinational companies (MNCs) not only introduced advanced technology to the industry, but also created a center-satellite manufacturing model to shape a supply chain. Taiwan's government promulgated several laws to encourage nationals to become involved in business affairs through investment, such as the Statute for Encouragement of Investment in 1960. In addition, the Statute for Establishment and Management of Export Processing Zones (1965), and the Statute for Establishment and Management of Science-Based Industrial Parks (1979), created the two most significant areas for Taiwan's industrial development; export processing zones (EPZ) and the Hsinchu Science-based Industrial Park. Taiwan's venture capital (VC) has made a particular impact on those in the emerging industries, and the government has established many VC associations, in addition to offering financial support to investors (Tsai and Wang, 2005). We can see that the role of govern-

ment as a direct provider (as opposed to facilitator) is emphasized. Examples are the establishment of the Industrial Technology Research Institute (ITRI), the Technological Information Center, and the National Science Council, which conduct research on a large scale and undertake studies into the feasibility of industrializing new technology. From the late 1980s through the early 1990s, the government directed a considerable number of innovation alliances in the areas of notebook computers, high-definition televisions, fax and communications equipment, etc., in order to promote industrial upgrading in Taiwan, working through research institutions. (Tsai and Wang, 2005).

The Taiwanese government focused on providing the tools of innovation, that is, technically educated students, as well as government-funded research, training, and information. However, Shyu (2006) criticized the approach in stating that the needs of industry are not always served by the supply policy system; this is the result of the separation of education, industry, and government, as well as the political nature of such a government-focused system.

Singapore

Public enterprises in Singapore's Government of Singapore Investment Corp and Temasek Holdings were established by the government to control or monopolize several strategic industries. Over time, the statutory boards not only became major actors in the economy, but also formed subsidiary companies to add flexibility to their own operations. These subsidiaries, such as, Jurong Town Corp., attracted corporate investment by offering funds and the promise of cooperation from government departments to ensure that the corporations transferred proprietary technology and training to Singapore.

The Singapore government has gone one step further by building more science parks (Tuas Biomedical Park, One-North Science Habitat), a city within a city (the Biopolis), and clusters (Communication and Media), in order to be on the cutting edge of technology. These science parks specifically catered to the unique research needs of advanced technology and new business models to create value.

The country's competitiveness is propped up by a strong focus on education, providing highly skilled individuals for the workforce. The National University of Singapore is not only the leading academic organization in higher education, it is also a decisive player in university-industry collaboration on applied R&D. It provides a campus location for regionally outstanding research institutes, such as the Institute for Microelectronics, pointing to a research focus on information and communication technology and microelectronics, as well as life sciences. These institutes co-operate with multinational enterprises and international research partners, and range from contract research to mutual agreements of understanding. The second major academic player is Nanyang Technological University, with research institutes such as the Advanced Materials Research Centre and the Gintic Institute of Manufacturing Technology. Its strategic outlook on R&D activities exhibits an even more applied orientation, closer to the innovation segment of product improvement (Nanyang Technological University, 1996). This assessment also holds for Singapore's four polytechnics, which are engaged in the promotion of R&D activities on a minor scale (Ebner, 2004).

These state universities were given greater autonomy to be competitive in the fast-emerging educational services sector of Singapore, and added to their traditional roles of training scientific, engineering, and managerial manpower in new ways to

form and incubate university spin-off firms since autonomy's inception in 1992, while the Innovation and Technology Transfer Office at Nanyang Technological University is currently incubating numerous high-tech start-ups.

The Singapore government established the Ministry of Information, Communication and Arts to develop a comprehensive infrastructure and manpower to boost the economy. In the 10-year master of information and communication (infocomm) industry plan (iN2015), the city-state aims to become "An intelligent nation, a global city, powered by infocomm". The infrastructure and manpower of infocomm was intended to speed up economic growth and set Singaporean businesses apart from others by encouraging ideas and creativity, building brands to foster growth of global talents and expertise based on iN2015.

The main differences in supply-side innovation policy between Taiwan and Singapore are shown in Table 2.

Environmental-Side of Innovation Policy

Taiwan

In Taiwan, the government encourages R&D by exempting companies from import duties on instruments and equipment for experiments. In addition, equipment with a life of longer than 2 years can adopt a 2-year accelerated depreciation, and expenditures of 15-20% can be business income tax-deductible (Shyu and Chiu, 2002). The Ministry of Economic Affairs also took action in promoting traditional industries' technology capacity with "Rules of encouragement for the private sector's development of new products" and the "Law governing development for directive new products" (Shyu and Chiu, 2002). In addition, a subsidy for the R&D activities of high-tech companies located in science-based industrial parks was of-

ferred by the Taiwanese government (Tsai and Wang, 2005).

Changes were made to address the weaknesses in patent enforcement and prosecution through the integration of the Taiwan Intellectual Property Office into the NIS administration structure, whereby Taiwanese laws and regulations include the Patent Act, Integrated Circuit Layout, Copyright Act, Trade Secrets Act, etc. Although most of Taiwan's companies are small and medium-sized enterprises, the country's competition law, the Fair Trade Law, does not emphasize mergers and acquisitions. Rather, it focuses on preventing cartels, monopolies, limited competition and other behaviors hindering fair competition.

Singapore

The first formal science and technology plan of Singapore was implemented only as recently as 1991, and had a greater focus on the establishment of investment environment. In the early years of independence, Singapore's strategy was to attract MNCs to the island state to produce goods for global export markets. Great efforts were consistently made to attract MNCs and invest in education and skills training, as well as encourage technology diffusion from MNCs to the local economy, in the early post-independence years. Tax incentives were given for manufacturing companies that undertook R&D in Singapore.

Singapore is one of the most efficient financial markets in Asia. Its open and flexible financial environment has attracted many giant MNCs, such that they have established their offices in that country, and the pro-business environment also gives support to domestic SMEs. Singapore also has put in place a regulatory environment that is broadly supportive of innovation. For example, the Bioethics Advisory Committee was formed in 2001,

at the time of the US stem cell controversy, to develop recommendations on the legal, ethical, and social issues of human biology research (Finegold, Wong and Cheah, 2004). This early and clear legal support for stem-cell research, plus government financial support, has helped Singapore create several stem-cell companies.

The Singapore government allows for tax benefits, grants, and training subsidies to raise productivity by upgrading skills and supporting enterprise investments in innovation in each of six qualifying activities: R&D, IP registration, IP acquisition, design activities, automation through technology or software, and training for employees.

The main differences in environmental-side innovation policy between Taiwan and Singapore are shown in Table 3.

Demand-Side of Innovation Policy

Taiwan

Taiwan uses government procurement as one of the most important sources of technological development, especially weapons systems procurement (Tien and Yang, 2005), although it faces a predicament in this respect. To comply with the Agreement on Government Procurement of the World Trade Organization (WTO), Taiwan's government procurement law was legislated in 1999 and aims to clarify procurement information, complete procurement evaluation, and internationalize the procurement market. Since then, the most advantageous tendering method has been adopted as a major legitimate contract award mechanism, instead of the lowest-bid tendering method (Tzeng, Li and Chang, 2006).

Singapore

The bulk of government procurement activities in Singapore are decentralized to individual ministries, departments, and statutory boards that make their own arrangements. However, they must adhere to central guidelines issued by the Ministry of Finance. Centralized purchasing is carried out for common goods and services, which are consumed service-wide by central procuring entities, such as the Expenditure and Procurement Policies Unit of the Ministry of Finance, the Ministry of Defense, and the Infocomm Development Authority. The Singapore government has adopted the fundamental principles of fairness, openness, and competitiveness for its procurement policies.

Since the signing of its first free trade agreement (FTA) under the ASEAN free trade area in 1993, Singapore has expanded to cover 18 regional and bilateral FTAs with 24 trading partners (China, Japan, Korea, the ASEAN, India and the United States). Singapore's FTAs have been instrumental in helping Singapore-based businesses strengthen cross-border trade by eliminating or reducing import tariff rates, providing preferential access to services sectors, easing investment rules, improving IP regulations, and opening government procurement opportunities.

There are no significant exchange controls, and funds may be freely remitted into and out of the country. There is also no restriction on the repatriation of profits. Subject only to tax liabilities, a company incorporated in Singapore may pay dividends to foreigners not residing in Singapore.

The main differences of demand-side innovation policy between Taiwan and Singapore are shown in Table 4.

How National Innovation Policy Affects Development: Taiwan and Singapore

From a systematic perspective, innovation policy can affect a country's innovation performance and competence-building. The capability to innovate and to bring innovation to market successfully will be a crucial determinant of the global competitiveness of nations. Most policy-makers are aware that innovative activity is a primary driver of economic progress and well-being, as well as a potential factor in meeting global challenges in domains such as the environment and health.

As small island economies, both Taiwan and Singapore have achieved high economic growth rates in the past, while being competitive in science, technology, and innovation. The current innovation policies of the Taiwanese government concentrate on supply-side policy. Conversely, the government of Singapore has refocused its innovation policy from promoting traditional innovative activities to attracting FDI and growing certain industrial clusters, such as the biomedical and infocomm industry, from environmental- to supply-side.

Governmental attitudes toward promoting national innovation capacity play a key role in determining the observed differences (OECD, 2007). First, in Singapore, the aggressive education policies and huge budget for the overall education system provide abundant research manpower and great competitiveness for domestic and MNCs. The incentive of tax and environment for foreign talents encourages the development of excellent human resources for businesses (Anwar, 2008). Every year, Singapore spends approximately 20% of its national budget on establishing its education system. The budget for education covers primary and higher education, occupational education, and on-the-job training. Well-trained individuals, not only in science and technology, are one of the main reasons why many MNCs have moved to Singapore. Moreover, these MNCs have brought advanced

knowledge and experience to the local landscape, and have created a positive cycle that encourages a greater number of knowledge workers and well-developed facilities (Anwar, 2008). The government considers entrepreneurship to be a key driver of its economic growth and it has launched policies that aim to implant an innovative and risk-taking spirit in school education and encourage students to start businesses.

Singapore has adhered to a series of policies that successfully constructed many notable clusters decades ago. These clusters once contributed to increased export, and helped Singapore evolve from a small harbor city into an innovation-driven country. The tax incentives and reliable infrastructure are the main reasons for creating clusters (Parayil, 2005). The Singapore government now has a base of successful experience and is turning its efforts toward advanced technology, such as in that of the biomedical, infocomm and media industries. These industries will upgrade the domestic manufacturers and will also reinforce the strength of infrastructure in Singapore.

Overall, as part of its innovation policy, Taiwan's government has invested significant amounts in research institutions and selected universities, and has also funded selected firms; these funds are typically used to develop one industry or technical area that is viewed as having significant growth potential. The Taiwanese government has chosen to develop high-technology industries (Tsai and Wang, 2005). In order to compete in these industries and to enter new segments, high levels of innovation have been vital. Focusing on a few sectors serves to concentrate scarce resources on priority areas (Habardas, 2008). This core concentration on innovation has resulted in a strong innovation performance, as shown by the number of triadic patent families. The results of this innovation policy focus can be ob-

served in constant patent growth, as well as in very strong cluster formation and in national development exhibited by long-term industrial growth.

Conclusion and Policy Implications

Variation in innovation policy shows the differences and similarities in Singapore and Taiwan in terms of public enterprises, education, and information. Taiwanese innovation policy places a greater emphasis on the development of innovation by research institutes and through universities. Taiwanese public institutes have taken an active role in innovation/R&D and have focused policies on specific industries, using a top-down approach. The Singapore government promotes innovation by public enterprises establishments, where large and wealthy holding companies directly control specific industries and define the path of innovation development.

In terms of education policy, Singapore puts more resources into education and training than Taiwan. We can find a variety of education and training programs that are provided by the Singapore government. With regard to information infrastructure, Singapore has made the construction of the infocomm industry of national importance. The iN2015 plan also shows Singapore's ambition to be a leader in information infrastructure. Taiwan's "Intelligent Taiwan" also aims to increase the strength of information infrastructure and industry.

In environmental-side policy, Singapore has a more competitive and wide-ranging benefits package, while Taiwan has established science parks and clusters that provide financial and tax holidays to specific industries. The most important direct subsidies in Taiwan are in the form of tax incentives. In Singapore, the effects of environmental-side policy can be found

in large FDI and specific grants, as well as tax holidays toward certain industry and innovation activities. As a result of efficiency and openness, Singapore has benefited from the presence of foreign MNCs, which bring in capital, technology, management know-how, and access to world export markets. Singapore also works with like-minded countries within international and regional organizations to encourage free trade.

In demand-side policy, the Taiwanese government has emphasized the

use of government procurement and industrial cooperation policies to acquire advanced technologies, such as aerospace technology, military technology, transportation technology, etc., which established the foundation of the high-tech industry in Taiwan (Industrial Technology Research Institute, 2005). Trade shows have also been of importance in bringing together key customers and manufacturers. The demand-side policy for Taiwan is mainly from the domestic market, whereas Singapore benefits more from regional and global integration.

References

- Anwar, S. (2008) Foreign investment, human capital and manufacturing sector growth in Singapore, *Journal of Policy Modeling*, 30(3), 447-453.
- Balzatz, M., Hanusch, H. (2004) Recent trends in the research on national innovation systems, *Journal of Evolutionary Economics*, 14(1), 197-210.
- Balzatz, M., Pyka, A. (2006) Mapping national innovation systems in the OECD area, *International Journal of Technology and Globalisation*, 2(1/2), 158-176.
- Christopher Freeman, John Clark, and Luc Soete (1982) *Unemployment and Technical Innovation: A Study of Long Waves and Economic Development*, Portsmouth: Greenwood Press
- Dent, C.M. (2003) Transactional capital, the state and foreign economic policy: Singapore, South Korea and Taiwan, *Review of International Political Economy*, 10(2), 246-277.
- Ebner, A. (2004) Innovation policies and locational competitiveness: Lessons from Singapore, *Asian Journal of Technology Innovation*, 12(2), 47-66.
- Edquist, C, Lundvall, B.A. (1993) Comparing the Danish and Swedish Systems of Innovation' in *National Innovation Systems: a Comparative Analysis*, ed, R.R, Nelson, New York: Oxford University Press, 265-298.
- Frenken, K. (2000) A complexity approach to innovation networks: The case of the aircraft industry 1909–1997, *Research Policy*, 29(2), 257–272.
- Habaradas, R.B (2008) Strengthening the national innovation system (NIS) of the Philippines: Lessons from Malaysia and Thailand, *Asian Journal of Technology Innovation*, 16(1), 1-22.
- Hsiao, C.T., Chang, P.L., Chen, C.W. and Huang, H.H. (2011) A systems view for the high-tech industry development: a case study of large-area TFT-LCD industry in Taiwan, *Asian Journal of Technology Innovation*, 19(1), 117-132.

- Industrial Technology Research Institute. (2005) Establishing new high-tech industries, Industrial Technology Research Institute.
- Kang, C.C., Feng, C.M. and Lo, W.S. (2007) Analysis of self-liquidation ratio and financial resource allocation for BOT projects with uncertain finance environment, *Journal of Management and Systems*, 14(3), 359-386.
- Lin, C.Y. (1973), *Industrialization in Taiwan, 1946-1972: Trade and Import Substitution Policies for Developing Countries*, New York: Praeger.
- Lumpkin, J.R., Ireland, D.R. (1988) Screening practices of new business incubators: The evaluation of critical success factors, *American Journal of Small Business*, 12(4), 59-81.
- Lundvall, B.A., Bjorn, J., Andersen, E.S. and Dalum, B. (2002) National systems of production, innovation and competence building, *Research Policy*, 31(2), 213-231.
- Merges, R. P., Nelson, R.R. (1990) On the complex economics of patent scope, *Columbia Law Review*, 90(4), 839-916.
- Mian, S.A. (1996) Assessing value-added contributions of university technology business incubators to tenant firms, *Research Policy*, 25(3), 325-335.
- Mowery, D.C. (1984) Firm structure, government policy, and the organization of industrial research: Great Britain and the United States, 1900-1950, *Business History Review*, 58(4), 504-531.
- Nelson, R. R., Rosenberg, N. (1994) American universities and technical advance in industry, *Research Policy*, 23(3), 323-348.
- Nelson, R.R., Rosenberg, N. (1993) Technical innovation and national systems, in *National innovation systems: A comparative analysis*, ed. R.R. Nelson, New York: Oxford University Press, 3-21.
- Nolan, P., Wang, X. (1999) Beyond privatization: institutional innovation and growth in China's large state-owned enterprises, *World Development*, 27(1), 169-200.
- OECD. (2007) OECD factbook 2007: Economic, environmental and social statistics, Organisation for Economic Co-operation and Development.
- Parayil, G (2005) From "Silicon Island" to "Biopolis of Asia": Innovation Policy and Shining Competitive Strategy in Singapore, *California Management Review*, 47(2), 50-73.
- Pekkarinen, S., Harmaakorpi, V. (2006) Building regional networks: The definition of an age business core process in a regional innovation system, *Regional Studies*, 40(4), 401-413.
- Roper, S. (2000) Innovation policy in Israel, Ireland, and the UK – An evolutionary perspective, NIERC-WP--47, Economic Research Centre of Northern Ireland.
- Rothwell, R., Zegveld, W. (1981). *Industrial innovation and public policy: preparing for the 1980s and the 1990s*, London: Frances Pinter.

- Schumpeter, J. A. (1942). *Capitalism, Socialism and Democracy*, New York: Harper and Row.
- Shyu, J.Z. (2006). *National Innovation Systems in the borderless world*, Hsinchu: National Chiao Tung University Press.
- Shyu, J.Z., Chiu, Y.C. (2002) Innovation policy for developing Taiwan's competitive advantages, *R&D Management*, 32(4), 369-374.
- Tien, M.C., Yang, C.C. (2005) Taiwan's ICP mechanism – a review and a stage approach, *Technological Forecasting and Social Change*, 72(1), 29–48.
- Tsai, K.H., Wang, J.C. (2005) An examination of Taiwan's innovation policy measures and their effects, *International Journal of Technology and Globalisation*, 1(2), 239-257.
- Tzeng, W.L., Li, J.C.C. and Chang, T.Y. (2006) A study on the effectiveness of the most advantageous tendering method in the public works of Taiwan, *International Journal of Project Management*, 24(5), 431-437.

Table 1. A More Complete innovation Policy Analysis Model

Grouping	Policy tools	Examples
Supply side	Public enterprise	Innovation by publicly owned industries, setting up of new industries, pioneering use of new techniques by public corporations, participation in private enterprise
	Network and entrepreneurship	Supporting start-ups, establishing science parks and incubators, encouraging collaboration between firms and institutions, venture capital associations, measures to promote entrepreneurship
	Scientific and technical	Research laboratories, support for research associations, learned societies, professional associations, research grants
	Education	General education, universities, technical education, apprenticeship schemes, continuing and further education, retraining
	Information	Information networks and centers, libraries, advisory and consultancy services, databases, liaison services
Environmental Side	Financial	Grants, loans, subsidies, financial sharing arrangements, provision of equipment, buildings, or services, loan guarantees, export credits, etc.
	Taxation	Company, personal, indirect and payroll taxation, allowances
	Legal and Regulatory	Patents, environmental and health regulations, inspectorates, monopoly regulations
	Political	Planning, regional policies, honors or awards for innovation, encouragement of mergers or joint consortia, public consultation
Demand Side	Procurement	Central or local government purchases and contracts, public corporations, R&D contracts, prototype purchases
	Public services	Purchases, maintenance, supervision and innovation in health services, public building, construction, transport, telecommunications
	Commercial	Trade agreements, tariffs, currency regulations
	Overseas agent	Defense sales organizations

Source: Adapted from Shyu & Chiu, Innovation Policy for Developing Taiwan's Competitive Advantages (2002), based on Rothwell and Zegveld (1981).

Table 2. Comparison of supply-side policies between Taiwan and Singapore

	Singapore	Taiwan
Public Enterprise	Several giant holdings companies	Five state-owned enterprises
	Commanding state-owned enterprises directly or indirectly involved in technology and science	Traditional manufacturer
	Engaged in banking, investment, real estate, land, infocomm, biomedical and other advanced industries	R&D activities that focus on product development and basic science research
Network and Entrepreneurship	Listed in national economic plan	Innovation alliances
	Social and cultural side reform	Incubator establishment
	Innovation Voucher Scheme	Setting up of venture capital associations
	Incubator Development Program	
Scientific and Technical	Four major clusters	Industry and research conferences
	The Agency for Science, Technology and Research (A* STAR)	Support for university research
	Spearhead in biomedical and infocomm industry	Establishment of research institutes
		University research grants
Education	Autonomy of universities	Government training
	Enhance entrepreneurship education in campus	Development plan for world-class universities and development of research centers of excellence
Information	iN2015 master plan	Enhance linkage between national institutes and businesses
	Infocomm Development Authority of Singapore develops policies to ensure the growth of an innovative and competitive Infocomm sector	Intelligent Taiwan project within i-Taiwan 12 projects

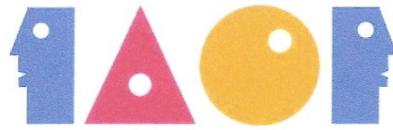
Table 3. Comparison of environmental-side policies between Taiwan and Singapore

	Singapore	Taiwan
Financial	Various loans on machinery, factories, working capital, ventures abroad	Loan subsidies
	Grants for incubators and start-ups	Grants for incubators
		Subsidies for firms Located in Science Parks
		Development fund
		Research facilities
Taxation	Benefits for small-to-midsize companies starting up	R&D equipment/expenditure tax alleviation
	Startups that meet certain qualifying conditions can claim for tax exemption under the Tax Exemption For Start-ups scheme	Tax relief for training
	Capital gains taxes are generally 0%	Tax incentives and export processing zones for attracting foreign direct investment
Legal and regulatory	Strict IP protection system	Patent and copyright acts
	Centralized IP management	Fair Trade Law focusing on preventing cartels and monopolies
Political	High business costs of terrorism	Visa restrictions (negative effect)
	Maintain balance of power	Technology export restrictions (negative effect)
	Independent foreign policy	

Table 4. Comparison of demand-side policies between Singapore and Taiwan

	Singapore	Taiwan
Procurement	Contracts and tenders worth around S\$10 billion each year	Government procurement and industrial cooperation
	Decentralized government procurement system	Build-operate-transfer
	Government R&D service contract	
	Central guidelines issued by Ministry of Finance	
Public service	Jurong Town Corporate	Science Parks in Hsinchu, Taichung and Neihu, and Nangang
	Singapore Science Park	
Commercial	No significant exchange controls	Reduced foreign exchange controls
	18 regional and bilateral free trade agreements (FTAs)	Access to multilateral trade organizations, such as the World Trade Organization (WTO)

Overseas agent	Member of WTO, Association of Southeast Asian Nations, Asia-Pacific Economic Cooperation (APEC), and other international groups	Participates in regional trade organizations, such as APEC
		Signed the FTA with Panama and Guatemala



A CASE STUDY OF APPLYING COMPUTER AIDED DESIGN (CAD) TO THE DESIGN AND MANUFACTURING OF KD CHAIRS

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Abstract

In this study, KD chairs were aimed, and a new furniture design was developed and manufactured in hope of designing a chair which is useful, easy to disassemble and transport, and beautiful. The sketches of the chair were first created by hand, and AutoCAD and SolidWorks were used to generate the 3D diagrams and three-diagrams of the product. Alpha-CAM was employed to simulate the product processing. Finally, a computer numerically controlled (CNC) router was applied to the milling process, namely using a semi-automatic method to increase the yield, reduce the costs, and try to design and produce furniture which can be mass-produced. It was found in this study that the optimal rotating angle of a KD chair is 7.5° , which makes the overall appearance the smoothest and the most graceful. However, if 7.5° is employed as the angle of a KD chair, 12 specifications of boards will be necessary. In addition, since the offset angel of each board is very small, it is necessary to

apply computer numerically control (CNC) to the processing and use semi-automatic methods to increase the yield and reduce the costs. Therefore, the future trend of furniture design is to introduce new furniture promptly to satisfy consumers' need.

Key words: Furniture Design, KD Chair, Joint, Computer Numerically Control (CNC).

Introduction

Wooden furniture is one of the important traditional industries in Taiwan. In early days, the furniture industry in Taiwan was based on an original equipment manufacturer (OEM) approach and earned the reputation of "furniture kingdom" in the golden export era. Nevertheless, due to the lack of labor, the difficulty in obtaining raw materials, and the increase of costs, numerous furniture manufacturers have moved from Taiwan to Southeastern Asia and China. The structure of the wooden furniture industry in Taiwan has thus changed. The manufacturers hence can not obtain abundant profits and control marketing channels, and the quality of furniture has also been influenced. The wooden furniture industry in Taiwan became the so-called sunset industry (Tsou, 1999).

However, the wooden furniture industry in Taiwan also has its advantages, such as the practical experience accumulating for decades and the excellent production technology. In the future, the industry can develop quality, exquisite, and diversified products, advance the added

value, increase the factory automation, actively cultivate design professionals, and establish brands for marketing (Wang, 2006; Jong, 2009; Tai, 2003).

This study was aimed to combine advanced production technology with innovative design skills to design a chair which is useful, easy to disassemble and transport, and beautiful. It was also aimed to use semi-automatic production methods to increase yield and reduce personnel costs as well as normalize production by means of computer-aided design and manufacturing (CAD&M) in hope of transforming furniture manufacturers in Taiwan from OEMs to original design manufacturers (ODMs) and, further, original brand manufacturers (OBMs), improving furniture production efficiency, and upgrading the international competitiveness (Hsu, 2010).

Materials and Methodology

Commercially available 2400×120×18 mm five-layer plywood was used in this study. The specific gravity was approximately 0.64, and the air-dry moisture was 14%. In terms of research methodol-

ogy, the sketches were first drawn by hands, the plane processing diagrams were created by AutoCAD, and the complete 3D and three-view diagrams were generated by SolidWorks. After the files were transferred into DXF files, which are AlphaCAM compatible, AlphaCAM was used to send processing instructions and transfer them into numerical control (NC) codes for processing. The NC codes were then sent to the CNC router for milling. After being milled, the components were trimmed and chamfered by a portable trimmer and then assembled. After being sanded and painted, the final product was accomplished, namely achieving the purpose of applying CAD&M to furniture manufacturing.

Results and Discussions

Material Selection

In the beginning, the selected main material was 18mm teak-veneered medium density fiberboard (MDF), whose specific gravity was approximately 0.68. Nevertheless, MDF is prone to creep, and the surface fluffs easily after being milled, which will increase the processing time. Eventually, plywood was selected as the main material of the KD chair in this study since some parts of the KD chair are very narrow, and plywood is not directional, unlike wood, or easy to break, and provides good strength when a person sits on the chair.

Conception

This study was aimed to design a KD chair which is useful, easy to disassemble, and beautiful. After several designs, it was finally decided to adopt the formal principles of spirals and gradual changes as the elements of this chair. Combining with rods, wooden boards piled up to form a chair. The number of the layers and the size of the chair were decided after the height and the thickness of plywood were calculated (Su, 2009). The functions of “rotate” and “array” in AutoCAD were first used to draw the rotating angle and the locations of the holes. In the beginning, three prototypes with different rotating angles were designed. Each prototype included 12 boards, and the boards of the three prototypes respectively offset 0° , 7.5° , and 15° in an arithmetic sequence. After that, each diagram was saved as an individual file to accomplish the plane processing of each board set. The outer diameter of each board set was 450mm, and the inner diameter was 250mm. SolidWorks was then used to open the files and extrude the thickness of each board to 18mm and chamfer it. The boards and rods were then combined. The shapes and features of the accomplished three prototypes are detailed in Table 1. After various evaluations, the 7.5° angle was selected in this study. The 3D and three-view diagrams of the three prototypes are shown in Table 1 and Figure 1.

Jointing

In this study, rods passed through boards and 18mm-thick acrylic rings to form the KD chair. In the beginning, the rods were directly purchased from outside, but the commercially available rods were processed coarsely and not exactly

circular, so after the assembly, they became loose easily or could not penetrate, which influenced the jointing precision. Eventually, the exactly circular rods were lathed. The connection of the rods is shown in Figure 2 (Tsou, 2004).

Table 1. The shapes and features of the three prototypes

Shape	Rotating Angle	Features
	0°	The 12 boards have only one specification. The shape is simple but lacks changes while the assembly is easy and prompt.
	7.5°	The boards have twelve specifications in total, one board one specification. The shape is curvy, smooth, and of changes, but the assembly takes more time.
	15°	The boards have six specifications, two boards for each specification. The shape is curved but not smooth, and it is also less beautiful.

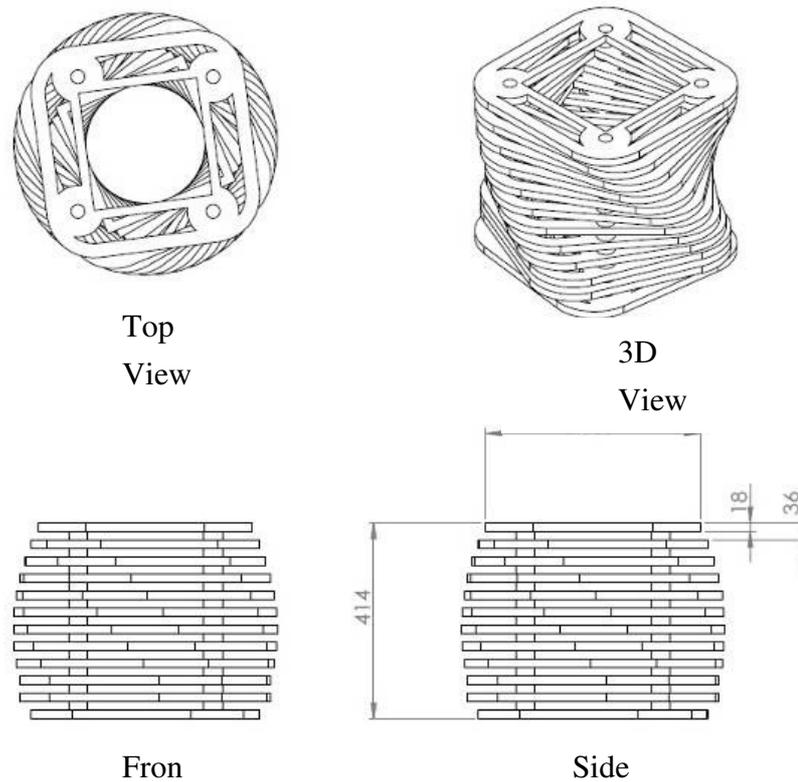


Figure 1. The 3D and three-view Diagrams of the KD chair

Computer Aided Manufacturing (CAM)

AlphaCAM was used in this study to send processing instructions and NC codes for processing, and a CNC router was applied to the processing. In terms of sending processing instructions, a straight knife with a 12mm diameter and a 35° end cutting edge angle was first selected, and the edges were selected, and the function of edge milling was used to mill the designed shape. Finally, the processing parameters for spindle speed, cutting feed, and cutting depth feed, respectively 10000 rpm, 2000 m/min, and 1000 m/min, were inputted. The process started after all the processing parameters were set. The phys-

ical simulation function of AlphaCAM can be applied to milling simulation before processing.

The processing surface of the CNC router was 1300×700mm in this study, so the plywood was cut into six pieces of 950×500mm boards. The boards were then fixed on the processing surface by vacuum suction. The workpiece coordinate (G54) was then established. Finally, the NC program was sent into the CNC router to start the NC codes and begin the processing. The processing time for each board was 32 minutes (Su, 2009). The process is displayed in Figure 3, and the processed components are shown in Figure 4.



Figure 2. Rod jointing



Figure 3. CNC router processing

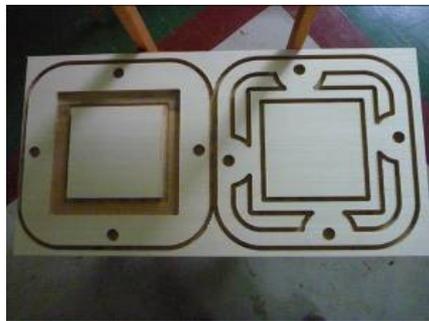


Figure 4. The components after being processed by the CNC router

Assembly and Modification

A portable trimmer was used to trim and chamfer the processed boards. Putty was then used to fill the dents of the milled surfaces. After the putty was dry, a sanding machine and #120~#180 sandpaper were used to sand the surfaces of the boards, which were then painted. The painting procedures were: PU primer paint for sealing → NC white primer paint → sanding → NC white primer paint → sanding → NC plain finish → NC plain finish. The assembly was carried out after the aforementioned procedures were accomplished. After the assembly, the height was approximately 430mm while the width was approximately 635mm. The final product is displayed in Figure 5.



Figure 5. The accomplished KD chair

Contexts of Use

This product is positioned as a shoes stool, which can be placed in the entrance of a house for people to sit when putting on their shoes. The seat of the product is slightly higher than that of general shoes stools, so users can obtain the center of gravity more easily and do not need to completely stoop when they are going to sit on the stool. In addition, the spiral design enables users to place their feet on the most comfortable place (Su, 2009). Furthermore, a bulb is installed inside the stool, and a time switch is combined, so the stool can be used as night-

light at night and illumination for office workers going out early and coming back home late, just like saying “welcome home” to them. The contexts of use of this product are displayed in Figure 6.



Figure 6. The contexts of use of the product

Conclusions

The process from sketch drawing to the completion of a chair was detailed in this study. Manufacturing a product by CNC routers and semi-automatic production methods will increase the yield and reduce the personnel costs. Moreover, CAD&M will help achieve production normalization, which enables the production of products to have the same quality and specification wherever the place is, whatever the country is, or whatever processing techniques the operators possess.

This study was focused on developing capabilities to design and manufacture furniture. The furniture industry in Taiwan should jump out of the OEM role, improve the automation, and establish individual brands. However, they should not be only capable of designing one piece of furniture. The value of a piece of furniture is influenced by the functions, finesse, and structure except the appearance. When people understand the manufacturing procedures and methods of furniture, they can design furniture with appropriate structure

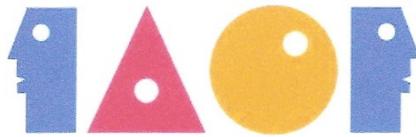
and conforming to contemporary processing technology.

It was found in this study that the optimal rotating angle of a KD chair is 7.5° since the overall shape will be the curviest and smoothest. However, if a 7.5° rotating angle is applied to a KD chair, it is neces-

sary to have twelve specifications of boards in total, and the offset angle of each board is only slightly different. It is thus necessary to apply CNC to the process, and use semi-automatic production methods to improve the yield and reduce the costs.

References

- Hsu, C. Y. (2010). *SolidWorks2010 Official Training Guide* (pp.12.2-12.10). Taipei: Chuan Hwa Books.
- Jong, Y. S. (2009). Marketing Strategies of Taiwanese entrepreneurs to Invest in China – Case Studies of the Wood Furniture Industry. Outcome report conducted at the 2008 Teachers' Seminar in the Cheng Shiu University.
- Su, W. C. (2009). *Computer Aided Manufacturing* (Handouts, pp.11). Forestry Science and Furniture Engineering Department, National Chiayi University.
- Su, W. C. (2009). *Ergonomics* (Handouts, pp. 4.1-4.18). Forestry Science and Furniture Engineering Department, National Chiayi University.
- Su, W. C. (2009). *Furniture Design* (Handouts, pp. 2-7). Forestry Science and Furniture Engineering Department, National Chiayi University.
- Tai, M. C. (2003). *A Study on the Value Integrator Model in Furniture Industry* (Master's Thesis). , College of Management, National Taiwan University.
- Tsou M. H. (1999). *Overview of Taiwan's furniture industry - Taiwanese furniture Chronicle* (pp.403-404). Taipei: Taiwan Furniture Manufacturers' Association.
- Tsou M. H. (2004). *Woodwork Jointing Illustrations* (pp.187). Taipei: Xushi Culture & Education Foundation.
- Wang, H. H. (2006). *More than Furniture* (pp. 37). Taipei: Garden City.



SENSITIVITY ANALYSIS OF “BLACK-SCHOLES” *OPTION* INDEX IN INDONESIA

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Abstract

The purpose of this research is to find the value of call and put option of LQ45 Index in Indonesia Stock Exchange with Black Scholes Model and to analyzed the sensitivity of index's price with Delta, gamma, Vega, theta, and Rho. This research,using historical volatility to find the volatility.

The result shows that the volatility of the index LQ45 is 32%. There are 3 condition to find the price of call and put option. The price of call option and put option when $S < X$ is 51.08 and 104.19. The result of sensitivity analysis when $S < X$ is : deltacall (0.51), Delta Put (-0.49), Gamma (0.0002004), vega (254.32), theta call (-0.12), Theta Put (0.03), Rho call (135.49), and Rho Put (-161.19). The price of call option and put option when $S = X$ is 69.55 and 89.12. The result of sensitivity analysis when $S = X$ is : deltacall (0.59), Delta Put (-0.41), Gamma (0.0001959), vega (275.51), theta call (-0.17), Theta Put (-0.03), Rho call (164.76), and Rho Put (-132.02). The price of call option and put option when $S > X$ is 90.89 and 76.91. The result of sensitivity analysis when $S > X$ is : deltacall (0.68), Delta Put (-0.32), Gamma (0.0002011), vega (311.83), theta call (-0.24), Theta Put (-0.24), Rho call (192.53), and Rho Put (-105.67).

Key words: call option, put option, black scholes model, volatility, delta, gamma, vega, theta and rho.

Research Background

Derivative products have considerably developed in the recent 20 years. This case is related to the need of finding a solution towards financial pressure as well as financial marketing development. The use of derivative as the investment means in the capital market and financial trade has increased followed by the development

and deregulation of global financial trade. One of derivative products is option, which is based on the underlying asset.

Option is a contract between an option seller and an option buyer, in which the option seller ensures that there is right (not obligation) of the option buyer to buy or sell particular stock in certain cost and

time (Tendelilin, 2001). Based on the agreed form of stock, the option can be grouped into two: call option and put option. Call option gives the right towards the holder to sell the stock in certain amount in the agreed cost and time. Another securities form is put option which gives the right towards the owner to sell certain stock in certain amount, time, and cost.

Some foreign stock exchanges trade the option namely Chicago Board Option Exchange which is established on April, 26th 1973 by trading call option where 16 stocks becomes underlying. Until now, the total of option contract option volume indicates the increased tendency; there are 275.4 million option contracts in 2002. It increased 25.45% compared to the preceding year in 1999 which were 221.3% contracts. The development of option contract trade in other stock exchanges such as in Korean Stock Exchange also indicates the enhancement of option contract trade volume. In 2002, there is an increment of option contract trade of 2,264.05% whereas in 1999, 79.94 contracts became 1,889.82 option contracts (www.bapepam.go.id).

In Indonesia, Surabaya Stock Exchange firstly introduced contract trade of stock index futures based on the stock index of LQ-45 in Jakarta Stock Exchange in 2001. Subsequently, Jakarta Stock Exchange has traded stock futures namely Stock Option Contract since October, 6th 2004. Some derivative instruments use underlying stock index of LQ-45. LQ-45 index has been recognized as the leading stock benchmark in Indonesian Capital Market (Siahaan as cited by Hariani, 2010).

One of call option assessment models which have been considerably used in financial domain is Black-Scholes model. This model was developed by Fischer Black and Myron Scholes in 1973. It

assesses the call option which does not pay dividends and uses five variables; the standard stock, strike price (exercise price) which is the listed price on the option contract, expiration date which is the end date of the contract, volatility of stock price which is the risk indicator of the option, level of short-term interest rate, and the expected dividends. The Black-Scholes assessment of option is intended for European option.

Basically, an investor uses the derivative to conduct the hedging against the financial risk potency. In order to know the magnitude of risk towards an option, so it is necessary to analyze the sensitivity to figure out what will happen on the option price if there is a change on the some variables which influence the option including the stock price during the expiration date, the volatility of stock price, the interest rate, and the duration of option contract.

Based on the above elaboration, this research aims to reveal (1) the intrinsic price of LQ45 index option by using Black-Scholes method and historical volatility approach in determining the volatility, (2) the magnitude of the stock option price change which probably will happen if there is a change on the variables influencing them, so that it will be beneficial for the investors to gain the knowledge before they invest their fund in option. Based on the aim of the study, the researcher takes the research title.

Literature Review

Option

Option is a contract between the option seller or writer and the option buyer, in which the option seller ensures that there is right (not obligation) of the option buyer to buy or sell particular stock in certain cost and time. The engaged parties in option are the investors with the other in-

vestor. The stock securities publisher companies (issuers) which is used as option are not engaged (Tandelilin: 2001).

There are two basic types of option (Hull;2006). A call option gives the holder the right to buy the underlying asset by a certain date for a certain price. A put option gives the holder the right to buy the underlying asset by a certain date for a certain price.

Index Option

Index option is an option which is directly associated with the index value change, which becomes the underlying of its asset. Index option gives a chance for the investors in transacting towards certain groups not necessarily buying the whole group members' stock individually (Karnadjaja: 2007). The index is counted based on the average of price change from each index member's stock.

In addition to the options associated with the certain stocks, option also can be associated with the value of index market, e.g. S&P 500 index, Nasdaq-100 index, and other indexes. The option associated with this index value is called as stock index option. Stock index option can be defined as the option associated with the value of index market.

An investor can buy the buying option or the selling option for this stock index option. The investor can transact with this stock index option based on the movement of the market. By buying this stock index option, the investor only needs to decide only based on the movement of the market. For instance, the investor ex-

pects that market will go up so, s/he can buy the buying option and vice versa if s/he expects that market will go down, she can buy the selling option.

Black-Scholes Model

Black-Scholes model is a call option assessment model which has been widely accepted by financial community. This model was developed by Fischer Black and Myron Scholes. The formula used is not so complex even it has been available on calculator and computer. The Black-Scholes model in assessing the call option which does not pay dividends uses five variables; stock price, strike price, expiration date, interest rate, and volatility of stock price. There are assumptions of this Black-Scholes model (Jogiyanto; 2010):

1. The stock associated with the option never pays the dividends during the option.
2. There is no transaction fee to buy and sell the option and the stock.
3. The level of risk free interest is constant during the option.
4. The stock buyer can borrow the short-term loan with the risk free interest.
5. The short-selling is allowed and the short-term seller will sell his/her stock based on the market price at that time.
6. The option can be only exercised at maturity.
7. The liquid market and the trade of all securities can occur continuously.
8. The stock market prices change randomly.

The formulas of option assessment by using Black-Scholes model are:

$$C = SN(d_1) - X_0 e^{-rt} N(d_2)$$

Where:

$$d_1 = \frac{\ln\left(\frac{S}{X}\right) + (r + 0.5s^2)t}{s\sqrt{t}}$$

$$d_2 = d_1 - s\sqrt{t}$$

C = call option price

S = stock price

X = strike price

r = risk free interest rates of short-term

t = time remaining until the expiration date (in years)

S = standard deviation of stock prices

N (.) = Cumulative density function of d_2 and d_1 . The value N (.) generated from Normal Distribution Tables.

By knowing the price of call option, we can calculate the price of a put option at strike price, expiration date and shares the same benchmark. In addition, we can also determine the price of a put option by using the formula below:

$$C_{\text{put}} = X / (e^{rt}) - S + C_{\text{call}}$$

where:

C_{put} = price of put option

Call = price of call option strike price

X = strike price

S = stock price

r = risk free interest rate

t = expiration date (in years)

Volatility.

Volatility is the statistic measurement of an instrument price (Butler: 1999). Return volatility is indicated by the return standard variants or deviation. There are some different methods in implementing the measurement of volatility, each measurement has particular characteristics (Best,1998).

The considerable volatility value describes the extent of risk level which will be faced in the future. The information about this volatility works for the investors who will invest on the index in USA and Asia. The higher the value of

volatility is, the higher the risk which will be faced is. It is based on a risk concept namely high risk high return.

There are two main types of volatility (Karnadjaja: 2007), they are historical volatility and implied volatility.

a. Historical Volatility

Historical volatility is also known as statistical volatility measuring the tendency of the stock price change based on the past price change during the certain period.

b. Implied Volatility

Implied volatility is a number which measures the tendency of an option price change. Implied volatility describes the movement of stock price in future during the certain period.

Option Greeks

Greeks is a measure of call price sensitivity (Sunaryo, T: 2007). There are calculations of option sensitivity measure; they are Delta, Gamma, Vega, Theta, and Rho.

Delta – Δ

Delta is a measure of call price sensitivity towards the change of basis asset price (spot price). Delta value is the first derivative of call price (C) towards the spot price (S). It means that if S goes one unit, C price rose by delta (Sunaryo, T: 2007). The formula for European call option on a non-dividend paying stock can be shown as (Hull: 2006).

$$\Delta = N(d_1)$$

For a European put option on a non-dividend, delta is given by (Hull: 2006) :

$$\Delta = N(d_1) - 1$$

Where :

N(.) = is the cumulative density function of normal distribution.

Gamma – Γ

Gamma is a measure of delta sensitivity towards the change of spot price. Gamma value is the second derivative of call price (C) towards the spot price (S) (Sunaryo, T: 2007). For a European call and put option on a non-dividend-paying stock, the gamma is given by (Hull;2006).

$$\Gamma = \frac{1}{S_t \sigma_s \sqrt{\tau}} N'(d_1)$$

Vega – A

Vega is a measure of call price sensitivity towards the change of volatility. Vega value is the first derivative of call towards spot price volatility (σ). The higher the fluctuation of spot price is, the higher the option value is. Hence, the Vega value is always positive (Sunaryo, T: 2006). For a European call or put option on a non-dividend-paying stock, vega is given by (Hull: 2006).

$$v = S_t \sqrt{\tau} \cdot N'(d_1)$$

Theta (Θ)

Theta is a measure of option price sensitivity towards the change of maturing. Theta value is the first derivative of the call price towards the remained time until the maturing period. Option value will be higher if the maturing is still long. Thus, the option value will be smaller if the maturing becomes shorter (Sunaryo, T: 2006). Theta is sometime referred to as the time decay of the portfolio. For a European call option of a non-dividend paying stock, theta can be shown as (Hull: 2006).

$$\Theta = -\frac{S_t \sigma_s}{2\sqrt{\tau}} \cdot N'(d_1) - rX \cdot e^{-r\tau} N(d_2)$$

For a European Put Option of a non dividend paying stock, theta can be shown as (Hull: 2006).

$$\Theta = -\frac{S_t \sigma_s}{2\sqrt{\tau}} \cdot N'(d_1) - rX \cdot e^{-r\tau} N(-d_2)$$

Rho (ρ)

Rho is a measure of the call price sensitivity towards the change of interest

rate. Rho value is the first derivative of call price towards the interest rate. The rho value is positive. It means that the increment of interest rate causes the call price up. Otherwise, the decrease of the interest rate causes the call price down (Sunaryo, T: 2007). For a European call option of a non-dividend paying stock, rho can be shown as (Hull: 2006).

$$\rho = X\tau \cdot e^{-r\tau} N(d_2)$$

For a European Put Option of a non dividend paying stock, rho can be shown as (Hull: 2006).

$$\rho = -X\tau \cdot e^{-r\tau} N(-d_2)$$

Research Methodology

Type of Research

The type of research conducted in this research is descriptive research. Descriptive method according to Sekaran (2006) is conducted to be capable in figuring out and explaining the characteristics of researched variable in a situation

Based on the level of explanation, this research is included in quantitative descriptive research. According to Bungin (2006), "A quantitative research framed by descriptive format aims to reveal, sum up various conditions, situations, and variables emerging in society which become the research object based on what is happening".

Operational Variables

Table 3.1 Operational Variables

No.	Variable	Definition	Formula
1.	Call Option Value	Intrinsic Value of 1 call option	$C_{\text{call}} = S N(d_1) - X e^{-r\tau} N(d_2)$
2.	Put Option Value	Intrinsic Value of 1 put option	$C_{\text{put}} = X / (e^{r\tau}) - S + C_{\text{call}}$
3.	Delta	Delta for Call Option Non Dividend Stock Delta for Put Option Non Dividend Stock	$\Delta = N(d_1)$ $\Delta = N(d_1) - 1$
4.	Gamma	Gamma for Call Option dan Put Option of Non Dividend Stock	$\Gamma = \frac{1}{S_1 \sigma_s \sqrt{\tau}} N'(d_1)$
5.	Vega	Vega for Call and Put Option Non Dividend Stock	$\nu = S_1 \sqrt{\tau} \cdot N'(d_1)$
6.	Theta	Theta for Call Option Non Dividend Stock Theta for Put Option Non Dividend Stock	$\Theta = -\frac{S_1 \sigma_s}{2\sqrt{\tau}} \cdot N'(d_1) - rX \cdot e^{-r\tau} N(d_2)$ $\Theta = -\frac{S_1 \sigma_s}{2\sqrt{\tau}} \cdot N'(d_1) - rX \cdot e^{-r\tau} N(-d_2)$
7.	Rho	Rho for Call Option	$\rho = X\tau \cdot e^{-r\tau} N(d_2)$

		Non Dividend Stock Rho for Put Option Non Dividend Stock	$\rho = -X\tau \cdot e^{-r\tau} N(-d_2)$
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Source: Data processing

Population and Sample

Population.

According to Sugiyono; 2007: 90, population is a generalisation area consisted of object or subject which has certain quality and characteristic agreed by the researcher to be learned and then s/he draws the conclusion. Population in this research is index of Indonesia Stock Exchange.

Sample.

The sampling is conducted by using non-probability sampling with purposive sampling method. Purposive sampling is a technique of sampling determination with certain consideration (Sugiyono; 2010). In this research, criteria of sampling choice are determined as following:

1. Index which has blue chips stocks consists of stocks with high liquidity and capitalization.
2. Index which has daily data completeness started on January 2008 until December, 30th 2011.

Sampling Technique

Data source used in this research is secondary data, in which the data has been provided and published by particular party. The secondary data refers to the information collected from available sources (Sekaran: 2006: 60). The data is obtained by:

1. Literary Study

Literary study is about learning and comprehends the literatures, articles, other sources, and publishing which is relevant to the discussed problem through the literary study, the obtained data is the secondary data which is used to establish the strong theoretical foundation in order to support the used analysis.

2. Data Survey

Data survey is about collecting the data from www.financeyahoo.com in the form of daily index, from www.BI.go.id in the form of interest rate data.

Data Analysis Technique

Period Determination.

This research will use the daily index information data with the period range of 3 years; since January 2008 until December 2011.

Option Contract Period.

This research will use option contract period which is six months. The contract period is aimed to ease the investor who is accustomed with short-term and mid-term period so it can be directly compared to the investment in the form of deposit and in the form of purchase of government bank certificate.

Risk Free Interest Rate.

Risk Free Interest Rate which will be used in this research is short-term interest rate, the interest rate set on short-term loan such as on market securities published by government and finance institution. The assumption during the contract

period is that the interest rate is constant, the sharp fluctuation does not occur.

Index Data Return.

Return Measurement:

Return is an outcome obtained from the investment. Actual return is the return that has occurred, calculated based

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{t-1}}$$

Where :

- R_{it} : actual return of stock i in day t
- P_{it} : stock price i in day t
- P_{i,t-1} : stock price i in day t-1

Volatility Calculation.

In volatility estimation calculation in setting the European Model call option for index, it will be used the historical volatility model.

The estimation with the historical volatility is based on the as-

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2}$$

Where :

- x_i = daily return
- μ = mean of daily return
- N = Number of observations-1
- i = 1, 2, 3, N

In option pricing, we usually measure time in years, and the volatility of an asset is usually quoted as a “volatility per year”.

on the historical data (Jogiyanto, 2010). To calculate the stock actual return of each sample by using daily stock, it is used the following formula: (Jogiyanto, 2010).

sumption that the volatility occurred in the past will be applied continuously in the future. To estimate volatility of a stock price empirically, the stock price is usually observed at fixed intervals of time. The usual estimate, s, of the standard deviation is given by :

The equation to find the standard deviation in year is $\sigma_{year} = \sigma_{day} \sqrt{N}$. N is the number of trading days (Hull: 2006). In this paper, i

assuming that N is 240 days of trading.

Strike Price.

Strike price is denoted by X. This research conducts the discussion from the option buyer side (Long Position). The price used as the execution price (strike price) for each stock is the closing price on January, 3rd 2012.

Index Price.

The calculation of data is the closing index value at the end of the agreed contract, with the notation of S. There are three illustrations of index value. Condition (1): the recent index value (S) is 5% greater than the strike price (X). Condition (2): the recent index value = the strike price (X). Condition (3): the recent index value (S) is 5% smaller than the strike price (X).

Call Option Calculation.

In this research, Black-Scholes model is used in implementing the call option value calculation. There is the determination formula of call option:

$$C_{call} = SN(d_1) - Xe^{-rt} N(d_2)$$

Put Option Calculation.

Put option calculation uses the following formula:

$$C_{put} = X / (e^{rt}) - S + C_{call}$$

Results

Return indeks LQ45

Calculation results of LQ45 index actual return can be seen in Table 4.1.

Table 4.1 *Actual Return Indeks LQ45*

<i>Date</i>	<i>Close LQ45</i>	<i>Return LQ45</i>
02/01/2008	596.55	
03/01/2008	591.35	-0.00871679
04/01/2008	602.35	0.018601505
....
30/12/2011	673.51	0.00357

Source: Data processing

Based on the calculations, the actual return stocks during the event period is positive, zero and negative.

- Positive value indicates an increase in the stock price of the day-t from stock price on the day t-1.
- Zero value indicates that stock price on the day-t is equal to stock price in the day t-1. In other words, stock price will not be changed from the previous day.

- Negative value indicates a decrease in the stock price on the day-t of stock price on the day t-1.

Calculation Results of Volatility

By using Historical Volatility method, the daily volatility value is 0.02068. To obtain the annual volatility value, $0.02068 \times \sqrt{240} = 0.320 = 32\%$.

Based on this result, the standard deviation of annual LQ45 index return is 32%.

Calculation results of LQ45 index option value call and put

Table 4.1 Result for Call and Put Value Option Indeks LQ45

	Strike Price (03/01/2012)	Current Price	Volatility	Life Expiration	Risk Free Rate	Call Value	Put Value
	K	S0	σ	t	r	c	p
S<K	670.8	637.26	0.32	0.5	0.0575	51.08	104.19
S=K	670.8	670.8	0.32	0.5	0.0575	69.55	89.12
S>K	670.8	704.34	0.32	0.5	0.0575	90.89	76.91

Source: Data processing

From Table 4.1, the value of 1 call and put value is tends to increase from 1 month to 6 month life of expiration. The value of 1 call is higher than the value of 1 put, it is because the current price is higher

than the strike price in each life of expiration.

Sensitivity of call and Put option indeks LQ45.

Table 4.2 Result for Delta, Gamma, Vega, Tetha, dan Rho

	S<X	S=X	S>X
Delta Call	0.51	0.59	0.68
Delta Put	-0.49	-0.41	-0.32
Gamma	0.0002004	0.0001959	0.0002011
Vega	254.32	275.51	311.83
Theta Call	-0.12	-0.17	-0.24
Theta Put	0.03	-0.03	-0.24
Rho Call	135.49	164.76	192.53
Rho Put	-161.19	-132.02	-105.67

Source: Data processing

a. Delta

From the Table above, the value of delta call when S<X0 is 0.51. This means

that when the index price changes by a small amount, the option price changes by

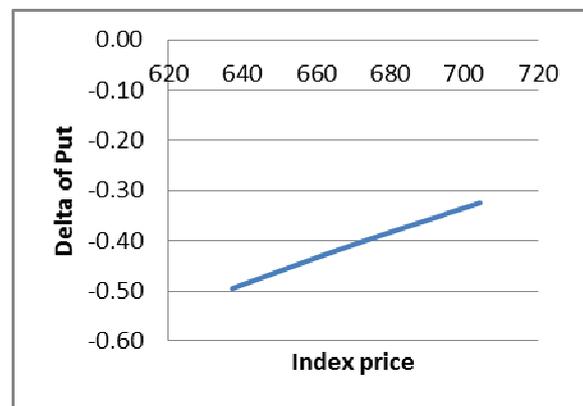
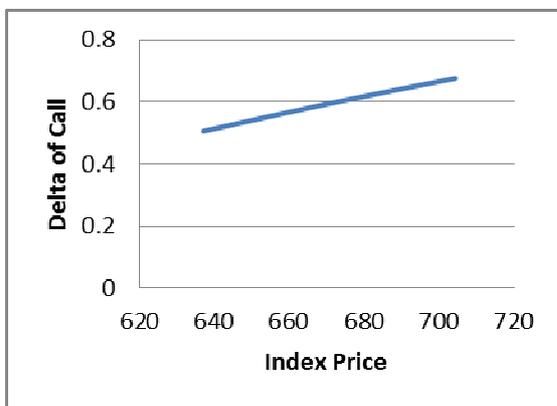
about 51% of that amount. If the index price goes up by \$1, so the call option will tend to go up by $0.51 \times \$1 = \0.51 . If the index price goes down by \$1, so the call

option will tend to go down by \$0.51. For the put option value it will be an opposite from the call value.

Table 4.3 Option Value if the Current Index go up by \$1

	S<X	S=X	S>X
Call Option Value	51.59	70.15	91.56
Put Option value	103.69	88.71	76.59

Figure 4.1 Variation of Delta with Stock Price for (a) a call option and (b) a put option of a non-dividen-paying stock



Source : Data Processing

b. Gamma

For condition (1) where $S < X$, Gamma for call and put option is 0.0002004. It has small value because its equal to zero (0). According to Hull: 2006, If gamma is small, so delta will change slowly. So does the condition (2) and (3).

c. Vega

For condition 1 ($S < X$), vega for call and put option is 254.32. Thus, a 1% (0.01) increase in volatility (from 32% to 33%), increases the value of the option approximately 2.543 ($1\% \times 254.32$).

Table 4.4 Option Value if the volatility increase 1%

	S<X	S=X	S>X
Increases in Option Value	2.54	2.75	3.11

Source : Data Processing

d. Theta

For condition 1 ($S < X$), Theta for

call option is -0.12. For the other condition, theta is in negative value.

According to Hull (2006), theta is usually negative for an option. This is because, as the time to maturity decreases with all else remaining the same, the option tends to become less valuable.

e. *Rho*

For condition 1 ($S < X$), rho for call option is 135.49. This means for a 1% (0.01) change in interest rate (from 5.75% to 6.75%), the value of the call option increases by 1.35 (0.01 x 135.49).

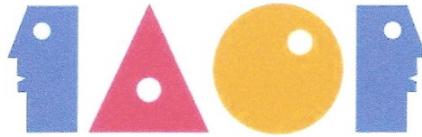
Table 4.5 Option Value if the Risk free rates increase 1%

	$S < X$	$S = X$	$S > X$
Call Option Value	51.59	70.15	91.56
Put Option value	103.69	88.71	76.59

Source : Data Processing

References

- Best, Philip. 1998. *Implementing Value at Risk*. Chicester: John Wiley & Sons.
- Burhan Bungin. 2006. *Metodologi Penelitian Kuantitatif. Edisi pertama*. Jakarta : Kencana.
- Butler, Cormac. 1999. *Matering Value at Risk, Financial Time*. Great Britian: Prentice Hall.
- Eduardus Tandelilin. 2001. *Analisis Investasi dan Manajemen Portofolio*. Yogyakarta. BPFE
- Hariyani, Iswi dan Serfianto, DP. 2010. *Buku Pintar Hukum Bisnis Pasar Modal: Strategi tepat Investasi Saham, Obligasi, Waran, Right, opsi, Reksadana & Produk Pasarmodal Syariah*. Jakarta : Transmedia Pustaka.
- Jogiyanto. 2010. *Teori Portofolio dan Analisis Investasi*. Yogyakarta : BPFE.
- John C. Hull. 2006. *Options, futures, and Other Derivatives*. Sixth Edition. Pearson Prentice Hall.
- Karnadjaja, Agustino., Ong, Edianto., Wijaya, Chris., Tanujaya, Budi., Effendi, Janto. 2007. *Smart Investment for Mega Profit : Strategi Menuju Kebebasan Finansial melalui Investasi Stocks dan Options dengan Small Capital, Low Risk, Liquid & Stress Free*. Jakarta : PT Elex Media Komputindo..
- Sunaryo, T. 2007. *Manajemen Risiko Finansial*. Jakarta : Salemba Empat.
- Uma Sekaran. 2006. *Research Methods For Business*. Edisi 4. Buku 1. Jakarta: Salemba Empat.
- www.bapepam.go.id



STEPPING STONES TO SUCCESS: A COMPARISON OF STAKE-
HOLDER GROUPS ON PERCEIVED BENEFITS REGARDING
PROFESSIONAL CERTIFICATES IN GAMING MANAGEMENT

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Abstract

This paper aims to explore how academic administrators, certified employees, and casino managers perceive the value of gaming management certificate programs using the methods of in-depth interview. A cross-group perspective was used to analyze and interpret the data collected in this study. It was hoped that the combination of academic and industry perspectives would generate a deeper understanding of an explanation for the perceived benefits of a gaming management certificate program. The findings overall revealed favorable perceptions toward the gaming management certificate programs, in terms of individual professional development and the increased rate of enrollment for the department. The discussion takes into consideration the literature on Taiwan's higher educational system and gaming industry in Asian jurisdictions.

Keywords: Certificate program, Perceived benefits, Gaming education, Professional certificates

Introduction

Most of the growth in casino expansion for the foreseeable future will take place in Asia. Macau has become the top gaming destination in the world over the

past decade, and other Asian countries have started to see that there are enough gamblers in China to support a larger gaming industry (Gardner, 2012). The casino industry in Macau has exhibited phenomenal growth on a scale never before wit-

nessed in any gambling jurisdiction (Kale, 2007). With another twenty gaming projects opening within the next five years, Kale (2007) predicted the race to acquire the appropriate labor for casinos will heat up even more, and within such a competitive market, gaming customers will have a choice, especially when it comes to customer service. As casinos expand in Asia and customers are given more options as to destinations, there is an increased demand for the number of trained and qualified employees in the gaming industry (Hashimoto, 2003). Cummings (1996) noted today's casino employers often seek prospective employees who understand the art, science, and business of gaming. Therefore, because of the rapid expansion of the gaming industry worldwide, and with the resulting increase in gaming career opportunities, it has become increasingly important to address the need for gaming education (Ebner, 2002).

Careers specifically within the gaming industry require certain knowledge, skills, and abilities. Principles for casino operation and management skills differ from traditional operation and management theories. Accordingly, a single, general-purpose gaming course no longer addresses the needs of all professionals working within increasingly diverse fields (Hashimoto, 2003). Academic units have responded to this demand by offering highly specialized courses connected with logical sequences designed to meet specific and diverse educational objectives. Certificate programming is rapidly becoming one method of focused competency-based, continuing education. As developed to date, certificate programs on gaming management recognize this diversity in background and are developed to prove the practitioner's know-how in carrying out the tasks associated with particular job functions (i.e., dealing, floor management, table gaming supervision, etc.) at an estab-

lished level of performance (Fenich and Hashimoto, 1995).

Gaming management certificates are presently offered at colleges and universities, mostly within the United States, Canada, Great Britain, and Australia. Unfortunately, a small number of certificate programs exist in Asian countries. The University of Macau and the Global Gaming Expo (G2E), and the Asia Gaming Association are the only institutions currently providing certificate programs in gaming management. Taiwan is at the initial stage in the development process of gaming management certificate programs. At present, there is not one Taiwanese university offering a gaming management certificate program, even though few universities offer gaming courses within their programs. With the expansion of Macau and Singapore casinos, over 100,000 job opportunities are to be expected in the future as Asian casino labor markets expand. The employment and career opportunities in the gaming industry appear strong. Taiwan, as their neighboring country, has the potential to possibly provide trained employees for the future Asian labor market in the gaming industry.

A review of related literature revealed the demand is increasing for the number of trained and qualified employees in this field (Hashimoto, 1999; Ebner, 2002; Cummings, 1996; Hashimoto, 2003). A shortage in the number of trained management employees currently exists due to the lack of casino management certificate programs offered by institutions of higher education (Hashimoto, 1999). The rationale for certificate programs, as it has evolved nationally, seems clear enough. Therefore, there is a need to gather information from Asian academic administrators, certified employees, and casino managers in order to reveal various perspectives and expectations of gaming management certificate programs. A better under-

standing of this phenomenon would allow Taiwanese educators to proceed from a more informed perspective, in terms of design and facilitation of gaming management certificate programs as part of hospitality education in Taiwan. In order to understand this phenomenon, the study addressed four research questions:

1. How do academic administrators perceive and what do they expect from a gaming management certificate program?
2. What expectations of perceived benefits do certified employees have of gaming management certificate programs?
3. How do casino managers perceive certified employees in terms of their professionalism?
4. Are there any discrepancies between these three groups?

With the findings of this study, educators will be able to identify the skills and knowledge that employers in today's gaming industry find essential, and they will be able to design appropriate gaming curriculum which will enable the students to obtain the skills and knowledge deemed most important. Once the gaps are bridged, program planners will be able to direct their efforts toward teaching the skills and knowledge today's gaming industry employers are looking for.

Literature Reviews

Certificate Programs versus Certification

The term "certificate program" is a troublesome piece of educational taxonomy. There is often a great deal of confusion associated with the term certification. In an effort to help clear some of this confusion, distinctions between certificate and certification need to be recognized in order to place "certificate program" in the cor-

rect context. Holt (1988) first introduced the definition of a certificate program:

A certificate program represents a sequence, pattern, or group of courses or contact hours that focus upon an area of specialized knowledge or information and that are developed, administered, and evaluated by the institution's faculty members or by faculty-approved professionals. (p. 1)

Certificate programs provide in-depth training through a sequence of required and elective courses in a particular area of concentration. They provide opportunities for individuals to acquire knowledge and develop skills, which enable the development of predetermined practice competencies (Kirk, Joyner, Lee, & Oles, 1998). Walshok (1991) regarded a certificate program as an alternative to, or as a step beyond the substance of traditional degree programs, and believed they are designed to serve educational purposes different from those served by a general degree. Hashimoto (1999) claims intelligent action can expand hospitality graduate career opportunities, resulting in the development of a well-educated workforce and a solid foundation for game management within the gaming industry.

The perceived benefits of certificate to stakeholders

Certificate programs have some advantage for universities and colleges in attracting new students and by increasing the ways that institution can meaningfully serve business and industry (Robinson, 1991). One of the benefits of certificate is its effect on recruitment and retention of students (Shirey, 2005). Murray et al. (2011) indicated that developing certificate programs can be a successful recruiting tool for academia, aiding students in finding a strong job.

There are several psychological and financial gains for certified individuals. The perceived benefits for individuals tended to be intangible, including greater personal satisfaction, respect and recognition, increased professional competence, and improved self-esteem and self-confidence (Morrison, 1993). More importantly, gaining a certificate to oneself demonstrates goal attainment and lifelong learning. For individuals, they may experience personal growth, a sense of accomplishment, and recognition by successfully completing the program (Haskins, Hnatiuk, & Yoder, 2011; Wade, 2009; Gladfelter, 2006; Byrne, Valentine, & Cater, 2004; Cary, 2001). Both business and industry fields view successful completion of certificate programs as an indicator of one's commitment to the profession, improving one's career opportunities and chance for advancement and preparing for greater on the job responsibilities (Settle, 1991). Besides, Certificate programs also provide excellent opportunities for affiliation within the industry network. The certificate program was a helpful mechanism for developing relationships with academic educators and classmates working in the industry, and for gaining exposure among the many human resource recruiters and practitioners within the field (Settle, 1991).

Certification can be a benefit to employers as well. A business benefits when an employee acquires and demonstrates additional knowledge and competence. Because certified employees attain additional skills and increased knowledge, which assures service quality to their customers. For business and industry professionals, the primary measure of the value of a certificate program is the development of competence, not the diploma, because competence translates to better products and services from employees (Caird, 1992).

Hashimoto (2003) conducted a study to examine casino managers' perceptions regarding the certification on gaming management. Casino managers were ambivalent to the idea of certified employees being rewarded by higher compensation, faster promotion, higher entry-level positions or preferential hiring, they believed certificates should be created to improve employee's quality and performance.

To sum up, certificate programs offer an employee-friendly, but results-oriented system for directing today's employees toward long-term growth and development of the individual and the firm (Murray et al., 2011). The collaborations between universities and industry benefit all stakeholders by recruiting students to academia and then placing those students into employment opportunities after completion of a certificate program in any professionalism.

Method

Sampling framework

In order to generate a deeper understanding of an explanation for the perceived benefits of gaming management certificate program from academic and industry perspectives, A series of in-depth interviews were conducted with five casino hotel employees and managers in Macau, China and with four academic administrators in Taiwan. Nine participants were selected based on criteria regarding their experience and professional qualifications, as presented in Table 1. Six males and three female participated in the study. The half of participants was aged between 30-39 years old and college-educated or above. Three participants have 6 to 10 years teaching or working experiences.

Table 1. Table of Sampling Framework (N=9)

Participants	Selection criteria	Number of participants
Academic administrators	<ul style="list-style-type: none"> – Those academic administrators who have taught in Hospitality and Tourism related programs for more than five years. – Those academic administrators who have held their present position for at least two year. – Those academic administrators who were the key decision makers in curriculum planning for their program. 	4
Certified employees	<ul style="list-style-type: none"> – Those certified employees who had been awarded a gaming management certificate within the past three years; – Those certified employees who had held their present position in the casino for at least one year. 	3
Casino managers	<ul style="list-style-type: none"> – Had been working in the position of manager for more than 3 years 	2

Data collection and analysis

The interview questions were designed and worded differently in order to create three separate question sets for the three groups of participants. These three sets of questions eventually formed the triangulation from participants' responses. The average length of each interview lasted 60-90 minutes. In conducting semi-structured interviews, the researcher asked key questions in the same way each time and did some probing to encourage the participants to elaborate further. If the participant's response was brief or unclear, probing questions were used to encourage them to elaborate on their answer and explain why or how.

To begin organizing the data, the researcher listened repeatedly to the audio recordings and transformed each into verbatim transcripts of interviews. All interviews were transcribed verbatim and pseudonyms were assigned to the various respondents to guarantee anonymity and confidentiality.

The data were analyzed qualitatively, looking for themes against the research questions. These themes were then categorized and developed into higher-order themes, which serve as headings in the presentation of the results from the study.

Issues of Trustworthiness

The aim of trustworthiness in a qualitative inquiry is to prove the inquiry's findings are "worth paying attention to" (Lincoln & Guba, 1985, p.290). In other words, it refers to whether the participants' perceptions match up with the researcher's portrayal of them (Bloomberg & Volpe, 2008). In this study, the researcher applied multiple data collection methods, member

checking, and debriefing to enhance trustworthiness.

Three different categories of participants (academic administrators, certified employees, and casino managers) were interviewed to enhance trustworthiness. Besides, the critical incidents technique was employed in the in-depth interviews and served as a "validity check" for certain aspects of the data uncovered in the interviews. Several types of data were analyzed by comparison and contrast performed at various levels in order to check for emerging themes. In the process of member checking, each participant was requested to review a summary of the data analysis procedure and a summary of the final results of the inquiry. They were able to answer or offer additional comments on whether or not they believed the data was interpreted in a manner congruent with their perceptions. And, last verification procedure involves asking a colleague to examine the research design of the study.

Discussion, Implications and Recommendations

Findings pertaining to the first research question identify the perceptions of three sampling groups regarding the value of gaming management certificate programs. Overall, favorable perceptions were revealed toward the certificate programs, as displayed in *increased enrollment and individual professional choice*.

Increase enrollment

As far as the department is concerned, increased enrollment rates are the number one priority and benefit brought on by the development of a gaming management certificate program. One participant agreed that the increased enrollment rate is the priority benefit by stating "we found that

many students choose our department as their major because they see there are some gaming courses included in our program.” Programs are encouraged to create distinguishing features so they are able to compete within other universities in the same professional fields. One participant reflected this view by stating:

Well, as you know, there are less and less students we can recruit because of the low birth rate. Even our department, with its long history and good reputation, still needs to compete with other universities to recruit more students so that our university can survive. By developing the gaming courses, we can increase our competitive advantage in recruiting new students (interviewee, male).

Typically, most departments attempt to be distinguished by offering distinctive curriculum features. However, the parameter of practicality and relativity of the curriculum is the prior consideration for perspective students. Holt (1991) gave credence to this perspective when she said: “The certificate program focuses on areas of specialized knowledge or information and contains a number of courses to meet the occupational, professional, or personal improvement needs of well-defined audiences.” As a result, certificate programs represent an excellent opportunity for individuals to grow professionally.

Enhance the professionalism of individuals

The sampling group of academic administrators showed confidence those students who have completed gaming courses can better distinguish themselves over those who have not. They also believe these students fully recognize what skills and knowledge are necessary for working in the

field. Moreover, such a program offers students the opportunity to master their gaming skills and increase their knowledge in a supplemental specialty combined with their existing profession. As an additional benefit, students are able to strengthen their position and increase their competitive advantage within the future job market. Students have recognized by being prepared in a certain field, with current employment opportunities, they may be able to add a certificate to their resumes and become marketable candidates for positions (Gordon, 1987). One of the academic administrator participants gave an example to illustrate his view:

We found some students who took the gaming courses last semester, majoring in Hotel Management, realized most casino-hotels combine lodging and casinos. Also, some students majoring in Travel Management are interested in gaming courses because they have the need to understand the gaming industry as their supplemental specialty in case there may be some members of an escorted tour interested in asking something about the casinos.

The certified employee participants provided some important insights into the value and personal worth of certificate programs as a mode of learning. Many are conceived as a result of increasing specialization of careers and individual needs for advancing job skills (Lopos, 1991). This reflects the statement of how Gonnella and Zeleznik (1983) define the goal of certificate programs. They believe the goal of continuing education is to ensure the development of proficiencies that can be translated into professional performance. Individuals who enroll in certificate programs recognize these support factors as economic benefits. As Lopos (1991) noted, higher wages and

promotions are the most tangible economic benefits that accrue from participation in certificate programs.

The second major finding offered by this study indicates the majority of certified employees reveal favorable effects regarding their individual professional advancement, and their practical needs related to curriculum design can be linked to the difficulties encountered by academic administrators. Each participant provided positive feedback in relation to the overall program. All three of them agreed they did learn a great amount, but they were not 100% satisfied with their courses. Regarding course content, the findings indicated the participants place higher value upon practical-based courses than theory-based courses when related to the gaming curriculum. That is, the participants valued the practical nature of the courses and the real examples instructors used during their lessons.

Most Participants prefer practical-based courses because they believe the knowledge they have gained from these types of courses can immediately be applied to their career and help to their job performance. "Especially those courses which focus on managing the various relationships among colleagues or subordinates, and on improving the quality of customer service" reflected by one participant. In addition, the participants suggested some very distinctive courses be added to the gaming curriculum. The focus of these courses specifically emphasizes moral issues, language ability, working attitudes and casino etiquette.

There are multiple factors affecting the integrity of certificate programs. A well-designed certificate program should be able to justify itself in order to meet the needs of the program and its constituents. It must adapt to appropriate cultural and regulatory

considerations within a particular geographical area so that it is able to benefit students and allow them to acquire and demonstrate the learned knowledge and skills within their future gaming career.

The third research question indicated some requirements, in terms of language ability and learning attitude, are valued by casino managers. Surprisingly, casino managers do not place a large emphasis on the necessity of a gaming management certificate, partly because the Macau government fully supports training programs and protects local residents' rights for employment. There was a consistent thread of employer support from the participants' respective casinos when they decided to return to class. The employer's strong support and personal enrichment contributed to the motivation of enrolling in the program (Lopos, 1991). Although casino managers seem to view the gaming certificate as not a requirement for job employment, they still have a positive attitude toward an employee's participation in the program. One casino manager described the fact:

If someone wants to get a job as a dealer, no certificate is necessary. In fact, casinos don't really care whether the employees hold a certificate or not. What they really care about is the attitude and the spirit of service. As long as the employed are willing to learn and love the job, everyone can be trained to be a qualified employee.

Here, he indicated a behavioral dimension, "willing to learn," that is important to most employers. As employees seek to enhance their career by enrolling in certificate programs, this capitalizes on their internal motivation to achieve professional competence and recognition by professional

peers (Settle, 1991). Besides, casino managers indicated a higher value should be placed upon the importance of language within the curriculum. As globalization increases and as casino players become even more culturally diverse, they believe human resources managers will prefer hiring someone with the ability to speak multiple languages over those who don't.

Last, the overall results from this study revealed favorable perceptions toward gaming management certificate programs from both academic and industry perspectives, though different groups placed emphasis upon different types of courses. Their inputs emphasize on their respective needs the current program doesn't satisfy. What the certified employees suggested becomes the platform the program planners should utilize in order to make the program more complete; what the casino managers suggested becomes the basic requirements future employees should meet in order to get the position. It is essential all inputs provided by the three different sampling groups be valued in the planning and implementation process. Walshok (1991) shed light on the importance of the input from program beneficiaries in the design of a certificate program. The involvement of beneficiaries, including institutional and individual, affects more than just program content. They can provide valuable input on the timing, sequencing, and method of delivery for various components of the program. As such, program planners must work collaboratively with the beneficiaries of the certificate program to ensure appropriate content and to arrive at a shared definition of quality.

A conclusion to be drawn from the overall findings of the study is that, the time

has come for hospitality educators and professionals to recognize gaming management certificate programs as an integral part of hospitality education and to include a sector in the curriculum tailored toward preparing qualified employees for a gaming career. Although gaming education and training needs, at present, are not being given much attention by most academic institutions in Taiwan, the study contributes valuable information for Taiwan's educators to use as they thoroughly evaluate the feasibility of gaming management certificate programs. Clearly, the findings of this study make it evident the gaming management certificate program is an excellent alternative with great potential for expanding continuing education programs, while also satisfying both individual career goals and educational needs.

Limitations of the study

This study contains certain limiting conditions. Because analysis ultimately relied on the thought and choices of the researcher, one of the key limitations of this study is the issue of subjectivity and potential bias regarding the researcher's own perceptions. The study sites may affect the findings of this study as well. The results of this study need to be interpreted within the unique sociocultural, geographic, and academic contexts of the participants. The differences between Taiwan and Macau exist not only in sociocultural perspectives, but also in the development of casinos. The level of expectation among participants may need to be considered between the countries without casinos and the countries with casinos. Taiwan's academic administrators may hold higher expectations than the individuals who live in a developed gaming city.

References

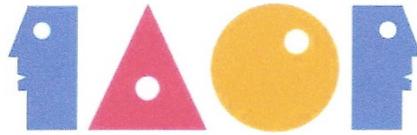
- Bloomberg, L. D. & Volpe, M. (2008). *Completing your qualitative dissertation: A roadmap from beginning to end*. Thousand Oaks, CA: SAGE Publications, Inc
- Byrne, M., Valentine, W., & Carter, S. (2004). The value of certification - A research journey. *AORN Journal*, 79(4), 825-835.
- Caird, S. (1992). Problems with the identification of enterprise competencies and the implications for assessment and development. *Management Education and Development*, 23(1), 6-17.
- Cary, A. (2001). Certified registered nurses: Results of the study of the certified workforce. *American Journal of Nursing* 101(1), 44-52.
- Cummings, L. E. (1996). Educating for the gaming industry: Need, profile, and suggested schema. *Gaming Research & Review Journal*, 3(2), 39-51.
- Ebner, S. R. (2002). Identification of gaming management competencies and attitudes toward inclusion of courses in Mississippi postsecondary institutions of higher education. Unpublished Dissertation, The University of Mississippi.
- Fenich, G. G., & Hashimoto, K. (1995). Teaching casino gaming. *Hospitality and Tourism Educator*, 7(4), 63-64.
- Gardner, A. (2012, July 9). Asian casino industry expanding as Taiwan approves gaming resort. *CasinoGamblingWeb.com*, Retrieved July 9, 2012, from http://www.casinogamblingweb.com/gambling-news/gambling-law/asian_casino_industry_expanding_as_taiwan_approves_gaming_resort_57877.html
- Gladfelter, J. (2006). Nursing certification: Why it matters. *Plastic Surgical Nursing*, 26(4), 208- 210.
- Gonnella, J. S. & Zeleznik, C. (1983). Strengthening the relationship between professional education and performance. *New Directions for Adult and Continuing Education*, 18, 59-72.
- Gordon, J. D. (1987). An experimental course in elements of digital computer technology for the training of computer programmers. *Dissertation Abstracts International*, 48, 01A.
- Hashimoto, K. (1999). Developing a national gaming management certification: An examination of gaming class product life cycles, core subjects, and industry needs assessment. University of New Orleans.

- Hashimoto, K. (2002). Casino managers' perception of the need for a national gaming management certification. *Journal of Hospitality and Tourism Education*, 14(4), 33-40.
- Hashimoto, K. (2003). Certification of Managers: Upgrading the Casino Industry. *Journal of Hospitality and Tourism Education*, 15(2), 30-35.
- Haskins, M., Hnatiuk, C.N. & Yoder, L.H. (2011). Medical Surgical nurses perceived value of certification study. *MedSurg Nursing*, 20(2), 71-93.
- Holt, M. E. (1988). About certificate programs. In G. J. Lopos, M. E. Holt & R. E. Bohlander (Eds.), *Peterson's guide to certificate programs at American colleges and Universities*. Princeton, N. J.: Peterson's Guides.
- Kale, S. H. (2007). Internal marketing: An antidote for Macau's labor shortage. *UNLV Gaming Research & Review Journal*, 11(1), 1-11.
- Kirk, J. K., Joyner, P. U., Lee, A. J., & Oles, K. S. (1998). Experience and implementation of a diabetes pharmacotherapy certificate program. *American Journal of Pharmaceutical Education*, 62, 307-310.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publications, Inc.
- Lopos, G. J. (1991). Certificate programs: Alternative ways to career advancement and social mobility? In M. E. Holt & G. J. Lopos (Eds.), *Perspectives on Educational Certificate Programs* (pp. 87-97). San Francisco: Jossey-Bass.
- Morrison, A. M., Hsieh, S., & Wang, C. (1992). Certification in the travel and tourism industry: the North American experience. *The Journal of Tourism Studies*, 3(2), 32-40.
- Murray, S. L., Long, S. K., Elrod, C. C., & Akula, S. (2011). The value of graduate certificate programs in Engineering education: A strategic assessment. *American Journal of Engineering Education*, 2(1), 51-62.
- NTUST open lotto, gaming research center (2007, Nov. 30). *The China Post*. Retrieved from <http://www.chinapost.com.tw/taiwan/national/national%20news/2007/11/30/132981/NTUST-opens.htm>
- Robinson, J. H. (1991). *The whats, hows, and benefits of noncredit certificate programs*. Manhattan, Kansas: Learning Resources Network.
- Settle, T. J. (1991). Certificate programs for business and industry. In M. E. Holt & G. J. Lopos (Eds.), *Perspectives on Educational Certificate Programs* (pp. 77-86). San Francisco: Jossey-Bass.

Shirey, M. (2005). [Celebrating certification in nursing](#). *Nursing Administration Quarterly*, 29(3), 245-253.

Wade, C.H. (2009). Perceived effects of specialty nurse certification: A review of the literature. *AORN*, 89(1), 183-192.

Walshok, M. L. (1991). Evaluation and quality control in certificate programs. In M. E. Holt & G. J. Lopus (Eds.), *Perspectives on Educational Certificate Programs* (pp. 23-31). San Francisco: Jossey-Bass.



SERVICE CLIMATE, SERVICE CONVENIENCE, SERVICE QUALITY AND
BEHAVIORAL INTENTIONS IN CHAIN STORE RESTAURANTS

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Abstract

This study aims to investigate the structural relationships among service climate, service convenience, service quality, and behavioral intentions in the chain store restaurants. Based on a theoretical background literature review, we are paying attention to investigate how to improve service quality on service to customers and how to provide them the best service by focusing on service climate and service convenience. Moreover, behavioral intention is also influenced by service quality. The proposed model was then tested employing data collected from 315 customers of chain store restaurants. The results of subsequent analysis of the data indicated that each construct has positive influence on each other. The findings suggest that service quality is perceived to be the most important factor and managers of restaurants should further understand about customer behavior to improve service quality in order to create value and satisfy customers.

Keywords: service climate, service convenience, service quality, and behavioral intentions.

Introduction

Today's customers have begun to demand what is good with high quality and convenience as an important part of service.

Basically, delivery quality service to users or customer is seen as the essential determinant of business success and survival in today's competition in service industries (Ug-

boma et al., 2007). Hence, to this date there are dozens of studies have been conducted in hope of understanding more about services in the services industry and related to businesses.

Existing practitioners and academicians have long noticed that perceived waiting time have great influential impact on how services are assessed (Taylor, 1994). Many researchers have long noted consumers' interest in conserving time and effort. This has encouraged the development of understanding on the convenience goods and services, increased advertisers' promotion of time-oriented benefits of their products and services, and motivated consumers to use convenience as a basis for making purchase decision (Katz et al., 1991). Berry, Seiders, and Grewal (2002) emphasized that service convenience is conceptualized as consumer's perception of time and effort related to buying or using a service. The authors discussed the perception of time and effort, and finally they conceptualized convenience of five main dimensions: decision convenience, access convenience, transaction convenience, benefit convenience, and post-benefit convenience. These convenience types reflect stages of consumers' activities related to buying or using a service. Furthermore, it is still beneficial to reach more comprehension of service employees' behaviors which are supposed to help control the perception of time and effort during the service consumption.

As mentioned above, both practitioners and academic examinations have put great effort on the studies on quality of services and services convenience. Consequently, there is still opportunity to examine and understand more about restaurant service. Additionally, this study intent to explore customers' perception of service quality,

service convenience and service climate and it also intent to know about the influence of service quality on customer behavioral intentions. Finally, we expect that this study can provide useful information and implication on how service convenience and service climate can enhance service quality and whether service quality can influence on customer behavioral intentions in chain store restaurant service in Taiwan.

Based on the research backgrounds and motivations mentioned earlier, this study attempts to conduct and develop the research objectives as the following: 1. To examine the influential of service climate and service convenience on service quality. 2. To investigate impacts of service quality on its outcome such as customer behavioral intentions.

Literature Review And Development Of Hypotheses

Service Climate

Little and Dean (2006) replicated that service climate in build on the basis of keeping an eye on customers and the other on employees. Moreover, Schneider et al. (2006) said that climate is of the information processing from various stimuli the people do encounter at work. They further emphasized that climate is a summary impression employees have about "how we do things around here" or "what we focus on around here" or "what we direct our efforts to around here". Moreover, climate is of the shared common psychological identify, and this identify appears aligned with the way service quality is done. Obviously, employees may be seeking to understand characteristics of their workplace are really a service-oriented company, and what activities constitute a service-oriented climate.

Interestingly, Schneider et al. (2006) also reported results from the focus groups that employees will treat customer fairly with the way company treat them. More importantly, they identified that there are four major components of service climate: foundation issues, internal service, clues and cues employees observe happening around them with the focus on service quality, and the behavior on the part of employees that yields customer satisfaction, loyalty and sales. Little & Dean (2006) examined and added one more dimension to the Schneider et al. service climate. Human resource management was their choice, which was concerned specifically with the policies, procedures, and resources to support frontline staff. This new factors also emphasize the training, problem-solving, and the role of customer-contact employees.

In this study the service climate is defined as the employees shared perceptions of practice, procedures, and a set of behaviors that get rewarded, supported, and expected with respect to customer service and customer service quality, and which are simultaneously concerned with their own and their customers' well-being.

Service Convenience

Consumers' perceptions of service convenience is time and effort required to buy or use a service. Time and effort are non-monetary cost consumers must bear to receive the service. Customer assessment of time expenditures is both objective and subjective (Davis & Vollmann, 1990; Hornik, 1993). Additionally, Lovelock, Writz, Tat Keh, & Lu (2005) explained the non-monetary costs the consumers spend on buying services. The time, effort, and discomfort associated with search, purchase, and use of a service are referred to as the ele-

ments of non-monetary costs the consumers spend. These costs tend to be high during such time as self-service and people-processing service, traveling to the service site, wait for service, figure out queuing systems and service process etc.

The marketing literature has emphasized the importance of consumer's desire for convenience and the value of time. Time or time-investment service of customers often have hedonic value, which is especially relevant to discretionary activities pursued for their own sake rather than as a means to another goal (Holbrook & Lehmann, 1981). Many researchers argue that consumers seek to conserve cognitive effort (Fennema & Kleinmuntz, 1995). Whereas cognitive effort associated with purchase decisions is expended for both goods and services, physical and emotional effort may be greater for services in which consumers participate in the production process. According to Hui, Thakor, & Gill (1998) the more effort spent by a service consumer, the stronger is that consumer's commitment to the service outcome and the higher is the potential for frustration.

Berry et al., (2002) concluded that if the time and effort the consumers spend during the service consumption can be reduced, the five dimensions of convenience can be positively and desirable affected. It can be said that the consumers may find it convenient to make buy or purchase decision, to process the transaction, to see how much benefit will be in an their exchange, to know how hard to have access to the service, or to see of it is still worthy after consuming the service.

Based on Expectancy Theory's argument (Robbins & Judge, 2007), it is concluded that people tent to exert a higher level of effort when they believe the effort will

lead to a better appraisal with rewards or recognition, which will lead to satisfaction of final personal goal. In addition, as mentioned above (Mowday et al., 1979) employee commitment in term of employees beliefs in the goals and value of the organization, their willingness to exert effort and their intention to maintain membership of organization. Thus, the following hypothesis is proposed:

H1: Service climate has a positive effect on service convenience.

Service Quality

Caceres and Pappas (2007) declared that a perception of service quality is a result of a comparison between what customer consider the service should be and their perceptions about the actual performance offered by the service provider. Similarly, Parasuraman et al. (1985) also defined service quality as the comparison between customers 'expectation and perception of service. In addition, they suggested the underlying themes after examination of the previous writing and literature on service. In the past research, many authors have linked service quality to the firm's performance and customer satisfaction (Cronin & Taylor, 1992) and behavioral intention (Boulding et al., 1993; Zeithaml et al., 1996). Knowing that SERVQUAL as a specific instrument for measuring service quality (Parasuraman et al., 1988). They also argued that there are only small difference between SERVQUAL and SERVPERF (Parasuraman et al., 1994). The SERVPERF is measurement of customer's perception of the performance of a service and it provides adequate assessment for service quality (Cronin & Taylor, 1992). Generally, the SERV-QUAL has been successfully used in many differences sittings (Tahir & Wan Is-

mail, 2005; Ugboma et al., 2004).

The role of service climate in service organizations is associated with shaping or creating single idea of what good, efficient delivery of service quality is (Dietz, Pugh, & Wiley, 2004) and repeatedly, has shown links between employees' service climate perceptions and customer perceptions of satisfaction with evaluations of service provided. Schneider et al., (1998) argued that the way employee perceives the service climate in their organizations is positively related to customer satisfaction with the quality of service. Moreover, in service quality literature found that organizations must create and maintain a climate for service in order for employees to effectively deliver excellent service. On this basis it is hypothesized that:

H2: Service climate has a significant effect on service quality.

There are many factors that cited as influencing consumers' perceptions of waiting. Those are service, facility, information provided by the firm, customer characteristics (Taylor, 1994). Waiting for service is a pervasive and often unavoidable experience for customers and appears to be a strong determinant of overall satisfaction with service and customer loyalty (Hui & Tse, 1996). As customer satisfaction with the service will be affected by the perception of waiting, an alternative approach to queuing is to find ways to make time pass as quickly and pleasantly as possible (Pruyn & Smidts, 1998). Berry et al., (2002) suggested that service failure can affect decision convenience if a consumer is given incorrect information. And for access convenience if an online connection fails or parking area has no vacancies, transaction convenience if an incorrect price is charged and its correction delays a consumer, and benefit convenience

if a dining experience is flawed by unresponsive service. On this basis it is hypothesized that:

H3: Service convenience has a significant effect on service quality.

Behavioral Intention

Behavioral intentions can be captured by such measures as repurchase intentions, word of mouth, loyalty, complaining behavior and price sensitivity (Zeithaml et al., 1996). Moreover, they argued that behavioral intentions can be seen as an indicator, which showed whether customer decides to remain with or defect from the company. Boulding et al. (1993) mentioned that customers were positively related with willingness to recommend and negatively related with switching and complaining behavior. As viewed by the customer, high service quality often leads to favorable behavioral intentions while a low service quality tends to lead to unfavorable behavioral intentions. The more positive of customer experience, the more likely customer willing to continues to use company's service again.

According to high service quality often leads to favorable behavioral intention while a low service quality tend to unfavorable behavioral intentions (Olorunniwo et al., 2006). Many authors conclude that service quality has direct links to behavioral intention. Furthermore, Cronin et al. (2000) emphasized that the direct link between service quality and behavioral intention is significant. On this basis it is hypothesized that:

H4: Service quality is positively influenced on behavioral intentions.

Methodology

Quantitative Data Collection

Participants.

The sample of this study focuses on the customers of chain store restaurants. Questionnaires were administered with the sample being randomly selected from a certain college in Taipei. Students from all areas of Taiwan respond to the questionnaire by their own actual consuming experience within the chain restaurants. The questionnaires finally yielded 391 finished questionnaires. Out of these, 315 were usable.

Measuring Tools.

The measurement instrument was designed based on various previous studies. All the questionnaire items were measured on a five point scale. Respondents were asked to indicate their level of agreement toward each statement, from 1 (strongly disagree) to 5 (strongly agree).

Service Expectation.

According to Little & Dean (2006), the employed 35 items of 5 factors, those are general service climate (GSC), customer orientation, customer feedback, HRM, and managerial practice. Hence, in this study is to adapt from Schneider's et al., (1998), this frame expects that the GSC can be used to investigate service climate, by referring to the previous researches (i.e., Little & Dean, 2006).

Service Convenience.

This study uses Berry's et al., (2002) scale to be the best choice. The service convenience has five main factors (decision convenience, access convenience, transac-

tion convenience, benefit convenience, and post-benefit convenience) and each factor has three items. Totally, there are 15 items are adopted.

Service Quality.

This study adapts Cronin's et al., (2000) that has 9 questionnaire items. The reason to adapt the scale by Cronin et al., (2000) is that it is reliable and valid measure of service quality.

Behavioral Intentions.

In order to measure behavioral intentions, the study adapts the three items according to (Cronin et al., 2000; Taylor & Baker, 1994; Zeithaml et al., 1996).

Purification and Reliability of Measurement Variables

To purify the measurement scales and to identify their dimensionality, principal components reliability test with Varimax rotation was applied to condense the collected data into certain factors. After reliability test, we used item-to-total correlation and internal consistency analysis (Cronbach's alpha) to confirm the reliability of each research factor. According to Robinson and Shaver (1973) if α is greater than .7, the variable has high reliability, and if α is smaller than .3, it implies that there is low reliability. The reliability of four latent variables was investigated by calculating Cronbach's alpha. The range of the values was between .83 and .91, which indicated all measures were quite reliable.

Structural Equation Model

In order to find out the relationship in the whole research model in this study, a

structure equation model (SEM) was used. The criteria of Chi-square, GFI, AGFI, CFI, RMR, and RSEMA were used to evaluate the overall goodness of fit of the model. According to Hair et al. (2010), the value of overall fit of a hypothesized model can be regarded as appropriately significant when each criteria Chi-square is small (p value $>.05$), and fit indices such as the ratio of Chi-square to degrees of freedom (Chi-square/d.f. ≤ 2); goodness of fit index (GFI $>.9$), and adjusted goodness of fit index (AGFI $>.9$); root mean square residual (RMR $<.1$), and root mean square error of approximation (RMSEA $<.08$) are all fulfilled. The result of confirmatory factor analysis (CFA) produced evidence of an acceptable fit of the model (Chi-square = 427.68; df = 243; $p = .00$; Chi-square/df = 1.76; RMR = .04; GFI = .91; AGFI = .92; RMSEA = .08). Parameter estimates of the final model were inspected and no problematic occasions were found.

Results

Quantitative Data Analysis

The results showed that the typical respondent was male (46.1%), between 20-29 years of age (39.2%) or 30-39 years of age (32.7%), and had completed university degree (67.8%); female (53.9%), between 20-29 years of age (40.3%) or 30-39 years of age (33.8%), and had completed university degree (74.7%). Moreover, the majority of respondents worked in professional jobs (47.2%), and earned a monthly income of 40,000 to 50,000 NT (37.8%) or 50,000 to 60,000 NT (27.3%).

Assumption Test

The hypotheses in this study were tested by using Structural Equation Model-

ing. The resulting measurement model has Chi-square /df equal to 1.76 and all values in the model reflect acceptable fit of the data. For finalized model, standardized path coefficients and significance are as below.

First, we find support for H1. The results of structural equation model analysis support this hypothesis, showing service climate has a positive effect on service convenience ($\beta = 0.36$, $p < 0.01$).

Secondly, we find support for H2. The results of structural equation model analysis show that service climate has a significant effect on service quality ($\gamma = 0.27$, $p < 0.01$).

Thirdly, we find support for H3. The results of structural equation model analysis show that service convenience has a significant effect on service quality ($\gamma = 0.33$, $p < 0.01$).

Finally, we also find support for H4. The results of SEM analysis reveal that service quality is positively influenced on behavioral intentions ($\gamma = 0.23$, $p < 0.01$).

Conclusion And Future Research

This study provides a model for understanding the relationships among service climate, service convenience, and service quality are indicators that lead to behavioral intention. Importantly, superior customer service is one of the characteristic of high performance business. Based on results reported in this study, managers of chain store restaurants could interpret these results as suggesting that they may understand what customers want and how they assess the service quality. Moreover, they should analyze their business and their competition from the point of view of the service quality frame-

work. Furthermore, they should understand well whether which factors (i.e., service climate and service convenience) can improve service quality. As mentioned in the marketing literature, organizations must create and maintain a climate for service in order for employees to effectively deliver excellent service. Since employees of chain store restaurants have firsthand and understand well about characteristics of customers, managers should encourage and reward their employees relative to service quality design and implementation, especially in regard to internal public. The feedback should be used to improve service quality. Moreover, they should focus on time and effort during service processing in restaurants because service convenience is conceptualized as consumer's perception of time and effort relative to buying and using service (Berry et al., 2002). Less time and effort spend to receive the service is likely to partly explain the quality of service. Contrary to the delay of a service is found to significantly affect the feeling of anger and dissatisfaction.

As is the case with any research project, the studies presented exhibit limitation should be considered. Clearly, the limitation of the research is relatively small sample size collected from chain store restaurants and the distribution is focused on the Taipei city only. Therefore, the future research should focus on many service sectors in order to get larger sample size and make the result more accurate. As mentioned above, this study focus on time and effort and also service climate to indicate service quality. Thus, for future research, we would like to suggest focusing on more other variables that influence on service quality such as attribution of firm controllability or quality of service environment and so forth. Moreover, the research considers service quality as a

main indicator which effects behavioral intention of customer. In this case, we also

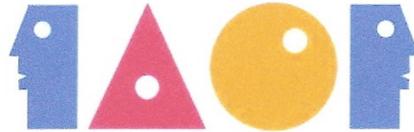
suggest to find more variables like perceived sacrifice, trust so on and so forth.

References

- Berry, L. L., Seiders, K., & Grewal, D. (2002). Understanding service convenience. *Journal of Marketing*, 66(3), 1-17.
- Boulding, W., Kalra, A., Staelin, R., & Zeithaml, V. A. (1993). A dynamic process model of service quality: from expectations to intentions. *Journal of Marketing Research*, 30(1), 7-27.
- Caceres, R. C., & Paparoidamis, N. G. (2007). Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty. *European Journal of Marketing*, 41(7/8), 836-867.
- Cronin, J. J., Brady, M. K., & Hult, T. M. (2000). Assessing the effects of quality, value, customer satisfaction on consumer behavioral intentions in service environment. *Journal of Retailing*, 76(2), 193-216.
- Cronin, J. J., Jr., & Taylor, S. A. (1992). Measuring service quality: a reexamination and extension. *Journal of Marketing*, 56(3), 55-68.
- Davis, M. M., & Vollmann, T. E. (1990). A framework for relating waiting time and customer satisfaction in a service operation. *Journal of Services Marketing*, 4(1), 61-69.
- Dietz, J., Pugh, S. D., & Wiley, J. W. (2004). Service climate effects on customer attitudes: an examination of boundary conditions. *Academy of Management Journal*, 47(1), 81-92.
- Fennema, M. G., & Kleinmuntz, D. N. (1995). Anticipations of effort and accuracy in multiattribute choice. *Organizational Behavior and Human Decision Processes*, 63(1), 21-32.
- Hair, J.F., W.C. Black, J.B. Babin, R.E. Anderson and R.L. Tatham, (2010). *Multivariate Data Analysis*. 7th Ed., Pearson Education Inc., Upper Saddle River, New Jersey.
- Holbrook, M. B., & Lehmann, D. R. (1981). Allocating discretionary time: Complementarities among activities. *Journal of Consumer Research*, 7(4), 395-406.
- Hornik, J. (1993). The role of affect in consumers' temporal judgments. *Psychology and Marketing*, 10(3), 239-255.
- Hui, M. K., & Tse, D. K. (1996). What to tell consumers in waiting of difference lengths: an integrative model of service evaluation. *Journal of Marketing*, 60(2), 81-90.
- Hui, M. K., Thakor, M. V., & Gill, R. (1998). The effect of delay type and service stage on consumers' reactions to waiting. *Journal of Consumer Research*, 24(4), 469-479.

- Katz, K. L., Larson, B. M., & Larson, R. C. (1991). Prescription for the waiting-inline blues: entertain, enlighten, and engage. *Sloan Management Review*, 32(2), 44-57.
- Little, M. M., & Dean, A. M. (2006). Linking between climate, employee commitment and employees' service quality capability. *Management Service Quality*, 16(5), 460-476.
- Lovelock, C., Writz, J., Tat Keh, H., & Lu, X. (2005). *Service marketing in Asia: managing people, technology and strategy* (2nd ed.). Singapore: Prentice Hall.
- Mowday, R. T., Steers, R. M., & Porter, L. W. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior*, 14(2), 224-247.
- Olorunniwo, F., Hsu, M. K., & Udo, G. F. (2006). Service quality, customer satisfaction, and behavioral intentions in the service factory. *Journal of Service Marketing*, 20(1), 59-72.
- Parasuraman, A., Zeithaml, V., & Berry, L. L. (1985). A conceptual Model of Service Quality: Its Implications for Future Research. *Journal of Marketing*, 49(4), 41-50.
- Parasuraman, A., Zeithaml, V., & Berry, L. L. (1988). SERVQUAL: A Multiple-item Scale for Measuring Customer Perceptions of Service Quality. *Journal of Retailing*, 64(1), 12-37.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Further Research. *Journal of Marketing*, 58(1), 111-124.
- Pruyn, A., & Smidts, A. (1998). Effects of waiting on the satisfaction with the service: beyond objective time measures. *International Journal of Research in Marketing*, 15(4), 321-334.
- Robbins, S. P., & Judge, T. A. (2007). *Organizational behavior* (12th ed.). New Jersey: PEASON Prentice Hall.
- Schneider, B., White, S. S., & Paul, M. C. (1998). Linking service climate and customer perceptions of service quality: test of a causal model. *Journal of Applied Psychology*, 83(2), 150-163.
- Schneider, B., Macey, W. H., & Young, S. A. (2006). The climate for service: a review of the construct with implications for achieving CLV goals. *Journal of Relationship Marketing*, 5(2/3), 111-131.
- Tahir, I. M., & Wan Ismail, L. S. (2005). Service quality is the financial services industry in Malaysia: the case of Islamic banks and insurance. *International Review of Business Research Paper*, 1(2), 10-20.
- Taylor, S. (1994). Waiting for service: the relationship between delays and evaluations of service. *Journal of Marketing*, 58(2), 56-69.

- Ugboma, C., Lbe, C., & Ogwude, I. C. (2004). Service quality measurements in port of a developing economy: Nigerian port survey. *Management Service Quality*, 14(6), 487-495.
- Ugboma, C., Ogwude, I. C., Ugboma, O., & Nnadi, K. (2007). Service quality and satisfaction measurements in Nigerian port: an exploration. *Maritime Policy and Management*, 34(4), 331-346.
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, 60(2), 31-46.



SERVICE EXPECTATION, PERCEIVED SERVICE QUALITY, AND CUSTOMER SATISFACTION IN FOOD AND BEVERAGE INDUSTRY

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Abstract

This study aims to identify the factors that contribute to service expectation, perceived service quality, and customer satisfaction in food and beverage industry. The author proposes a very brief Big-Five model with revised SERVQUAL and RESERV models to examine the relationships among service expectation, perceived service quality, and customer satisfaction. From the results, the major findings of this study are as the following: Firstly, service expectation and perceived service quality, relate positively to customer satisfaction. Secondly, service expectation has a positive effect on perceived service quality. Thus, the findings provide managers in the food and beverage industry with valuable insights that firms can increase their competitive advantage through enhancing customers' perceived service quality and satisfaction.

Keywords: service expectation, perceived service quality, and customer satisfaction.

Introduction

Taiwan's service industry now accounts for over 70 % of Taiwan's GDP. In particular, food and beverage industry in Taiwan has reached over 10 % market

share in service industry (Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Taiwan, 2010). The business flourishes vigorously and competes intensely. Therefore, it is important to satisfy the needs of target market and strengthen service management to achieve

better service performance (Analoui, 1995).

One role of management in food and beverage industry is to understand the customer behavior. Satisfied customers give referrals and repeat business. Managers in the food and beverage industry should consider how to improve the perception of the quality of their service in this respect (McDaniel & Louargand, 1994). To carry out food and beverage management functions via understanding factors to the implications has influence for the overall profitability of a firm. What are the factors affecting competition in the food and beverage industry and what is the status of the decision of customers are important for managers.

According to academic literature and interaction with food and beverage industry counterparts, the industry has competitive attributes, but its competition appears to be based more on non-price factors, such as firm reputation or level of service quality. The purpose of this research attempts to understand and satisfy if different personality orientations of customers have different needs in the food and beverage industry, to realize how to play a critical role to obtain customer satisfaction and maintain profitability, then to bring up suggestions to the managers and enhance the service quality in the industry.

The investigations of the research are: (1) to find the relationships among customer expectation, perceived service quality, and customer satisfaction in the market; (2) to understand if service expectation has a positive effect on perceived service quality. However, the research is ultimate to establish managers' professional, offer high level of service quality, then to create rational profit via profes-

sional performance.

Literature Review And Development Of Hypotheses

Service Expectation

Expectation is defined as the anticipation or looking forward to something while experiencing something. From this definition it obvious that every customer while consuming to a restaurant he or she will expect to see, experience, or even do something in that restaurant. Having said that, the customer before consuming to a restaurant he or she will expect the place to provide some of those expectations such as food and beverage, scenery, or culture. Many scholars focus on this area since it has a direct influence on their satisfaction. Expectation influences satisfaction directly. The balance between customer expectations and real experiences influences customers' satisfaction; furthermore, customers' experiences and satisfaction levels are mostly influenced by such factors as physical environment, activities, and psychological experiences (Xie, Qiu, Chen, & Song, 2007). Customer satisfaction is important to successful destination marketing because it influences the choice of destination, the consumption of products and services, and the decision to return (Kozak & Rimmington, 2000).

Parasuraman, Zeithaml, and Berry (1994) defined expectancy as the desire or need of consumers, which was not what service provider could provide but what service provider should provide. They believed that consumers understanding of service quality came from the difference between their expectations and their real experience. Brown and Fazzone (1998) believed the uncertainty of expectancy would affect consumers purchase behav-

ior. When consumers purchase merchandise, they have certain expectations. If the result is similar to their expectation, consumers will be satisfied.

The service quality tradition is concerned with a broader understanding of expectations where respondents are asked what they should expect of an excellent service provider. This is generally operationalized as normative or ideal expectations. The discrepancy between perceptions and expectations is used as to measure service quality. The size of this gap indicates the degree to which a consumer perceives quality service (Oliver, 1996). The discrepancy approach is believed to mimic consumers' cognitive processes and is grounded in prior conceptual work (Pitt & Jeantrout, 1994). The service quality literature typically uses two definitions of expectations, normative and ideal. Respondents are normally surveyed once only in the post-experience phase and are required to recall pre-experience expectations. Since expectations are captured in the post-consumption phase. Oliver (1996) has suggested a number of explanations for this convention. Simple expediency is a primary consideration given the difficulty identifying prospective consumers prior to purchase.

However, theoretical considerations may also be at play. The underlying assumption is that referents used by consumers in post-consumption phase are those that are actually processed cognitively in satisfaction formation are therefore the most relevant.

Perceived Service Quality

Service quality involves around the ideas that it is the result of comparisons which customers make between their ex-

pectations about a service and their perceptions of the way the service has been performed: "Poor quality places a firm at a competitive disadvantage" (Christopher, Jochen, Hean, & Xiongwen, 2005). For example, if customers perceive unsatisfied quality, they may change their business to elsewhere. Service quality is difficult to identify and priorities performance improvements that are required, unless both perceptions and expectation of service are measured.

Parasuraman et al. (1988) mentioned that SERQUAL instrument was specifically designed to measure service quality using both the gap concept, service quality dimensions, and was designed to be organizations in any service sector. In their original research form, SERVQUAL contains 22 item statements in five service quality dimensions. The first one was the tangibles that pertain to the establishment physical facilities, equipment and appearance of personnel. Second, the reliability which refers to the organizations' ability to perform the promised service dependably and accurately. Third, the responsiveness that means the willingness of service providers to help customers and provide prompt service. Fourth, the assurance that relates to the knowledge and courtesy of employees and their ability to inspire trust and confidence. Finally, the empathy, which means the caring and the individualized attention that, a firm provides to its customers. However, there is a number of researchers have criticized the SERVQUAL approach. Peter, Churchill, and Brown (1993) criticized that the indirect different score approach causes poor reliability and problems of variance restriction related with component scores. Brown, Churchill, and Peter (1993) observed that difference score produced theoretically poorer than reliabilities than their compo-

ment scores. Moreover, Teas (1993) argued that the SERVQUAL scale of expectation made several different types of expectation, the subjects were not able to differentiate among type of expectations when they provide evaluations.

The literatures on service quality have raised a number of important conceptual and methodology issues which it attempted to resolve such as the problems of conceptually differentiating consumer satisfaction, or the role of expectation (Theresa & Kay, 2003; Weiermair & Fuchs, 1999). Also, the service quality model has been broadly applied in measuring customer satisfaction in different level of service categories such as hotels, tourism sites, national parks and recreation service (Akama & Kieti, 2003). Since customers are capable of distinguishing whether the service provided are proper or not, they are more confident in deciding taking an active role in the service delivery. Thus, the following hypothesis is proposed:

H1: Service expectation has a positive effect on perceived service quality.

Customer Satisfaction

Customer satisfaction is the key mediator considered in relationship marketing and service quality theory (Hennig-Thurau et al., 2002; Reynolds & Beatty, 1999). In the history of marketing, many definitions of customer satisfaction have been postulated. Customer satisfaction can be defined generally as a positive affective reaction to the favorable appraisal of a consumption experience (Babin & Griffin, 1998). A favorable reaction is primarily associated with benefits that meet or exceed customer expectations (Ofir & Simonson, 2007; Parasuraman, Zeithaml, &

Berry, 1985). In relationship marketing, it has been argued that a customer's appraisal of his or her level of satisfaction can be made across multiple dimensions, including judgments of both the service employees and the service setting itself (Singh, 1991; Westbrook, 1981). For example, in a healthcare setting, satisfaction judgments are driven by assessments of both the medical staff and of the facility (Singh, 1991). Consequently, an owner or manager can closely understand and act upon the different types of customer satisfaction or dissatisfaction (Wong & Sohal, 2002).

Since customers are impressed when they get more than they anticipated. The customers who receive more than they bargained for will likely buy from that company again. Successful service companies offer their customers a distinguishably better service package. The roles that price, performance, and expectations play in determining satisfaction in a discrete service exchange (Voss, Parasuraman, & Grewal, 1998). When price and performance are consistent, expectations have an assimilation effect on performance and satisfaction judgments. Both predictors and consequences of consumer satisfaction and by providing evidence that expectation produce representational effects rather than merely measurement context and response language effects (Teas & Kay, 2003). Their findings provide support for the theory and the strategic implications of the disconfirmed expectations theory. Customers articulate their expectations can backfire and lead to more negative evaluations of the shopping and consumption experience. Pre-purchase expectations lead customers to negative aspects of the shopping experience and perceive the same performance more negatively (Ofir & Simonson, 2005). On this basis it is hypothesized that:

H2: Service expectation has a significant effect on customer satisfaction.

Service quality is an antecedent of customer satisfaction. Both perceived quality and disconfirmation are determinants of satisfaction (Cronin & Taylor, 1992). Service quality and customer satisfaction are widely recognized as key influences in the formation of consumers' purchase intentions in service environments. Consumer satisfaction is best described as moderating the service quality/purchase intention relationship (Taylor & Baker, 1994). Perceived service quality as a result of desired level of performance; disconfirmation of desires as a predictor of both satisfaction and service quality (Spreng & Mackoy, 1996). Perceived service quality is an antecedent of satisfaction, rather than vice versa. Finally, tangibles appeared to be a more important factor in the facility/equipment-based industries, whereas responsiveness is a more important factor in the people-based industries (Haksik, Yongki, & Dongkeun, 2000).

Customer satisfaction should be operationalized along the same factors and the corresponding items on which service quality is operationalized (Sureshchandar, Chandrasekharan, & Anantharaman, 2002). The link between service quality and customer satisfaction are indeed independent but are closely related, implying that an increase in one is likely to lead to an increase in another. Expectations and performance (SERVPERF) scores indicated that respondents were concerned most with the efficiency and least with the personalization of the services offered; promptness, empathy, efficiency and service-scope aesthetics seem to be the main

determinants of customer satisfaction (Johns, Avci, & Karatepe, 2004). Service belongs may explain the nature of the service quality construct and its relationship to customer satisfaction and behavioral intentions. The dominant dimensions of service quality construct in the service factory were found to be: Tangibles, Recovery, Responsiveness, and Knowledge (Festus et al., 2006). On this basis it is hypothesized that:

H3: Customer perceived service quality has a significant effect on customer satisfaction.

Methodology

Quantitative Data Collection

Participants.

This study conducted a convenience survey with a structured questionnaire. The questionnaires were distributed to a sample of 500 customers who received food and beverage services and yielded 416 finished questionnaires. Out of these, 367 were usable.

Measuring Tools.

The measurement instrument was designed based on various previous studies. All the questionnaire items were measured on a five point scale. Respondents were asked to indicate their level of agreement toward each statement, from 1 (strongly disagree) to 5 (strongly agree).

Service Expectation.

Utilized in the development of a generic service quality measurement instrument SERVQUAL (Parasuraman et al., 1991; Parasuraman et al., 1988, 1994), a

revised instrument to measure perceived levels of satisfaction with food and beverage service quality RESERV is developed (Nelson & Nelson, 1995).

Perceived Service Quality.

Utilized in the development of a generic service quality measurement instrument SERVQUAL, a revised instrument to measure perceived levels of satisfaction with food and beverage service quality RESERV is developed.

Customer Satisfaction.

This research utilizes the development of a generic service quality measurement instrument (Parasuraman et al., 1991; Parasuraman et al., 1988, 1994), a revised customer summary evaluation of the quality of service to measure perceived levels of satisfaction with food and beverage service quality.

Purification and Reliability of Measurement Variables

To purify the measurement scales and to identify their dimensionality, principal components reliability test with varimax rotation was applied to condense the collected data into certain factors. After reliability test, we used item-to-total correlation and internal consistency analysis (Cronbach's alpha) to confirm the reliability of each research factor. According to Robinson and Shaver (1973) if α is greater than .7, the variable has high reliability, and if α is smaller than .3, it implies that there is low reliability. The reliability of four latent variables was investigated by calculating Cronbach's alpha. The range of the values was between .81 and .90, which indicated all measures were quite reliable.

Structural Equation Model

In order to find out the relationship in the whole research model in this study, a structure equation model (SEM) was used. The criteria of Chi-square, GFI, AGFI, CFI, RMR, and RSEMA were used to evaluate the overall goodness of fit of the model. According to Hair et al. (2010), the value of overall fit of a hypothesized model can be regarded as appropriately significant when each criteria Chi-square is small (p value $>.05$), and fit indices such as the ratio of Chi-square to degrees of freedom ($\text{Chi-square}/\text{d.f.} \leq 2$); goodness of fit index ($\text{GFI} >.9$), and adjusted goodness of fit index ($\text{AGFI} >.9$); root mean square residual ($\text{RMR} <.1$), and root mean square error of approximation ($\text{RMSEA} <.08$) are all fulfilled. The result of confirmatory factor analysis (CFA) produced evidence of an acceptable fit of the model ($\text{Chi-square} = 405.79$; $\text{df} = 217$; $p = .00$; $\text{Chi-square}/\text{df} = 1.87$; $\text{RMR} = .04$; $\text{GFI} = .90$; $\text{AGFI} = .91$; $\text{RMSEA} = .06$). Parameter estimates of the final model were inspected and no problematic occasions were found.

Results

Quantitative Data Analysis

Returned valid questionnaires are female (54.2%) and male (45.8%), mostly range from 21 to 30 years old (34.1%), next are 31 to 40 years old (28.6%). Next, in the average monthly income, the highest percentage is NTD 40,000 to 50,000 (36.5%), followed by NTD 30,000 to 40,000 (30.7%). As for the occupation, the top one is Armed services, civil servant and educator (30.1%), followed by the business (24.7%), student for 18.7%, and manufacturing for 11.2%. To the education degree, university is most (53.6%), followed by college (26.3%), the high school

is accounted for 15.9%.

Assumption Tests

The hypotheses in this study were tested by using Structural Equation Modeling. The resulting measurement model has Chi-square /df equal to 1.87 and all values in the model reflect acceptable fit of the data. For finalized model, standardized path coefficients and significance are as below: First, we find support for H1. The results of structural equation model analysis support this hypothesis, showing a moderately positive relationship between service expectation and perceived service. ($\beta = 0.216, p < 0.05$; $\beta = 0.127, p < 0.05$). Secondly, we find support for H2. The results of structural equation model analysis show that customer service expectation has positive impact on customer satisfaction. ($\gamma = 0.189, p < 0.05$; $\gamma = 0.160, p < 0.05$). The result supports that customer service expectation has effect on customer satisfaction. Finally, we also find support for H3. The results of SEM analysis reveal that the path between perceived service quality and customer satisfaction constructs is significant positive in two modeling (excluding gap and including gap modeling) ($\gamma = 0.843, p < 0.01$; $\gamma = 0.638, p < 0.01$).

Conclusion And Future Research

The results of this study provide revised SERVQUAL and RESERV measurement scale is appropriate for use in the food and beverage industry. Service quality is main driver of customer satisfaction. This study shows that customer satisfaction is primarily predicted by perceived service. The study results imply that customers perceived service quality will significantly affect their satisfaction. This finding provides meaningful managerial

implications for consumer behavior. As service quality appears to be the most important issue for the satisfaction of food and beverage customers. Service provider should realize how to enhance their service quality to satisfy their customers in order to retain their customer base.

It is important to note that customers are more likely to make recommendation or repurchase if they are satisfied with their quality experience. If they are dissatisfied with their experiences, they are unlikely to return to the same firms for future contact. Service gap between service expectation and perceived service is influenced by perceived service quality. Customers have a high prior service expectation induce a negative impact on perceived service gap. A high service expectation may induce a little high perceived service quality, but cannot induce high satisfaction.

In addition, the difference between service quality and satisfaction is the concept of time. Satisfaction is related to a specific transaction whereas service quality is the attitude thought to develop over time (Nelson & Nelson, 1995). Food and beverage industry is also composed of widely spaced discrete transactions. The findings of this study could provide some meaningful implications for food and beverage industry.

Limitations

This study also has several limitations. The findings of this study could be generalized the types of service industry is unclear. Future research is necessary to examine the generalization of this study to other research in service industry. Future research dealing with food and beverage service quality measurement should ad-

dress one or more of the several remaining issues. This study is considered somewhat preliminary due to the research was conducted using a convenience sampling from customers only live in Taiwan. It may be doubtful if the empirical finding can be inferred in other regions. For future longi-

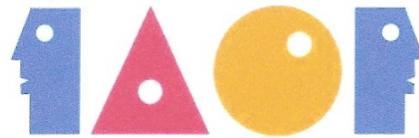
tudinal studies are recommended to explore all the customers live in Taiwan or to compare differences of data among more than two areas, then with systematic statistical method to measure the relationships among research variables.

References

- Akama, J. S., & Kieti, D. M. (2003). Measuring Tourist Satisfaction with Kenya's Wildlife Safari: A Case Study of Tsavo West National Park. *Tourism Management*, 24(1), 73-81.
- Analoui, Farhad. (1995). Workplace sabotage: Its styles, motives and management. *Journal of Management Development*, 14(7), 48-65.
- Babin, B.J. & Griffin, M. (1998). The nature of satisfaction: an updated examination and analysis. *Journal of Business Research*, 41 (2), 127-36.
- Brown, Churchill, G. A., & Peter, J. P. (1993). Improving the Measurement of Service Quality. *Journal of Retailing*, 69, 127-139.
- Brown, & Fazzino, J. (1998). Rapid Non metro Growth Causes Problems in Rural Counties: the Case of Public Transportation. 1998; 28(4): 16-23. *Small Town*, 28(4), 16-23.
- Christopher, L., Jochen, W., Hean, T. K., & Xiongwen, L. (2005). *Service Marketing in Asia*: PEARSON: Prentice Hall.
- Cronin, J. J., Jr., & Taylor, S. A. (1992). Measuring service quality: a reexamination and extension. *Journal of Marketing*, 56(3), 55-68.
- Hair, J.F., W.C. Black, J.B. Babin, R.E. Anderson and R.L. Tatham, (2010). *Multivariate Data Analysis*. 7th Ed., Pearson Education Inc., Upper Saddle River, New Jersey.
- Haksik, L., Yongki, L., & Dongkeun, Y. (2000). The determinants of perceived service quality and its relationship with satisfaction. *The Journal of Services Marketing*, 14(3), 217-231.
- Hennig-Thurau, T. Gwinner, K.P. & Gremler, D.D. (2002). Understanding relationship marketing outcomes: an integration of relational benefits and relationship quality. *Journal of Service Research*, 4 (3), 230-47.
- Kozak, M., & Rimmington, M. (2000). Tourist Satisfaction with Mallorca, Spain, as an off-Season Holiday Destination. *Journal of Travel Research*, 38(3), 260-269.
- McDaniel, J. R., & Louargand, M. A. (1994). Real estate brokerage service quality: an examination. *Journal of Real Estate Research*, 9(3), 339-351.

- Nelson, S. L., & Nelson, T. R. (1995). RESERV: an instrument for measuring real estate brokerage service quality. *Journal of Real Estate Research*, 10(1), 99-113.
- Ofir, C., & Simonson, I. (2005). The effect of stating expectations on customer satisfaction and shopping experience, *Working Papers (Faculty) -- Stanford Graduate School of Business* (pp. 2-43).
- Ofir, C. & Simonson, I. (2007). The effect of stating expectations on customer satisfaction and shopping experience. *Journal of Marketing Research*, 44 (1), 164-174.
- Oliver, R. (1996). *Satisfaction: a Behavioral Perspective on the Consumer*. Boston, MA.: Irwin- Mc Graw-Hill.
- Parasuraman, A., Zeithaml, V., & Berry, L. L. (1985). A conceptual Model of Service Quality: Its Implications for Future Research. *Journal of Marketing*, 49(4), 41-50.
- Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (1991). Refinement and reassessment of the SERVQUAL scale. *Journal of Retailing*, 67(4), 420-450.
- Parasuraman, A., Zeithaml, V., & Berry, L. L. (1988). SERVQUAL: A Multiple-item Scale for Measuring Customer Perceptions of Service Quality. *Journal of Retailing*, 64(1), 12-37.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Further Research. *Journal of Marketing*, 58(1), 111-124.
- Peter, J. P., Churchill, G. A., & Brown, T. J. (1993). Caution in the Use of Difference Scores in Consumer Research. *Journal of Consumer Research*, 19, 655-662.
- Pitt, L., & Jeantrout, B. (1994). Management of Customer Expectations: A Study and a Checklist. *Service Industries Journal*, 14(2), 170-189.
- Reynolds, K.E. & Beatty, S.E. (1999). Customer benefits and company consequences of customer-salesperson relationship in retailing. *Journal of Retailing*, 75 (1), 11-32.
- Singh, J. (1991). Understanding the structure of consumers' satisfaction evaluations of service delivery. *Journal of the Academy of Marketing Science*, 19 (3), 223-44.
- Spreng, R. A., & Mackoy, R. D. (1996). An empirical examination of a model of perceived service quality and satisfaction. *Journal of Retailing*, 72(2), 201-214.
- Sureshchandar, G. S., Chandrasekharan, R., & Anantharaman, R. N. (2002). The relationship between service quality and customer satisfaction -- a factor specific approach. *The Journal of Services Marketing*, 16(4), 363-379.
- Teas, R. K. (1993). Consumer Expectations and the Measurement of Perceived Service Quality. *Journal of Professional Services Marketing*, 8(2), 33-35.

- Teas, R. K., & Kay, M. P. (2003). Disconfirmed expectations theory of consumer satisfaction: an examination of representational and response language effects. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 16, 81.
- Theresa, A. P., & Kay, C. T. (2003). Tourist Satisfaction in Singapore--a Perspective from Indonesian Tourists. *Managing Service Quality*, 13(5), 399.
- Taylor, S. A., & Baker, T. L. (1994). An assessment of the relationship between service quality and customer satisfaction. *Journal of Retailing*, 70(2), 163-175.
- Voss, G. B., Parasuraman, A., & Grewal, D. (1998). The roles of price, performance, and expectations in determining satisfaction in service exchanges. *Journal of Marketing*, 62(4), 46-61.
- Weiermair, K., & Fuchs, M. (1999). Measuring tourist judgment on service quality. *Annals of Tourism Research*, 26(4), 1004-1021.
- Westbrook, R.A. (1981). Sources of satisfaction with retail outlets. *Journal of Retailing*, 57 (3), 68-85.
- Wong, A. & Sohal, A. (2002). An examination of the relationship between trust, commitment and relationship quality. *International Journal of Retail & Distribution Management*, 30(1), 34-50.
- Xie, G., Qiu, P., Chen, Y., & Song, J. (2007). Expectation and Satisfaction of Rural Tourism: a Case Study of Hainan, China. *Ecological Economy*, 3, 405-416.



ASSESSING MEASUREMENT INVARIANCE ACROSS GENDER IN
THE VERSION OF THE PART OF TANGIBLES IN *SERVQUAL* SCALE
FOR RETAIL CHAIN STORES BUSINESS IN TAIWAN

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Abstract

The *SERVQUAL* Scale has been recognized an effective instrument for measuring service quality in current marketing research. However, the measurement invariance issue in *SERVQUAL* has received very few considerations. Literature also revealed there is the significant relationship between gender issue and *SERVQUAL* Scale. The purpose of this quantitative study was to examine the measurement invariance for the part of Tangibles in *SERVQUAL* Scale for retail chain stores business in Taiwan. The population in this research was selected as customers from four retail chain stores in Taiwan, resulting in 200 individual surveys for analysis. The results indicated the Taiwan version of Tangible 5-item scale only achieved partial measurement invariance. The property of structural covariances and measurement residuals across the gender were not equivalent, while the property of factor loading across the gender was equivalent in this scale. Finally, this research generated the recommendations for retail chain stores business in Taiwan and suggested future scholar studies.

Key Words: service quality, *SERVQUAL*, tangibles, measurement invariance, retail chain stores, Taiwan

Introduction and Theoretical Foundation

Current enterprises recognize service quality is the critical factor to maintain the competency for business development. The most famous instrument for measuring service quality – *SERVQUAL* Scales was cre

ated by Parasuraman, Zeithaml, and Berry (1988). The *SERVQUAL* questionnaire proposed five dimensions to measure the service quality, such as tangible, responsiveness, reliability, empathy, and assurance. Although this scale has applied extensively to conduct studies for service quality in different industries or countries, very few stud-

ies have examined the issues of the measurement invariance for SERVQUAL Scale.

In addition, many researchers (Baird 1976, Blustain 2000, Canary and Hause 1993) have provided clear insight for gender difference in many aspects on psychology and attitude, such as social skills, communications, work approaches and so on. Following the issues of woman buying power is getting stronger, the issues of gender differences in consumer behavior also have become important topic for academy researcher and corporate administrations. Meyers-Levy and Maheswarm (1991), and Mitchell and Walsh (2004) claimed gender difference will lead to different buyer behavior. Mitchell and Walsh (2004) also claimed gender differences resulted in different decision making process. These theories and studies provided the view that there is the significant relationship between gender issue and SERVQUAL Scale. Therefore, this study extended previous research and applied SEM approach to assess the measurement invariance across gender for the part of Tangibles in SERVQUAL Scale in retail chain stores business of Taiwan.

Research Purposes and Hypotheses

Based on the theory concept, the purposes and the significance for this study were: (a) to examine the measurement invariance for the part of Tangibles in SERVQUAL Scale in retail chain stores business of Taiwan, (b) to generate the recommendations for managerial application of retail chain stores business, and (c) to identify areas for future scholarly inquiry. Byrne (2010) suggested the tests for multigroup invariance are: (a) factor loadings, (b) factor covariances, and (c) structural regression paths. Following this concept, the researcher proposed three hypotheses as follows.

Hypothesis 1: Assuming model measurement weights to be variant for gender groups.

Hypothesis 2: Assuming model structural covariances to be variant for gender groups.

Hypothesis 3: Assuming model measurement residuals to be variant for gender groups.

Methodology

The five items of Tangibles in this research were little modified from the SERVQUAL Scales (Parasuraman et al, 1988). Following Five Likert Scale: strongly disagree, disagree, neutral, agree, strongly agree, the five items were: (a). Store's facility is modern., b). Store's environment is clear and brilliant., c). Employee's apparels are good., d). Display of goods on shelves is well-organized., and e). Store style (music, decoration or atmosphere) is good. Previous studies by Hu (2011, 2012, and 2013) have demonstrated the validity and reliability for this scale are reasonable and acceptable. The customers from four retail chain stores in the Kaohsiung city of south Taiwan attended this research. The pretest was conducted with Item Analysis in 50 samples. The researcher applied the method of random sampling. Each store randomly invited volunteer customers who shopping in stores to participate the questionnaire survey. The total number of valid responses was 200 (not including 15 invalid response), providing an adjusted response rate of 93%.

Analysis of Results

The Structure Equating Modeling (SEM) by Analysis of Moment Structure (AMOS) software was applied to test the

model structure and hypotheses in this study. The factor analysis for five Tangibles items was showed as Figure 1. The results of multi-sample analysis for the unconstrained and the three constrained models were listed as Table 1. The unconstrained model showed an acceptable baseline model for

both males and females. The multi-sample analysis also showed the indexes of model fit for three constrained models - measure weights, structural covariances (See Table 2.) and measurement residuals, across gender, and these indexes indicated the three constrained models were accepted.

Chi-square=66.880 degree of freedom=20
 normed chi-dquare=3.344
 GFI=.895 AGFI=.843 CFI=.876
 RMSEA=.109

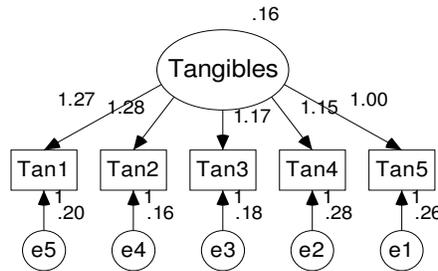


Figure 1. Factor Analysis for Tangibles Items

Table 1. Model Fit Indexes for Unconstrained and Constrained Model

Model	χ^2	χ^2 / DF	RMSEA
Unconstrained	40.22	2.01	.100
Measurement weights	48.99	2.45	.115
Structural co-variances	44.00	2.20	.105

Model	χ^2	$\chi^2 / D F$	R M S E A
Measurement residuals	2	1	.109
	6	7	
	2		
	6	3	
	6		
	.	3	
	8	4	
	8	4	

Table 2. Nested Model Comparisons

Model	χ^2
Measurement weights	1
	.
	6
	7
	6
Structural covariances	1
	2
	.
	3
	6
Measurement residuals	3
	1
	2
	.
	6
	1
	9

The test results for nested model comparisons were showed in Table Two. They χ^2 difference test ($\chi^2(4)=1.675$, $p>.05$) between baseline model and constrained model for measurement weights was not significant, indicating the factor loadings across gender in this scale were equivalent.

However, the χ^2 difference test between baseline model and constrained model for structural covariances ($\chi^2(1)=12.363$, $p<..05$) and measurement residuals ($\chi^2(5)=12.619$, $p<..05$) were significant, indicating the structural covariances and measurement residuals across gender in this

scale were not equivalent. The findings supported H2 and H3, while not support H1.

Conclusions and Suggestions

The results indicated this Taiwan version of Tangible 5-item scales of SERVQUAL Questionnaire only achieved partial measurement invariance. The property of the structural covariances and measurement residuals across the gender were not equivalent, while the property of measurement weights across the gender was equivalent in this scale. The results consisted with the views of Meyers-Levy and Maheswaram (1991), and Mitchell and Walsh (2004) suggested gender differences will lead to dissimilar buyer actions. Although this model

was only partial invariance, Milfont and Fischer (2010) claimed full measurement invariance is questionable to hold in reality. Vandenberg and Lance (2000) also suggested partial invariance can be assessed when some but not all of the parameters are invariant across groups. However, if researcher keep strict manner in measurement invariance, researcher may still apply this questionnaire, but should examine this scale separately by gender, specially studying retail chain stores business in Taiwan. Or, researcher may apply other types of service quality questionnaires when conducting service quality studies in Taiwan retailing business.

References

- Baird, J. E., Jr. (1976). Sex differences in group communication: A review of relevant research, *Quarterly Journal of Speech*, 62, 179-192.
- Blustain, S. (2000). The new gender wars, *Psychology Today*, 33, 1-5.
- Byrne, B. M. (2010). *Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming*, 2 ed, Routledge, Taylor & Francis Group, NJ. 197-200.
- Canary, J. D., & Hause, S. K. (1993). Is there any reason to research sex differences in communication? *Communication Quarterly*, 41(2), 129-144.
- Hu, Y. J. (2013). Using structural equation modeling to evaluate a consumer behavior model: the case of retail chain stores in Taiwan, *International Journal of Organizational Innovation*, 6(1), 121-127.
- Hu, Y. J. (2012). The moderating effect of brand equity and the mediating effect of marketing mix strategy on the relationship between service quality and customer loyalty: The case of retail chain stores in Taiwan, *International Journal of Organizational Innovation*, 5(1), 155-162.
- Hu, Y. J. (2011). How Brand Equity, Marketing Mix Strategy and Service Quality Affect Customer Loyalty: The Case of Retail Chain Stores in Taiwan, *International Journal of Organizational Innovation*, 4(1), 59-73.
- Meyers-Levy, J., & Maheswaran, D. (1991). "Exploring Differences in Males' and Females' Processing Strategies, *Journal of Consumer Research*, 18(1), 63-70.

Milfont, T. L., & Fischer, R. (2010). Testing measurement invariance across groups: Applications in cross-cultural research, *International Journal of Psychological*, 3(1), 110-121.

Mitchell, V. W., & Walsh, G. (2004). Gender differences in German consumer decision making styles, *Journal of Consumer Behavior*, 3(4), 331-346.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Communication and control processes in the delivery of service process, *Journal of Marketing*, 52(1), 36-58.

A STUDY OF THE LEISURE MOTIVATION AND SATISFACTION
IN THE 2013 TAIWAN KAOHSIUNG CHENGCING
LAKE BALLOON FESTIVAL

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Abstract

The purpose of this study is to explore the motivation and satisfaction of participants of the Taiwan Balloon Festival in Kaohsiung Chengcing Lake. Descriptive statistical analysis, ANOVA analysis, and Pearson correlation analysis were applied after valid questionnaires had been collected among three hundred and fifty questionnaires distributed. The research results are as follows: Firstly, the differences in the background variables of the participants' gender, age, education level, occupation, and monthly income showed partially significant differences in the dimensions of the participants' motivation and leisure satisfaction. Secondly, participants accompanying with children attending the festival showed stronger motivation, higher satisfaction and continued in participation longer than the participants without accompanying children. Thirdly, the higher motivations the participants had the stronger satisfaction they owned. This is especially manifested in the significant correlation between leisure motivation and satisfaction. Fourthly, the most popular leisure activi-

ties of Taiwan balloon festival include taking photos from air while flying with balloons, taking photos with colorful balloons, themed balloon exhibition, and wishing to have marriage ceremony in balloon situation. Based on the above results, the following conclusion and concrete recommendations are as follows: Firstly, with more multiple education-recreational programs and diversified interesting activities to be involved with, the participants would have higher leisure motivation and satisfaction. Second, this study focused on the participants in Kaohsiung city only; the other areas within Taiwan should be considered as well to see the difference among different culture and background. Therefore, the further study can be carried into the participants of other areas (e.g., Taitung and Hualien city in Taiwan). Third, the researcher recommends that a continuous follow-up study in the future can be carried by combining quantitative and qualitative research methods to explore advanced issues or do comparative study.

Key Words: Leisure Motivation, Recreation Experience, Satisfaction, Balloon Festival

Introduction

According to World Travel and Tourism Council 2013 Annual Statistical Report on Tourism, the average number of trips per person during the year 2012 was 5.12, an increase of 0.66 trips from the 4.46 average of 2011 and 2012 respectively (Kotler & Keller, 2011; World Tourism Organization, 2012). The leisure activities in this context include a lot of diverse items like surfing, diving, fishing, competitions, sea angling, marine life viewing, camping among others. Many countries including Asia, Europe, America, Australia, and Africa pay more and more emphasis on modern people's leisure activities management, not only to relax people's pressure, to comfort people's psychological disease, but also to combine education and entertainment. The definition of leisure is time spent in freedom from work, home or study and other daily routines, including dynamic and

static activities, and the application could be put into scholar, entrepreneur, medical, and art area...etc. (Klin, 2013). For short travelling, it is popular because it combines sightseeing and leisure. For example, Disneyland in America, Hong Kong, and Japan gain so much positive feedback, the amusement park in Taiwan also offer so much entertainment and leisure activities for people, and the hot spring area, farm also become hot sightseeing sites for people feel comfort and joyful after visiting those places. From 2011 till now, Taiwan balloon festival was most held in Taitung area and gained so much popularity from many countries' support and participation. From the leisure perspective, Taiwan people gain more and more focus both locally and globally from the famed festival. In 2013/06/01 - 2013/09/01, many countries participated in Taiwan's balloon festival, from 2013/07/06 -2013/08/04, this activity is held in Kaohsiung

Chengchin Lake. The study collected the 350 on-site valid questionnaire data from the following five Saturday, including 07/06, 07/13, 07/20, 07/27, 08/03. Because on Saturday, the activity is combined with lake landscape, sound, image and night shows. Recreational leisure is a psychological experience. Therefore, recreational leisure activities involve an individual traveler's subjective perception of an actual or imagined activity in which he or she participates at a given time. In order to serve effectively recreational leisure participants at their destinations, it is essential for the study to deal in recreation at the destinations to understand the psychological forces and factors that motivate and satisfy individual participants.

With the government strategies in focusing on leisure art and sport to offer participants wonderful leisure experience, this study is invoked by the need for complete customer satisfaction at the tourist activity and facility of the 2013 Taiwan Kaohsiung Chengcing Lake Balloon Festival. This is mainly due to the stiff competition experienced from other facilities and from the popularity of balloon activities during these years. As thus, there is a general agreement that to favorably compete in this very dynamic activities, it is imperative that decisive action is taken to make drastic improvement. To completely effect this, there was need to have these improvements in the services in the complete perspective of the visitors to best accommodate their needs. The purpose of this study is to determine the motivation and satisfaction of participants of the Taiwan Balloon Festival in Kaohsiung

Chengcing Lake. It is significant in the inherent service delivery value it contains. Even more outstandingly is the fact it is an incredible basis for proper policy formulation and customer satisfaction. The research questions are elaborated as follows.

1. To determine the current situation and difference of various different backgrounds participants' leisure motivation and satisfaction.
2. To compare the level of leisure motivation and satisfaction between participants with children and the participants without accompanying children.
3. To explore the relationship among leisure motivation, leisure satisfaction and recreation experience.
4. To establish the most popular leisure activities of Taiwan balloon festival.

The purpose of the study aims to reach the following items.

1. To analyze the situation between different background participants' verifiable pattern to motivation and satisfaction.
2. To explore participants' leisure motivation, recreation experience and satisfaction involvement of balloon festival activities.
3. To investigate what leisure activities are most preferred by participants. To offer results for related institute for developing appropriate leisure activities.

Definition of Terms

Exclusively for the compilation of and in the context of this research, the following terms were used as follows:

Motivation - refers to the activity incite individual to go for a goal guided activity, and it is also could be internal impetus to promote individual do actions, and its limits based on the context in which the inquiry is carried out and the subjects who will be involved.

Recreation Experience - The whole leisure experience and experiment includes anticipate phase, travel to the site, on-site activities, return travel, and recollection phase

Satisfaction - Visitor satisfaction refers to the extent to which the services offered by a tourist destination meet the expectations of a visitor with regards to the service quality and value, experience and destination environment and outcomes of the visit (Beaver, 2012).

Leisure - In order to reach joyfulness and body healthy, individual choose to active participate some activities and the time spent in freedom from work, home or study and other daily routines.

Review of Related Literature

Motivation

First of all, Freud (1856-1949) claimed that personality could be divided into five stages, and in accordance with individual needs, individual needs different physical energy, happiness and reality principle to explore actions. Maslow (1908-1970) suggested that human being's actions are all

from "needs and the internal needs for learning is learning motivation, and the following needs include physical, safety, love and belongings, respect and self-fulfillment. In accordance many scholars, different background factors influence participants' attending motivation. Generally, the older the people are, the higher attending motivation people have. Deci & Ryan (1991) pointed three motivation stereotypes, including intrinsic motivation, extrinsic motivation, amotivation. Intrinsic motivation means even without outside praise, individual still feel love to do, satisfy and enjoy, and the motivation provokes individual to have internal actions. Extrinsic motivation means the actions are all influenced by outside world praise and pleasure. Amotivation means after the appearance of competition ability, having no god reason to provoke individual into continuously attending motivation. For leisure motivation, in order to reach joyfulness and body healthy, individual choose to active participate some activities and the time spent in freedom from work, home or study and other daily routines. With the combination of leisure and motivation, scholars suggested that from objective perspective, participants define activities, environment, and time for leisure; and from subjective perspective, participants define experiment, satisfaction, experience, and meaning for leisure. (Shu & Wu, 2007; Mannell & Kleiber, 1997).

Satisfaction

With customer satisfaction being a global aspect of business success, little ground has been covered in the drive to achieve a uni-

versal definition for the concept. Despite the difference in the opinions about the definition of customer satisfaction, several elements have been identified as common among the numerous definitions presented so far. That is, customer satisfaction being an emotional or a cognitive response or both and its being a response to a specific focus such as expectations; product; consumption experience (Castro, Armario & Ruiz, 2007; Chen & Chen, 2010). Moreover, customer satisfaction as a response is achieved at a specific time after a client chooses or consumes a product (Bosque & Martin, 2008; Chen & Tsai, 2007; Chi & Qu, 2008). Thus, a sound definition of customer satisfaction should encompass varying intensity of responses, aspects of products, time-specific determination and duration. The other distinctions that should be made in definitions of customer satisfaction are approaches to customer satisfaction such as the cognitive and affective aspects of satisfaction and the nature of transactions such as cumulative or transaction-specific. Furthermore, customer satisfaction could also be transaction-based, in this regard, a customer's cumulative judgment guides the definition adopted. In many cases, customers evaluate the performance of products immediately it is bought and used. This information could be really useful for suppliers of products, for marketing and improvement purposes (Castro, Armario & Ruiz, 2007; Dann, 1996; Cole & Illum, 2006).

Leisure and Recreation Experience

Experience existed in people's heart, and it is the summary of individual emotional,

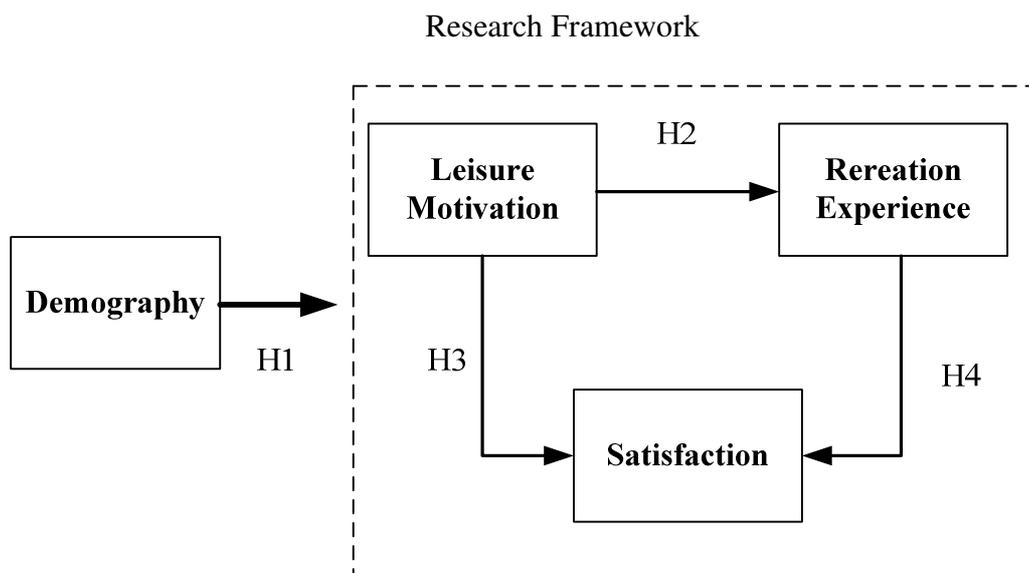
knowledge, physical participation. Schmitt (1999) suggested that experience happens when individual receive some feedback for any particular item, and the experience is provoked and is deemed as psychological mind of state of participants. Carbone (2004) suggested that experience means the impression when people faces products, service and business, and it is the combination of human beings' feelings, emotions, and knowledge. Many scholars agreed Driver & Tocher (1970)'s recreation experience include the following items. (1) Recreation is from participants. (2) Recreation Experience is from the real activity participants experience personally. (3) Recreation activity belongs to self feedback from which participants gain joyfulness. (4) Participants choose the activity from their free consciousness. In accordance with Ownes (2000), the high technology advances human beings' consumption and service is toward the satisfaction for participants; hence, the recreation experience gains more and more emphasis in new technology age.

Generally, we have had a thorough investigation into some literature that we feel is most pivotal our study in terms of the approach to various issues of interest as well as their development of certain issues of interest. We have had insight on various leisure motivation theories such as the Maslow theory and others (Feud, 1930) and leisure motivation measurements (Beard & Ragheb, 1983). We have also looked into literature concerning recreational experience (Lock, 1996). We also reviewed the sociology of leisure (Stefan, 2011). These perspectives were especially

crucial and gave us exponential perspectives when drafting questionnaires.

From the review, it is not that there is a massive wealth of information on this particular topic. We also discovered that there has been a fundamental shift towards this kind of research in recent times. However, it has come to our realization that most of the research in this area is basically expert analysis and the recommendations thereby are do not account for the perspectives of the tourists. We also realized that most of the recommendations had not been ade-

quately implemented and the most obvious reason was the unfeasibility of some of those recommendations. The most promising aspect in our review was the fact more locals are noticeably getting increasingly interested in local tourist attractions. From the review, it is logically conclusive that there is a lot of perspective on the topic but most of the approaches do not impact properly due to lack of input from the target customers in the balloon festival activity. Our study in relation to the current state of affairs and the wealth of research knowledge is in the fact that



we intend to contribute by considering the gap in approach and implementation.

Instruments

For the measurement of leisure motivation, Beard & Ragheb (1983) designed leisure motivation measurement to measure leisure motivation, including intellectual motivation (with the attending lei-

sure activity to gain intellectuality), social motivation (with the attending leisure activity to improve interpersonal relationship), competence-mastery motivation (with the attending leisure activity to improve, cope with problem solution ability), stimulus avoidance motivation (human nature impetus) were adopted for the study. For the recreation experience, the study adopted Beard & Ragheb (1980)

measurement into psychological, educational, social, relaxational, physiological, and aesthetic.

Method of Data Analysis

350 participants were used in the study with different responses to the various questions reported. To qualify as a respondent in the study, an adult more than 18 years old is qualified to be a participant. The data collection method which this research used is questionnaire. Quantitative data will be analyzed by using Statistical Package for Social Science (SPSS) software. Descriptive Statistics, item analysis, reliability analysis, independent samples Table test, and one way ANOVA analysis were adopted. The questionnaire reliability analysis shows that Cronbach's α value is above 0.8; therefore the pretest results indicate to keep all questions in the research. And questionnaires item analysis is significant ($p < 0.05$) as well.

Factor Analysis

Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) significantly points out if it is appropriate for the research dimension, variables and questions in the survey to conduct factor analysis or not. The value near 1 means a higher relational situation. Hence, it is appropriate for factor analysis. Bartlett ball test method shows the χ^2 distribution. The higher the correlation coefficient between the variables, the greater will be the χ^2 value. Furthermore, it also stands for the situation of the common

factors between the correlation matrix in the population and appropriateness of using factor analysis. The research distinguished the standards of factor analysis based on the results of KMO and Bartlett ball test method. The data below shows the outcome of the both tests. Factor analysis does not distinguish between dependent variables and independent variables; it places all the factors together and seeks to establish their interrelationships. In this research, for the "destination image" and "satisfaction" factors, the results of KMO and Bartlett's check are shown in the following Tables. The destination image and the service quality questionnaire in the study are rather suit for factor analysis.

The results of the Bartlett ball test method in the questionnaire from visitors to destination image is 3256.298 and to service quality is 3284.937, indicating a strong correlation between variables and their suitability for factor analysis.

One Way ANOVA Analysis

From the collected data regarding destination, parents aged in the 36-40 bracket have the highest grades in recreation experience factor. Considering leisure motivation and satisfaction part, age group 31-35 reported the highest satisfaction. Perhaps this situation is due to enthusiasm and energy to play with their children and have conduct experiment with their children in the balloon activity. In addition, the other age groups have no significant

Table 1. Questionnaire Reliability Analysis

Item	Motivation	Experience	Satisfaction
Questionnaire numbers	15	15	5
Related Value Range	0.243-0.587	0.428-0.687	0.398-0.713
Cronbach's α value	0.827	0.889	0.854
Pre-test Results	Keep All	Keep All	Keep All

Source: Self-designed

Table 2. Demographic Profile of Respondents

Variable	Item	Frequency	Percentage	Accumulated
Gender	Male	192	54	54
	Female	58	46	100
Age	18-25	3	1	1
	26-30	101	28	29
	31-35	172	49	78
	36-40	78	21	99
	41-45	4	1	100
Education	Senior School & Lower	8	2	2
	High & Voc. School	102	28	99
	College & Higher	4	1	100
Personal Monthly Income N.T. Dollars	Less Than 20,000	38	10	10
	20,001-30,000	128	35	45
	30,001-40,000	102	28	73
	40,001-50,000	32	9	82
	50,001-60,000	26	8	90
	> 60,000	32	10	100
Occupation	Manufacturing	9	2	2
	Information	19	5	7
	Service	88	25	32
	Department	28	7	39
	Insurance	25	7	46
	Business	79	22	68
	Free	49	14	82
	Police/Public/Education	58	17	99
	Others	3	1	100

Residence Place	North	120	34	34
	Middle	83	25	59
	South	130	35	94
	East	15	4	98
	Others	10	2	100

Table 3. The standard of the KMO numbers

0-0.5	0.5-0.59	0.6-0.69	0.7-0.79	0.8-1.0
Very un-suit	Unsuit	Common	Moderate	Suit

Source: Kaiser, 1974

Table 4. The KMO and Bartlett Check of Leisure Motivation

KMO	KMO	0.915
Bartlett	Near Chi-Square Dis-tribution	3256.298
	Freedom	209
	Significance	0.000

Table 5. The KMO and Bartlett Check of Recreation Experience

KMO	KMO	0.902
Bartlett	Near Chi-Square Dis-tribution	3284.937
	Freedom	209
	Significance	0.000

difference in service quality, satisfaction and loyalty, as Table 6. and Table 7.

Age

Different age visitors has different explanation on motivation, recreation

experience and satisfaction. We can see that in the age 36-40, their recreation experience has the highest average. After Scheffe check, in recreation experience factor, 36-40 age level is significantly higher than 31-35 level age visitors. And in leisure motivation and satisfaction factor, 31-35 level age

is significantly higher than 26-30 and 36-40 level age visitors. And visitors of different age have significant difference in recreation experience, as Table 7. shows.

The independent t-test of Gender on “Leisure Motivation”, “Recreation Experience”, and “Satisfaction”

are illustrated in the following. Gender has significant difference on the “Social” and “Stimulus” of Leisure Motivation; “Psychological,” “Psychological,” and “Aesthetic” of Recreation Experience; “Overall Satisfaction” of Satisfaction; for the above items, female has

Table 6. One Way ANOVA of Age on Leisure Motivation and Satisfaction

Item	Intellect	Social	Competence	Stimulus	Satisfaction
25 Younger(1)	3.99	4.36	3.96	4.21	4.09
26-30(2)	3.87	3.92	3.78	4.07	4.03
31-35(3)	3.99	4.11	4.08	4.09	4.26
36-40(4)	3.79	4.08	3.80	4.51	4.04
41 older(5)	3.74	4.01	3.72	4.08	4.05
F value	2.503	4.683	2.612	4.985	2.621
P value	0.354	0.003**	0.421	0.002**	0.532
Scheffe	n.s.	1 > 2,3	n.s.	4 > 2,3	n.s.

*p<0.05 ** p<0.01 *** p<0.001 n.s no significance

Table 7. One Way ANOVA of Age on Recreation Experience

Item	Psycho	Education	Socio	Relax	Physiology	Aesthetic
25 Younger(1)	3.38	3.49	4.00	3.39	3.88	3.99
26-30(2)	3.41	3.46	3.98	3.24	3.72	4.08
31-35(3)	3.35	3.51	3.97	3.21	3.70	4.07
36-40(4)	3.99	3.89	4.02	3.89	3.96	4.16
41	3.39	3.52	3.98	3.21	3.64	4.02

old- er(5)						
F value	4.394	5.184	4.645	5.103	4.181	5.483
P value	0.002 **	0.000 ***	0.002 **	0.000 ***	0.002**	0.000 ***
Schef fe	4>2, 3	4>2	4>2, 3	4>2, 3	4>2,3	4>1

*p<0.05 ** p<0.01 *** p<0.001 n.s no significance

Table 8. t-test of Gender on Leisure Motivation, Recreation Experience and Motivation

Factor	Item	Average male	Aver- age Fe- male	t	P(sig)
Leisure Motiva- tion	Intellectual	3.7 7	3.79	- 2.27 1	0.029
	Social	3.4 9	3.97	- 2.01 3	0.011*
	Compe- tence	3.7 4	3.76	- 1.79 3	0.074
	Stimulus	3.6 9	4.21	- 2.25 3	0.000* **
Recrea- tion Ex- perience	Psychologi- cal	3.4 0	4.35	- 2.68 4	0.000* **
	Education	3.4 8	3.49	- 0.69 2	0.524
	Socio	4.0 1	4.00	- 0.93 4	0.463
	Relax	3.5 6	3.58	- 2.19 3	0.071
	Physiologi- cal	3.4 2	3.95	- 2.54 3	0.000* **
	Aesthetic	3.5 9	4.16	- 2.54 3	0.000* **
Satisfac- tion	Expectation	4.0	4.01	-	0.031
	Product	0	3.99	1.58	0.052
	Perform overall	3.9 9	4.56	7 -	0.000* **
		4.0 7		1.58 3 - 2.65 8	

higher recognition ability than males. While other items have no significant difference between male and female.

Results

Basing on the analyses of the data, the following results can be drawn. The participants with demographic backgrounds of higher educational background, higher financial income and younger to middle ages frequent the program than participants of any other demographics.

Participants attending the festival accompanied with children showed stronger motivation, higher satisfaction and continued in participation longer than the participants without accompanying children.

The higher motivations the participants had the stronger satisfaction they experienced. This is especially manifested in the significant correlation between leisure motivation and satisfaction. The correlation between leisure motivation and recreation experience is positively significant; the correlation between recreation experience and satisfaction is also positively significant.

The most popular leisure activities of Taiwan balloon festival were aerial photo shots from hot air balloons, taking photos with colorful bal-

loons, themed balloon exhibition, and having marriage ceremony in balloon situation

Limitations of the Study

The scope to which the research was carried out was from personal examination and engagement of certain visitors by use of questionnaires to review of some very important literature relevant to the topic. The study had limitations in terms of the number of people we were able to administer the questionnaire to since only 350 were selected for the undertaking. The other limitation was an element of non-corporation among the target population as only 350 questionnaires were valid and useful for the study.

Recommendations

1. Introduction of better quality and more appealing recreational equipment, especially hot air balloons and cameras and diversified interesting activities to be incorporated to see to it that the participants have higher leisure motivation to enjoy what they like most.
2. There should be a concerted effort to raise and sustain the motivational incentives since they form the core to satisfactory stays at the festival.

3. There should be an aggressive drive to introduce and incentives promote children programs to increase the number of children involved in the program and by extension, ensure stronger motivation, higher satisfaction and continued participation for longer by those who bring them along.

4. There should be measures taken to ensure that the festival is portrayed as an inclusive event where no specific group dominates by downplaying any depictions of dominance but also tactfully ensuring the strong attendance demographics are retained.

Suggestions for further research

Based on the above results, the following conclusion and concrete recommendations are as follows: Firstly,

Reference

Beard, J. G., & Ragheb, M. G. (1983). Measuring Leisure Motivation, *Journal of Leisure Research*, 15(3), 219-228

Beard, J. G., & Ragheb, M. G. (1980). Measuring Leisure Satisfaction, *Journal of Leisure Research*, 12(1), 20-33.

Carbone, L. P. (2004). *Clued in How to keep customers coming back again and again*. Upper Saddle

with more multiple education-recreational programs and diversified interesting activities to be involved with, the participants would have higher leisure motivation and satisfaction. Second, this study focused on the participants in Kaohsiung city only; the other areas within Taiwan should be considered as well to see the difference among different culture and background. Therefore, the further study can be carried into the participants of other areas (e.g., Taitung and Hualien city in Taiwan). Third, the researcher recommends that a continuous follow-up study in the future can be carried by combining quantitative and qualitative research methods to explore advanced issues or do comparative study.

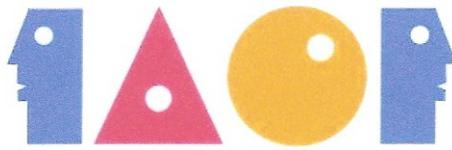
River, NJ: Finance Times Prentice Hall.

Castro, C. B. Armario, E. M., & Ruiz, D. M. (2007). The influence of market heterogeneity on the relationship between a destination's image and tourists' future behavior. *Tourism Management*, 28, 175-187.

Chen, C. C., & Chen, F. S. (2010). Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists.

- Tourism Management, 31, 29-35.
- Cole, S. T., & Illum, S. F. (2006). Examining the mediating role of festival visitors' satisfaction in the relationship between service quality and behavioral intentions. *Journal of Vacation Marketing*, 12, 160-173.
- Curtis, M., (2011). *Why Games Work and the Science of Learning*. Retrieved; 19 April 2014
- Torbidoni F., (March, 2011). *Managing of Recreational Experience Opportunities: The Case of Hikers in Protected Areas in Catalonia, Spain*. Retrieved; 19 April 2014.
- Dann, G. (1996). Tourist images of a destination: An alternative analysis, In D. R. Fesebnauerm H, T, O'Leary & M. Uysal (Eds.), *Recent advances in tourism marketing research* (pp41-55). New York: The Haworth Press.
- Driver, B. L., & Tocher, R. C. (1970). *Toward a Behavioral Interpretation of Recreation Engagements, with implications for planning*. *Elements of Outdoor Recreation Planning*. (pp. 9-31). The University of Michigan Press.
- Duwan, J. L. (2008). *Leisure Activity-Experiment Perspective*. Wa-du Publishers, Taipei.
- Hribernik, J., & Mussap, A., (2010). *Research Note; Leisure Satisfaction and Subjective Well Being*. *Annals of Leisure Research*, 13(4), 701-708
- Kleiber A. (1999). *Leisure Experience and Human Development; A Dialectical Interpretation*. NJ: Basic Books
- Kline, B. (2013). *Free Time; the Forgotten American Dream*. Philadelphia: Temple University Press
- Manfredo J., Driver L., & Michael, A. (1996). *Journal on Leisure Research; A Meta-Analysis of the Recreational Experience Preference Scales*. *JSTOR* 28(3), Lindholst c., Burton M. and Dempsey N., (February 2013). *Urban Design and Planning*. *Proceedings of the ICE* 166(5)
- Mihali, C., & Isabella, S. (1992). *The Optimal Experience; The Psychological Studies of Flow un Consciousness*. London: Cambridge University Press

- Moneta, B. (2012). *Measurement and Conceptualization of Flow*. New York: Springer.
- Morgan M., Lugosi P., & Ritchie, B. (2010). *The Tourism and Leisure Experience; Consumer and Managerial Perspective*. San Francisco: Channel View Publications
- Owens, D. D. (2000). Whence Consumer Loyalty? *Journal of Marketing*, 63(2), 33-44.
- Rossmo, J., & Schlatter, E. (2008). *Recreation Programming; Designing Leisure Experiences*. n.a.: Sagamore Publishing LLC.
- Schmitt, B. H. (1999). Experimental Marketing, *Journal of Marketing Management*, 15, 53-67.
- Stefan, P. (2011). *Leisure Time and Technology*. Mainz: Institute of European History. Last accessed 19 April 2014.
- Torkildsen, G. (2005). *Leisure and Recreation management*. New York: Routledge
- Weber, D., & Anderson, D. (2010). *Contact with Nature: Recreation Experiences in Australian Parks*. Taylor Francis Online 13(2)



EXPECTED DIVIDEND AND EARNINGS MANAGEMENT:
EVIDENCE FROM TAIWAN

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Abstract

The earnings of a firm are not only relevant to its survival, but also affect managers' performance and stakeholder's decision. The accrual basis of accounting provides managers the discretion of financial statements. Since the funding of dividends often comes from and is often limited to earnings or equity increased, the accounting earnings are one of the important factors that determine the level of dividend payouts. In other words, when accounting earnings are lower than expected dividend levels, managers will have the incentive for an upward earnings management to prevent decreases in dividends. Daniel, et al. (2008) found that managers treat the expected dividend as an important earnings threshold. This paper followed Daniel, et al. (2008), and adopted the 6145 companies that listed in Taiwan Stock Exchange and OTC market, from 2005 to 2010, to examine the association between dividend threshold and earn-

ings management. The empirical results support our hypothesis that the dividend threshold is an important incentive for managers to engage in earnings management. This is worth the attention of stakeholders and researchers.

Keywords: Earnings Management, Accruals, Discretionary Accruals, Dividend Policy

Introduction

The earnings of a firm are not only relevant to its survival, but also affect manager's performance and stakeholder's decision. However, the business accounting law stipulates that a company should adopt the accrual basis of accounting, to provide managers the discretion of financial statements, and the behavior of earnings management. The past literature indicated that the incentives for managerial earnings management include are to maximize bonus plan, smooth income, prevent decreases in earnings and Deficit, or correspond to analysts' expectation, etc.

In addition, the largest source of the firm's funding of dividend payouts often come from and is limited to the earnings or the equity increased. Therefore, the earnings reported in financial statements are an essential factor that decides the level of dividends. Managers will avoid a lower accounting earning compared to the expected dividend level, which may be the earnings of

previous year or analyst forecast in the current year. Managers may have the incentive for engaging in an upward earnings management, to prevent decreases in payment of dividends. This study followed Daniel, et al. (2008) to examine the association between expected dividends and

earnings management. In Taiwan, as far as we know, few studies are concerned for the relationship between expected dividends (dividend threshold) and earnings management. Thus, this study can supplement such void and act as a basis for conducting international comparison.

Review of Literature

In order to correspond to the general accounting principle, and based on the principle of matching cost with revenue, the accounting information should be reported on accrual basis. However, the accrual basis accounting leaves lots of options and discretions, so these provide company managers to engage in earnings management due to various incentives and motivations.

In the academic area of financial management, there are distinct opinions toward whether firms should disburse cash dividends or not. One supports the “Dividend Irrelevance Hypothesis” of Miller and Modigliani (1963), which indicates that in perfect capital market, if the dividend policy does not affect the company's capital budget and the owners' expected rate of return, then the disbursement of dividend is irrelevant to the value of the company.

However, the past empirical research documented that after most companies announced changes in dividend, there's significant change in their stock prices, and managers seem to be willing to make every effort to avoid reducing dividends, such as DeAngelo and DeAngelo (2006).

The debt obligations often stipulate the largest source of funding that companies can disburse must come from the earnings or equity increase of the company. Therefore, the earnings of the accounting report become one of the factors that decide the level of dividends. In the other word, when the accounting earnings are lower than the expected dividend level, the manager will have the incentive to improve the reported earnings in order to prevent the decrease in disbursement of div-

idends. Daniel, et al. (2008) found that managers treat expected dividends as an important earnings threshold.

Even though there are some domestic studies indicating the relationship between earnings threshold and earnings management of companies (e.g. Yang and Wu 2003; Chang and Huang 2005; Tsai and Yang 2006; Lin, et al. 2009), but they didn't focus on the expected dividend (dividend threshold), and investigate its relationship with earnings management. This study can make up the shortage and provide an international comparison of such issues.

Research Design

This study used Taiwan Economic Journal Database, and collected all listed and OTC companies in Taiwan Stock Exchange Corporation (TWSE) during 2005 to 2010 as the research object. We adopted the panel data analysis, after eliminating financial related industries, state-operated enterprises and objects with incomplete empirical data, there's only 7,906 companies remained. Since this regression model contained many variables that need to use the data from previous year, the number of companies in 2005 has been reduced from the

samples. Additionally, some variables have missing values (undeclared or without data), so the actual empirical samples only remained approximately 6,145 and 4,170 for our different regression models (regression (2) and (3)).

Three procedures are used to view the relation between dividend threshold and earnings management.

(1) This study follows the empirical model of Daniel, et al. (2008), and firstly adopts the cross-sectional regression model of Jones (1991), as shown below:

$$TA_i = a_1 + a_2 \Delta S_i + a_3 PROP_i + a_4 EQU_i + e_i \quad (1)$$

In the above equation, the variable is set as:

i: firm i

TA: total accrual = reported earnings before extra-ordinary income – operating cash flow

ΔS : Increase in annual net sales

PROP: Total property

EQU: Total plant and equipment

In addition, the discretionary accruals (DA), that is the residuals e_i of the cross-sectional regression model from Jones (1991) shown above, equals $TA - NDA$ (Non-discretionary accruals, that is the pre-

dictive value of the cross-sectional regression model from Jones (1991) shown above).

(2) We used the descriptive statistics value of each variable to observe whether a significant difference in DA between the companies that pay dividend and the companies that don't pay dividend and the companies with Deficit and the companies without Deficit.

(3) We used the multiple regression models to see the relationship between expected dividend (dividend threshold) and the managerial earnings management after controlling other factors. The empirical regression formula and the variable setting used in this study are as shown below:

$$DA_{it} = \beta_0 + \beta_1 DEF_{Pit-1} + \beta_2 DEF_{NPit-1} + \beta_3 PAYER + \beta_4 RE_{it-1} + \beta_5 CC_{it-1} + \beta_6 SIZE_{it-1} + \beta_7 LEV_{it-1} + \beta_8 MBit-1 + \sum_{j=1}^{19} \theta_j Ind_{jt} + \beta_9 YR + e_{it} \quad (2)$$

Add previous earnings threshold (EARN) and analyst forecast threshold (FORC) to control the variables in regression.

$$DA_{it} = \beta_0 + \beta_1 DEF_{Pit-1} + \beta_2 DEF_{NPit-1}$$

$$\begin{aligned}
& +\beta_3\text{PAYER}+\beta_4\text{RE}_{it-1}+\beta_5\text{CC}_{it-1} \\
& +\beta_6\text{SIZE}_{it-1} \\
& +\beta_7\text{LEV}_{it-1}+\beta_8\text{MBit}_{it-1}+\beta_9\text{EARN}_{it-1} \\
& +\beta_{10}\text{FORC}_{it-1} \\
& +\sum_{j=1}^{19} \theta_j \text{Ind}_{it} +\beta_{11}\text{YR}_{it} + e_{it} \quad (3)
\end{aligned}$$

In the equations (2)~(3), each variable setting is:

CC: The salary and bonus of managers
 SIZE: Company size = Log (the total book assets)
 LEV: Gearing ratio = total liabilities / total book assets
 MB: Book-to-market ratio = (year-end total book assets – year-end total shareholders' equity + year-end stock price × outstanding shares) / year-end total book assets
 IND: In the category of industry, we merged the industries with fewer firms into the industries with similar characteristics and obtained 20 categories.
 YR: Yearly dummy variable. If the fiscal year is 2010=1, otherwise it will be 0.
 DEFP: The Deficit of company that pays dividend;
 DEFNP: The Deficit of company that does not pay dividend. For DEFP and DEFNP, Deficit = Max (0, earnings shortfall). In the formula above, earnings shortfall = expected dividends (EXPD) – pre-

managed earnings (PERM). Among which, EXPD (expected dividend) = actual dividend paid in prior year; PREM (pre-managed earnings) = Operating cash flow + NDA – preferred stock dividends.

PAYER: Dummy variable. If the amount of paid dividend in prior year is larger than zero, then PAYER=1, otherwise it will be zero.

RE: Retained earnings.

EARN: Annual earnings reported earnings before extra-ordinary income – preferred stock dividend.

FORC: Analyst forecast earnings per share at the end of each year (if there's more than one predictive value, then substitute with an average value) × number of shares outstanding.

The regression equations (2) to (3) are used to verify the H1 hypothesis: When accounting earnings are lower than expected dividend level, managers may engage in an upward earnings management, in order to avoid a reduction in payment of dividends.

Results

The focus of this study is to examine the relationship between expected dividends and earnings management. Unlisted Table showed that in companies that paid dividend, there's about 33.75% positive Deficit, and the expected divi-

dend (EXPD) is greater than the real earnings (PREM), and this result is slightly higher than the one of previous research (such as Daniel, et al. 2008). The average Deficit is about 6.36 hundred million NT. The average of paid dividend among all dividend-paying companies is about 8.39 hundred million NT. Besides, among dividend-paying companies without any Deficit, only 26.7% of them have positive discretionary accruals (DA). In contrast, the percentage of dividend-paying companies with Deficit is as high as 79.3% that have positive DA.

As we arranged companies from having the least to the greatest Deficit, and divided them into six groups, except the first group of zero-Deficit (2,678 companies), the other five groups each contained approximately 273 companies. The data of Table 2 showed that in the zero-Deficit group, the average DA is negative; the average DA of each positive Deficit group is positive, and increases as Deficit increases. In the second group with the least Deficit, there're about 57.5% companies with DA that are greater than their Deficit. Yet in the fourth, fifth and sixth group, the average of DA is smaller than the average of the Deficit, which represents that the Deficit of many companies can't be eliminated by DA. Meanwhile, the per-

centage that DA is greater than its Deficit decreases as well.

We used the regression model to control other variable to observe the relationship between Deficit and DA. In Table 2, regression equation (2) observed the impact of the payment of cash dividends (PAYER) and the Deficit upon DA. Our Deficit variable depends on whether there is cash dividends or not, and is divided into the two of variables (DEFP and DEFNP). If a dividend-paying company has positive Deficit of earnings (PREM), it means the premanaged-earnings do not meet the expected dividend level (EXPD). Table 2 shows that the regression coefficient of the Deficit of companies that pay dividend (DEFP) is significant at the 1% level of significance. This means that the expected dividend level is an important earnings threshold, which is consistent with the result of Daniel, et al. (2008). Whereas, the regression coefficient upon the Deficit of a company that does not pay dividend (DEFNP) is negatively significant at the 1% level of significance. The results means that a company which is closer to zero earnings threshold will be more likely to engage in earnings management (DA positive); if farther from zero earnings threshold, companies will consider the cost of earnings management, and thus the

DA values are lesser. This is consistent with Kerstein and Rai (2007). The regression coefficient upon PAYER variable is also significant at the 5% level of significance, which means a dividend-paying company's DA value significantly larger than the payment of cash dividends of companies. In addition, a coefficient of retained earnings (RE) is significantly negative, in line with theoretical anticipations, which means that retained earnings is the legitimate source of cash dividends, so the higher retained earnings leads to the fewer needs of earnings management.

Last, we added the annual earnings of the previous year (EARN) and analysts forecast earnings (FORC) of the same year into the regression equation (2) to obtain the regression equation (3). We expected to control the effect that managers engaged in earnings management to achieve the earnings thresholds (Burgstahler and Dichev 1997) of the previous year earnings as well as analysts forecast threshold (Degeorge et al. 1999). Table 2 showed that even with the addition of these two variables, the regression coefficient upon the Deficit of a

dividend-paying company (DEFP) are still positively significant, while that of the Deficit of a company that does not pay dividend (DEFNP) then become not significant at the 1% significance level. Accordingly, the empirical result of regression equation (2) to regression equation (3) supports the hypothesis of this study.

Summary and Conclusions

The empirical result of this study supports our hypothesis: when the accounting earnings are lower than the expected dividend level, managers might engage in an upward earnings management to avoid decrease in the dividend payout. That is, expected dividend level is an important earnings threshold. Even under the condition of controlling other factors, the difference of premanaged - earnings and expected dividend level can explain most cross-sectional variations of discretionary accruals (DA). In other words, the dividend threshold is another important incentive for managers to engage in earnings management.

References

- Burgstahler, D. and Dichev, I. (1997). Earnings Management to Avoid Earnings Decreases and Losses, *Journal of Accounting & Economics*, 24(1), 99-126.
- Chang, W. and Huang H. (2005). Investment Sales, Income-Smoothing and Market Reward, *Journal of Contemporary Accounting*, 6(2), 153-186.
- Daniel, N.D., Denis, D.J. and Naveen, L. (2008). Do Firms Manage Earnings to Meet Dividend Thresholds, *Journal of Accounting & Economics*, 45(1), 2-26.
- DeGeorge, F., Patel, J. and Zeckhauser, R. (1999). Earnings Management to Exceed Thresholds, *Journal of Business*, 72(1), 1-33.
- DeAngelo, H. and DeAngelo, L. (2006). The Irrelevance of the MM Dividend Irrelevance Theorem, *Journal of Financial Economics*, 79, 293-315.
- Jones, J. J. (1991). Earnings management during import relief investigations, *Journal of Accounting Research*, 29(2), 193-228.
- Kerstein, J. and Rai, A. (2007). Intra-year Shifts in the Earnings Distribution and Their Implications for Earnings Management, *Journal of Accounting & Economics*, 44(3), 399-419.
- Tsai, L., and Yang Y. (2006). Corporate Governance and Earnings Management to Meet Performance Thresholds, *Soochow Journal of Economics and Business*, 53, 33-72.
- Miller, M. H., and Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares, the *Journal of Business*, 34(4), 411-433.
- Lin Y., Chiu P., and Ho, W. (2009). Earnings Thresholds Effect and Earnings Management, [*Journal of Accounting and Finance Development*](#), 2(2). 1-16.
- Tsai, L., and Yang Y. (2006). Corporate Governance and Earnings Management to Meet Performance Thresholds, *Soochow Journal of Economics and Business*, 53, 33-72.
- Yang, C. and Wu, S. (2003). Pay-Performance Sensitivity, Performance Threshold and Discretionary Accounting Choices--An Empirical Study, *International Journal of Accounting Studies*, 36, 55-87.

Table 1. The Discretionary Accruals of Dividend-Paying Companies with Deficit and without Deficit

	Number of Company	Deficit(Average, Hundred million NT)	DA(Average, Hundred million NT)	DA> Deficit number (%)
1 st Group Deficit=0	2678	0	-7.79	
Deficit>0 (Total)	1364	6.37	4.77	699 (51.24%)
2 nd Group	273	0.19	0.39	157(57.51%)
3 rd Group	273	0.68	1.30	149(54.58%)
4 th Group	273	1.53	1.44	117(42.86%)
5 th Group	273	3.55	3.11	137(50.18%)
6 th Group	272	25.91	17.67	139(51.10%)

This table shows the relationship between discretionary accruals and Deficits of the sample companies, which are classified into six groups according to their Deficits.

Table 2. The Affecting Factors of Discretionary Accruals:
Regression Equation (2) and Regression Equation (3)

Name of Variable	Regression Coefficient	T value	V IF	Name of Variable	Regression Coefficient ²	T value	V IF
DEFP _{it-1}	1.449***	20.05	1.07	DEFP _{it-1}	1.158***	16.06	1.100
DEFNP _{it-1}	-0.548***	-4.85	1.11	DEFNP _{it-1}	-0.162	-0.86	1.128
PAYER	207.113**	2.09	1.23	PAYER	167.77	1.08	1.155
RE _{it-1}	-0.140***	-13.98	1.28	RE _{it-1}	0.074***	2.76	5.915
CC _{it}	-17.031	-0.51	1.22	CC _{it}	1.860	0.05	1.163
SIZE _{it-1}	-1311.820***	-13.68	1.69	SIZE _{it-1} ***	-		1.764
LEV _{it-1}	-587.770**	-2.20	1.19	LEV _{it-1}	-414.745	-1.05	1.216
MB _{it-1}	-2.6835	-0.12	1.03	MB _{it-1}	19.483	0.51	1.020
Number of Sample	6143			EARN _{it-1}	-0.135***	-3.18	6.072
R ²	0.156			FORC _{it-1}	-0.177***	-3.04	1.122
Adjusted R2	0.152			Number of Sample	4170		
F value	140.40***			R ²	0.1233		
Name of Variable	Regression Coefficient	T value	VIF	Adjusted R2	0.117		
DEFP _{it-1}	1.449***	20.05	1.07	F value	19.40***		

This table shows the empirical results of regression equation (2) and regression equation (3). The regression coefficient is at 1% level of significance. Regression coefficient1 is the result of regression equation (2); Regression coefficient2 is the result of regression equation (3).

*** : α (Significant Level)<1% ; ** : α <5% ; * : α <10%

