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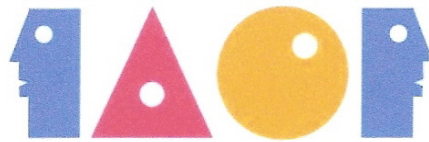
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ELIMINATING BRIBERY FROM GOVERNMENT SYSTEMS: A STUDY OF A TAXATION AGENCY

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Abstract

This paper investigates the underlying issues surrounding bribery within the systems of government organizations. Bribery harms societies and derails economic development. This study analyzes the organizational systems using the Deming's and Jaques' methods to identify systematic causes of bribery. Jaques classifies managerial organizations as *Managerial Accountability Hierarchies.* His method examines organizations, and identifies inefficiencies and holes in the organizational systems. The authors use Jaques' method to identify systematic causes of bribery. The authors also apply Deming's theory to analyze organizational systems to find other and additional systematic causes of bribery. This study was conducted in 2014 and 2015.

Key Words: Systemic Causes of Bribery, Organizational Systems, Organizational Analysis, Organizational Structures, Management, W. Edwards Deming, Elliott Jaques, Case Study, Leadership

Introduction

Organizations are real entities, which function according to their own laws. These laws concomitantly influence the organization's effecti-
veness and overall quality of life of employees at work (Harald Solaas and Associates, 2015). According to Jaques' general theory of managerial hierarchy (Jaques, 1989, 2002), the emphasis is placed on responding to how people

behave in order to improve organizations, which is in fact a traditional view, and is far from achieving the transformation most organizations envisage. Jaques argues that it is necessary to change systems in the requisite ways and individual behavior will inherently change.

In this study, it is theorized that bribery, which is attributed to a function or dysfunction of the system, is "the offering, promising or giving of something in order to influence a public official in the execution of his/her official duties" (OECD, 2015).

Bribery and corruption continue to be principal obstacles to the economic development of most developing countries. Within one region in South America, to which this study relates, the same is true. Loss due to bribery is estimated to be over US$500,000 annually, which is significant for a small country which population is less than one million persons. On January 27, 2000, the Government formed The Tax Authority within its corporate republic. This establishment saw the merger of two departments - the Revenue Department and Customs Department; where each were managed by independent governors. These departments have since been renamed the Administration Department and the Tax Department respectively. Although both are still managed by the independent commissioners, they are now ultimately under the umbrella leadership of a Commissioner - General, to whom they are required to report. The Commissioner General's duty is to the Governing Board, who is accountable to the Minister of Finance; thus, expanding the hierarchical nature of this organization, which is critical to this study.

The organization comprises of approximately twelve hundred employees and is the main revenue collecting agency in the country. Its mission incorporates promoting compliance with the various tax, trade, and border laws and regulations through educating, providing quality service, and ensuring responsible enforcement program, contributing to the overall economic wellbeing of citizens. (Tax Authority, 2005-2013).

To date the country's GDP continues to be affected through loss of revenue from incidences of bribery. This is corroborated in sentiments shared by the Commissioner General who insists that "there is a strong correlation of corruption in the Agency with incidence of aiding and abetting by the Private sector which is responsible for a significant loss in revenues" (Tax Authority, 2005-2013). Top management, in their attempt to quell the pervasiveness of this activity, have extended a significant amount of resources in providing Integrity Training and Workshops, with the hope of improving employee's morale, trying to minimize the occurrences of bribery. However, this goal has not been achieved. This study aims to find out why.

Methodology

Systems Theories

This study analyzes the Tax Authority organizational system using Deming's and Jaques' methods to identify systematic causes of bribery. Jaques classifies organizations into two categories: Associations and Managerial Accountability Hierarchies (MAHs). The latter according to Jaques are "systems for getting work done by

means of specialization of functions by vertical organizations" (Jaques, 1996).

He emphasizes that for organizations to achieve optimum effectiveness with its hierarchical structure, it must meet customers' needs in producing quality goods and services, coupled with excellent conditions under which people work. The latter is accomplished where humans' full capabilities are utilized in an environment where the bonds of mutual trust are strengthened. To Jaques, the epitome of the requisite theory as an effect on the system of the organization is trust inducement. He appeals to organizations to assess whether the organizational system would induce and enhance the employee's ability to trust one another as well as the organization. Within such an environment employees will enjoy regular feedback from management on their personal effectiveness and areas for improvement. There will also be a fair system of distribution of pay differentials, employees will receive all requisite training, career development will be encouraged and recognized and individuals will be assigned work based on their level of potential capability.

Jaques further expounds on the concept of values within the organization and recognizes that it is imperative for top management to execute good managerial leadership, and corporate values. These values "are not necessary for the business but also sufficiently acceptable as to set limits within which everyone can be expected to behave, i.e., the corporate values will not merely be stated but will be enacted" (Jaques, 1996). Jaques also stressed that the personal values of individuals should not be dictated by the organization.

However, once the organization's values are analogous with broader social values, organizations can require of its employees to respond or behave appropriately within the confines of those values. The goal is to have a common set of workable values that will encourage altruism and not thwart it. In so doing, everyone can work synergistically towards achieving the organization's goals.

Systemic Causes of Behavior

Jaques' general theory of managerial hierarchy may be able to explain the reasons why bribery occurs in the government systems and may provide reasonable solutions to this issue. According to Jaques, "the achievement of requisite organization is thus not only an executive accountability but a moral leadership duty" (Jaques, 1996). To understand this further, he broke it down into five categories:

1) First, there is an array of concepts and principles connected with the human nature of people at work that have to be taken into account, e.g. principles of fair recognition and differential compensation.

2) There are required functions.

3) There is the organizational structuring of the aligned functions – the network of positions (roles) at various levels for assigning accountabilities including tasks, and the matching authorities.

4) There is the universal structure of equitable differential compensation related directly to differentials in level of work.

5) There is a wide range of managerial leadership practices including managerial team working, context setting and planning and personal effectiveness appraisal, coaching and merit review.

Deming, similarly, offers insights and solutions to organizations (Deming, 1986). With his approach to management, he offers a unique leadership theory to assist organizations in managing complex. He also asserts how critical it is to view the organizations, families and ourselves - all social systems, with new eyes, which he sums up as leadership. He succinctly addresses the issue of transformation, advocating that it can only be achieved by man and not hardware.

Deming's 14 Points are the basis for accomplishing this transformation of industries in the 21st century. He admits that given the 14th point is to "take action to accomplish the transformation," top tier management will struggle regarding the 13 points which will inevitably lead them to accomplishing the transformation they so desire. He also presents diseases and obstacles which prevent transformation.

Deming found that one of the fundamental mistakes most organizations make is to fail to create a constancy of purpose. In so doing, they fail think long term and emphasize on the "now," to the detriment of the organization's ability to remain competitive in the future; hence creating jobs for their employees. Ivanov (2015), in extension of this theory examined stratums of work in hierarchical organizations. In his study "*why organizations fail*" (2011) he found that "in compressed organization, most people function in lower-strata roles. They focus on short-term solutions, without creating strategic plans for a longer future. The short-term solutions may be adequate for smaller organizations, but not for larger organizations" (Ivanov, 2011), such as the taxation agency which is being studied.

Another disease which Deming identifies, and is also critical to this study is the emphasis on short term profits. There is a linkage between this disease and the lack of constancy of purpose. To the extent that organizations are willing to refract from the production of quality products and competently applying employees' full capabilities in a secure environment in order to reflect excellent figures on paper, is indicative of the fact that they are not interested in continuing in business for the foreseeable future. To emphasize short-term profits means cutting down on everything: research and development, training, salaries and may also be guilty of creative accounting (Ivanov, 2015). Inevitably, a crisis will pursue. Apart from poor quality, organization faces a challenge to manage a demotivated and demoralized workforce.

Deming, like Jaques, also advocates that fear should be driven out of MAHs. Ivanov (2012, 2014, 2015) calls this paradigm *feararchy*. This is one of the most detrimental hindrances to transformation of organizations today. "A common denominator of fear in any form, anywhere, is loss from impaired performance and padded figures" (Deming, 1986). An individual can never excel on the job if he/she feels insecure.

Study

To ascertain whether the Tax Authority is functioning effectively applying Jaques' theory, and to ascertain which of Deming's "diseases and obstacles" stand in the way of transforming the organization, surveys were conducted to obtain relevant data. Employees at various organizational layers were surveyed. The survey included top management, middle management, and lower level staff, and was conducted during 2014 and 2015.

The respondents were required to reply to six fundamental questions. The survey attempted to uncover responses to very specific questions, which we consider important to this study. The questions structured in the surveys were carefully designed, taking into account the goal of the study, and the decisions which may ensue as a result of data gathered from the surveys. As alluded to earlier, employees were required to complete these surveys in a paper format, since we believe this to be a more private survey method. Hence, employees may be more likely to respond in an open and honest way. As subjective as this may appear, since the subject matter of the study is so sensitive, it is also assumed that the paper surveys would be less intimidating than a face to face interview, giving the respondents the opportunity and privacy to be open and honest in their response. All surveys have been kept confidential.

Respondents were asked to indicate what in their opinion were contributing factors to people accepting bribes, and why anyone in the organization would engage in bribery. While the two questions appear to be similar, the intention was to uncover and compare reasons for the incidences of bribery within the organization.

Jaques in his study of requisite organization states that "the MAH is an organizational system in which to employ people and to deploy their talents to get work done – and in which they are remunerated for their personal effectiveness as shown in their effectiveness under the prevailing circumstances to produce outputs" (Jaques, 1996). We believe the absence of such characteristics in any organization would result in employees seeking after their own self-interests instead of the organization. What he is referring to here is the size of roles and time span of each role, which determine the appropriate fair pay for a given role. In our attempt to garner data enabled us to determine whether employees are appropriately matched with their roles and were appropriately remunerated; we asked questions pertaining to the type of tasks required in a role and the longest tasks. Also, the respondents were asked to indicate if they were the boss, how long would they give the employee to complete his/her task. This question created a level of confusion among participants who were unable to ascertain the nexus between these specific questions and that of bribery. To evoke further discussion and to capture data otherwise not directly requested in the surveys, respondents were invited to include any additional comments.

Thirteen respondents, primarily middle management and lower level staff were the ones who completed the surveys. No surveys were completed by top management. The data gathered were analyzed based on the theories of Jaques and Deming and were inputted in spreadsheet format for reference.

It is envisaged that this analysis may help to determine why employees accepts bribes and what conclusions could be formulated from this analysis.

Discussion of Key Findings

Bribery is perceived as a function of the system, which is a subsystem of a social system, rooted in ethics, politics, and the economy as a whole. Its impact results in the departure from the organizations "original purpose, processes, structure, governance and context of systems created with the intention to be pure and correct and to enable development" (Coetzee, 2015).

The Tax Authority can be identified as a Managerial Accountability Hierarchy (Jaques, 1996). Work and accountability within this organization is generally disseminated down successive levels, from the Commissioner-General to entry level staff. At each level, staff are required to complete specific tasks within a given time frame. The study revealed that within the tax audit division, audit cases take a long time to complete and extend beyond one year. Changing requirements for audits, external influences, political and from top management, or the lack thereof to make informed decisions are key factors which lead to delays in audit cases. In addition, employees believe that top management is not interested in their career advancement and training. Employees are frustrated when those "*felt needs*" are not on top management's priority list.

Several departments are interlinked, as the output of one department is contingent on the successful completion of another. However, the study found that these departments fail to effectively collaborate with each other, or if they do, information is either distorted or fundamental information withheld. This threatens the organization's ability to achieve its full potential in terms of maximizing output.

The challenges the organization faces today to encourage collaboration is not a new phenomenon. "The term collaboration has a shady past. In World War II, it meant helping the enemy; a collaborator was a traitor. But now the term has reverted to its Latin root *co-labore*, working together, and, according to a recent IBM global survey of five hundred CEOs collaboration has become the major challenge of the knowledge workplace" (Maccoby, 2007).

There is a ray of hope. However, it requires an effort by leaders who possess the requisite "skill and courage to lead a difficult cultural shift that threatens bureaucratic values of security, loyalty and seniority" (Heckscher, 2007). Heckscher summarizes the values that support collaboration to include an authority, which facilitates contributions from others rather than the formal hierarchical position, dialogue, which embraces openness and the ability to challenge superiors and peers without fear, and also freedom with which information can be shared.

42% of surveyed participants indicated that there is no way for employees to address their concerns or disagreements. In fact, employees have inherently took several "trips to Abilene" (Harvey, 1988). Ivanov (2015) states "the Abilene Paradox, the inability to manage agreement, may be the major source of organization dysfunction" (Harvey, 1988). Employees out of fear

for being alienated, discriminated, or retaliation from superiors fail to adequately express their agreement or disagreement regarding how the organization functions. Oftentimes, employees agree in private about a particular situation and steps that should be taken to correct the problem, but publically expresses contradictory opinions about what they believe to be true. This is the epitome of the paradox. Leaving Abilene is not so easy. Hence, employees find other ways to cope with this paradox while satisfying personal gratifications in the form of bribery, to meet their basic and other needs.

Employees in the Managerial Accountability Hierarchies spend 40 hours and more on the job. Jaques found that because of this, it is of great importance that there is trust at every level. At the core of his requisite theory is "trust inducement as an effect of organizational systems." He believes that people do not have to like each other in order to work effectively. However, it is necessary for them to trust each other to produce the desired output.

Employees within the organization for which this study was undertaken, find themselves functioning within a very dynamic environment, not necessarily for all the right reasons. This organization has for the past six years or more gone through major "continuous" restructuring, which seem to be far from over. Employees are left in the dark regarding what is likely to happen to them, and where they will be when they show up to work.

Organizational changes and shifts are perceived to be made at top management's whim and fancy with little considerations for people who work at lower levels. Fear and lack of trust within this environment is ubiquitous.

Jaques argues that trust between humans is the social glue. On the other hand, "suspicion and mistrust are the prime enemies of reasonable human relationships" (Jaques, 1996). He further advocates that the organizational arrangements, structures, and processes must be tested against a single criterion: "do the managerial accountability hierarchy induce and enhance people's ability to trust each other and the organization? Or do they arouse suspicion and mistrust?" (Jaques, 1996).

One of our findings in analyzing why employees accept bribes is low pay. Jaques concludes that if people are able to maximize their full potential at a given work level, receive fair remuneration coupled with effective leadership, people would be committed to the job and enjoy it. Any organization which fails to satisfy these conditions negatively impacts the way people work. He also evaluated people's value system; a critical concept that would also determine how committed employees would function in a specific role. Jaques argues that it is imperative for organizations to find a balance between an employee's ability, the level of work assigned, time span of the role for each task assigned and pay.

Deming's diseases and obstacles also apply to level one and level two work (Ivanov, 2015). All work at these levels is defective (Ivanov, 2015). The diseases discovered by the study are indicative of why the organization faces the present crisis.

While the organization, because of its nature has to exist in business of the future, its ability to do so effectively is highly questionable. A lack of constancy of purpose is seen as constant changes being made within this organization. Employees are insecure of tomorrow. There is no job security. Emphasis is on work "*now*" to the benefit of top managers and external parties. This, combined with lack of leadership, unequivocally, give room for employees to perpetuate their own agenda to the detriment of the organization.

Another crippling disease found by the study is the emphasis on short term profits. Various units are given specific targets to achieve, weekly and monthly. Almost 100% of the surveyed participants indicated that while there is a strict requirement to accomplish the targets; employees do not have the necessary resources.

Poor leadership is another major obstacle. The linkage of these factors results in compromise of audits conducted in order to represent certain visible figures to management. Deming, like Jaques, and Ivanov, also advocates for fair pair, abolition of fear and demolition of barriers between staff areas; crippling diseases the study found are manifested in this organization.

Conclusions

Based on the study conducted, we found a strong deviation from what occurs in practice as against the theories examined. However, the surveys were not completed by top management, which is another indication of systemic trouble in this organization.

The conclusions obtained from the study are the following:

1) Systems drive behavior. As Jaques postulated, once organizations are changed, the requisite way (required by nature of things), the individual behaviors will inevitably change. Failure by the organization to align its extant structure and systems with human nature has resulted in a malady of mutual suspicion and defensiveness much to the detriment of the organization as a whole.

2) There is an urgent need for fear to be driven out. Fear incapacitates the employee from putting his/her best effort forward if he/she feels insecure (Deming, 1986).

3) There is an urgent and dire need to create trust in the organization. The benefits of this and the former point stand to benefit the organization in significant ways. One would observe a connection between the organization's diseases and obstacles identified in the study. The general theory of managerial hierarchy postulates that in reality, once the organization is structured in a way where work coincides with employees' roles, and employees are awarded fair pay, it would be sufficient to motivate employees to work well. Mutual trust and satisfaction may also be guaranteed within such an environment. It is very clear from the study conducted, that the employees perceive management to have very little interest in employees' need for achievement, moreover equity. The study shows a level of fear and suspicion which lead employees to protect their personal interests at the

expense of the organization. The resulting factor is bribery, which not only stifles the organization's ability to conduct business in a smooth and harmless way, but its impact on the economy is pernicious.

4) Lack of constancy of purpose is to the detriment of the organization's ability to continue in business for the foreseeable future. Since the taxation agency is the main revenue collecting agency within the country, its ability to continue in business "effectively" rests on senior management, the governing board and ultimately the government's ability to function long term. It behooves them to be deliberate in their efforts by providing a secure feeling for everyone – that is, their jobs are guaranteed. Deming explained this best "One requirement for innovation is faith that there will be a future. Innovation, the foundation of the future cannot thrive unless the top management have declared unshakable commitment to quality and productivity. Until this policy can be enthroned as an institution, middle management and everyone else in the company will be skeptical about the effectiveness of their best efforts" (Deming, 1986). To the extent that the above is not achieved, employees will continually seek to satisfy their needs ahead of the organization, which is what they do.

5) The challenges for taxation agencies to collaborate rests on the ability of top management to incorporate as part of the vision of the organization, the willingness, competence and courage to transform the organization into a collaborative community (Maccoby, 2007).

6) Leadership needs to be instituted at every level. I propose to conduct further research into this subject, specifically to garner data from top management. It is envisaged that at the end of a comprehensive study, top management would be presented with the results of our findings for review.

Application for Corporations

The world today is a global melting pot. As such, malpractices in developing countries can have far reaching consequences for other global jurisdictions. Since several U.S. Companies are parent companies to subsidiaries located within the region, the results of this study may provide important insights with regards how U.S. companies may conduct better businesses with entities located there.

Contained in the Foreign Corrupt Practices Act is an anti-bribery provisions, which prohibits U.S. persons from paying foreign officials to obtain or retain business. Hence this study may prove useful not only for the minimization of bribery which would result in higher revenues for the organization which was studied, but could also provide valuable information for multinational companies operating within the region. Furthermore, it may offer insights on how to eliminate bribery from government systems around the world.

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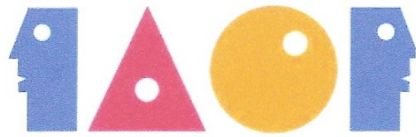
LOW MORALE IN ORGANIZATIONS:
A SYMPTOM OF DEADLY MANAGEMENT DISEASES?

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Abstract

This article shows how low morale is a symptom of larger issues in an organization. The article identifies and explains W. Edwards Deming's five *Deadly Diseases* and discusses how each of these diseases causes the symptom of low morale. The article concludes by suggesting several recommendations leadership within an organization could make in order to prevent the organization from being afflicted with deadly diseases, and therefore, eliminating low morale from the organization altogether.

Key Words: Low Morale, W. Edwards Deming, Deadly Diseases, Organizational Systems, Organizational Theory, Leadership, Organizational Theory Review

Introduction

Throughout one's life, a minimum 40 hours per week, 52 weeks per year, for 30+ years will be spent in an organization. Considering how much time this is, the hope is that it would be a positive experience, but often times it is not. The reason for this is most organizations across the globe suffer from low employee morale. The term employee or organization morale refers to "the emotion, attitude, satisfaction, and overall outlook of employees during their time in a workplace environment" (WebFinance, Inc.). One may assume that low morale is a major issue within an organization, but in actuality, it is merely a symptom of much larger issues or diseases within an organization (Ivanov, 2011, 2013, 2015). The purpose of this paper is to discuss these diseases that affect organizations and offer possible solutions organizations could employ to relieve the symptom of low morale.

Deming's Deadly Diseases

In analyzing how to eliminate low morale within organizations, it is best to look at what causes it. In his book *Out of the Crisis*, renowned business scholar W. Edwards Deming identifies *Deadly Diseases* within organizations that are the root of the issue of low morale. Demining's Deadly Diseases are as follows (Deming, 1986, 1992):

1) Lack of constancy of purpose to plan product and service that will have a market and keep ·the company in business, and provide jobs

2) Emphasis on short-term profits

3) Evaluation of performance, merit rating, or annual review

4) Mobility of management; job hopping

5) Management by use only of visible figures, with little or no consideration of figures that are unknown or unknowable

Lack of Constancy of Purpose

Often management within an organization acts like fire fighters because the organization is only dealing with problems after they have already become ablaze. The reason for this is the organization has put in place poor processes and lacks of constancy of purpose. According to Deming, "it is better [for an organization] to protect investments by working continually toward improvement of processes and of products and services that will bring the customer back again" (Deming, 1986, p98). It is imperative that every organization plans for the future in order to ensure the organization remains relevant in the future. This is why management needs to place an emphasis of importance on the continuous process improvement, and innovation (Ivanov, 2015).

It is a truth universally acknowledged that most people do not like change. The idea of having to continuously alter processes in order to allow for improvement may seem like it would create low morale within an

organization. Especially if the changes seem arbitrary and are never properly explained to the employees. The employees are likely to become disengaged due to frustration, which in turn lowers morale. However, if management were to clearly demonstrate constancy of purpose with good planning, and clearly communicated the long-term strategies to employees, morale within the organization would have a positive increase. When organization's strategy and management approach are clearly defined and communicated to all employees, the employees are much more likely to not only embrace the change, but actually enjoy and willingly participate in transformation.

Emphasis on Short-Term Profits

Most people would say the single most important goal of any organization is to increase profits. As true as this may appear, it is important for organizations to have balance and not solely place focus on earning profits in the short - term, but to also have long-term objectives. Deming defines the deadly disease of emphasis on short-term profits as "short-term thinking (just the opposite from constancy of purpose to stay in business), fed by fear of unfriendly takeover, and by push from bankers and owners for dividends" (Deming, 1986, p97-98). Ivanov calls such business paradigm *feararchy* (Ivanov, 2014, 2015). What Deming means is executives succumb to pressure from shareholders to maximize profits for their benefit and this is usually done at the expense of the employees and longevity of the business.

Some examples of how organizations make sacrifices at the employees' expense is by reducing salaries,

benefits, and training, and in extreme cases, layoffs. Often times fear is manifested in employees working in an environment operating in this manner. An organizational environment filled with fear is an organization that will remain stagnant, barely surviving in a state of constant low morale. Employees will suppress their creativity and will not be willing to take risks as they are concerned it will either cause conflict or will reflect negatively upon them in their performance evaluations.

Evaluation of Performance, Merit Rating, or Annual Review

The third Deadly Disease Deming has identified in corporations deals with the concept of performance appraisals and the negative effect they have on organization. Deming's belief is that "performance appraisal or merit rating focuses on the end product, at the end of the stream, not on leadership to help people" (Deming, 1986, p102). Many people are misled by the role performance appraisals play in the workplace. They are viewed as a tool to provide performance feedback and encourage employee growth, when in fact they are actually used as a weapon to gain control and manage employees through fear.

Throughout the year, employees are conscientious of the fact that they will receive an evaluation based on their performance, but the irony of this is the employee actually has almost zero control over the quality of his or her work. This is due to the fact that management is in control over virtually every aspect that controls the quality of an employee's work (Deming, 1986, Ivanov, 2015). Additionally, managers will often play one employee against

another during the evaluation process, which encourages competition and hinders collaboration resulting in anaclitic depression (Harvey, 1988). This constant state of competition between employees causes depression and low morale in organizations to plummet.

Mobility of Management, Job-hopping

According to Deming, "failure to make a good grade in the annual rating leads a man to look around for better opportunities elsewhere" (Deming, 1986, p121). This leads to his fourth Deadly Disease, which is mobility of management or job hopping.

Consistency is vital for an organization to thrive, therefore when a manager leaves an organization, it can have a detrimental effect on employees and the long-term objectives of the organization. As new managers are brought in, new philosophies and management styles are established causing employees to have to readjust the manner in which they work. Employees must also completely reestablish themselves with new management to prove they are an asset to the organization. This includes building trust between the employee and the new manager. It can be very defeating and emotionally draining for employees to continuously have to reestablish themselves within the organization.

Management by Quotas

Deming writes, "he that would run his company on visible figures alone will in time have neither company nor figures" (Deming, 1986, p121). There are a multitude of figures in business a manager can use to show whether the company is succeeding or failing, all at the same time. The problem is the figures that are most valuable to managers are the ones that are unknown. Managing by visible numbers doesn't always align with the greater good of the organization and its employees. When an employee meets his or her quota, it is not necessarily an indication of the quality of work; it just says some work was completed.

Recommended Solutions

The first solution to solving Deming's Deadly Diseases is for leaders to not solely work toward profits in the short-term, but to plan long-term. When an organization has balance, it shifts the focus so there is not solely an emphasis on short-term profits, and creates a constancy of purpose, and thus, future. Balance in an organization means that it has identified short-term goals for profit, as well as, long-term goals for profit. This can increase morale in the organization because it takes the pressure off the employee for unrealistic performance. When an organization is transparent in sharing its long-term goals with the employees, they are able to see the goals they are working towards accomplishing, and they would feel empowered as they see the result of their work which in turn makes them want to be more productive.

The second solution to solving Deming's Deadly Diseases is to eliminate employee evaluations. Evaluations might be effective if the system of work is evaluated, but not the employee. This would allow for a more objective evaluation as anyone would be able to conduct the evaluation. Evaluations would be more effective if they were solely based on assessing organizational conditions, but this is not the case.

Instead, evaluations are only used to unfairly appraise personalities of employees. This contributes to creating negative feelings in the workplace and for this reason, performance evaluations should be eliminated.

To alleviate the problem of mobility of management, organizations need to emphasize their efforts in maintaining the longevity of its workforce. They should avoid the constant transition of management. When management is constantly changing, it does not allow for employees to build trusting relationships, and keeps them guarded. Eliminating the criticism that occurs through evaluations would also help, but more should be done. To minimize mobility of management, organizations should create an individual career development plan with each employee that would provide meaningful training and prepare for advancement. By doing this, the organization empowers the employee, showing them that they are valued, thus, increasing morale. It also allows for relationship building with employees for the long term, raising the morale in the organization. The final solution to solving Deming's Deadly Diseases is to eliminate quotas that management place on employees. As stated before, quotas are often unrealistic. Having unrealistic performance goals causes excessive stress in organizations, creating a hostile work environment. No one wants to work in a hostile environment. For this reason, eliminating quotas would have a large affect in creating positive morale within an organization by building trust, and indirectly, would help alleviating the Deadly Disease of mobility of management.

Conclusion

It is clear that working in an organization with low morale is an undesirable situation for anyone. To solve low morale, it is important for management to recognize that low morale is not the problem, but just a symptom of deadly diseases in the organization. Only when management truly understands the causes of this symptom, they would be able to solve the issue of low morale. By adopting the solutions laid out in this paper to cure Deming's *Deadly Diseases*, the issue of low morale would hopefully become a thing of the past, ensuring thoughtful organization a bright future.

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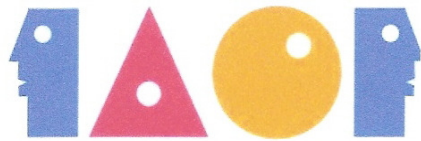
CHANGE MANAGEMENT ISSUES IN A LARGE MULTINATIONAL CORPORATION: A STUDY OF PEOPLE AND SYSTEMS

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Abstract

In this study, Deming's *fourteen principles of management* were used to provide recommendations to improve the effectiveness of the company and address change management issues. The report also used *The General Theory of Managerial Hierarchy*, formerly known as *Stratified Systems Theory*, and *requisite organization* concepts established by Elliott Jaques. Both of these methods are instrumental in analyzing the problems that have been stated in this report, as well as providing the proper recommendations for improvement to executive management.

Key Words: Organizational Systems, Organizational Analysis, Organizational Structures, Management, W. Edwards Deming, Elliott Jaques, Case Study, Leadership

Introduction

The organization studied is a leading telecommunications company in North America. Its business units are divided into three categories: wireless, residential and small business services, and enterprise services. The organization provides cellular phones services, cable TV, and internet. The company is a pioneer in its technology and supports the largest cellular network in the U.S. It was founded in the 1980s and has offices all over North America and worldwide. The company supports local and international markets and half of the

IT teams are located offshore, primarily in India.

The company is struggling with employee satisfaction and its overall image due to numerous leadership changes that are taking place. To effectively resolve some of these issues the company has to understand how to create a better work environment.

Purpose

The purpose of this report is to analyze the numerous changes in leadership that have occurred. Business demands are continuously changing and due to these changes, a lot of leadership restructuring has taken place.

The issues that this report analyzes are:

- Overall communication between cross functional teams
- Improving business processes
- Low employee morale
- Change resistance among employees
- Lack of strategic direction

Scope

Report coverage includes an examination of current managerial practices and resulting impact on employees. The report analyzes the effects of numerous organizational changes from January 2012 to January 2015. Feedback was gathered from managers, technical staff, and business personnel. After analyzing these issues, the executive director will receive the report to management. This will ensure that leadership is aware of the changes that need to be made in the organization.

Methods and Assumptions

In this study, Deming's *fourteen principles of management* were used to provide recommendations to improve the effectiveness of the company and address change management issues (Deming, 1992, 1994). The report also used *The General Theory of Managerial Hierarchy*, also known as *Stratified Systems Theory* and requisite organization concepts established by Elliott Jaques (Jaques, 1986, 1994, 1994, 2002). Both of these methods are instrumental in analyzing the problems that have been stated as well as providing the proper recommendations to higher management levels.

Key Theory

In order for the company to run effectively, individuals at each level in the hierarchy have to understand what is expected of them. This means that employees need to have a proper understanding of their job requirements. In addition, managers need to understand all the employees that they supervise. This is vital because understanding the employees will help managers provide the proper amount of supervision and support. Employees cannot be blamed when they "screw up." Managers will need to take responsibility in these situations and then provide the employee with the correct information, help, and knowledge. This relationship of trust and reliance between the leadership, team, and employees is necessary in order to create a better working environment within the company.

Jaques' General Theory of Managerial Hierarchy can be used to analyze the issues within the company. In his theory, Jaques states that management issues occur within organizations when the layers on the organizational chart do not correlate with the *universal*

organizational structure. Ivanov (2011, 2012, 2013, 2014, 2015), Clement (2014, 2015), and others depict and provide examples of the universal structuring of all hierarchical organizations. When structural conflicts occur, hierarchical divisions become blurred and managers are no longer held accountable for the work that is done by their employees. Therefore, when an employee has a concern about an issue, managers do not feel compelled to alleviate the situation or take responsibility for the results. Managers need to be responsible for not only the employees but also for the results that are produced (Jaques, 1992, 1994, 2002), (Deming, 1992, 1994).

Jaques' theory identifies eight stratum levels. Each level represents the designated amount of time that it takes to complete an assigned task. The stratum time ranges from 3 months for stratum 1 to 20 years for stratum 6. The level of work is directly correlated with the completion time of the longest project or task. The *timespan* that it takes to complete a task determines the value that is given to that job (Jaques, 1966, 2002). Individuals who are higher up in the organizational system have a longer time span of completing tasks and this correlates to the idea that they should have higher pay. Understanding this concept is fundamental to understanding why employees might feel dissatisfied with the pay they are receiving and the impact this has on their overall job satisfaction.

Discussion and Recommendations

Using Deming's fourteen points as a guideline, the authors recommend the following (Deming, 1992, 1994):

- Deming's first point is to create a constant purpose toward improvement. This means that the company needs to reevaluate its mission and goals to reflect the changes that have occurred within the company and the industry. There needs to be a reevaluation of the services that customers are currently being offered as well as an increased focus on improving the quality of service being offered to customers. Doing so will ensure that the company is able to retain its customers over a long period and gradually expand its services. It is also vital to create a plan that will allow the company to progress and provide jobs.

- The second point is to adopt a new management philosophy (Deming, 1992, 1994). This means focusing on quality throughout the organization and implementing measures to put the customer first. The company needs to focus on improving the overall quality and eliminating poor service and monetary waste.

- The third point is to cease dependence on inspection to achieve quality. This is an important point because it signifies the need to have quality build into the product. The company would need to ensure that the services it is providing are at a competitive price and good quality. They should also be able to detect problems in quality without having to rely on inspections to provide the information.

- The fifth point is to improve constantly and forever the system of production and service. The company's leadership team needs to take feedback from customers and

employers on problems they are currently facing. Managers need to take a proactive approach and be aware of potential quality concerns as this will help to reduce long-term costs. If this plan is followed, then quality improvement is continuously happening.

- The sixth point states that training should be instituted on the job. Company employees should be trained to work in teams and know the importance of communication. Training methods should be used to ensure that each employee understands the job and has the essential tools to accomplish their tasks.

- The seventh point is that the organization needs to implement leadership. The company needs to implement a method that will create a strategic direction for the organization. This will also boost employee morale because they will see that the company is clear on the direction that it is heading. It is vital that supervisors and managers within the organization take appropriate action to ensure quality of work. The company needs to ensure that employees understand the chain of command. There are currently a lot of leadership changes that have taken place, such as the recent replacement of the CEO. Employees should feel confident in their leaders' and managers' abilities to take the organization in the progressive direction. Company managers should instill an open door policy so employees could freely communicate their concerns on deliverables and projects.

- Next, Deming states that the organization should eliminate fear (1992, 1994). Ivanov (2014, 2015) calls such paradigm *feararchy*. Currently, there have been major cutbacks at offices all over the country and overseas. Due to this cutback, thousands of individuals have lost their jobs. In turn, present employees are fearful that their jobs may be in jeopardy as well. In these conditions, employees are less likely to approach their managers or supervisors with any work problems they may be facing. The fear that more employees will be laid off creates job insecurity and leads to less productive employees. In addition, this creates a negative image for the organization as a whole and deters qualified individuals from applying to positions within the company. It is important for leadership to facilitate positive and open communication to make employees feel secure in the company and the direction where it is headed.

- The ninth point is to break down barriers between departments. Employees need to have an understanding that the work done by one department affects the work done by another because that output is used. Currently, there is a lack of respect and appreciation for the work that one department's employee does compared to the work done by another department's employees. This lack of understanding and communication creates delays in project completion and increases tension among employees. If employees worked as teams, there would be less internal stress, and a possible direct increase in productivity and quality of work.

- The eleventh point states that management should eliminate numerical objectives and put a greater emphasis on the quality of the work. This would ensure that employees are not sacrificing the level of quality just to increase their productivity levels. All employees should have a sense of pride in their work. The company needs to make employees feel that their work is valued. Managers need to foster open communication among employees, which might boost self-esteem, leading to higher productivity. These changes may lead to a better working environment and happier employees.

- Company employees should be encouraged to expand on their education, learn new skills, and acquire new knowledge. This self-improvement would improve employee morale, also allowing for the company to retain its employees, preventing them from joining another company. This could also prevent employee burnout and stimulate job interest. It is necessary for management to implement these changes because keeping employees joyful of work would ensure growth of the company as well as higher quality of services and products provided.

Conclusion

In conclusion, most companies face different obstacles and diseases that stand in the way of good management and work quality.

Two great disease factors are stifling teamwork and the impossibility of everyone having a fair rating. Although teamwork is highly encouraged in most organizations, in the end, employees are gripped by fear. This fear stems from the individual ratings and evaluations to which the employees are subject. One individual may not get credit for the tasks he or she accomplished because s/he was part of a team that worked in a different area. Employees are generally afraid to speak up or ask questions because they do not want to contradict their management, which further puts them in more fear. This causes employees to follow others and not take any risks or offer new ideas because they do not want to get a low yearly rating. Having a low rating could prevent individuals from moving up and advancing in their careers, and possibly even losing their jobs.

The company management and leadership needs to take these factors into consideration as doing so would create a better understanding of the current company culture. At a time when there are so many individuals losing their jobs, employees have heightened fear and are cautious in what steps they take and the feedback they provide. There is a need to work on boosting employee morale and trust, and foster a better working environment as dedicated employees and competent management are the main factors that could lead the company to success.

Applying Jaques' *The General Theory of Managerial Hierarchy* and Deming's *fourteen principles of management*, such as adopting a new management philosophy, could provide a deeper insight into the organizational root issues. Deming's ideas of implementing leadership and breaking down departmental barriers are vital to creating a strategic direction for the company, improving long-term business

prospects, and ensuring organizational future.

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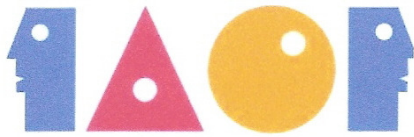
STUDY OF COMPANY X:
WARNING SIGNS OF DEADLY DISEASES

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Abstract

This research studies a small corporate organization in the United States. The study has found that this company noticeably faces at least three major problems: *micromanaging*, *indecisiveness*, and *management hypocrisy*. The article explains how these difficulties relate to larger issues of *Deadly Diseases* and *Low Levels of Work* identified by management theorists W. Edwards Deming and Elliott Jaques. The article then develops recommendations that could assist executives to solve these management dilemmas.

Key Words: Micromanaging, Indecisiveness, W. Edwards Deming, Elliott Jaques, Management Diseases, Organizational Systems, Organizational Theory, Leadership, Organizational Theory, Organizational Studies

Introduction

Every company, no matter how big or small, new or old, could improve starting with an honest evaluation of itself. The problem is that most companies are not willing to do this, for a variety of reasons, one of which is great fear of facing the truth (Ivanov, 2014, 2015).

Over the course of our professional careers and research work, we have studied multiple organizations, which

could be in need of honest self-evaluations. This study analyzes one specific organization, to which we refer in this paper as Company X.

The purpose of this analysis and study is to evaluate Company X to identify major issues for improvement, and develop possible leadership solutions using the management theories developed by W. Edwards Deming and Elliott Jaques.

Background of Company X

Company X is a small corporation with approximately fifty full-time employees, and annual revenue ranging between five and eight million dollars. The corporation is an accounting, financial management, and information technology consulting firm based in the Washington DC metropolitan area.

Founded in the early 2000s, Company X has had contracts with a variety of federal clients, including:

- U.S. Census Bureau,
- U.S. Department of Energy,
- U.S. Department of Health and Human Services,
- U.S. Department of Housing and Urban Development,
- U.S. Department of Labor,
- U.S. Department of Transportation,
- U.S. Federal Housing Administration,
- Office of Personnel Management, and other organizations.

Leadership of Company X

In order to fully understand the issues within Company X, it is also important to understand the leadership structure in the organization. Company X is owned by a husband and wife team, to whom we refer to as Jane and John Doe. Jane serves as the President and Chief Executive Officer (CEO), while John serves as the Chief Operations Officer (COO).

The organizational structure within Company X is a hierarchical structure. The executive team within Company X consists of the CEO/President, COO, and three Vice Presidents assigned to manage the areas of Information Technology, Business Development, and Finance. In total, Company X's organizational structure consists of five layers of reporting.

Issues within Company X

In analyzing Company X, there were three obvious issues that immediately stood out. Those three issues were *micromanaging*, *indecisiveness*, and *hypocrisy*, negatively impacting the organization and business.

Micromanaging

The staff of Company X consists of professionals, qualified and competent individuals. Every employee at Company X is well educated, experienced, and knowledgeable. In spite of this, all of Company X's managers have been guilty of micromanaging their employees. None of the managers show trust in their employees and are constantly reviewing the work of their employees at every turn. This micromanaging not only makes projects run inefficiently, but also creates an uncomfortable atmosphere of tension and paranoia in the organization. Ivanov (2012, 2013, 2014, 2015) calls and analyzes this negative organizational paradigm as *feararchy*. Many of the

employees resent their managers and feel insulted that their work is under constant review.

Indecisiveness

The executives of Company X are notorious for being indecisive, causing a lot of extra work and unnecessary stress for employees. An example of this can be seen in the way Company X responds to Requests for Proposals or RFPs as they are more commonly referred to in the Federal contracting world. A typical schedule for responding to a Request for Proposal involves months of planning and preparation, a series of meetings to discuss the response strategy, and a series of proposal draft preparations and reviews. This type of scheduling allows for the proposal team to develop a clear and concise response that is professional and accurate, and ultimately achieving a winnable proposal and contract.

At Company X though, a typical schedule is much different. The executives of Company X would often waver on which proposal they want to respond, waiting until the last minute to decide. This causes the proposal team to have little to no time for planning the response. Often, the proposals that should normally have taken months to develop, are instead drafted within a few days, with very little research and sometimes without any review. Not only does this create an unprofessional and messy response, it also causes a lot of extra work and a great amount of unnecessary stress for the employees. Beyond this, such ineffective work also leads to low-quality proposals, and lower than possible win rate in a highly competitive federal contracting market.

Hypocrisy

The executives of Company X desire for their company to run like the much larger consulting firms in the area, so they are continuously talking about creating a series of standardized policies and procedures for how the company should run, and how the employees should act. Such policies and procedures have recently been developed, and communicated to all of the employees.

The problem is that none of the executives follow any of the policies and procedures, creating a lot of frustration among the employees. The phrase "practice what you preach" comes to mind. Since the executives do not follow any of the policies or procedures, many of the employees feel confused and frustrated that they have to follow them. This leads to a lot of tension between the employees and management.

Deadly Diseases

In his management theory, Deming identifies *Deadly Diseases* that plague organizations and explains their devastating consequences (Deming, 1992, 1994).

Our study shows that the main issues in Company X stem from *Low Levels of Work* and Deming's five deadly diseases. These five diseases are *lack of constancy of purpose*, *emphasis on short-term profits*, *performance evaluations*, *mobility of management*, and *management by numbers*. The analysis below highlights how each of these diseases demolishes Company X.

Low Levels of Work

A healthy organization, a business the size of Company X should be operating through three management levels (Jaques, 2002), (Ivanov, 2012, 2013, 2014, 2015). Instead, Company X is over layered, operating through five organizational levels.

This means that the lowest level employees in Company X are doing level one work, which consists of basic job functions that take at most three months to complete, while the highest level employees are doing level five work (complex work), which consists of job functions that take between five and ten years to complete.

In this structure, the lower level employees run the day to day business, while the high level employees plan the future of the organization, also known as having Deming's *constancy of purpose* or Jaques' or Ivanov's *operating at a high level of work* to develop and plan the corporate future. This does not happen in Company X.

Lack of Constancy of Purpose

Company X does not operate in the manner of the future. Company X operates in a *compressed organizational structure* (Ivanov 2012, 2013, 2014, 2015), where the executives are doing level one and two basic work, which should and could easily be done by lower-level employees, hired for this purpose.

This is evident from the fact that the executives are busy micromanaging employees, instead of planning the future. By micromanaging and lacking a constancy of purpose, Company X is putting itself in danger of not lasting as a company.

Emphasis on Short-Term Profits

When a company is solely focused on short-term profits, it does so by mortgaging its future (Deming, 1992, 1994). This is very much the case at Company X. The executives at Company X do not like to spend money as it will lower their profits in the short-term, and therefore always go for the least expensive option with every investment they make in regards to resources and employees. Such examples include buying low quality technical equipment, and not investing in training for employees.

Performance Evaluations

Company X's management likes to conduct multiple performance evaluations for employees. Each performance evaluation is always first completed by the employee, and then signed off by management with very little input on their part. Company X then files the performance evaluations never to be looked at again.

Employees feel it is a useless process because it does not let them know how management actually feels about their performance. Also, the irony is that much of the difficulties employees have at work have been caused by low quality equipment and lack of proper software needed to improve performance and not lack of any abilities. Last minute deadlines replacing good planning by management also do not contribute to high quality of work.

Mobility of Management

Company X has an extremely high turnover rate. This is demonstrated by examining the case of one employee, hired only two-years ago, who is now the fifth most senior employee in the corporation.

Company X's high turnover rate is even worse in management. The main cause of this is indecisiveness amongst the executives. The executives rarely make decisive decisions, and this causes a lot of headaches for everyone in the organization, especially, the managers.

The executives' inability to make decisions causes a lot of late work nights, so it is no wonder that managers hired at Company X rarely stay for longer than six months on the job. This high turnover (and burnout) of mid-level managers creates a very difficult work environment. Employees constantly have to re-establish their value to newly hired managers, over and over again, every time new management comes aboard.

Management by Numbers

In order to "determine" employee productivity, company X assigns quotas to each employee, which are only superficially relevant to their jobs.

For example, employees who work for Company X's HUD contract received new quotas. For this contract, HUD tasked Company X to review two hundred and fifty applications per week U.S. citizens filled out in order to receive aid to assist in mortgage payments. In turn, Company X assigns quotas of eight applications per day for each employee to review. This looks competent, superficially.

The problem is that not all applications are the same. Some are much more complex and difficult than others, so often employees are not meeting their quotas through no fault of their own. This is very frustrating to the employees working on the HUD contract.

This disease also relates to Company X's issue of hypocrisy in not treating all employees the same. The HUD contracting team is exclusively measured as successful only by meeting superficial quotas. Other employees at Company X's are not subject to any quotas, and this often creates tension between the different teams of employees. Employees would often complain that it is unfair that some teams are not subject to any quotas, while other teams are only evaluated through ill-devised quotas.

It is unfair that employee teams have different performance standards, which creates great tension in the organization.

Recommended Solutions

In order to solve some issues in Company X, we believe it best to follow a management theory, starting with curing the *Deadly Diseases* afflicting the organization. Solving these issues may actually be quite simple if Company X follows the four recommendations below.

Emphasize the Long Term Future

It is in Company X's best interest to develop constancy of purpose by

focusing on long-term planning and emphasizing long-term future over the short-term profits. This would help increase the likelihood of Company X being a successful corporation into the future.

By removing the short-term focused mindset and shifting the focus to long-term, Company X would also stretch its organizational structure into a healthy position, where it should have been all along. In this healthy structure, the executive team would be busy planning for long-term, and lower level employees would be busy running the day-to-day business operations, just as they should be.

This would also help eliminate micromanaging because the managers would be doing their own work, rather than the work of their subordinates (Ivanov, 2013), and would not have time nor desire to micromanage.

Eliminate Performance Evaluations

Performance evaluations harm organizations (Deming, 1992, 1994), and this applies to Company X as well. Company X's performance evaluations serve no one and have no purpose in the organization.

Besides wasting time and organizational resources, performance evaluations are actually quite ironic as they are intended to evaluate performance, yet the issue with the employee performance has nothing to do with the employee, but with the system that the executives have created for the employees in which to work (Deming, 1992, 1994), (Jaques, 1996, 2002), (Ivanov 2012, 2013, 2014, 2015). Performance evaluations should be

eliminated entirely if Company X is to have a future.

Apply Rules Consistently

It is in the best interest of Company X to create useful policies and procedures that apply to every employee across the entire organization. This includes the executives. If the executives actually follow the same policies they set for their employees, this could greatly assist in eliminating Company X's affliction to the mobility of management. For example, the executives do not apply the same timeframes to themselves as they do to their subordinate managers.

Developing and following useful, competent, and consistent policies could help eliminate frustration and confusion employees have regarding company rules. It would also help to grow trust, which is vital to this company.

Remove Quotas

It is advisable that Company X removes all quotas from its employees. Using quotas to gauge success tells a false story, especially when not all work is created equal, such as in the case of Company X.

Many quality employees leave Company X because their quality work is perceived incorrectly due to quotas, to the detriment of the company.

Removing all quotas would directly eliminate the deadly disease of management by numbers and indirectly help with eliminating the mobility of management disease, as it would take pressure off management and allow them to do quality work.

This approach would also help build trust between the owners, management, and employees, essential to this small company.

Conclusion

There is no such thing as a perfect organization. Even the best of companies have their faults. That is why it is important for every organization to conduct an honest health check, periodically, to determine issues afflicting it so it could prescribe itself the right medicine to get healthy.

After evaluating the easily noticeable main issues affecting Company X, and comparing them to *Jaques'* *Management Theory* and Deming's *Deadly Diseases*, it is clear that there is more to Company X's story. Each of these three issues are symptoms of larger diseases and structural problems in the organization.

That is why it is so imperative that Company X acts now to cure the *Deadly Diseases* afflicting it. By taking the actions of emphasizing the long-term future, eliminating performance evaluations, developing and applying competent rules consistently across the organization, and removing all quotas, Company X could put itself on a path of being capable of achieving great success for years to come.

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A MODEL FOR COMMON WEIGHTS OF VARIABLES MINIMAL INTER-VARIATION

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Abstract

In order to improve the shortage of Data Envelopment Analysis (DEA) that loses the distinguishability, many researchers have discussed the common weights (CW) method. However, they consider the model of common weights to find a set of weights for all decision making units (DMUs). The weights of each DMU are neglected. Therefore, this study aims to develop a common weights evaluation model that can also reflect individual weights. This study obtained each DMU for individual weights from the CCR model. Next, the common weights developed in this study not only have the function to upgrade the efficiency evaluation discrimination, but also includes the following advantages: 1) the common weights v_i of variable x_i is the unbiased estimator of mean of population of common weights; 2) the mean v_i of each weight of DMU v_{ij} to be common weights is not only considering the whole DMUs, but also the advantages of each unit v_{ij}; 3) v_i as unbiased estimator of the mean of population v_{ij} makes the internal variation minimized.

Key Words: Data Envelopment Analysis (DEA), Minimal Inter-Variation, Common Weights (CW), CCR model

Introduction

Charnes, Cooper and Rhodes proposed Data Envelopment Analysis (DEA) in 1978. DEA is a non-parametric method, which can evaluate the decision making units (DMUs) of a group of the same nature

with multi-input and multi-output variables, without knowing the production function in advance. The measurement of relative efficiency is based on the ratio of weighted sum of outputs to weighted sum of inputs within 1. The greatest characteristic of the DEA is finding a set of best weights for each DMU that can maximum its efficiency (called the CCR model). That is within the CCR model, based on the same conditions, each DMU's maximum efficiency can be evaluated.

However, the shortage of CCR model is that it often results in many relative efficient DMUs (efficiency value equal 1). Thus the distinguish ability of the efficiency evaluation declines. Many researchers consider the common weights (CW) method to evaluate the efficiency value of each DMU. The characteristic of this model is finding a set of weights for all DMUs. Therefore, the probability of the same conditions with relative efficient will decline under the common weights model. The concept of common weights was proposed by Cook, Roll, and Kazakov in 1989, and then improved by Roll, Cook and Golany in 1991.

There have been countless researchers committed in the development of common weights model. The famous one is Cook and Kress (1991) evaluated the common weights of each variable based on the concept of the minimum distance between the upper and lower limit of each weight. Roll et al. (1991) use common weights to evaluate the closest efficiency between a DMU and target. The common weights of Ganley and Gubbin (1992) are applying the sum of the maximum efficiency ratio for the ranking of DMUs. Sinuany-Stern (1994) uses linear discrimination analysis to distinguish each DMU as efficient or inefficient on the basis of common weights evaluation. Sinuany-Stern (1998) uses common weights to develop a DR/DEA model in order to obtain the best order of ranking of each DMU. Liu and Peng (2008) assume that each DMU has the same degree of importance, they presented a CWA model and evaluated each variable's common weights. Liu and Peng (2009) presented one systematic procedure and evaluated each variable's common weights based on maximally the group's comprehensive score.

Kao and Hung (2005) presented the compromise weights model, in which the financial performance evaluation of entire DMUs based on the same conditions. Tsai, Bao and Tsai (2012) presented a common weights evaluation model based on the compromise concept. Those methods consider the model of common weights to find a set of weights for all DMUs and have different meanings toward management, though there is a lack of consideration of each individual DMU. Therefore, this study aims to develop a common weights evaluation model that can also reflect individual weights.

This study can be divided into four sections. A detail discussion about the proposed model of variables minimal inter-variation and the advantages of the common weights model is introduced in section 2. Then a numerical example is used to illustrate two examples from previous literature and compare the results of the proposed model with current evaluation models. Finally, the section 4 is conclusion.

Model of Variables Minimal Inter-Variation

The Data Envelopment Analysis (DEA) has been proposed by Charnes, Cooper and Rhodes since 1978. The measure efficiency method of decision making units (DMUs) is generally subject to a wide range of applications and development. DEA through the distribution of each decision making units of input and output variables (Charnes, 1978, 1979, 1989). The mathematical model can be represented as follow (called the CCR model):

$Max.$ $h_k = \sum_{r=1}^{s} u_r y_{rk}$

$s.t.$ $\sum_{i=1}^{m} v_i x_{ik} = 1$

$\sum_{r=1}^{s} u_r y_{rj} - \sum_{i=1}^{m} v_i x_{ij} \leq 0$ (1)

$u_r, v_i \geq 0$
$i = 1,2,…,m$
$j = 1,2,… ,n$
$r = 1,2,… ,s$

Assume that there are n decision making units, and each of them has m input variables and s output variables. When the weights of each DMU were evaluated by the formulation (1), this efficiency evaluation especially emphasizes the maximization of individual DMUs, thus the distinguish ability of the efficiency evaluation declines. In addition to considering the overall commonness, we can also consider the efficiency evaluation without being affected by individual DMU to produce an excessive variation. Therefore, this study consider the common weights of each variable of each decision making unit, the minimal inter-variation is as the plan and design of the common weights of the variable. What emphasized in this study is "the common weights of variables minimal inter-variation" is similar to the concept of the caps and lower limit of each weight with smallest distance by Cook et al. (1991).

The population of the weights of variable x_i, y_r of CCR model is unknown. The weight value from the CCR efficiency evaluation can be regarded as the sample of sampling. It is assumed that the weight evaluation value of input variable x_i is v_{i1}, $v_{i2}…$, v_{in}. Thus, the mean v_i of v_{i1}, $v_{i2}…$, v_{in} (u_r of u_{rj}) would be the common weights, which is the optimal statistics.

$v_i = \frac{\sum_{i=1}^{m} v_{ij}}{n}$, $u_r = \frac{\sum_{r=1}^{s} u_{rj}}{n}$
(2)
$j = 1,2,… ,n$

In formulation (2), the value of v_{i1}, $v_{i2}…$, v_{in} (u_r of u_{rj}) means the statistical amount of common weights of x_i & y_r. There are the following advantages:

1. The common weights v_i of variable x_i (u_r of y_r) is the unbiased estimator of mean of population of common weights.
2. The mean v_i of each weight of DMU v_{ij} to be common weights is not only considering the whole DMUs, but also the advantages of each unit v_{ij} (u_r is the same).
3. v_i as unbiased estimator of the mean of population v_{ij} (u_r is the same) makes the internal variation minimized (see the appendix).

Numerical Example Illustration

Example 1: For the convenience of comparison, this study applied the example of Cooper et al. (2002). Supposing there are 14 companies, each company has two input variables and two output variables. Their data are list as Table 1.

Table 1. 14 Companies' Input and Output Variables

DMU	x_1	x_2	y_1	y_2
1	3008	20980	97775	101225
2	3985	25643	135871	130580
3	4324	26978	133655	168473
4	3534	25361	46243	100407
5	8836	40796	176661	215616
6	5376	37562	182576	217615
7	4982	33088	98880	167278
8	4775	39122	136701	193393
9	8046	42958	225138	256575
10	8554	48955	257370	312877
11	6147	45514	165274	227099
12	8366	55140	203989	321623
13	13479	68037	174270	341743
14	21808	78302	322990	487539

The efficiency value of each decision making unit is evaluated by the formulation (1), and the weights of each variable are listed as Table 2.

Table 2. The Weights of Each Variable of DMUs

DMU	CCR θ	v_1*	v_2*	u_1*	u_2*
1	0.955	0.000332	0.0	0.0000096	0.0000002
2	1.000	0.000242	0.0000014	0.0000072	0.0000002
3	1.000	0.000104	0.0000204	0.0000034	0.0000033
4	0.702	0.000282	0.0000001	0.000	0.0000070
5	0.827	0.000	0.0000245	0.000	0.0000038
6	1.000	0.000078	0.0000154	0.0000026	0.0000025
7	0.844	0.000133	0.0000102	0.000	0.0000051
8	1.000	0.000209	$4.58*10^{-08}$	$1.11*10^{-08}$	0.0000052
9	0.995	0.000	0.0000233	0.0000043	0.0000001
10	1.000	0.000032	0.0000149	0.0000022	0.0000014
11	0.913	0.000162	$7.39*10^{-08}$	0.000	0.0000040
12	0.969	0.000079	0.0000061	0.000	0.0000030
13	0.786	0.000	0.0000147	0.000	0.0000023
14	0.974	0.000	0.0000128	0.000	0.0000020

Based on the information in Table 2, the common weights can be obtained by formulation (2), the results are listed as Table 3.

Table 3. The Common Weights of DMUs

v_1*	v_2*	u_1*	u_2*
$1.1814*10^{-04}$	$1.0286*10^{-05}$	$2.0786*10^{-06}$	$2.8571*10^{-06}$

The efficiency value of each DMU can be obtained using the common weights in Table 3, the results are listed as Table 4.

Table 4. The Efficiency Value of Common Wight of DMUs

DMU1	DMU2	DMU3	DMU4	DMU5	DMU6	DMU7
0.8796	0.9104	0.9825	0.5761	0.6854	1.000	0.7507
DMU8	DMU9	DMU10	DMU11	DMU12	DMU13	DMU14
0.8832	0.8780	0.9628	0.8477	0.8808	0.5958	0.6228

The efficiency value of each DMU as independent variable is based on the information in Table 4. Each input/output variable as dependent variable is based on the information in Table 1. The result of regression analysis as follow:

1. The coefficient of determination $R^2 = 0.8682$. That means this regression model is fully able to illustrate efficiency value.

2. The linear significance of ANOVA p value is equal to 0.000645, which shows that the regression model has significant linearity.

3. θ $=0.788-4.8*10^{-5}x_1-8.8*10^{-6}x_2+1.6*10^{-6}y_1+2.114*10^{-6}y_2$.

This regression model illustrates that the coefficient of the input variable x_1, x_2 is negative.

The coefficient of the output variable y_1, y_2 is positive. Conform to the efficiency evaluation, the lower the input variable the better; whilst the higher the output variable the better (Bao, Lee and Pu, 2010).

Example 2: The data is selected from Roll et al. (1991) that there are ten units, each with three input variables and two output variables. Their data are list as Table 5.

Table 5. Ten Units' Variables in Roll et al. (1991)

DMU	x_1	x_2	x_3	y_1	y_2
1	1	0.8	5.4	0.9	7
2	1.5	1	4.8	1	9.5
3	1.2	2.1	5.1	0.8	7.5
4	1	0.6	4.2	0.9	9
5	1.8	0.5	6	0.7	8
6	0.7	0.9	5.2	1	5
7	1	0.3	5	0.8	7
8	1.2	1.5	5.5	0.75	7.5
9	1.4	1.8	5.7	0.65	5.5
10	0.8	0.9	4.5	0.85	9

The weights of each DMU of each variable as evaluated by the formulation (1) are listed as Table 6.

Table 6. The Weights of Each Variable of DMUs in Roll et al. (1991)

DMU	v_1*	v_2*	v_3*	u_1*	u_2*
1	0.6442	0.4448	0.0000	0.6902	0.0322
2	0.0000	0.0000	0.2083	0.9722	0.0000
3	0.1949	0.0000	0.1502	0.9176	0.0000
4	0.5640	0.5148	0.0303	0.9199	0.0191
5	0.0000	0.9286	0.0893	0.0000	0.1036
6	0.7527	0.1739	0.0609	0.8077	0.0385
7	0.6484	0.5919	0.0348	1.0577	0.0219
8	0.3402	0.0000	0.1076	0.7152	0.0165
9	0.0000	0.0000	0.1754	0.8187	0.0000
10	0.5648	0.2215	0.0775	0.4651	0.0672

Based on the information in Table 6, the common weights can be obtained by formulation (2). Then, the efficiency value of each DMU can be obtained using the common weights. The results are listed as Table 7 and Table 8.

Table 7. The Common Weights of DMUs in Roll et al. (1991)

v_1*	v_2*	v_3*	u_1*	u_2*
0.37092	0.28755	0.09343	0.73643	0.0299

Table 8. The Efficiency Value of Common Wight of DMUs in Roll et al. (1991)

DMU	1	2	3	4	5
CW θ	0.792235	0.792967	0.535486	1.0000	0.552412
DMU	6	7	8	9	10
CW θ	0.885916	0.867483	0.560946	0.411531	0.921013

The efficiency value of each DMU as independent variable is based on the information in Table 8. Each input/output variable as dependent variable is based on the information in Table 5. The result of regression analysis as follow:

1. The coefficient of determination $R^2 = 0.9982$. That means this regression model is fully able to illustrate efficiency value.

2. The linear significance of ANOVA p value is equal to 0.000014, which shows that the regression model has significant linearity.

3. θ =1.419-0.174*10-5x1-0.167x2-0.132x3+0.398y1+0.005y2. This regression model illustrates that the coefficient of the input variable x1, x2, x3 is negative. The coefficient of the output variable y1, y2 is positive. Also conform to the efficiency evaluation, the lower the input variable the better; whilst the higher the output variable the better.

To compare the proposed model with existing common weights models such as Tsai et al. (2012), Chen (2009), and current CCR evaluation model.

These are also used to solve the data in Table 5 and the results of these four methods are listed in Table 9.

Table 9. Efficiency Values of Four Methods

DMU	Proposed	Tsai (2012)	Chen (2009)	CCR
1	0.792	0.792	0.821	0.847
2	0.793	0.793	0.905	0.972
3	0.535	0.535	0.734	0.734
4	1.000	1.000	1.000	1.000
5	0.552	0.552	0.513	0.829
6	0.886	0.886	1.000	1.000
7	0.867	0.867	0.776	1.000
8	0.561	0.561	0.649	0.660
9	0.412	0.412	0.528	0.532
10	0.921	0.921	0.938	1.000

It is difficult to judge which model is more suitable for performance evaluation since the efficiency value of each DMU may be different when computed by different model (Tsai et al., 2012). One direction is to compare the correlation coefficient between the efficiency values derived from all models, the results are listed as Table 10.

Table 10. The Correlation Coefficient of Four Models

	Proposed	Tsai (2012)	Chen (2009)	CCR
Proposed	1.0			
Tsai (2012)	0.9999**	1.0		
Chen (2009)	0.9009**	0.9012**	1.0	
CCR	0.9242**	0.9239**	0.6177*	1.0

*Significant when 0.05 (two tail)
**Significant when 0.01 (two tail)

Table 10 shows that the correlation coefficient between proposed model and other three model are larger than 0.9. It shows the stability of the proposed model is quite enough. Reviewing the efficiency evaluated by the four methods, both Chen (2009) and CCR model have more than two efficient units, which illustrates that the distinguish ability of the efficiency evaluation by the proposed model in this study is better.

Conclusion

This study aims to have more definite discrimination of efficiency evaluation, and to propose the common weights of efficiency evaluation. The common weights in this study are obtained from the CCR efficiency evaluation model which gets the common weights value of each variable of n DMUs. Based on the theory of minimal inter-variation of common weights, this study infers the common weights of each DMU. Therefore, the common weights developed in this study not only have the function to upgrade the efficiency evaluation discrimination, but also includes the original DMU's common weights information in each variable. The perspective considered regarding these common weights should be more objective.

There are the following advantages of the method of minimal inter-variation of common weights proposed in this study: 1. The common weights v_i of variable x_i is the unbiased estimator of mean of population of common weights. 2. The mean v_i of each weight of DMU v_{ij} to be common weights is not only considering the whole DMUs, but also the advantages of each unit v_{ij}. 3. v_i as unbiased estimator of the mean of population v_{ij} makes the internal variation minimized.

Appendix

It is assumed that v_i in formulation (2) is the estimator of mean of population of x_i common weights, the sample sum of square (SS) of weight x_i is as the following. $SS_1 = \sum (v_{ij} - v_i)^2$. It is assumed that the estimator of mean of population of

another sample is $t_i \neq v_i$ the sample sum of square (SS) is as the following.

$$SS_2 = \sum (v_{ij} - t_i)^2 = \sum (v_{ij} - v_i + v_i - t_i)^2 = SS_1 + 2\sum (v_{ij} - v_i)(v_i - t_i) + \sum (v_i - t_i)^2 = SS_1 + 0 + \sum (v_i - t_i)^2 \geq SS_1$$

Therefore, SS1 is the minimized variation (u_r is the same).

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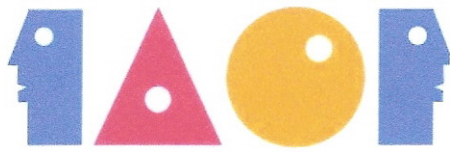
THE RELATIONSHIP BETWEEN ELEMENTARY SCHOOL TEACHERS'TECHNOLOGY READINESS AND INTENTION TO USE SOCIAL MEDIA PLATFORMS FOR CLASSROOM MANAGEMENT

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Abstract

The purpose of this paper is to assess the technology readiness of elementary school teachers in Taoyuan County, Taiwan. The Technology Readiness Index developed by Parasuraman was adopted to measure the technology readiness of teachers. A stratified convenience sampling method was used to collect 478 effective samples from 20 schools. The results showed that in terms of optimism and innovation in technology readiness, there are clear differences among teacher seniority, the most used social websites, and the time spent on Facebook. The four facets of technology readiness, i.e., optimism, creativity, insecurity, and discomfort, all possess prediction ability with respect to the intention of using Facebook for class management. Among these, optimism has the highest prediction value with its overall explanatory power reaching 44%. The elementary school teachers were categorized in terms of technology readiness, and the group of pioneers has the highest ratio of 12.97%. The implications of our findings for future research and practice are discussed.

Key Words: technology readiness, intention, social media platforms, classroom management

Introduction

The Internet has been a major catalyst for change (Jaafar *et al.*, 2007). It is estimated that, in Taiwan, nearly seven million people are regular social media website users. A survey of the most frequently used personalized social media platforms by Internet users revealed the following as the top five: Facebook (95.8%), Google+ (24.7%), PIXNET (20.7%), Xuite (12.7%), and Plurk (8%) (Foreseeing Innovative New Digiservices, 2014). Among social media platforms, Facebook has the largest number of users (Lee *et al.*, 2014). In education, the ability of teachers to utilize information technology (IT) and the Internet is becoming increasingly important (Subrahmanyam and Greenfield, 2008). According to existing research, encouraging parents and teachers to use social media platforms can enhance a sense of belonging and improve knowledge sharing (Pai and Yeh, 2014). Using these platforms can continually improve the communication between the school and parents (Ateş, 2013) and extend learning beyond school hours so that learners can engage in interaction, collaboration, active participation, and information and resource sharing. It has been shown that in daily life, Facebook is closely related to education (Mazman and Usluel, 2010).

Classroom management is the main element in professional development; it is used as an important criterion for assessing such development (Wu, 2010). Research has found that, in terms of professional performance, elementary school teachers are the best in the area of "professionalism," but are relatively poor in the area of "classroom management" (Chang and Hsin, 2011).

Using social networking platforms effectively, however, depends on the understanding of both the psychological attributes and the social interactions of participants (Pagani *et al.*, 2011). In terms of psychological attributes, teachers may experience an increased level of stress in response to Facebook friend requests if they have a high need for selfprotection (Bevan *et al.*, 2014). Teachers may be concerned about perceived social norms and their professional image (Hermans *et al.*, 2008; Lin and Lu, 2011), as well as putting their personal privacy at risk; they may also be unwilling to disclose personal information (Mohamed and Ahmad, 2012). Therefore, it is important to consider the perceptions of teachers who are expected to use the intended technology prior to implementation.

Research has shown significant differences in terms of technology readiness (TR) across teachers' genders, nationalities, and the number of students for which they are responsible (Badri *et al.*, 2014; Summak and Bağlıbel, 2012; Caison *et al.*, 2008). Other variables such as the teachers' age, experience, education, and work location have partial effects (Badri *et al.*, 2014). The TR model has been applied to a variety of contexts including the consumer adoption of high technology products (Ferreira *et al.,* 2014), self-service technologies (Meuter *et al.*, 2005), healthcare services (Borrero *et al.*, 2014; Caison *et al.*, 2008), and online insurance (Taylor *et al.*, 2002). These studies have highlighted the effectiveness of the TR model in studying respondents' propensity to adopt new technologies.

Most of the studies have merely applied theories about behavior in

exploring usage intentions with customer or student samples (e.g., Chiang, 2013; Lee *et al*., 2014; Taneja *et al*., 2014). Therefore, it is likely that researchers have only targeted factors that affect attitude, but ignored investigations of usage intention (Ateş, 2013; Summak and Bağlıbel, 2012). Care for elementary school children, in particular, requires interaction between the teachers and parents for such activities as announcements relating to school activities, including discussions of physical abnormalities, the sharing of class photos and videos, and the preparation of school curriculum. Therefore, the first purpose of this study focuses on teachers' TR, how TR is formed, and the concept of TR segments. For this purpose, we investigated how TR can make a difference in the use of Facebook to manage classrooms. The second purpose is to attempt to use the relationship between TR and classroom management to explain the value of technical social media platforms in terms of interactions between elementary school teachers and parents. This is to estimate the user acceptance of IT. It is hoped that the results will lead to a better understanding of the classroom management methods adopted by faculties and teachers, and provide useful information for professional development in teaching.

Literature Review

Technology readiness

TR translates into the overall mental state of an individual with respect to technology in general. Parasuraman (2000) defined TR as "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work." TR comprises four dimensions: (1) optimism, which refers to "a positive view of technology and a belief that it offers people increased control, flexibility, and efficiency in their lives;" (2) innovativeness, which refers to "a tendency to be a technology pioneer and thought leader;" (3) discomfort, which refers to "a perceived lack of control over technology and a feeling of being overwhelmed by it;" and (4) insecurity, which refers to "a distrust of technology and skepticism about its ability to work properly" (Parasuraman, 2000). The optimism and innovativeness dimensions are considered drivers of TR, whereas discomfort and insecurity are considered inhibitors. In the people working, users who display a more optimistic attitude toward TR also have a higher intention to use IT. However, innovativeness, discomfort, and insecurity seem to be weakly correlated with the intention to use IT (Sophonthummapharn and Tesar, 2007).

TR models have been widely applied to investigate how people interact in various contexts. In most cases, male teachers have a significantly higher mean score than female teachers (Casion *et al*., 2008; Summak and Bağlıbel, 2012). Moreover, Parasuraman and Colby (2003) used a cluster analysis to classify technology users into five TR segments, namely, explorers, pioneers, skeptics, paranoids, and laggards. Tsikriktsis (2004) replicated and extended a TR-based taxonomy of customers in U.S. and U.K. samples, and found support for the existence of four clusters (explorers, pioneers, skeptics, and laggards) but found no evidence of the existence of the fifth segment.

TR is a personality trait displayed by an individual (Parasuraman and

Colby, 2003). Many studies have established a strong relationship among personality traits, generalized beliefs, affects about technology, and the use of social media platforms (Amichai-Hamburger and Vinitzky, 2010; Muscanell and Guadagno, 2012; Pagani *et al*., 2011). Demographics may affect the acceptance of social media (Meuter *et al*., 2005; Parasuraman, 2000). No significant differences have been found in terms of TR across the age groups and subject areas of teachers, but a significant difference has been found between TR and gender (Caison *et al*., 2008; Summak *et al*., 2010). Giota and Kleftaras (2014) indicated that motives, personality, relationship quality, and gender are good predictors of attraction to online social support. Currently, there is a lack of research examining teachers' readiness to adopt, and evaluations of the online social community.

Classroom management

A class consists of students, teachers, and the environment; only through classroom management can the goal of education be realized. The purpose of classroom management is to effectively manage the people, intangible things, and physical objects that influence a class to fulfill its purpose. Classroom management is multidimensional and diverse in many ways, with various scholars advocating different views on what it entails. In summary, scholars have asserted that classroom management has many dimensions, such as physical environment, administrative organization, interpersonal relationships, classroom rules, curriculum and teaching, and behavior management (Erdogan *et al*., 2010; Wu, 2010).

Intention to use

To investigate teachers' intention to use Facebook for classroom management, we used a questionnaire based on those designed by David (1989) and Pavlou (2003). The intention mentioned here refers to teachers' intent to use Facebook for classroom management. The positive or negative perceptions arising from actual actions will affect a user's intention to engage in certain actions. In order to understand the teachers' levels of intention to use Facebook for classroom management, this study measures the intention to use as a single dimension, and appropriately adjusts the results in accordance with specific classroom management contexts.

In summary, TR affects the intention to use service-oriented digital technologies, and many factors affect the usage of social media websites (Lee *et al*., 2014). People with different demographics tend to display significant differences in various psychological attributes related to technology use, including optimism, innovativeness, insecurity, and discomfort. Based on this tendency, it was inferred in this study that teachers' TR for social media platforms is likely to influence the intention to use Facebook for classroom management. Thus, TR served as a foundation for the segments (explorers, pioneers, skeptics, paranoids, and laggards) and the psychological attributes being tested in this study to allow a discussion of the difference between the demographic variables in TR attributes and classroom management intention.

Research Methods

Research framework

Figure 1. shows the research framework based on the purpose of this study. Information gathered on teacher demographics include gender, age, seniority, and tutor/non-tutor, while data on social media platform usage include items such as the amount of time spent online each time and frequently visited websites.

Based on the research framework, the following hypotheses were made:

H_1: The demographics among teachers who display different TR psychological attributes are significantly different.

H_2: The user habits for social media platforms among teachers who display different TR psychological attributes are significantly different.

H_3: The demographics among teachers who display different levels of intention to use Facebook for classroom management are significantly different.

H_4: The user habits for social media platforms among teachers who display different levels of intention to use Facebook for classroom management are significantly different.

H_5: Teachers' TR propensities significantly and positively correlate with teachers' class management using Facebook.

H_6: Teachers' TR significantly predicts teachers' intentions to manage the class using Facebook.

Research instrument

The survey was designed as a self-report questionnaire. According to the research framework, two subscales were applied in the survey: a demographic section and questions about participation behaviors. The subscales used a 5-point Likert scale ranging from 1 = Strongly Agree to 5 = Strongly Disagree. Higher scores rep- resent greater agreement with each statement.

TR was measured using a four-dimensional structure encompassing 26 items from the Technology Readiness Index (TRI) scale developed by Parasuraman (2000). A factor analysis using the principal component method and varimax rotation was employed to extract factor dimensions, and four dimensions were extracted with their eigenvalues. Then items with critical ratios below 3 and items with lower correlations to the overall scale than 0.35 were eliminated (Hair *et al.*, 1998). The constructive validity of this subscale reached 61.36%. The reliabilities (Cronbach's α) of the four dimensions are 0.89, 0.88, 0.87, 0.70, respectively.

Intention was measured using the six items developed by Davis (1989) and Pavlou (2003), including "I create social groups on Facebook," "I convey news to parents on Facebook," "I dis- cuss classroom matters on Facebook," etc. Cronbach's α for each single dimension reached 0.94.

Questionnaire collection and data analysis

The research population consists of all full-time teachers of the elementary schools in Taoyuan County, Taiwan. Using a stratified convenience sampling method to select the teachers of
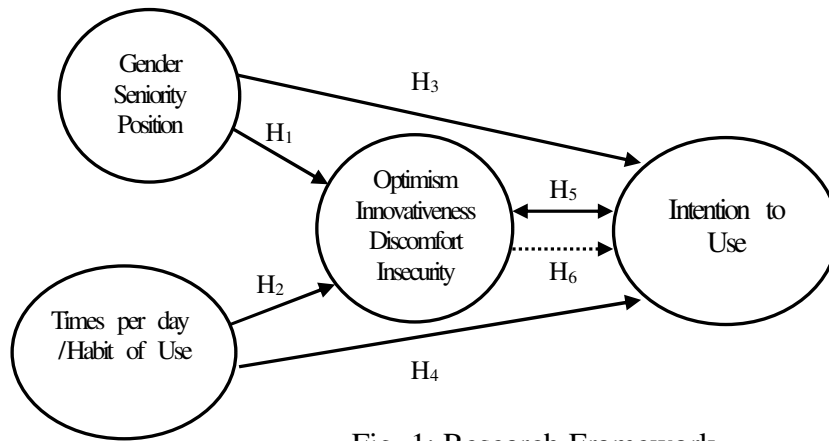
Fig. 1: Research Framework

elementary schools, we selected the study population from 65 smaller-scale schools with 12 classes or less, 91 medium-scale schools with 13 to 48 classes, and 35 large-scale schools with 48 classes or more (Ministry of Education and Statistics Department, 2013). The questionnaire was distributed in accordance with the ratio of teachers among 20 schools, and the ratio of male to female teachers (the male-to-female teacher ratio is approximately 2:5). In total, 562 questionnaires were distri- buted and 478 valid questionnaires were received. By comparing the distributions of gender, seniority, and position amongst the respondents, it can be concluded that this study sample offers good representativeness.

For the 478 respondents, des- criptive statistics, t-tests, one-way ANOVA, and Scheffe's post hoc tests were conducted to analyze the differences among the groups. A multiple regression analysis was conducted, and Pearson's Correlation and factor scores were obtained for all the TR and intention to use dimensions.

Results

Sample characteristics

As shown in Table 1, there are many more female teachers than male teachers; the majority of the individuals in the sample are teachers with 11 to 15 years of experience (188 teachers, 39.3% of the total sample) and class tutors (296 teachers, 61.9% of the total sample). In terms of the habits of use, Facebook is the most commonly used social media platform (357 teachers, 74.7% of the total sample), and the majority of time spent per day is less than 30 minutes (203 teachers, 42.5% of the total sample).

Reliability and validity analysis

Cronbach's α coefficient was applied to evaluate the internal consistency of the indicators of each dimension. When the value of α is low, this means that the scale is unable to accurately represent a measure, while $\alpha > 0.7$ is considered as reliable (Nunnally and Berstein, 1994). According to Table 2, the overall reliability is 0.86 and Cronbach's α for each dimension is higher than 0.7. The indicators in each dimension thus have good internal consistency, indicating that overall, this study showed good reliability.

Validity measures can also be divided into content and construct validity. Both the questionnaire and the questions used in this study were revised based on the theoretical foundation provided by past research, thus ensuring content validity. Moreover, construct validly was also tested using the Kaser-Meyer-Olkin (KMO) approach, which measures the appropriateness to represent the comparison values between the coefficients related to variables and the coefficient of net correlation; the coefficient should be > 0.5 (Kaiser, 1998). In Table 2, the KMO coefficients of the variables are all > 0.5, indicating the presence of common factors among the variables and their suitability for factor analysis. The results showed that the factor loadings of all items in the questionnaire are > 0.5, which further indicated that the questionnaire has good construct validity.

Table 1. Demographics of respondents

Demographics	Item	N (%)	Demographics	Item	N (%)
Gender	Male	112(23.4)	Times per day	None	113(23.6)
	Female	366(76.6)		< 30	203(42.5)
Seniority	< 5	56(11.7)		31–60	120(25.1)
	6–10	78(16.3)		61–90	25(5.2)
	11–15	188(39.3)		Over 91	17(3.6)
	16–20	74(15.5)	Habits of use	Facebook	357(74.7)
	Over 21	82(17.2)		Other	121(25.3)
Position	Tutor	296(61.9)			
	Non-tutor	182(38.1)			

The results showed that the mean for innovativeness is the lowest at 2.82, whereas the mean for insecurity is the highest at 3.67. This means that, in general, respondents have greater concerns about the security of new tech-

nologies. Table 3 shows the results of the different categories of TR (TR segments). The pioneers are the dominant sample group at 12.97%, meaning that most of the respondents belong to the pioneers group, who tends to show high levels of optimism and innovativeness, but also high levels of insecurity and discomfort. At the other end of the scale, the paranoids are the minority of the sample at 4.60%, so relatively few teachers belong to this group. These types of teachers tend to show greater optimism, but lower inno-vativeness, and relatively high inse-curity and discomfort.

Based on the level of TR displayed by the elementary school teachers who are Facebook users, they can be cate-gorized into pioneers (12.97%), skeptics (11.30%), explorers and lag-gards (10.88%), and paranoids (4.60%). Therefore, the order of these respon-dents based on the frequency of Facebook usage from high to low is pioneers > skeptics > explorers > laggards > paranoids.

Table 2. Results of descriptive statistics for TR dimensions

Dimensions	M	SD	Cronbach's α	KMO	Eigenvalue	Cumulative
Optimism	3.20	0.74	0.89	0.88	7.17	20.11
Innovativeness	2.82	0.71	0.88	0.86	4.11	36.46
Discomfort	3.28	0.54	0.87	0.80	1.60	50.45
Insecurity	3.67	0.64	0.70	0.60	1.86	61.30
Overall TR	2.77	0.42	0.86	0.90		
Overall Intention	2.49	0.90	0.93	0.91		

Table 3. Descriptive statistics for TR segments

TR Score	Drivers		Inhibitors		N	%
	A	B	C	D		
Explorers	high	high	low	low	52	10.88
Pioneers	high	high	high	high	62	12.97
Skeptics	low	low	low	low	54	11.30
Paranoids	high	low	high	high	22	4.60
Laggards	low	low	high	high	52	10.88

Note: A = Optimism; B = Innovativeness; C = Discomfort; D = Insecurity.

Results of t-tests and ANOVA

The findings from this study showed that in terms of innovativeness, male teachers scored higher than female

teachers in their TR. There is a significant difference in the teachers' years of experience across the dimensions of

optimism, innovativeness, and the intention to use Facebook for classroom management. The value for the 1–5 year group is higher than for groups with more experience, and the value for non-tutors is higher than for class tutors. This means that compared with class tutors, non-tutors have greater intention to use Facebook for classroom manag- ement. Compared to those who regularly use other platforms, teachers who use Facebook regularly showed greater optimism, innovativeness, and intention to use Facebook for classroom management. Finally, those who use Facebook for a relatively longer length of time each day showed higher intention than those who do not use Facebook on a daily basis (see Table 4).

Correlation analysis

The formula for calculating the TR level is as follows: {optimism level + innovativeness level + [(scale unit + 1) - Discomfort] + [(scale unit + 1) - Insecurity]}4 (Tsikriktsis, 2004). The average TR yielded is 2.77, while optimism and innovativeness levels showed a positive correlation with the intention to use Facebook for classroom management ($r = 0.450$, $r = 0.451$). This means that the higher the optimism and innovativeness levels in

the teachers' TR, the more inclined they are to use Facebook for classroom management. Conversely, insecurity and discomfort levels have a negative correlation with intention to use ($r = -0.147$, $r = -0.096$), demonstrating that the greater the insecurity and discomfort levels experienced, the less willing the teachers are to use Facebook for classroom management (see Table 5). Nevertheless, with the use of the formula, the overall TR level has a significant positive correlation to intention to use ($r = 0.634$). Therefore, the teachers' TR levels in general clearly correlate to their intention to use Facebook for classroom management, and an increase in optimism and innovativeness would also increase their intention to use Facebook for classroom management.

Multiple regression analysis

The variance inflation factor (VIF) of the four dimensions of TR (independent variables) is less than 10, meaning that this study does not have a multicollinearity problem. A multiple regression analysis was hence conducted to predict the intention to use social media platforms for classroom management (see Table 6).

The results from the multiple regression analysis showed that $R^2 = 0.44$, and the adjusted $R^2 = 0.43$, meaning that it has 44% explanatory

power. The test of significance also showed a significant result (F = 90.80, p < .001), thus indicating statistically significant explanatory power.

Table 4. A comparison of demographics with TR dimensions and intention

Demographic	Factor Dimensions					Demographic	Factor Dimensions				
	A	B	C	D	E		A	B	C	D	E
Gender						Times per day					
1. Male	3.26	3.08	3.26	3.62	2.64	1. < .30	3.25	2.82	3.27	3.65	2.51
2. Female	3.19	2.75	3.29	3.68	2.44	2. 31–60	3.50	3.01	3.27	3.72	2.76
t-test	0.87	4.41***	-0.50	-0.77	1.97	3. 61–90	3.80	3.30	3.27	3.52	3.07
Seniority						4. 91–120	3.77	3.35	3.16	3.49	2.89
1 Under 5	3.60	3.16	3.30	3.54	2.85	5. Over 121	4.08	3.79	3.30	3.70	3.52
2. 6–10	3.39	3.01	3.31	3.75	2.72	F-test	37.93*	18.28	0.22	0.64	18.46
3. 11–15	3.10	2.73	3.28	3.71	2.35	Scheffe Post-hoc	2,3,4, 5>1; 3, 4 >2	2,3,4, 5>1; 4>2		2,3,4, 5>1; 4>2	
4. 16–20	3.03	2.73	3.29	3.70	2.36	Habit of use					
5. Over 21	3.15	2.72	3.22	3.57	2.43	1. Facebook	3.37	2.91	3.28	3.68	2.64
F-test	7.85	6.33	0.35	1.63	5.34	2. Other	2.72	2.58	3.30	3.64	2.04
Scheffe Post-hoc	2>4					*t*-test	7.76**	4.45**	-0.47	0.55	6.54**
Position											
1. Tutor	3.16	3.80	3.29	3.70	2.39						
2. Non-tutor	3.28	2.90	3.27	3.60	2.64						
t-test	-1.78	-1.99	0.35	1.52	-2.93**						

Note: A = Optimism; B = Innovativeness; C = Discomfort; D = Insecurity; E = Intention.

*p < .05, **p < .01, ***p < .001

Table 5. Correlation analyses of TR and TR segments with Intention to Use

Dimensions	Intention to Use	Dimensions	Intention to Use

Optimism	0.450**	Explorers	-0.026
Innovativeness	0.451**	Pioneers	0.304**
Discomfort	-0.096*	Skeptics	0.240
Insecurity	-0.147**	Paranoids	-0.063
Overall TR	0.634**	Laggards	0.017

*p < .05, **p < .01.

The standard error of estimate for the predictions regarding the four dimensions of TR is 0.27. A regression analysis was conducted to explain the level of influence of TR on the intention to use Facebook for classroom management. The results showed that optimism (β = 0.44) and innovativeness (β = 0.22) have the greatest prediction ability, followed by insecurity (β = -0.12), and finally discomfort (β = -0.09).

These outcomes demonstrated that, of the four factors that influence the intention to use Facebook for classroom management, optimism is the most influential. Similarly, the greater the score in innovativeness, the greater one's intention is to use Facebook for classroom management. In the multiple regression analysis, coefficient estimation was also conducted on the insecurity and discomfort dimensions, and the respective outcomes are β = -0.12 (t = -2.97, p < .001) and -0.09 (t = -2.23, p < .05). The β value for TR, however, dropped to 0.44, meaning that after the covariance between these factors was excluded, the actual predictive values showed that the influence on the intention to use Facebook for classroom management decreased because insecurity and discomfort were excluded from the variables considered.

Table 6. Regression analyses predicting the intention to use Facebook

Variables	Beta(β)	*t*-Value	Toler	VIF
Constant		3.07***		
Optimism	0.44	8.91***	0.49	2.04
Innovativeness	0.22	4.85***	0.49	2.06
Insecurity	-0.12	-2.97**	0.80	1.25
Discomfort	-0.09	-2.28*	0.78	1.30

*p < .05, **p < .01, ***p < .001.

Conclusion

This study found that for TR, male teachers scored higher for innovativeness than female teachers; teachers

with 1–5 years of experience scored significantly higher for optimism and innovativeness when compared to teachers with longer experience. Interestingly, non-tutors displayed greater

intention to use Facebook for classroom management than class tutors, and those who use Facebook regularly or extensively on a daily basis also have greater intention compared to those who tend to use other platforms or do not use Facebook every day. These outcomes are consistent with the findings of (Summak & Bağlıbel., 2010), who found that elementary school teachers' TR differs between males and females. More importantly, existing research has shown similar results in that the psychological attributes of optimism and innovativeness shape user habits and the time spent on Facebook (Erdogmus and Esen, 2011; Walczuch *et al*., 2007).

In terms of TR segments, the pioneers constitute the largest proportion of respondents, and the paranoids the smallest. This showed that many teachers seem to be willing to use new technologies, and it is recommended that schools hold experience-sharing seminars or observations for teachers who fall into the laggards and skeptics segments. By doing so, they can learn about privacy and security settings and how to use the interface and functions of social media platforms so that their

intention to use will increase. It is particularly important that class tutors adopt diverse management methods and communication channels for information sharing to encourage greater collaboration and bonding. Reinforcing the teacher-student bond will increase both parties' interests in participating in classroom management, and thus increase the satisfaction of classroom management. To recognize and further encourage the teachers who use Facebook for classroom management, schools are recommended to hold competitions for using Facebook for classroom management, and assessment criteria can include the number of browse, the abundance of information provided, and the level of students and parties interacting.

This study provided a discussion on the impact of TR on teachers' intention to use technology for classroom management. However, as the teacher-student identity was not within the scope of this study, further research on this aspect would be needed. Based on the findings of this study, it is recommended that future studies extend the observation and investigate the effects of using social media platforms for classroom management on teaching and learning performance. Furthermore, future studies can expand the sample to include teachers from junior high schools, senior high schools, colleges, and universities. This way, more help-

ful theories can be derived from the study of their interactions and relationships with parents. The comprehensiveness of the findings and theories from this study can also be improved if

more in-depth research could be conducted to examine and discuss the specific scenarios and viewpoints of each teacher, which would also help to improve their classroom management.

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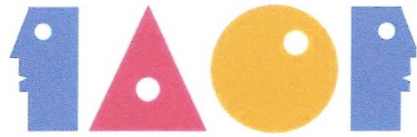
A STUDY OF THE WILLINGNESS OF TEACHERS TO USE HUMAN RESOURCE WEBSITES

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Abstract

Due to the rapid development of information technology in recent years, human resource websites have become a new matching channel for recruiting substitute teachers in Taiwan. The willingness of school administrative staff and substitute teachers to accept and utilize teacher human resource websites is explored in this study by applying the TAM (Technology Acceptance Model). 419 of the total 450 questionnaires distributed were found to be valid, representing a response rate of 93.11%.

The results indicated the following. First, although elementary school teachers have a positive attitude toward the "perceived usefulness," "perceived ease of use," and "behavioral intention"

of these human resource websites, their actual usage needs to be strengthened. Second, there are significant differences in the attitude of elementary school teachers with different background variables toward the "perceived usefulness," "perceived ease of use," and "behavioral intention" of the websites. Third, the external variables of "computer self-efficacy" and "site functionality" are significantly positively correlated with the "perceived usefulness," "perceived ease of use," and "behavioral intention" of the TAM variables. Fourth, the "perceived usefulness" and "perceived ease of use" of the websites can effectively predict teachers' "behavioral intention" to use them.

Although human resource websites have become an important recruitment and job-seeking channel in Taiwan in recent years, the overall usage rate of either public or private websites is still low, which implies that these websites still have room for improvement. Therefore, it is suggested that when building these websites, educational authorities and site operators should pay special attention to users' feelings about the site's functionality, information security measures, and ease of use, in order to satisfy users' needs and influence and attract more target users. Moreover, educational institutions should make good use of teacher human resource platforms to attract the best teachers to meet the needs of different institutions.

Keywords: Human Resource, e-Recruiting, Technology Acceptance Model, Behavioral Intention

Introduction

Teaching is a desirable job and it has always been recognized as a stable career. However, implementation of the Teacher Education Law in 1994 led to opening diverse channels for Taiwan's elementary and junior high school teachers. Teaching posts have shifted from being "guaranteed assignments" to a state of "free competition." Taiwan is currently experiencing a "low birth rate" trend (Chen 2012; Lee, 2007; Luoh, 2009), which has an extremely negative impact on the demand for elementary and junior high school teachers.

The competition for permanent teaching positions has been intense in recent years, and even openings for one-year substitute teachers have attracted many applicants. According to statistics from the 2010 "Yearbook of Teacher Education Statistics, the Republic of China," published by the Ministry of Education, 156,366 people were trained (based on the 1994 Teacher Education Law) and certified as teachers. 83,879 of them were permanent teachers, 13,963 were on-the-job substitute teachers, and 58,524 were reserve certified teachers. The percentage of substitute teachers rose from 0.9 % in 1997 to 21.44% in 2009, which

demonstrates a huge increase year on year. Being a substitute teacher first may soon become the norm in order to be employed in an elementary or junior high school in Taiwan.

The recruitment of talent is an essential aspect of human resource management. In the current situation of teacher oversupply, each school's quota for permanent teacher human resources has been extremely stable, but the selection of part-time and substitute teachers still has room for employment and management. The selection of teachers with qualities that fit the school not only benefits the promotion of the school's various under-takings, but also supports students' right to be educated. In terms of human resource management, the use of Internet technology is now an important practice among innovative talent managers. Many compa-nies currently use Internet technology for the innovative management of human resources, resulting in substantial benefits.

The rapid development of information technology in recent years has made human resource websites a new matching channel. Although there are many teacher human resource websites, including the Ministry of Education's national (prior to high school) teacher selection web, 1111 teacher web, Hsinchu City's teacher human resource system, and Tainan City's substitute human resource system, are these websites widely used by educational careerists? Does the level of educational careerists' computer self-efficacy affect their willingness to use teacher human resource websites? These issues are worth exploring.

With regard to studies devoted to users' motivation to utilize information technology, Davis (1989) first proposed the Technology Acceptance Model (TAM) to explain and predict people's computer usage behavior. He maintained that the acceptance of technology, including perceived usefulness and perceived ease of use, helps to improve the performance of technology usage; in other words, the attitude of people toward technology usage affects the effect of new technology application. Little previous research has utilized users' perception to explore human resource websites, and studies related to teacher human resource websites are currently extremely rare. Therefore, this study uses the TAM as a basis to explore the different correlations of teachers' personal background, computer self-efficacy, website functionality (three external variables) and perceived usefulness, perceived ease of use, and the behavioral intention of the TAM variables with the aim of determining school administrative staff and substitute teachers' level of acceptance of teacher human resource websites. Some recommendations are finally presented for the consideration of relevant agencies.

Methodology

Research Framework

Relevant literature is integrated in this study and other dimensions are added to the scope of the study to expand the TAM theoretical framework. According to Szajna (1996) and Venkatesh and Davis (2000), attitude cannot completely mediate the influence of perceived usefulness on behavioral intention; therefore, the "attitude" variable from the original TAM framework is omitted from this study, which instead, focuses on the possibility of future use and investigates the influence of "perceived usefulness" and "perceived ease of use" on "behavioral intention." Thus, "behavioral intention" is treated as a dependent variable in this study and the "actual usage behavior" variable is omitted in order to investigate the correlation between teachers' personal background, computer self-efficacy, and website functionality (three external variables), and the TAM variables of perceived usefulness, perceived ease of use, and behavioral intention. This is expected to provide a better understanding of the level of teachers' awareness of teacher human resource websites and their willingness to use them.

The research framework is shown in Figure 1.

Sample

The sample population of this study includes the administrative staff and substitute teachers of New Taipei City public elementary schools, who participated in the
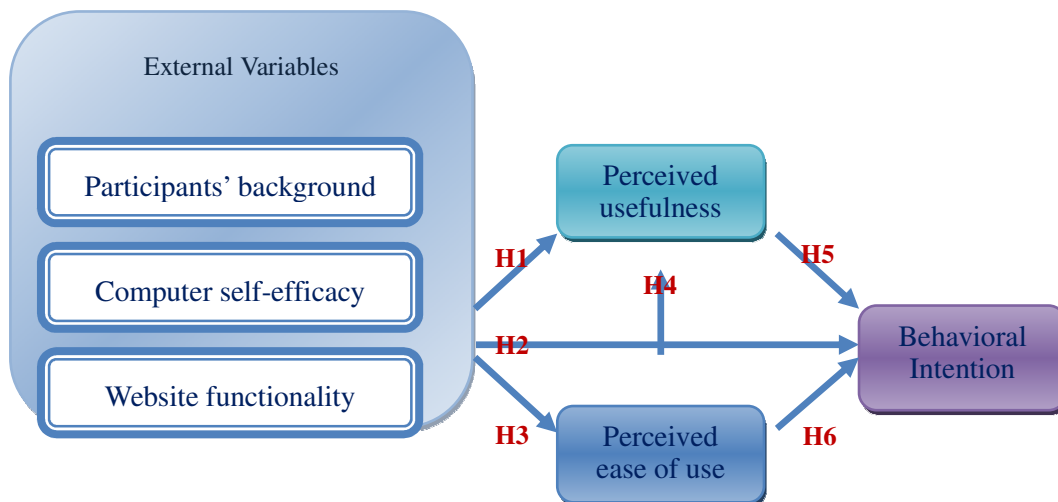
Figure 1. Research Framework

implementation of the curriculum for the 2010 academic year. Following the administrative organization plan of the nine districts by the Department of Education, New Taipei City, a stratified purposeful sampling technique was adopted and survey questionnaires were distributed based on the school class numbers in each district. 450 questionnaires were distributed and 426 of them were completed and returned. After discarding seven invalid questionnaires, 419 were found to be valid for use, representing a response rate of 93.11%.

Research Instrument

The study began with the collection of data related to domestic and international human resource websites and a review of relevant existing literature. The TAM was then utilized to categorize and compile the research tool; a "survey questionnaire of the willingness to use teacher human resource websites." Expert validity was obtained from seven experts and scholars, who reviewed the scale and recommended the addition of two elements, namely, teachers' personal background information and teachers' level of awareness of teacher human resource websites and willingness to utilize such websites. The background information included eight items, while the

second element was divided into five dimensions consisting of a total of 29 items related to computer self-efficacy, site functionality, perceived usefulness, perceived ease of use, and behavioral intention. A five-point Likert scale was used for measurement. The validation of the questionnaire's reliability revealed that each dimension's individual and total Cronbach's alpha were all greater than 0.7. The results, which are shown in Table 1, indicate that the questionnaire was extremely reliable.

Results and Discussion

Analysis of Samples' Demographic details

The ages of the administrative staff among the 419 valid questionnaires ranged from 31 to 35 (30.7%), and the substitute teachers were mainly aged under 30 (47.8%), which was consistent with the age gap between on-the-job and reserve teachers. In terms of gender, according to the Ministry of Education, 31.75% of the elementary school teachers in the nation are male and 68.25% are female. 32.9% of the respondents in this study were male and 67.1% were female, indicating that the male-female ratio of the valid samples was in line with that of the whole population. Therefore, the research sample was well able to represent all the

Table 1. Reliability of each dimension and the overall questionnaire

Dimension	Operational definition of variable	Cronbach's alpha Value	Number of items
Computer self-efficacy	Self-perception of one's ability to use teacher human resource sites for recruitment (job seeking), self-perception of ability to use teacher human resource sites.	0.918	9
Site functionality	Self-perception of the functionality teacher human resource sites should have in order to increase the usage rate.	0.905	7
Perceived usefulness	Self-perception of the awareness of using teacher human resource sites to help with recruitment (job seeking).	0.926	5
Perceived ease of use	Self-perception of the level of ease of using teacher human resource sites.	0.838	3
Behavioral intention	Self-perception of the subjective willingness to continue to use teacher human resource sites or recommend them to others.	0.879	5
Overall reliability		0.942	29

elementary school teachers in Taiwan.

Current Usage of Teacher Human Resource Websites

As shown in Table 2. administrative staff and substitute teachers were all found to have experience of using the Web; however, 50.6% of them declared that they "have never used" teacher human resource websites. This clearly indicates that the usage of teacher human resource websites is still low at this particular point in time.

Table 2. Summary statistics of teacher respondents' experience of using the Internet and percentage distribution

Item	Category	Total		Administrative Staff		Substitute Teacher	
		Number of people	Percentage	Number of people	Percentage	Number of people	Percentage
Average hours per day spent surfing the web	less than 1 hour	78	18.6%	36	16.5%	42	20.9%
	1~2 hours	138	32.9%	72	33.0%	66	38.2%
	2~3 hours	73	17.4%	35	16.1%	38	18.9%
	more than 3 hours	130	31.0%	75	34.4%	55	27.4%
Usage of teacher human resource websites.	often use	18	4.3%	2	0.9%	16	8.0%
	sometime use	189	45.1%	68	31.2%	121	60.2%
	never use	212	50.6%	148	67.9%	64	31.8%

On the other hand, 68.2% of the substitute teachers said that they use teacher human resource websites, which is significantly more than the 32.1% of administrative staff. This indicates that there is still an information gap between these two groups because of their different needs.

The average mean of the respondents' "computer self-efficacy" was 4.16, which implies that the level of teachers' computer self-efficacy is above medium. In terms of teacher human resource websites, the average mean of "perceived usefulness" was 3.72, the average mean of "perceived ease of use" was 3.97, and the average mean of "behavioral intention" was 4.07. These means indicate that the respondents generally have an extremely positive attitude toward the usefulness and ease of use of teacher human resource websites and are willing to try to use them.

Difference in Awareness; An Analysis of the Contrasting Backgrounds of Elementary Teachers' Use of Teacher Human Resource Websites

Both *t*-tests and one-way ANOVA analyses were used in this study to explore the differences between the perceived usefulness, perceived ease of use, and behavioral intention toward human resource websites by elementary school teachers with different background variables. Firstly, it was found that male teachers' perceived

usefulness of these websites is significantly higher than that of female teachers, and this may be because there are more females than males in the teacher gender structure in schools; therefore, male candidates have a better chance of gaining attention when applying for teaching positions.

Secondly, teachers with a teaching certificate were found to rank "perceived ease of use" and "behavioral intention" significantly higher than those without a teaching certificate. All the reserve teachers had sufficient information literacy and could easily operate websites. Since almost all schools that seek teachers to fill posts specify that the possession of a teaching certificate is the first priority, this affects the willingness of teachers without a certificate to apply for such posts.

Thirdly, their experience of using teacher human resource websites was found to have a significantly different impact on the respondents' attitude toward "perceived ease of use" and "behavioral intention." The more experience they had of teacher human resource websites, the greater their perception of the ease of use of those websites and their willingness to use them. This illustrates that the use of teacher human resource websites increases users' willingness to continue to utilize them. The overall analysis of the variables that reached a significant level is shown in Table 3.

Correlation Analysis of Variables

Pearson's correlation coefficient was used in this study to analyze the level of correlation of various variables, and the results are summarized in Table 4. The results of using the TAM to determine the most important factors of elementary school teachers' acceptance of teacher human resource websites indicate that "computer self-efficacy" and "site functionality" have a significantly positive relationship with the TAM variables, "perceived usefulness," "perceived ease of use," and "behavioral intention" and the correlation coefficients all reached a significant level. Among them "computer self-efficacy" and "perceived ease of use" had the highest coefficient, reaching 0.666; the coefficient of "perceived.

Table 3. Different analyses across different background variables of elementary school teachers on TAM variables

Item	Perceived usefulness	Perceived ease of use	Behavioral intention
Gender	t=3.172**	t=1.547	t=1.078
	male>female		
Having a teaching certificate	t=0.954	t=2.845**	t=2.823**
		having>not having	having>not having
Website using experience	F=1.885	F=4.093*	F=8.705***
		often use>never use	often use >sometime use
			often use >never use

Note: *p<0.05 ** p<0.01   ***p<0.001

Table 4. Correlation analysis of external variables and TAM variables

	Computer self-efficacy	Site functionality	Perceived usefulness	Perceived ease of use	Behavioral intention
Computer self-efficacy	1.00				
Site functionality	0.472**	1.00			
Perceived usefulness	0.273**	0.383**	1.00		
Perceived ease of use	0.666**	0.433**	0.388**	1.00	
Behavioral intention	0.434**	0.575**	0.598**	0.448**	1.00

Note: *$p<0.05$, **$p<0.01$, ***$p<0.001$

usefulness" and "behavioral intention" had the second highest, reaching 0.598 while the coefficient of "site functionality" and "behavioral intention" had the third highest, reaching 0.575. Teachers' computer self-efficacy or information skill was found to affect their behavioral intention. Teachers with better information skills were also more inclined to use teacher human resource websites. The more familiar teachers were with the operation of the websites, the lower their negative feelings toward them, which was a mutually positive interaction cycle. As their acceptance of teacher human resource websites increased, teachers were more willing to use them. The "perceived usefulness" of the TAM variables influenced their "behavioral intention." The teachers felt that teacher human resource websites were useful for recruitment or finding a job, which resulted in a higher intention to use them. "Site functionality" was also found to have a substantial influence on their behavioral intention.

The researchers of this study believe that, if schools can post recruitment information on teacher human resource websites and web designers can improve the operational interface of the site functions, teachers' intention to use these websites will increase, thereby simultaneously increasing

Table 5. Stepwise multiple regression analysis of perceived usefulness, perceived ease of use and behavioral intention

| | Unstandardized coefficient | | Standardized coefficient | *t*-value | R^2 | R^2 after adjustment |
	Regression coefficient	Standard error	Regression coefficient			
Perceived usefulness	0.398	0.033	0.499	12.244***	0.412	0.410
Perceived ease of use	0.220	0.035	0.254	6.236***		
Intercept	1.724	0.146	-	11.770***		

*Note: *p<0.05, **p<0.01, ***p<0.001*

the actual usage of these sites.

Predictive Analysis of Teachers' Intention to use Teacher Human Resource Websites

A stepwise multiple regression analysis (Table 5) of teacher human resource websites', "perceived usefulness," "perceived ease of use," and "behavioral intention" was also conducted. The explained variance (R^2) of the results of the analysis was 0.412 and 0.410 after adjustment, indicating that the predictive power of this regression model reached the significance level of 0.001 and the joint explanatory power was 41%. In addition, the regression coefficient indicated that the variable that most strongly influenced behavioral intention was perceived usefulness (0.398), and both perceived usefulness and perceived ease of use had a positive influence on behavioral intention.
Conclusion and Recommendations

The original TAM of Davis (1989) and the modified TAM of Szajna (1996) were combined in this study to build a basic research model to explore the correlation and correlational differences between "external variables" and teacher human resource websites' and the three variables, "perceived usefulness," "perceived ease of use," and "behavioral intention". Lastly, a stepwise multiple regression analysis was

used to examine the predictive power of the websites' "perceived usefulness" and "perceived ease of use" on "behavioral intention." The following conclusions can be made based on the results.

1. Elementary school teachers have a positive attitude toward teacher human resource websites' "perceived usefulness," "perceived ease of use," and "behavioral intention," but the actual usage by teachers needs to be strengthened.

2. There were significant differences between the attitude of elementary school teachers with different background variables toward 'teacher human resource websites' "perceived usefulness," "perceived ease of use," and "behavioral intention".

3. The external variables, "computer self-efficacy" and "site functionality" were significantly positively correlated with the TAM variables, "perceived usefulness," "perceived ease of use," and "behavioral intention".

4. Teachers' attitude toward the "perceived usefulness" and "perceived ease of use" of these websites can effectively predict their "behavioral intention" to use teacher human resource websites.

Although human resource websites have been an important channel for recruitment and job seeking in Taiwan in recent years, the overall usage rate of either public or private (for example, 1111 teacher web) websites is still low. Therefore, there is still room for the improvement of teacher human resource websites. The most important factors users consider when using teacher human resource websites are the ability of these websites to meet their needs and whether the websites are useful or not. Thus, it is suggested that, when building these websites, educational authorities and site operators should pay close attention to users' feelings about the site's functionality, information security measures, and ease of use, in order to satisfy their needs and influence and attract more target users.

Moreover, educational institutions should make good use of teacher human resource platforms to attract the best teachers, who meet the specific needs of different institutions. Administrative staff should have a more thorough understanding of web usage before posting recruitment messages on teacher human resource websites in order to enhance the actual effects on teachers' use of such websites. These efforts will match the human resource to each school unit, make teachers more efficient, and improve the current qualitative and quantitative supply-and-demand imbalance experienced by Taiwan's junior high and elementary reserve teachers.

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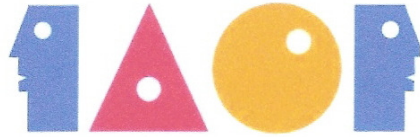
THE EFFECT OF TEACHER'S LEADERSHIP STYLE ON THE OUTCOMES OF EARLY CHILDHOOD EDUCATION

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Abstract

Early childhood education is not only related to the physical and mental development of children, but is also vital to a nation's development. Thus, teachers of early childhood education should exercise leadership skills to bring about a happy, healthy, and warm learning atmosphere to children in their early childhood and help them progress adaptively. This study hence explores the effect of a kindergarten teacher's leadership style on their teaching effectiveness. The research began with observations of three teachers' leadership style and then used Rubrics Scale to record the performance of children in early childhood from the beginning to the end of a school term. We find that a kindergarten teacher's leadership style significantly impacts children's learning. The study also notes that an appropriate and systematical mix of teachers with different leadership styles could significantly enhance children's learning outcomes.

Keywords: Teacher's Leadership Style, Early Childhood Education, Learning Performance, Classroom Management

Introduction

Kindergarten is the first learning place for most children in their early childhood. Contact with kindergarten teachers obviously plays a very important role in the growing process of children. It is often found that after experiencing work and advance study, the kindergarten teachers of various classes have their own methods for communications with parents, teaching, or arrangement of courses.

As a teacher's leadership style may determine the results and effectiveness of children's early education, this study therefore focuses on exploring the effects of a teacher's leadership style on teaching results.

As an art, leadership has no established form or manner, and different leaders employ various approaches and skills. A good leader will first communicate with members of a group to understand their views before leading the group towards a common goal, whereas an inferior leader will lead the group in a loose and not very organizational style, or even in disorder, thus never achieving their goals. At the teaching scene of a kindergarten school, the role a teacher plays is a leader who should first understand what the children in early childhood are thinking and what they need. The teacher can then bring self-confidence to the children by getting them interested in active learning, so that together with the children the teacher achieves their learning goals. The theories of leadership are roughly divided into five patterns: transforming leadership, transactional leadership, moral leadership, paternalistic leadership, and charismatic leadership. We describe them as follows.

Bass & Avolio (1990) defined transforming leadership as a leader exercising his influence to transform members' ideas and views, helping members bring forth their full potential, and marching toward a common target. We use four "I" to explain leadership:

1) Idealized influence. A leader with a forward-looking vision helps members move forward toward the realization of their vision. 2) Intellectual stimulation. A leader helps members obtain the capability to resolve problems by enlightening them in clarifying situations. 3) Inspirational motivation. Through incentive methods, a leader encourages members to pursue success. 4) Individualized consideration. A leader attaches great importance to the individual differences among members in order to allow for adaptive development.

In transactional leadership, a leader emphasizes the "transactional behaviors" between the leader and members. Through communications and consultations with members, a leader tries to understand members' demands and commits to meet them by getting the members to become willing contributors to achieving the organizational goals. The primary practices for this include rewards, punishments, and weakening skills so as to encourage members and to clearly advise them that completing their work means they obtaining benefits.

Moral leadership is based on a leader's morality, ethics, and own noble personality by setting himself as a good example. A leader leads members with justice, a sense of responsibility for doing good, and a sense of obligation in the hope that the members can also act with justice and do good things. In such a leadership style, the leader and

members exhibit mutual support and affirmation and work together to achieve their goals. Moral leadership employs responsibility and obligation as an incentive reward in order to encourage members to act in a positive way and to satisfy the moral aspect demands from members.

With enterprises in Taiwan as the subjects of observation, Silin (1976) found that the leadership style in a Chinese culture is "paternalistic leadership". Most leaders in this culture have paternalistic characteristics, which Farh_and Cheng (2000) divided it into three types: 1) benevolence leadership, 2) moral leadership, and 3) authoritarianism leadership. A Chinese leader cares not only about the members themselves, but also about their future development and their families.

Chen (2014) stressed that members are often attracted by the charisma of their leader, therefore generating psychological recognition and behavioral imitation that bring self-confidence to those members who are willing to work together to achieve organizational goals. So Chu (2008) argued that the primary characteristic of leadership (which depends on the charisma of a leader) is the leader's strong self-confidence in the decisions he has made that in turn enhance members' confidence in him. Thus, when a leader sets idealized goals, members recognize and accept these goals, and then the leader uses simple slogans, symbols, and rituals to shape an objective meaning into

members' expectation for achieving these goals. As a result, this triggers members' enthusiasm in working together to achieve the goals set forth.

Materials And Methods

This study analyzes the part of children's observable behavioral changes in classroom management content (course teaching management, general class management, and teacher-student relationship). The subjects were children in a junior class in kindergarten (a total of seven children). First, we explored different leadership styles of three teachers in a class before observing the changes (expressed by the Rubrics scale) of the children from the beginning (September) to the end of a semester (December-January). The class observed in the study was a mixed-age class with three teachers and 30 children.

From Table 1 we can see that Teacher A is the youngest and has the minimum education qualification. He concurrently takes on administrative work, which often affects his teaching and handling of class affairs. For Teacher B, in addition to having the fewest years of teaching, he also is a novice teacher and was not familiar with teaching affairs and the teaching process at the beginning of the semester. For Teacher C, in spite of having seniority, he is an early childhood educator that is not responsible for theme teaching, but rather handles general management and

nursery in the class. He also needs to assist the director in his spare time. In this study we believe that each teacher's leadership style does not completely belong to one leadership theory, but that leadership could be subdivided into many aspects and that a teacher could have some characteristics of different leadership theories at the same time. We list our everyday observations and practical approaches by the three teachers in classroom management in Table 2.

Table 1.   Introduction of Teachers

Teacher	Age	Education	Identity/Title	Teaching Seniority	Main Job
Teacher A	28	Bachelor	Teacher and Director	4 years	In the morning, teaches and handles class routine works in rotation with Teacher B. In the afternoon, handles administrative work in the kindergarten.
Teacher B	31	Master	Novice Teacher	1 year	In addition to class routine work and teaching, also has to take guide work, handle the children's nap, and be involved in other works for entire kindergarten in rotation.
Teacher C	33	Master	Early Childhood Educator	7 years	Establishes general rules for the children in kindergarten, helps handle class affairs, and assists the director in dealing with administrative affairs .

Table 2.   Classification of Teacher's Leadership Styles

Leadership Theory	Teacher A	Teacher B	Teacher C
Transforming Leadership	1. Allows children the opportunity to face practical problems. 2. Triggers children's intrinsic motivation as a learning goal. 3. Uses encouragement method to help children pursue better performance	Lets children learn by doing	
Transactional Leadership	Establishes routines like rewards, punishment, weakening skills, etc.	Establishes routines like rewards, punishment, weakening skills, etc.	Establishes routines like rewards, punishment, weakening skills, etc.
Moral Leadership		1. Sets himself as an example 2. Cares about children's feelings and needs.	
Paternalistic Leadership	Cares about not only the child himself, but also the child's family and future.		Keeps a distance with the children and establishes authority in the class.
Moral Leadership			1. Perceptive to children's feeling. 2. Confident in his own judgment.

From an analysis of the above table, Teacher A does not actively provide an answer when children face problems, but gives them an opportunity to face practical problems. The aim is to cultivate children's problem-solving capability and to trigger their children's intrinsic learning motivation as a learning goal. For the part of exchange between teacher and students, Teacher A uses the encouragement method to allow children to pursue better performance. The above leadership style is transforming leadership.

For the part of establishing routines, Teacher A employs rewards, punishment, and weakening skills, which tend to make up transactional leadership. For the interaction between teacher and children, Teacher A cares about not only the child himself, but also the child's family and future, denoting paternalistic leadership.

In designing courses, Teacher B lets children learn by doing, which further produces children's problem-solving ability. This is transforming leadership. For the part of establishment of routines, Teacher B sets himself as a good example for children and allows them to imitate and learn voluntarily. Teacher B also cares about children's feelings and needs. This is moral leadership. Teacher B uses rewards, punishment, and weakening skills, he was inclined toward transactional leadership. For the exchange between teacher and children, Teacher B cares and respects children's feelings and needs. Setting oneself as an example before asking children to do something and establishing a model for children to learn are the contents of moral leadership.

Teacher C has less close teacher-student interactions and keeps a distance from the children to establish authority in class. They are characteristics of paternalistic leadership. In the classroom setting, Teacher C is good at taking advantage of the existing space and at considering how to use existing resources to improve the current environment, thus facilitating its use by the children and furthering enhancing teaching effectiveness. In the class routine management, Teacher C is very perceptive to the children and knew how to use different approaches to face different problems and strongly confident about his own judgment. They are contents of charismatic leadership. On the part of routine establishment, Teacher C also uses rewards, punishment, and weakening skills. This is to transactional leadership. After summarizing the above-mentioned teachers' leadership styles, we conclude that Teacher A is inclined to a transforming leadership style, Teacher B has a moral leadership style, and Teacher C exhibits a charismatic leadership style.

Liu (2013), Deputy Executive Director of the Accreditation Council of Institute Engineering Education Taiwan (IEET), pointed out that the Rubrics scale displays students' expected learning results by teachers with a clear and comparable pattern that teachers can follow in the process of teaching, while the students can understand the direction of evaluation of courses and their own record of studies. Hence, the Rubrics scale helps students understand their own advantages and disadvantages and better realize their own learning state. Furthermore, the scale helps teachers evaluate data that are more difficult to be quantified to correspond to whether teaching contents can achieve teaching goals, meeting the key points observed by this study. In order to let parents to quickly indentify children's learning

Table 3.   Scoring Gauge of Children's Learning Performance in Early Childhood

Dimension/ Scores	Excellent (100-90 points)	Good (90-80 points)	Average (80-70 points)	Need to Improve (under 70 points)
Representative Symbol	④	③	②	①
Contents of Evaluation	More than 90% actively conducted learning activities and actively completed work without being reminded.	More than 70% were willing to participate in learning activities. Under supervision of teachers, they could independently complete the work.	More than 50% cooperate to participate in learning activities. Under a little assistance and guidance of teachers, they can complete the work.	Not willing to participate in learning activities, or could not or were not willing to participate in the work. They need teachers or others to render a lot of help to complete the work.

performance, we utilize a "digital circle" to represent learning results (shown as Table 3).

This study examines the concrete targets of the contents for three types of classroom management (course teaching management, general or routine management, and teacher-student relationship). The setting of concrete targets depends on the current class situation. Table 4 presents the difference in the children between the beginning and the end of the semester. The rightmost column clearly shows the extent of the individual progress of children - for example, from "Average 2" progress to "Good 3" is "progress 1 level". Table 4 presents the overall performance of children. The performances of most of the children at the beginning of semester fell in the categories of "Average" and "Need to Improve", for a total of 62 children (68%). Twenty-nine children were "Good" and "Excellent" (32%). At the end of the semester, 23 children made up "Average" and "Need to Improve" and 68 children were

"Good" and "Excellent". The ratio was 25:75, showing a significant and dramatic overall improvement in performance. The item that had the largest number of children in "Good" and "Excellent" at the end of semester was "A-2 Pleased to Share Their Own Experiences", followed by "A-3 Can Answer the Questions the Teacher Raised", "B-1 Can Actively Return the Articles to the Original Places", "B-2 Can Independently Complete Work Like Cleaning Tables and Brushing Teeth", "B-4 Can Initiatively Express Demands", and "B-5 Can Use Teaching Tools Correctly". Thus, we see that "B General and Routine Management" enjoyed the greatest progress, followed by "A Course Teaching Management", with the progress of "C Teacher-Student Relationship" being the smallest. For children's individual performances, in order to allow parents to clearly understand the differences in performance between the beginning and end of the semester, we reorganize children performances in Table 5.

Table 4. Statistics of Children's Learning Performance in Early Childhood

Classroom Contents	Management	Concrete Target	Children's Learning Performance at the Beginning of the Semester	Children's Learning Performance at the End of the Semester	Children's Progress
A.	Course Teaching Management	A-1 Take the Initiative to Speak	Excellent ④------0 Good ③------2 Average ②------2 Need to Improve ①------3	Excellent ④------2 Good ③------2 Average ②------2 Need to Improve ①------1	Continue to be Top Level------0 Progress Two Levels------1 Progress One Level------4 No Progress------2
		A-2 Pleased to Share Their Own Experiences	Excellent ④------1 Good ③------2 Average ②------2 Need to Improve ①------2	Excellent ④------3 Good ③------3 Average ②------1 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------1 Progress One Level------5 No Progress------0
		A-3 Can Answer the Questions the Teacher Raised	Excellent ④------1 Good ③------0 Average ②------3 Need to Improve ①------0	Excellent ④------2 Good ③------4 Average ②------1 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------3 Progress One Level------3 No Progress------0
		A-4 Pleased to Participate in Course Activities	Excellent ④------1 Good ③------1 Average ②------2 Need to Improve ①------3	Excellent ④------3 Good ③------1 Average ②------3 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------2 Progress One Level------3 No Progress------1
		A-5 Understand the Contents of Ongoing Activities	Excellent ④------0 Good ③------1 Average ②------3 Need to Improve ①------3	Excellent ④------1 Good ③------3 Average ②------2 Need to Improve ①------1	Continue to be Top Level------0 Progress Two Levels------2 Progress One Level------4 No Progress------1
B.	General and Routine Management	B-1 Can Initiatively Return the Articles to their Original Places	Excellent ④------1 Good ③------1 Average ②------3 Need to Improve ①------2	Excellent ④------3 Good ③------3 Average ②------1 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------2 Progress One Level------4 No Progress------0
		B-2 Can Complete Independently Cleaning a Table and Brushing Teeth	Excellent ④------0 Good ③------3 Average ②------3 Need to Improve ①------1	Excellent ④------3 Good ③------3 Average ②------1 Need to Improve ①------0	Continue to be Top Level------0 Progress Two Levels------0 Progress One Level------7 No Progress------0
		B-3 Can Follow the Class Rules in Playing Games	Excellent ④------1 Good ③------1 Average ②------4 Need to Improve ①------1	Excellent ④------3 Good ③------2 Average ②------2 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------1 Progress One Level------4 No Progress------1
		B-4 Can Initiatively Express Demands	Excellent ④------1 Good ③------1 Average ②------2 Need to Improve ①------3	Excellent ④------1 Good ③------5 Average ②------1 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------2 Progress One Level------3 No Progress------0
		B-5 Can Use Teaching Tools with Correct Methods	Excellent ④------1 Good ③------1 Average ②------3 Need to Improve ①------2	Excellent ④------1 Good ③------5 Average ②------1 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------1 Progress One Level------4 No Progress------1
C.	Teacher-Student Relationship	C-1 Can Share Life Experiences with Teachers	Excellent ④------0 Good ③------3 Average ②------2 Need to Improve ①------2	Excellent ④------3 Good ③------2 Average ②------2 Need to Improve ①------0	Continue to be Top Level------0 Progress Two Levels------0 Progress One Level------7 No Progress------0
		C-2 Can Ask or Tell Teachers when Encountering Problems	Excellent ④------1 Good ③------2 Average ②------2 Need to Improve ①------2	Excellent ④------2 Good ③------3 Average ②------2 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------0 Progress One Level------5 No Progress------1
		C-3 Willing to Follow Teacher's Instructions	Excellent ④------1 Good ③------2 Average ②------3 Need to Improve ①------1	Excellent ④------5 Good ③------0 Average ②------2 Need to Improve ①------0	Continue to be Top Level------1 Progress Two Levels------2 Progress One Level------3 No Progress------1

Table 5. Results of the Children in Early Childhood

Child	Gender	A-1 BG	A-1 END	A-2 BG	A-2 END	A-3 BG	A-3 END	A-4 BG	A-4 END	A-5 BG	A-5 END	B-1 BG	B-1 END	B-2 BG	B-2 END	B-3 BG	B-3 END	B-4 BG	B-4 END	B-5 BG	B-5 END	C-1 BG	C-1 END	C-2 BG	C-2 END	C-3 BG	C-3 END
a	♀	③	④	④	④	④	④	❷	❹	③	④	③	④	③	④	④	④	④	④	③	③	③	④	④	④	③	④
b	♀	❶	❸	②	③	②	③	③	④	❷	❹	④	④	③	④	③	④	②	③	④	④	②	③	②	③	❷	❹
c	♀	②	③	③	④	❷	❹	④	④	❶	❸	②	③	②	③	②	③	②	③	②	③	③	④	③	③	④	④
D	♂	②	②	②	③	②	③	①	②	①	②	❶	❸	①	②	①	②	❶	❸	①	②	②	③	②	③	②	②
E	♀	③	④	③	④	❶	❸	②	③	②	③	❷	❹	②	③	②	③	②	③	②	③	③	④	③	④	③	④
F	♂	①	①	①	②	①	②	①	②	①	①	①	②	②	③	❷	❹	①	②	❶	❸	①	②	①	②	①	②
G	♀	①	②	❶	❸	❶	❸	❶	❸	②	③	②	③	③	④	②	③	❶	❸	②	③	①	②	❶	❹	④	④

Note: "BG" represents "Beginning of Semester"; "End" represents "End of Semester"

Results And Discussion

Teachers' Applications of Leadership Style to Class Operation

The three teachers expressed different leadership styles. Our analyses of their leadership style present that Teachers A and B enjoyed closer relationships with the children, whereas Teacher C believed the establishment of authority was helpful to win the respect of the children. However, class atmosphere was not negatively impacted by the teachers' different leadership styles. The teachers managed to solve the children's problems through exchanges of observations with the children in their class and through applications of their own leadership styles. The general regulation management methods in classroom management content by the three teachers are more consistent, because the establishment of general regulations needs the teachers to maintain a continuous and consistent attitude. If teachers' requirements of general regulations are not consistent, then they tend to cause confusion among students, with even loopholes emerging. The teaching concepts of the three teachers in the class are closer to the general regulations, helping to establish an easy format of learning for the children. The three teachers have their own strengths in the creation of class atmosphere, and this is the part where we can clearly see a teacher's leadership style in the classroom management contents. If a teacher uses diversified methods to create together a warm and appropriate learning environment, then this will help form a trusting environment for the students and the teacher in turn can help with the children's growth. Despite the differences in teachers' leadership styles, they all communicated with the children through positive language and supported the children by giving them more autonomy, which can build confidence and generate good behaviors.

Children's Learning Performance.

From Table 4 and Table 5 We clearly see the progress of the children's overall learning performance. Almost all children in this junior kindergarten class improved their performance during the term. The bold mark symbol represents greater growth - that is, two grades of growth. The biggest growth is in answering the teacher's questions. This results from the impact of the children's maturity and their concentration on the courses. Moreover, the three teachers' leadership styles led to growth in the children. Children D and F showed little progress in the table. The reason may be that the parents of D thought that their child was still too young, and so family members solved problems for him for which he was more passive in learning. Child F had a low learning concentration and was under observation to see if he had handicaps in learning skills and whether he needed a special education teacher to intervene. Child A expressed high interest in learning, and his oral expression capability was better than other children of the same age. Thus, almost

all his learning performance records were between "good" and "excellent". The reason may be that his parents emphasized their child's independence and their dialogue method helps inspire A to think independently. Child G performed with the greatest progress among the children of the junior class. The teacher A concluded after observation that although G did not adapt to class life at the beginning of the semester, he had good life self-management capability and by the end of the semester he had eventually adapted to class life. Furthermore, there was positive and close communications between parents and teacher, and the parents and teacher maintained the same standard. Hence, he demonstrated good learning performance.

Conclusion

The allocation of class tutors in early childhood education is different from that in elementary schools and junior high schools. More mutual cooperation among teachers is needed to jointly create a good class atmosphere and to build an environment that is suitable for learning in a class with two or more teachers. Doing so could help children in their early childhood to upgrade their overall capability. We summarize the conclusions and recommendations after analyzing the contents as follows:

a. Communications and sharing between teachers are essential to young children. Ho (2007) noted that teaching in a same class should entail mutual trust and respect between teachers. Facing 30 kindergarten children in a class, a teacher sometimes may not be able to carefully and thoroughly handle all of their behaviors. The three teachers in this case study's class used after-class time to exchange their observations of the students and exercised different leadership styles to help the children to face and solve problems. Thus, they could bring forth the observation that 1+1 is indeed greater than 2.

b. This study has found that if teachers in the same class share the same teaching concepts and have common standards on the part of general and routine management, then the learning results of the children can effectively be enhanced.

c. The enhancement of students' overall learning results and effectiveness will be limited if it depends only on the efforts by teachers at the school. Hsu (2008) argued that with the changing of times, although teachers have more and more responsibility in taking care of young children, both teachers and parents share the decisive influence on children at the same time. The interactions between parents and teachers also have a great effect on children. If parents can mutually cooperate with class tutors, then it is certain that young children's overall performance will be enhanced. There is no difference in behaviors under different environments.

d. Irrespective of the quality of leadership styles, if teachers can understand their own leadership styles and applied them to

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teaching and problem-solving, then this will greatly help in the growth of young children.

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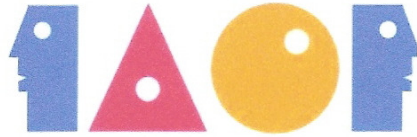
THE RELATIONSHIP OF CREATIVITY BETWEEN ARCHITECTURE AND VISUAL COMMUNICATION DESIGN

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Abstract

This paper investigates the relationship between architecture and visual communication design. This study is based on architecture, and it utilizes visual communication design techniques to develop new opportunities for architectural design. From two-dimensional, to three-dimensional and four-dimensional designs, the study constructs the main relationship theme of each dimension and their key development directions. The basics of design emphasize "shape", "color", and "quality".   Architectural design pays special attention to the development of "shape". Visual communication cannot be delivered verbally, and therefore also relies on "shape" as a media of communication. The semantic of "shape" is not a fixed form or model. Space-time and the cultural environment cause changes to the meaning of "shape". In visual communication area, the producer utilizes "shape" to objectify design contents in order to carry the message across to recipients.   This implies that the meaning of "shape" must have social significance. Therefore, visual communication design can be applied in various fields. This paper also points out its application possibilities in the field of architecture designs, so that multi-disciplined professionals can have an application direction, showing the results of such aid.

Key Words: Architecture design, Visual communication design, Creativity, Scenario

Introduction

Design is widely applied in scientific fields. With respect to architecture related fields, design includes the broad scope of urban environmental design and architecture design, and the narrow scope of interior design and furniture design. Peripheral related designs also include garden design, landscape design, basic design, and lighting design, etc. Therefore, "architecture design" deals with all these big and small scopes mentioned; they all have to be taken into consideration while designing.

After the introduction of computer interfaces and platforms, architecture design developed a set of virtual design representations that combines the digital field. Therefore, it deals with the problem of physical and virtual space design. With respect to the world that is composed of the three elements of men, nature, and society, design can be divided into three fields of spatial design, product design, and visual communication design.   The main purpose of this paper is to explore visual communication design in the field of architecture. Amongst this, creative design is set as the starting point for developing design needs, and scenario representation is set as the ending point.

"Visual Communication Design" literally means design related to visual, communication, or dissemination. It is a design profession that especially deals with dissemination and publicity. Traditional applications are mainly based on graphic designs including newspaper ads, magazine ads, TV commercials, and other design works. However, in addition to being related to, and being similar but having different names to two-dimensional graphic design, commercial design, and art design, can the scope of visual communication design be extended to three-dimensional spatial design? What, in fact, is visual communication design? What are the properties? What is its definition? What are its design objectives?

Visual Communication Design

The definition of visual communication design

Exploration of the definition of "Visual Communication Design" must start from "Design". The word "Design" derives from the Latin word "Designare", and can be translated as "a designer" or "draftsman". From the English point of view, design can refer to plans, proposals, objectives, outlines, and processes, which means the idea of planning, and also includes ideas and development processes. In addition, it can also refer to sketches, models, themes,

decorations, visual compositions, and styles, which means drawing, because a plan is put into effect through pictures, themes, and visual compositions. The German designer, Fritz Eichler, said that "design" is a multi-faceted and complicated activity. It is not limited to pursuing the beautiful appearance of products and objects. Solving the appearance is only a kind of visual representation. Design must be in coordination with function; a line, a circle, a composition, a kind of modeling, must have its representative significance that conveys the effects of communication deeply (Mozota, 1990).

Chen and Yang (1998) suggest the visual communication design should be viewed in separate words as "Visual, Communication and Design". This makes it relatively easy to understand: It is a kind of design that is visual; and it is related to communication. The word "communication" conveys dissemination, notification, contact, exchange, and communication. That is, it is a design that converts information into visual codes to facilitate transmission to and communicates with recipients. It constitutes of an originator, symbols, and a recipient. Transmission cannot be established if any of the constituents are missing.

Wang (2000) points out that "Design" is a type of project, plan, idea, and problem-solving approach. It is the activity process that communicates in a visual way.

The core contents include three aspects as following:

(1). Project, concept formation.
(2). Visual communication methods such as utilizing a visual method to covey the project, concept, idea, and problem solving method.
(3). The overall application of the project after it has been conveyed.

Therefore, "design" is a conception, plan, and problem solving activity. It is an activity that communicates conception and overall application through visual form. It has a certain purpose, method, and process to realize the conception. Moreover, "Visual Communication Design" is a kind of design that conveys or communicates visual information. Through pictures, colors, and messages, it communicates and allows people to experience certain feelings and experience the results of the design (Lin, 2003).

Wikipedia defines "Visual Communication Design" as: "The active behavior with the objective of communicating something through visual form. It primarily, or in part, relies on and expressed with two dimensional images, including: signs, typography, drawing, graphic design, illustration, color, and electronic equipment. At the same time, a message is found - visual message accompanying text has a greater power to communicate, educate, or persuade the audience." From this, it is clear that

traditional visual communication design mainly used graphic visual communication methods. Space, architecture, industrial, environment, digital media, fashion, and other areas are not considered under the narrow category of visual communication design. However, the broad visual communication design category in modern days is design that allows the audience to see and appreciate with their eyes. It can be fully interpreted through design that utilizes "image" and "form" as the subject matter, or through the purpose of visual communication design to "convince" or "letting meanings take shape" (a story with form or shape).

Therefore, visual communication design is a design that exchanges information and communicates through visual form.

The Objectives of Visual Communication Design

Visual communication cannot be transmitted verbally, but it relies on "shape" as a media. Thus, it is necessary to control the meaning and pattern of "shape". The meaning of the shape is the implication expressed by the shape. More specifically, they are the elements of shape which producers try to capture - point, line, surface, body, color, texture, and so on. The particular meaning formed through a certain combination and organization is conveyed to the recipient. The forms of language, mentioned previously, cause many psychological and physiological

effects on the recipient, and the recipient re-interprets the shape in their own way. The meaning of the shape that utilizes visual communication as the main contents primarily conveys the ideas expressed by the creator. The language of design itself can replace oral or written language, and convey the producer's meaning and intention.

According to the evolution of visual communication design, Yang (1999) points out that the simple graphic designs in the early days function to inform; which is a one-way communication. Today, this has transformed into a formal appeal. In other words, it is a virtual method to convince, and intends to achieve the goals of communication and persuasion through the design of visual mediums that transmit the message. In other words, "communication" is the basic task for visual communication design. A more aggressive objective is to "persuade" through visual expression.

Along with the evolution of the times, "Visual Communication Design" has had different names and definitions. Yu-Fu Yang points out that in addition to utilizing the vision advantages of mankind and the cultural codes that conform to the audience to capture beauty, visual communication design must also combine visual elements with communication and persuasion elements.

In visual communication, the producer utilizes "shape" to objectify design contents in

order to carry the message across to recipients. This implies that the meaning of "shape" must have social significance. In other words, visual communication cannot be like paintings or sculptures where the creator injects their personal emotions and ideas into the shape. It does not need to consider whether the meaning of the shape can be interpreted by the viewer. The meaning of shape must include common feelings and memories of the people, nature, and society. Moreover, there must be consensus towards the meaning of shape obtained through this. This kind of socially significant consensus forms the basis for communication of shapes among the people (Lin, 2008).

Therefore, the design objective of visual communication is to convey ideas and emotions to the audience through creations. This purpose has created today's broad concept of visual communication design, and expanded its design scope.

The Relationship between Visual Communication Design and Spatial Design

With the progress of computer technology, sound, motion pictures, and virtual reality, multi media are now used in combination. Visual design has already moved well beyond the scope of two dimensions. The term "Graphic Design" can no longer include all the contents involved in this field of design.

The term "Visual Communication Design" became popular during 1960 when a World Design Congress was held in Tokyo, Japan. Designers that participated in this event realized that under the continuous expansion of image media, visual and image can exist as independent methods of communication. Especially in the information age, visual communication design is not just a commercial service. Whether it is communication between people, communication between the government and its people, and communication between vendors and customers, efficient communication has become the main objective of visual communication design. It goes through: conveyance → communication → persuasion. Here, the term "Visual Communication Design" vividly expresses the meaning of this design field.

Opinions vary with regards to the classifications of visual communication design. There are difficulties in exploring the classifications of graphic design; hence, it can be discussed from three perspectives. First, from factors of the object of design, such as font, layout, illustration, logo designs etc. Secondly, if you look at it from the functions involved in the design, then it can be classified into the discussion, content, and effect of visual communication. Thirdly, it can be classified according to a specific range of application such as book, packaging, advertising designs etc.

Each classification method has their different perspective. The different aspects must be taken into consideration especially when it comes to the objective of writing design's history. Therefore, three different perspectives are all used in order to maintain the basic features and contents that can entirely reflect the evolution of design.

If design demand is used to reflect the main classifications, for example, under the category that needs marketing advertisement, there are poster, graphic advertisement designs etc... Categories closely related to exhibition functions are exhibition design, display design, POP commercial promotion design etc... Categories that need to consider visual identification include trademark, corporate identity, CIS design etc.. From this classification method, the requirements of design thinking and the main point expressed by the design results can be seen.

In addition, as long as the design involves an originator that utilizes visual forms to communicate with the recipient, it is included into the scope of discussion. Emphasis should be placed on "conveyance and communication" rather than on the comparison of commerciality and culture. This includes signs, charts, space representation - maps, time representation - calendar and almanac, advertisement design, packaging design, exhibition design, and typography and editing design. In addition, the spatial type presented by the final work

can be used to define the scope. This is divided into two dimensions, which includes logo design, font, print design, editorial design, advertisement design, poster editing, illustration, etc...; three dimensions, which includes packaging design, PS advertisement design, POP advertisement design, exhibition, display design, periodical sample design, etc.; and four dimensions that consists the time factor, which includes TV-CF design, animation, video design, etc.. Chen (2008) presents the two-Dimensional, three-Dimensional and four-Dimensional visual communication design classifications are shown in the Tables 1, 2, and 3.

Each of the classified professional design mentioned above need very well-skilled designers and professional knowledge. However, they have one common feature: the finished design must be visually appreciated by the audience. Therefore, the effectiveness of visual communication has become the most important factor for designers to think about. During the early stages of design, the designer must first clarify what sort of visual experience the end product must bring to the audience, what sort of message does the designer hope to communicate across through these mediums, and how to make the communication most efficient. These are the main issues that must be considered when practicing visual communication design. From the above literature interpretations of "Visual Communication Design", we can summarize these specific observations:

(1). Visual communication design is design that allows the viewer to see and appreciate through their eyes. It is visual symbol design that conveys the message to recipients and communicates with them through the process of message encoding and decoding. The commun-ication struct- ure constitutes of an originator, symbols, and a recipient. This communication model cannot be estab-lished if any of the constituents are mis-sing. In addition to the communication function, it also has the purpose to convince and persuade.

(2). Visual communication design must thoroughly think about where the core of the problem is, create a new concept that can solve the problem satisfactorily, and cautiously propose an answer to solve the problem. Visual communication design must also take into account the visual effect of aesthetics in order to have the opportunity to get closer with the target audience and allow customers to accept satisfactory designs.

(3). Visual communication design includes various specific applications from print ad design, three-dimensional display design, to dynamic homepage design that include the time factor. As long as it uses visual forms to transmit the message to engage in communication and per-suasion.

Architecture Design and Visual Communication Design

With respect to the field of architecture design, in addition to the general urban environment design and architecture design, to the narrower sense of interior design, furniture design, and lighting design, it also deals with related problems in garden landscape design and basic design etc. Therefore, in "Architecture Design", all the major and minor fields of physical and virtual space mentioned previously must be considered while designing. The actual pres-entation of architecture design outcome relies on two-dimensional graphic designs such as floor plan, elevation drawing, sectional drawing, and perspective drawing, in addition to three-dimensional spatial designs such as models and animation to be presented completely. In short, it belongs to the overall manifestation of two and three dimensions in visual communication design that conveys the designer's creativity.

Architecture related design places more emphasis on methods and organizations to address the demands of space, which also takes functionality and practicality into consideration. The design concept must have clear objectives, a source of attraction, in which design can be made according to specific and clear concepts. It is not confined to the manner in which people use or understand the building. Instead, it seems like opening the door and inviting everyone to

make their own interpretations and insights. This is its biggest difference from visual communication design. Therefore, this paper consolidates and filters out each dimensional factor in related architecture design fields, supplements and amends it with partial contents for two to four dimensional communications from Tables 4~6, and establishes the multi-dimensional relationship between architecture and visual communication designs. It re-investigates from the perspective of two to four dimensions and establishes the relationship between architecture design and visual communication design, providing an opportunity for the two different disciplines to be integrated:

(1). Two Dimensions: Areas of most relevance between architecture and visual communication design are centered on chart design, cover design, poster design, catalog design, and guide design, which are mostly used to make picture compositions in the architecture plan report and layout.

(2). Three Dimensions: Can be divided into the following fields:
  A. Urban environment design: Includes advertisement signboard design, street furniture design, public art design, amusement park facilities image design, amusement park spatial ideology design, community ideology design, and spatial repurposing design. Architecture Design: Includes build-
ing facade design, building exterior image design, building exterior decoration design, building corporate identity design, and building materials and colors.
  B. Interior design: Includes interior decor style design, interior thematic design, interior upholstery material and color, window display design, and exhibition design.
  C. Furniture design: Includes POP, furniture product design, and beautification of construction facilities.
  D. Garden landscape design: Includes playground equipment design, prop design, road sign design, and signs design.

(3). Four Dimensions: Mainly refers to lighting design, including accent light design, architectural animation design, and stage design.

Comparing the differences between each dimension, architectural design places more emphasis on space and three-dimensional aspects. With respect to the breadth and depth of application, it uses the techniques of visual communication design. With regards to four dimensions, visual communication design application gives more in-depth development guidance to architectural design; mainly in the aspect of depth, such as lighting and virtual reality.

Conclusion

This paper points out the application possibilities in architectural design, which allows multi-disciplined professionals to have an application direction, showing the results of such aid.

This paper argues that architecture and visual communication design should use "creative design" as the starting point for developing designs. In other words, creativity is thinking outside the box and trying to face the problem from a new perspective, and proposing a refreshing and more efficient problem solving method.

This paper argues that architecture and visual communication design should make "ideology expression" as the goal for developing design requirements. The creativity in architecture design comes from understanding the needs of the space. From this understanding, the designer can use creative thinking to organize the space and satisfy the functional demands of each space while solving complex spatial design problems at the same time. However, eventually it has to produce a beautiful and practical spatial entity that shows the overall ideology.

Architecture and interior related spatial design emphasizes combination with visual communication design. Academic and practical aspects must strengthen diversified application, and make use of visual communication computer software abilities for editing or post-production, in order to show the perfect spatial production results.

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Table 1. Visual Communication Design Classification for Two-Dimensional
Communication.

Two-Dimensional Communication	
Trademark Design	Visual symbols for identification purposes, such as company, enterprise, brand trademarks.
Logo Design	The symbol that expresses the spirit of activity or competition's theme, such as exhibition logo.
Badge Design	Symbols with identification and symbolic significance, such as family crest, mark.
Banner Design	Pattern compositions with a strong spiritual symbolism, such as national flags, game flags.
Indicator Design	Refers to public indicator symbols, such as traffic indicators, safety guidelines.
Label Design	Symbols with description functions, such as laundry labels, ingredient labels.
Chart Design	Structural diagram, assembly diagram, systems organization chart, explanatory charts, etc.
Illustration Design	Hand-drawn or computer-drawn advertisement illustrations, book illustrations, picture book illustrations, etc.
Cover Design	Cover designs for books, magazines, journals, yearbooks, manuals.
Print Ad Design	Print ads used to differentiate between television advertisements, such as magazine and newspaper ads.
Poster Design	A kind of print ad, such as posters, billboards, outdoor advertisements.
Catalog Design	Product introductions with the intention for marketing promotions, such as product catalogs, restaurant menus. Introduction design, and manual designs with introductory functions, such as business, unit, and activity introductions.
Guide Design	Manual or leaflet that has navigation properties and is often included with a

	location map.
Books Editor	Handles large amounts of text data layout design, and especially emphasizes structured arrangements.
Textile Design	Single or continuous pattern designs that are printed or woven on fabric.
Logotype Design	The font /typeface designed to convey the spirit and nature of a business or organization.

Table 2. Visual Communication Design Classification for Three -Dimensional Communication.

Three-Dimensional Communication	
Packaging Design	Labeling, paper cards, paper boxes, gift boxes, bags, bottles, packaging design.
DM Design	Folded advertisements and flyers for mailing. Needs to take into consideration the effects of front and reverse folds.
Corporate Identity Design	Specific applications for corporate identity's diverse mediums, such as uniforms, signs, business cards, and so on.
Brand Identity Design	Used for branding, advertisements, posters, catalogs, etc.
POP	Advertisements used in stores to stimulate product sales; a three-dimensional billboard design.
Exhibition Design	Utilize spatial arrangements to display goods or services, such as the World Trade Center design.
Window Display Design	A single window display design for static displays, and is arranged in order to highlight the item featured.
Signboard Design	Outdoor three-dimensional advertisement designs that must consider readability and recognizability.

Table 3. Visual Communication Design Classification for Four –Dimensional Communication.

Four-Dimensional Communication	
Commercial Video	Motion pictures that TV media use to promote products, services, or create image.
Prologue Design	Opening that are played at the beginning of a movie to point out the theme.
Webpage animation	The objective of the homepage (index.html) is to show the spirit or style of the website.
Multimedia Interactive	Multimedia design that combines motion pictures and sound interactions, such as training CDs.
Lighting Design	As long as the space or site utilizes lighting to create atmosphere, style, image.
Website Planning	The planning and design of virtual space in the internet world, with display or interactive mechanisms.
Stage Design	Spatial design for stage performances, which includes shaping the style, lighting, and visual images.

Table 4. The Classification of Architecture and Visual Communication Design for Two Dimensions.

Two Dimensions	
Chart Design	Structural diagram, assembly diagram, systems organization chart, and other explanatory charts
Cover Design	Cover designs for reports, books, magazines, journals, yearbooks, manuals.
Poster Design	A type of print ad, such as putting up posters, advertising billboards, beautifying external walls.
Catalog Design	Product introductions with the intention for marketing promotions, such as

	product catalogs, restaurant menus. Introduction design, and manual designs with introductory functions, such as business, unit, and activity introductions.
Guide Design	Manual or leaflet that has navigation properties and is often included with a location map.

Table 5. The Classification of Architecture and Visual Communication Design for Three Dimensions.

Three Dimensions	
Urban Environment Design	
Advertisement Signboard Design	Outdoor three-dimensional advertisement sign designs that must consider readability and recognizability for pedestrians.
Street Furniture Design	Telephone booth, trash can, street lights, street benches, flags or banners
Public Art Design	Creative entity that expresses the natural or cultural image or implications of the space.
Amusement Park Facilities Image Design	Visual simulations from thematic displays of game facilities.
Amusement Park Spatial Ideology Design	Visual experience creativity for recreational environments which allows users to feel that they are virtually there.
Community Image Design	The expression of the community's characteristics and properties, such as entrance image design, beautification of wall paintings.
Spatial Repurposing Design	Using a variety of visual communication techniques to change the traditional spatial image.
Architectural Design	
Building Facade Design	The overall appearance of the building, entrance design, functional architectural design.
Building Exterior Image Design	The image shaping of exterior residential, office, commercial, and school buildings.
Building Exterior Decoration Design	Decoration design embellished on the exterior of buildings.

Building Corporate Identity Design	The overall application of diverse mediums for corporate identity on the external appearance of buildings.
Building Materials and Colors	The use of outdoor materials including material and color selection.
Interior Design	
Interior Decor Style Design	Use different visual elements to express different interior spatial images to create style.
Interior Thematic Design	Visual ideology simulations to express different themes.
Interior upholstery material and color	The use of indoor materials including material and color selection.
Window Display Design	A single window display design for static displays, and is arranged in order to highlight the item featured.
Exhibition Design	Utilize spatial arrangement to display products or services, such as World Trade Center design.
Furniture Design	
POP	Advertisements used in stores to stimulate product sales; a three-dimensional billboard design.
Furniture Product Design	Styled tables and chairs, counters, sofa, and beds that suit each environment's themes.
Beautify Construction Facilities	Beautification of construction vehicles, construction fences, construction signs, and construction facilities.
Landscape Design	
Playground Equipment Design	Playground equipment combinations such as slides, nets, horizontal bars, and seesaws.
Prop Design	Such as photography facilities.
Road Sign Design	Road guidance.
Signs Design	Structures designed to introduce the garden landscapes and facilities located around the area.

Table 6. The Classification of Architecture and Visual Communication Design for Four Dimensions.

Four Dimensions	
Lighting Design	
Lighting Ideology Design	Accent lighting on building exteriors, nighttime urban landscape simulation, indoor thematic lighting.
Architectural Animation Design	Virtual reality, flight simulation.
Stage Design	Performance space design which includes shaping the style, lighting, and visual image.
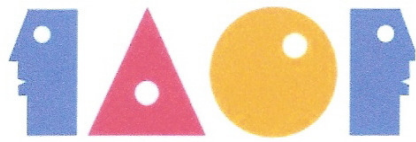
MEASURING TOURIST COGNITION AND PREFERENCES IN CREATIVE TOURISM AREA

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Abstract

As one of the oldest cities in Taiwan, Tainan boasts a rich resource of cultural and historical attractions. Thanks to the backing of the municipal government, Old Five Channels Cultural Zone has been turned into an example of creative tourism, drawing in a large number of tourists. This research surveyed the cognition and preferences of visitors at the cultural zone via questionnaire and analysed the statistics using one-way Analysis of Variance (ANOVA) and Tukey Honestly Significant Difference (HSD) test. A connection between the attraction and the area, which the research aims to discover, was found to be absent. The lack of local distinctness is detrimental to the development of cultural and creative industries here, which in the long run risk would harm the zone's tourist appeal and image as a creative tourism destination.

Key Words: Old Five Channels Cultural Zone, Preference, Cognition, Cultural and Creative Industry, one-way ANOVA

Introduction

Cultural tourism has emerged in recent years as the fastest developing and the most popular travel type around the world (Richards and Wilson, 2006a). Culture, as a tourism resource (Fainstein, Hoffman and Judd, 2003), is used as a means of social and economical development (Smith, 2005a; Richards and Wilson, 2006b). This trend helps the flourishing of cultural tourism market and the abundance of destinations offering their unique cultures as the selling point. However, as Richard and Wilson (2006a) suggested, the serial reproduction of culture in different places starts to make many customers feel tired. To address this, creative tourism appears as an alternative to the conventional models of cultural tourism (Smith, 2005a).

UNESCO defines cultural and creative industries as "sectors of organized activity whose principal purpose is the production or reproduction, promotion, distribution and/or commer- cialization of goods, services and activities of a cultural, artistic or heri- tage-related nature" (UNESCO,

2000). In other words, cultural and creative industries promote products and services by highlighting their unique local features, in order to evoke visitor's affection for a destination's distinct his- tory and heritage.

Literature of Review

Established in 2002, Old Five Channels (Goǔ Tiaǔ Kanġ) Cultural Zone is located in the mid-western part of Tainan city. Since the Kang Xi period during the Qing Dynasty, Old Big Well port – the logistic hub in the west side of Tainan city, had been hit by serious sedimentation which affected shipping traffic and goods transportation. The worsening situation triggered the shift of development from the port's nearby Chih-kan to the mid-western side of the city, where the Old Five Channels area would later exist. During the reign of Emperor Qian Long, local businessmen followed the water current to dig up five channels for commercial purposes. From north to south, they were Shin-kang-qian Kang, Fo-tou Kang, Nan-shi Kang, Nan-he Kang and Hai-an Kang. The new channels led to the prosperity of its vicinity, which lasted till the end of the Qing dynasty and the onset of Japanese occupation. However, after several phases of urban planning and construction under the Japanese rule and later the governing of Kuomintang, these old channels have now disappeared all together. In 1991 the project to expand Hai-an road, dogged with scandals, failed and caused the road to be closed and the area abandoned with several residential houses torn down and businesses gone. The work on Hai-an road only resumed years later and was finally completed in 2002. And, in 2013 thanks to the old streets revival program led by the Council for Cultural Affair the derelict buildings along the road were rediscovered by local artists.

Art in- stallations and graffiti sprouted here and there, transforming the once abandoned rubbles and half-demolished buildings into artwork exhibitions. Business also returned with many small independent shops moving into the side streets along the road. The vicinity of Hai-an road is now transformed into Tainan's latest trendy spot.

Thematisation (Law, 1992, 1993; Swarbrooke, 1999, 2000; McCarthy, 2002) is one of the most popular strategies adopted by cities when cultivating their tourist resources (Richards and Wilson, 2006a). The development of creative industry and creative tourism is key to a city's thematisation (Smith, 2005a, 2005b; Richards and Wilson, 2006a, 2006b). Creative tourist experience provides indi- vidual visitors the opportunity to express their creative potential (Richards and Raymond, 2000), while showcasing distinct local craftsmanship, expertise and tradition (Binkhorst, 2005; Richards and Wilson, 2006a). Such activities enable tourism to connect with the place and the communities in a way to promote the local economy and identity.

Environmental cognition refers to an individual's emotional response to the environment based on personal exper- ience and his/her perception and awareness of it. The cognition hence involves both tangible and intangible elements, such as incidences, personal and/or collective emotions and symbolic meanings (Bell *et al.*, 1996).

Environ- mental awareness, impression, inform- ation and beliefs reflect personal and collective feelings and understandings of the elements and objects within the environment. They are also images of the environment's characteristics, functions, changes and structural connections, to which meaning, significance and mythical-symbolic features are given by an individual (Moore and Golledge, 1976). Therefore, to understand a person's environmental cognition is to help solve spatial problems, to provide a framework for his/her feelings, beliefs, fantasies and current or future actions, as well as to enable him/her to identify with the place. In psychology, preferences could be conceived as an individual's attitude toward a set of objects (Lichtenstein and Slovic, 2006), or to mean evaluative judgement in the sense of liking or disliking an object (Schere, 2005). Therefore, tourist activities reflect an individual's social-environmental prefer- ences (Iso-Ahola and Weissinger, 1985), as well as the results of an interaction between cognitions and feelings (Kaplan, 1988). Tourist preferences also shed light on how and why a destination has a "pull" on its visitors (Smith, 1995).

The imagination generated from tourism is based on tourists' connection with the destination (Jenkins, 1982). In this sense, the creation of an attraction means to create symbols and meanings for the tourists (Desforges, 1999). And, to manage a recreational area has to take effort in

conveying a positive image (Woodside and Carr, 1988), which adds a competitive edge. This research looked at Taiwan's cultural and creative tourism based on the case of Old Five Channels Cultural Zone. Through questionnaire survey it explored visitors' cognition and preferences in terms of creative tourism with the aim to provide the industry reference for tourism management and future planning.

Methodology

This research adopted the closed version of a structured questionnaire using the Likert 5-point scale. The survey ran from 25 to 27 July 2014 and targeted visitors at Old Five Channels Cultural Zone. Random sampling resulted in the total of 491 collected copies, among which 469 were confirmed valid (96% validity rate).

Questionnaire design covered three aspects, namely demographics, environmental cognition and tourism preferences. The demographic section included gender, age, number of visit, familiarity with the destination and length of each visit. Based on the target industry and space, the section regarding environmental cognition was designed to meet research purposes and needs, and covered three dimensions: industry development cognition, enviro- nmental characteristics cognition and environmental image cognition. Refer- encing Recreation Experience Preference Scale (REP) (Driver,

Brown and Peterson, 1991), the last section regarding tourist preferences was divided into feature preferences, development preferences and attractiveness preferences. SPSS 20 was used for statistical analysis.

Statistical analysis started with item analysis to remove items without item discrimination ($r \leq 0.3$). The results led to the removal of item 1, 9, 17 from the section of environmental cognition, and item 15 and 17 from the section of tourist preferences. Cronbach's α values reached 0.910 and 0.896, confirming the scale's overall high validity level.

To understand respondents' environmental cognition and preferences, one-way analysis of variance (ANOVA) was utilized to determine item signifi- cance with level of significance set at 0.05 ($p < 0.05$). Environmental cognition cover- ed the dimensions of industry devel- opment cognition, environmental charac- teristics cognition and environmental image cognitions, while tourism pref- erences included the preferences for tourism features, development and attractiveness. Within each dimension two hypotheses, null (H_0) and alternate (H_1) were set up as seen below:

1. Industry development cognition:

H0 - there is no significant variance be- tween any two items regarding

respondents' industry development cognition.

H1 - there are at least two items regarding respondents' industry development cognition showing significant variance.

2. Environmental characteristics cognition:

H0 - there is no significant variance between any two items regarding respondents' environmental characteristics cognition.

H1 - there are at least two items regarding respondents' environmental characteristics cognition showing significant variance.

3. Environmental image cognition:

H0 - there is no significant variance between any two items regarding respondents' environmental image cognition.

H1 - there are at least two items regarding respondents' environmental image cognition showing significant variance.

4. Tourism feature preferences:

H0 - there is no significant variance between any two items regarding respondents' tourism development preference.

H1 - there are at least two items regarding respondents' tourism feature preference showing significant variance.

5. Tourism development preferences:

H0 - there is no significant variance among items regarding respondents' tourism development preference.

H1 - there are at least two items regarding respondents' tourism development preferences showing significant variance.

6. Tourism Attractiveness preferences:

H0 - there is no significant variance between any items regarding respondents' tourism attractiveness preference.

H1 - there are at least two items regarding respondents' tourism attractiveness preference showing significant variance.

During variance analysis when the F-test reached significance ($p < 0.05$) a null hypothesis was disapproved. Such a result indicated the existence of significant variance between at least two items. However, this did not reveal which items are at variance and to identify them require posteriori comparisons. To reduce type 1 errors caused by multiple com- parisons, Tukey Honestly Significant Dif- ference (HSD) test was employed for the calculation of item difference.

Results and Discussions

In our survey, 36% of the resp- ondents were male (168), 64% female (303), mostly aged between 16-24 (267 people, 57%) and with 74% having a university degree (348). In terms of their familiarity with the destination, more than half (60%) were first-time visitors at Old Five Channels area, that were 282 in total, while 43% had a lower-than-average familiarity wit the area (203). 41% of visitors came from Tainan city (193), though a worth-mentioning 59% came from other cities (including from other countries). This suggests Old Five Channels Zone has a certain degree of reputation outside Tainan city. In terms of travel companion and length of trip, 257 respondents (55%) made the trip in the company of family and friends, and only 9 (2%) came with a group excursion. This suggested the majority of visitors here are independent travelers. Most of the respondents, that is 74% (349 people), made a day trip.

In one-way ANOVA the results of all three cognition dimensions were significant, as seen in Table 1 to Table 3. The null hypotheses were therefore disapproved, meaning the existence of variance between at least two items in each of the dimensions.

Table 1.   Variance analysis of industry development cognition

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.476	5	.895	2.554	.026
Within Groups	984.328	2808	.351		
Total	988.805	2813			

Table 2.   Variance analysis of environmental characteristics cognition

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21.139	4	5.285	8.964	.000
Within Groups	1379.578	2340	.590		
Total	1400.716	2344			

Table 3.　Variance Analysis of environmental image cognition

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	63.187	8	7.898	15.201	.000
Within Groups	2188.503	4212	.520		
Total	2251.691	4220			

The variance analysis of the three dimensions regarding preferences, namely feature, development and attractiveness, showed results with significance, as seen in Table 4 to Table 6. This indicated that in each dimension there were at least two items having significant difference between them. The null hypotheses were therefore proven wrong.

Table 4.　Variance analysis of tourism feature preferences

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	75.439	7	10.777	20.229	.000
Within Groups	2003.151	3760	.533		
Total	2078.590	3767			

Table 5.　Variance analysis of tourism development preferences

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	115.111	5	23.022	37.939	.000
Within Groups	1711.227	2820	.607		
Total	1826.338	2825			

Table 6.　Variance analysis of tourism attractiveness preferences

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	26.352	4	6.588	11.358	.000
Within Groups	1363.151	2350	.580		
Total	1389.503	2354			

As the dimensions of either environmental cognition or tourism preference revealed significant variance between items, Tukey Honestly Significant Difference (HSD) test was adopted for further calculation. The results of posteriori comparisons regarding the cognition dimensions are listed in Table 7 to Table 9, as Table10 to Table 12 present those of the preference dimensions. It was found that respondents were unaware that Old Five Channels Cultural Zone is managed as a destination of cultural and creative tourism. They also did not see their visits here as creative tourism. However, they agreed that the area's tourism potential could benefit from the development of cultural and creative industries. This indicates that cultural and creative industries have already had an effect on shaping the image of the area. Moreover, respondents agreed that the cultural and creative image of the area is developing a local distinctness and has a pull on foreign visitors. In general, Old Five Channel Cultural Zone is found to be a good choice of leisure travel destination and is worthy of further promotion and repeated visits.

In term of feature preferences, visitors at Old Five Channels Cultural Zone in general found the activities available here, though fun and with traditional charms, were not powerful enough to evoke a reminiscence of the past. In addition, despite its current popularity, the area's history and heritage are yet to be properly conveyed and presented. The preservation of cultural distinctness should be the priority to avoid commercialized over-development and modernization. Finally, despite the fact that the cultural zone aims for creative tourism as its selling point, most of the visitors still found old streets and buildings most interesting. In comparison with art installations and architectures, the cultural

and creative industry here somehow ranked the lowest in tourism attractiveness.

Conclusion

The results of one-way ANOVA and Tukey HSD test suggested that Old Five Channel Cultural Zone has conveyed its local distinctness. However, the attractiveness of its cultural and creative industries remains low, as they do not make a real connection with the area's past, and fail to evoke visitor's reminiscent thoughts. One of the reasons is that they feel like the special new industries being brought in from the outside, instead of being a historical part that tells local stories. The lack of a local connection is detrimental to the future of cultural and

Table 7.   Industry development cognition: posteriori comparisons

	A02	A03	A04	A05	A06	A07
A02						
A03						
A04						
A05						
A06	*					
A07						

* ($P<0.05$)

Table 8.   Eenvironmental characteristics cognition: posteriori comparisons

	B08	B10	B11	B12	B13
B08					
B10					
B11	*	*			
B12	*	*			
B13			*		

* ($P<0.05$)

Table 9.   Environmental image cognition: posteriori comparisons

	C14	C15	C16	C18	C19	C20	C21	C22	C23
C14									
C15	*								
C16		*							
C18		*	*						
C19		*		*					
C20	*		*		*				
C21	*		*		*				
C22		*				*	*		
C23		*				*			

* (P<0.05)

Table 10.   Tourism feature preferences: posteriori comparisons

	A01	A02	A03	A04	A05	A06	A07	A08
A01								
A02								
A03								
A04		*	*					
A05	*	*	*	*				
A06	*			*	*			
A07		*	*		*	*		
A08				*	*		*	

* (P<0.05)

Table 11.   Tourism development preferences: posteriori comparisons

	B01	B02	B03	B04	B05	B06
B01						
B02	*					
B03	*	*				
B04	*	*	*			
B05		*	*			
B06	*	*		*	*	

* (P<0.05)

Table12. Tourism attractiveness preferences: posteriori comparisons

	C01	C02	C03	C04	C05
C01					
C02	*				
C03	*				
C04			*		
C05		*	*		

* (P<0.05)

creative tourism. The solution, lies in the conservation of local distinctness, while curbing excessive development. It is also crucial to translate local features into creative products and services in a way to highlight the area's distinct tradition and craftsmanship. Conserving and cultivating local uniqueness would help boost the area's image of creative tourism and its appeal to visitors seeking a unique cultural and creative experience.

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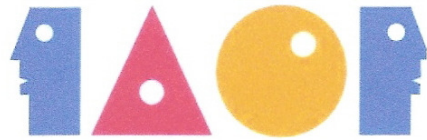
MEASURING TOURIST SATISFACTION BY MOTIVATION, TRAVEL BEHAVIOR AND SHOPPING BEHAVIOR: THE CASE OF LAKE SCENIC AREA IN TAIWAN.

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Abstract

The rise of tourism and leisure is a global trend and a promising source of new revenues. To harness this industry's potential has become the core policy of government authorities at different levels. This study investigated Plum Blossom Lake Scenic Area in Taiwan to explore the correlation of tourist satisfaction with a variety of factors. 450 questionnaires were distributed and resulted in 392 valid copies during the survey. SPSS Statistics 20.0 was used for

descriptive statistics, one-way analysis of variance (ANOVA) and regression analysis. The results indicated that the level of education caused variance in travel motivations, income affected satisfaction, and residence had a significant effect on shopping behavior. Age was found inversely related to tourist satisfaction, so was level of education to travel motivations and tourist satisfaction. The result also drew conclusions on scenic area management and tourism industry planning for further developing strategies.

Key Words: Tourist satisfaction, Travel motivation, Travel behavior, Shopping behavior, Scenic area management, Tourism industry.

Introduction

Driven by agriculture's need to adapt and the growth of leisure tourists, the trend of agri-tourism in Taiwan continued to flourish, driving up the total number of tourists from 9.59 million in 2008 to over 20 million in 2013. Foreign tourists also increased by an impressive 309%, from 63,700 in 2008 to 260,897 in 2013. To seize the momentum, Taiwan government sets out a grand plan of turning Taiwan into an international destination for agricultural leisure travel. The number of tourist is estimated to reach 22.5 million domestically and 32,000 from abroad – contributing $11 billion NTD worth of tourism foreign exchange (Chen, 2014).

Plum Blossom Lake Scenic Area is located inside the Plum Blossom Lake Agricultural Leisure Area – among one of the few scenic areas featuring the natural and ecological setting of a water body. Apart from being a scenic attraction, the lake is a wildlife haven, and doubles as a water reservoir and a source of irrigation. It is a valuable asset for the purposes of tourism, conservation, education and agriculture (Plum Blossom Lake Agricultural Leisure Area Development Association, 2013). In 2006 Yilan County government became the official custodian of the area and has since then kept up with regular maintenance. Moreover, led by Donshan Township Office, four phases of constructions were carried out to extend the area's tourist facilities. Celebrity endorsement, for instance, from the famed writer Wu Danru, and a series of events, including the dragon boat competition and Valentine's Day activities, further transformed the lake into a tourist magnet. The number of visitors rose from 159,931 in 2008 to 1,184,077 in 2013 – by an impressive total of 1 million and 24,146 people (Department of Accounting and Statistics, Yilan County government, 2014). However, such a surge of visitors exposed several underlying problems,

such as insufficient facilities, varying accommodation charges, a lack of comprehensive management by the officials and difficulties in managing vendors and businesses.

There are four purposes for studying the case of the Plum Blossom Lake Scenic Area. First, to understand the content and distribution of travel motivations, travel behavior, tourist consumer behavior and tourist satisfaction. Second, to compare and correlate different motivations, behaviors and levels of satisfaction with demographic features. Third, to explore motivations' and behavior's respective correlation with tourist satisfaction. Last but not least this study aims highlight factors affecting tourist satisfaction. The end of this research is to understand the reasons for the tourists' visitors, the experience they had and the quality of facilities and services provided here. Such knowledge can then help to unleash the area's tourist potential further and in a way to boost the local economy as well as employment opportunities for a sustainable growth of communities in the region.

Travel Motivations

Before discussing travel motivations, it is necessary to clarify what "motivations" are. According to Maslow (1943), motives originate from certain unfulfilled desires, in parts physical, that drive a person to take certain actions. Kotler & Armstrong (2010) described motive as a drive powerful enough to push an individual to seek the satisfaction of personal needs as a way to ease anxiety and restlessness. In other words, travel motivations are the drive behind an individual's decision to travel. To understand travel motivations is to find out why travelers favor traveling over partaking in other activities.

Different research dimensions can widen the definition of motivations. Mclntosh & Goeldner (1977) suggest there are four categories of tourist motivation: physiological motivators, culture motivators, interpersonal motivator, and status and prestige motivators. Cai & Combrink (2000) proposed the theory of "Push and Pull" in tourism. Under push factors, they included learning, escapism, relaxation, challenge, outdoor activities, status, rest and socialization, while categorizing safety, entertainment, nature, monuments, education, facility, budget, fishing and culture as pull factors. Referencing prior studies, the motivation survey in this research covered the following possibilities: a planned trip, a spontaneous visit, to see the attraction, cultural experience, intrigued by media coverage, travelling alone for relaxation, a shared journey with friends and back to nature.

Travel Behavior

McIntosh & Goeldner (1990) defined travelling as an action of people leaving their home for another place and undergoing activities different from their usual daily routines. Travel behaviour is therefore the external action based on free will during journeys of varied purposes. Wang & Ju (2010) believed that travelling is not a single action but a series of them, such as choosing destination, travel type, length of the trip, meals and lodging. Bammel and Bammel (1992) found occupation, income and education, place of residence, gender and age as significant personal factors affecting travel motivations. In the research by Lee, Cao & Chang (1995), apart from personal needs and social factors, the characteristics of the destination also plays a key role in influence tourist behavior. Ni (2000) believed that facilities and services at the destination and even things tourists experience before arriving at the destination, such as food, accommodation, transportation and entertainment, all have a direct influence on travel behavior. Gan & Shui (2002) categorized the characteristics of tourist behavior into motivations, source of information, means of transportation, travel experience, travel length, attractions, travel expenses and revisit experience. An investigation of Taiwan public's travelling habits in 2012 conducted by Taiwan Bureau of Transportation (2013) showed that one person made an average of 6.87 trips a year, with 71.2% of them undertaken during holidays and each lasting 1.47 days. In conclusion, to understand tourist behavior this research looks at the following factors: company size, company type, means of transportation, trip length, travel frequency and source of information.

Tourist Shopping Behavior

Hawkins, Best & Coney (1989) regarded consumer behavior as a sequence of actions, including searching, purchasing, usage and evaluation, aimed to fulfill the varying demands for products, services and ideas. Kotler (1999) in studying hospitality and consumer behaviour in tourism proposed that the purchase decision-making process involves five stage: recognizing the need to buy; searching information; weighting options; making the purchase decision; and finally post-purchase services. Ho & Lin (1996) believed that the type of travel product has the greatest influence on purchasing decisions and tourist shopping behavior.

A survey of tourist shopping behavior conducted by Taiwan Tourism Bureau (2013) revealed purchase content and sum of foreign visitors in Taiwan. Local delicacies were to the Japanese tourists the most popular, accounting for 58.32% of their purchases, while jewelry

or jade products were the preferred choice among Chinese tourists. Travel spending per head averaged at $234.31 USD, of which shopping had the largest share (36.33%), followed by expenses within the hotels (31.68%) and dining expenses outside the hotels (13.12%).

Tourist Satisfaction

Tourist satisfaction is the ultimate goal all travel providers strive to achieve. The success of products or services with customers is the only way to ensure their sources of income. For any business owners, customer satisfaction is always the key target. Baker & Crompton (2000) believed that tourist satisfaction reflects a tourist's feelings and state of mind after his/her experience with travel activities and interaction with the destination. In a study of domestic travels in Taiwan, Chen (2003) listed destination, accommodation, individual reasons, food and transportation as the major five factors influencing tourist satisfaction. Tseng, Chien & Shen (2012) assessed tourist's satisfaction of a walking trail via the following four dimensions: natural surroundings, public facility, recreational facility and available guides or signposts

Lin, Kao & Chen (2009) pointed out that marital status, occupation, monthly disposable income, level of education and place of resident play a significant part in

tourist satisfaction. In the case study of Wonggong Yuhuo pier, Liu & Shiao (2012) looked at the link between destination, tourist satisfaction and willingness to revisit, and found that the destination's appeal can be used to predict tourists' satisfaction and their willingness to revisit. To assess tourist satisfaction, this research looked into three main categories: facility, convenience and services, covering details like mobile vendor management, cleanliness of the surroundings, signposting, parking convenience and the scenery.

Methods

Structure

This research focuses on how travel motivations, travel behavior, tourist shopping behavior and tourist satisfaction correlated with different demographic features and explores factors affecting tourist satisfaction. The research structure is shown as Figure 1 below.

Subject

The subject included tourists who had visited Plum Blossom Lake Scenic Area within the last two years and was chosen via convenience sampling. During the pre-test, conducted between 1 February and 20 February 2014, 50 questionnaires were sent out and yielded

48 valid copies. The pre-test questionnaire design was analyzed and items that did not reach the Cronbach α value of 0.7 were removed. The official survey took place between 1 March and 30 April 2014, during which 450 questionnaires were distributed and yielded 392 valid copies after collection. The validity rate was
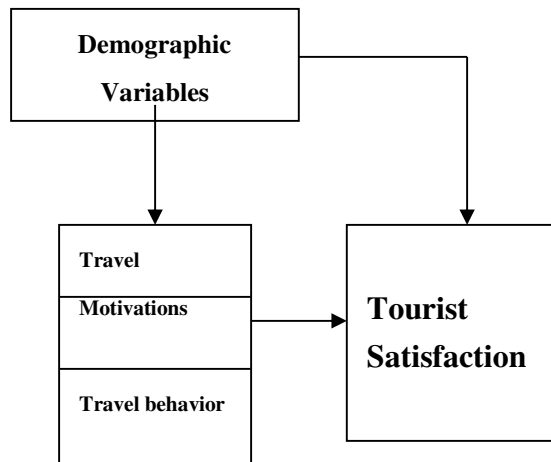
Figure 1.   Research Structure

87.11%. The Cronbach's Alpha values of travel motivation, travel behavior, tourist shopping behavior and tourist satisfaction were 0.87, 0.71, 0.72 and 0.94 respectively.

Questionnaire and Measurement

After establishing the purposes and structure, this research used the questionnaire as the main measurement instrument. The design of the content referenced various studies of tourism in Taiwan and other nations with the focus on their literature reviews and measurement scales. The questionnaire consisted of five sections: travel motivations, travel behavior, shopping behavior, tourist satisfaction and respondents' demographics. A categorical scale was used for measuring demographic features, while the other sections use the 5-point Likert scale to evaluate respondents' attitudes. They were asked to mark, from 1 to 5, how strongly they agree on the question proposed, with 5 being "strongly agree", 4 "agree", 3 "neither agree nor disagree", 2 "disagree" and 1 "strongly disagree." The initial questionnaire draft went through several stages of revision to rule out vagueness in wording and expression before being finalized.

The travel motivation section, taking reference from prior studies by Iso-Ahola & Allen (1982), Yeh & Liu (2010) and

Chou (2011), addresses the following aspects: trip organization, the appeal of the scenic area, cultural experience, and interest generated by media coverage, a shared experience with friends and relaxation.

The section regarding travel behavior in parts references McIntosh & Goeldner (1990), Wang & Ju (2010), Gan& Hsieh （2002）and Tourism Bureau (2012) and investigates the size of the group, the relationship between travelers, means of transportation, trip length, travel frequency and source of information.

The Tourist Shopping Behavior section in parts references Schiffman & Kanuk (1991) and Tourism Bureau (2013) and addresses purchase type and sum of spending in the categories of transportation, food, shopping, accommodation and entertainment.

Referencing Oliver (1981), Jian & Huang (2010), Tseng, Chien & Shen (2012) (2012), the section of tourist satisfaction covers questions about street vendors management, cleanliness, notices displays, road signs, transportation efficiency, hospitality, public facility and the appeal of the view.

Demographic variables include gender, age, education, median monthly income and place of residence.

Data Analysis

After collecting the questionnaires, the valid ones were screened and numbered. To analyze the data, SPSS Statistics 20 (English version) was used for descriptive statistics analysis, single factor analysis of covariance (ANCOVA), post-hoc analysis, relevance analysis and regression analysis. Significance level was set at .05.

Limitations

Due to limited manpower, time and budget constraints and other considerations, the results of this research are limited in two ways. First, respondents answered the questions based on memories, as the survey asked those who had previously visited the scenic area to recall their experience when answering. The results' reliability could therefore be affected by false recollections. Second, in order to recruit more respondents and increase collection rate, the survey adopted convenience sampling to target those who are willing to take part. This may also result in research biases.

Results

Demographics

The results showed that 56.1% of the visitors at the Plum Blossom Lake Scenic

Area were female, 43.9% male. The age groups of 31 to 40, 21 to 30, 41 to 50 and 51 to 60 had the percentages of 26.3%, 25.0%, 24.5% and 15.8% respectively. Regarding their levels of education, 50.5% had a university degree, 24% a high school or vocational college education, 13.5% a postgraduate degree and less than 12% having a junior high school education or less. 48.0% earned an average of $20,001 to 40,000 NTD per month, followed by 26.3%, 14.0% and 11.7% having a median monthly income of $40,001 to 60,000, below 20,000 and above 60,001. As for their places of residence, 48.5% lived in Yilan, Hualien and Pingtung, 24.7% in Taipei-Keelung metropolitan area, and 13.5% in Taoyuan, Hsinchu and Miaoli.

Travel Motivations

Questions about visitors' motivations showed that "for relaxation" scored the highest (M=4.06). The others, from high to low, were back to nature (M=4.04), attracted by the scenic area (M=3.98) and a trip to share with friends (M=3.83). Intrigued by media coverage and a spontaneous visit (M=3.47) were on the bottom of the list.

Travel Behavior

Most of the visitors at Plum Blossom Lake were accompanied by family mem-

bers and relative (38.3%), followed by friends (18.4%) and coworkers (15.6%). 53.1% drove their own cars, while 20.4% used motorbike and 10.5% took tour coaches as the means of transportation. Just over half of the visitors (53.6%) learned about the scenic area from friends and relative, while 20.9% read about it on the internet and 8.7% on the newspaper and magazines. The majority (74.7%) of the visitors made a day trip to the lake, while only 22.4% stayed overnight. 48.5% visited the scenic area one to three times in the past three months, while 40.8% did not. The most popular time of visit as surveyed was the weekends (66.1%) with only 24.0% of visits made during the week.

Tourist Shopping Behavior

Just under half of the visitors at Plum Blossom Lake surveyed by this research (47.4%) spent $500 NTD or less on transportation, followed by 28.8% spending $501 to 1000 NTD and 13.0% none. On food, a majority (70.9%) spent $500 and/or less; 16.6% spent between $501 and1000 NTD; 11.0% spent none. Among the edibles purchased, local snacks accounted for 52.3%, fruit, set meals & sushi 17.3%, beverages 16.3% and ice cream products 14.0% .On entertainment, 28.6% spent between $501 and 1000 NTD; 25.8% did not spent anything; 24.0% spent $500 NTD or less. The majority of

visitors did not spent anything on accommodation; 7.4% spent between $1501 and 2000 NTD; 6.6% spent more than $2000 NTD; 6.4% spent from $1001 to 1500 NTD.

Tourist Satisfaction

Among all the questions about satisfaction, parking convenience scored the highest (M=3.87), followed by the surroundings' cleanliness (M=3.86) and the display of notices and road signs (M=3.81). Crowdedness had the lowest score (M=3.49).

Analysis of Variance

No variance between different genvders and age groups was found in travel motivations, travel behavior, shopping behavior and tourist satisfaction. There was, however, variance of travel motivations among different levels of education. Tourists with a junior high school and below education were shown to have higher travel motivations than those with a university degree (F=4.462, *p<0.01*).

Median monthly income was found to be a variance factor in tourist satisfaction. Respondents with an income under $20,001 NTD had a higher degree of satisfaction than those with an income above $60,000 NTD. Tourists whose monthly earning falls between $20,001 and $ 40,000 NTD were more satisfied than those earning more than $ 60,000 NTD. However, monthly income did not cause variance in travel motivations, travel behavior and shopping behavior.

Place of residence caused variance in travel motivations, travel behavior, shopping behavior and tourist satisfaction. The results of post-hoc analysis indicated that tourists residing in Yilan, Hualien and Pingtung scored the lowest in shopping behavior in comparison with all the other regions in Taiwan.

Relevance Analysis

Age was shown to be negatively related to level of education (r=-0.341) and tourist satisfaction (r=-0.112), indicating that the older the tourists are, the lower their levels of education and degree of satisfaction. Level of education and personal income (r=0.411) had a positive correlation, meaning that higher education corresponds to higher pay.

However, level of education was negatively correlated with travel motivations (r=-0. 144), showing that the higher the level of education, the lower the motivation to travel. Personal income had a negative correlation with travel motivations (r=-0.108) and tourist satisfaction (r=-0.187), indicating that tourists with a

higher monthly income were less motivated to travel and less satisfied with the trips. Travel motivations were found to have positive correlations with shopping behavior (r=0.187) and tourist satisfaction (r=0.411). This suggests that motivated tourists tend to spend more and are more satisfied with their travel experience. Positive correlation was found between travel behavior and shopping behavior (r=0.371), as well as between

shopping behavior and tourist satisfaction (r=0.140).

Regression Analysis

To assess the influence of each variable on tourist satisfaction, four regression models were established to include the factors of basic demographics, travel motivations, travel behavior and shopping

Table 1.   Correlations Of Plum Blossom Lake Tourist's Travel Motivations, Travel Behaviors, Shopping Behavior And Satisfaction

	Age	Level of Eeducation	Personal Income	Travel Motivations	Travel Behavior	Shopping behavior	Tourist Satisfaction
Age	1	-.341**	.079	.044	.023	-.042	-.112*
Level of Education	-.341*	1	.411**	-.144**	-.025	.028	-.086
Personal Income	.079	.411**	1	-.108*	-.037	.091	-.187**
Travel motivations	.044	-.144**	-.108*	1	.085	.187**	.597**
Travel behavior	.023	-.025	-.037	.085	1	.371**	.024
Shopping behavior	-.042	.028	.091	.187**	.371**	1	.140**
Tourist Satisfaction	-.112*	-.086	-.187**	.597**	.024	.140**	1

(*:p<0.05   **:p<0.01   ***:p<0.001) Source: survey data

behavior. Model 1 covered the basic demographic features, namely age, level of education and median monthly income. In addition to the demographic factors in Model 1, the variable of travel motivations was added to Model 2, travel behavior to Model 3 and shopping

behavior to Model 4. The results of regression analysis were shown as Table 2.Model 1 showed that both age (b=-0.122, p<.001) and median monthly income had negative effects on tourist satisfaction. In other words, younger age and lower income corresponded to a

higher degree of satisfaction.

Model 2 indicated a positive effect of travel motivations (b=0.591, p<.001) on tourist satisfaction. That is, when tourists are more motivated, they tend to be more satisfied with their trips. Again in this model, age (b=-0.128, p<.01) and median monthly income (b=-0.114, p<.01) were both found to have a negative effect on tourist satisfaction.

Model 3 showed that age (b=-0.123, p<.01) and median monthly income (b=-0.149, p<.01) both had a negative effect on tourist satisfaction, while the influence of travel behavior was not significant.

Model 4 confirmed the positive effect of shopping behaviors with significance on tourist satisfaction (b=0.152, p<.001). In short, shopping increased satisfaction. The model also showed the negative effects of age (b=-0.113, p<.01) and median monthly income (b=-0.167, p<.01) on tourist satisfaction.

Table 2.   Influence Models of Travel Motivations, Travel Behavior, Shopping Behavior and Tourist Satisfaction

Independent Variables	Model 1	Model 2	Model 3	Model 4
	beta	beta	beta	beta
Age	-.122***	-.128**	-.123*	-.113*
Level of education	-.066	.002	-.066	-.060
Median monthly Income	-.150**	-.114*	-.149**	-.167**
Travel motivations		.591***		
Travel behavior			.019	
Shopping behavior				.152***
Tourist Satisfaction	6.43***	61.33***	4.85**	7.30***

(*:p<0.05   **:p<0.01   ***:p<0.001)

To conclude, factors affecting tourist satisfaction are travel motivations, age, education and shopping behavior, among which motivations had the most influence.

Conclusions

Travel motivations as surveyed in this research put "relaxation" on top of the list, followed by back to nature. Since its opening in 2006, Plum Blossom Lake offers tourists a natural experience with the chance to observe wildlife. The adorable flock of mandarin ducks and a variety of outdoor performances entertain children and adults alike. The walking trail surrounding the lake is especially popular for a peaceful relaxing stroll, and a reason for many to return. It is recommended to keep manmade structures to a minimum and blend in with their surroundings when bringing visitors closer to the natural resources. Natural landscaping should be used to maintain the view in a way to promote tourist satisfaction and the willingness to revisit.

The food spending per tourist averaged at $500 NTD or less under. A lack of certain flair to the meal provided is partially to blame for such uninspiring performance. To improve the image it is suggested to adopt locally sourced ingredients in a creative way to provide safe, tasty and reasonably priced choices in a cozy dining ambience. A dedicated place for souvenirs and local delicacy display would also help combine sales with the exhibition of local cultures and produces.

Visitors were least happy about crowded situations. To ease congestion and help visitors navigate, better signposting is needed to provide clear direction and information. These not only assists visitors to get around smoothly, but also helps reduce the long queue of enquiring visitors at the short-staffed information center. Road signs and notice boards inside the area should be maintained, adjusted and updated whenever necessary to help improve travel motivations and tourist satisfaction.

Most of the visitors at Plum Blossom Lake undertook day trip and did not stay overnight. To further the area's tourism appeal, other attractions in the vicinity, such as Chen Chung-Tsang Gallery, cultural factory, Forest Park, Water Park and National Center for Traditional Art, should play a part in developing the region's service and hospitability industries. Unique accommodation choices with local features give visitors a good reason to spend the night. Besides, celebrative events for special holiday and festivals give tourists extra incentives to visit and local business a special lift. For example, a special promotion of agricultural produces from the area can

coincide with the holiday season of Lunar New Year; dragon boat race and rice dumpling and scented sachets making are fitting for Dragon Boat Festival; activities catered for Chinese Valentine's day or Mid-autumn Festival would also benefit local businesses.

To maintain the area's natural scenery is key to keeping its appeal and enticing visitors to return. It is important to prevent pollution, such as proper wastewater management, to adopt green technologies in construction and to make sure manmade structures blend in with the natural setting. Free admission to the scenic area can help draw in more visitors, though basic services and facility, such as public toilets, should keep up with demand.

The functionality of the information center can be improved to provide visitors a greater diversity of services. For instance, it is recommended for the community, the area of leisure farm, local businesses and local government to join

force in training interested residents of the area to be the area's guides. The dedicated tour guides will be able to share with visitors the area's background stories in an informative and entertaining way to boost tourist satisfaction and their willingness to return.

Visitors in the survey were relatively dissatisfied with the management of stall vendors. Therefore, it is recommended for Plum Blossom Lake Agricultural Leisure Area Development Association and vendors themselves to work together on improving the image. The vendors should be assigned with a pre-allocated spots and responsible for the cleanliness of their own stalls. Regulations and exit strategies should be introduced for a better management. In terms of service quality, personnel working in the scenic area can wear uniform and pay special attention to their attitudes toward visitors. They are advised to present themselves in an agreeable and friendly manner, taking own initiatives to help out and provide information to make visitors feel at home.

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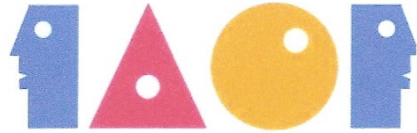
THE GLOBAL STOCK EXCHANGE AND ITS INFLUENCE TOWARD THE INDONESIA STOCK EXCHANGE AFTER THE GLOBAL FINANCIAL CRISIS IN 2008

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Abstract

The global financial crisis has a negative effect on the global capital market; involving the Indonesia Capital Market (IHSG). This study aims to know the influence of global stock markets to the Indonesia Capital Market, to analyze how the performance of each Global Capital Market compared with others, to find out which are the best and worst markets. The type of this study is a descriptive and explanatory study. The data used is a secondary data with purposive sampling technique. The samples in this study are the global stock exchanges, such as: DJI, NIKKEI, KOSPI, HSI, FTSE, ASX, STI and IHSG. The technique of data collection is by literature study and documentation, while the technique of data analysis is with Eviews5 program. The finding of this study shows that (1) there is a simultaneous significant influence of the global stock exchanges (DJI, NIKKEI, KOSPI, HSI, FTSE and ASX) toward the Indonesia Stock Exchange (IHSG) and partially, there are three world stock exchanges (DJI, FTSE and HSI) which significantly influence IHSG, (2) There is no difference significance of each capital market performance in the global capital markets, And (3) the Indonesia capital market has the highest average market return.

Keywords: Global financial crisis, the global indexes of capital, market return.

Introduction

Towards the end of the third quarter of 2008, the world of economic was faced into a new chapter of problem; that is the collapse of the global economic stability along with the expansion of the state control financial crisis in every aspect. At the end of the third quarter of 2008, the intensity of the crisis gained momentum as the greatest collapse of U.S. investment bank Lehman Brothers, which was followed by increasingly severe financial difficulties in a number of large-scale of financial institutions in the U.S., Europe, and Japan (Outlook of Indonesian economy, 2009-2014). The global financial crisis in 2008 brought negative impact on the declining of stock market index around the world, such as HSI-U.S., NIKKE-Japan, KOSPI-Korea, HSI- Hong Kong, FTSE-UK, ASX-Australia, STI-Singapore , and IHSG-Indonesia. The global financial crisis had influenced the mechanisms of investment and global trade in the stock market world and given a massive impact on investors in North America, Europe, Australia, and Asia (Darmawan: 2009).

Experts argue that the economic condition of a country will be influenced by other state economic conditions. The crisis of 13 Asian countries in 1997, according to the World Bank study, was mainly caused by the domino and contagion effect of other countries (Tan, Jose Antonio, in Darmawan: 2009). The study by Eun and Shim (1989) shows that the U.S. capital market is the most influential capital market, so that, any changes in the U.S. market will be able to affect other capital market movements. Based on some of these opinions, it can be ascertained that the case of subprime mortgages originated in the United States is a trigger of a global crisis that could affect the global economy whose indicators are reflected in the world of capital markets. The fall of the stock price index is one of the significant crisis indicators occurred in the United States. Yet, the rising of global stock market index is also an indicator that the crisis has begun to subside. Table 1 below illustrates the development of 4 global market indexes; those are JCI, FTSE, NIKKEI and HSI in the period of 2008-2009. At first, there is a significant decrease in the index due to the crisis and, gradually, it rises up along with the end of the crisis. The decrease of index begins to look at the period of September-October 2008 until approximately May-June 2009. Then, on September 2009, it seems that the graph index has risen up. Therefore, the month is considered as the beginning of period after the global financial crisis.

Table 1. THE GLOBAL STOCK MARKET INDEX

Source: yahoo finance, 2011

The cycle of the increase or decrease of economic activity will always happen in the long run. The increase will raise peak and then decreases will finally be over (Sukirno, 1985:167). This Analogy also occurs in the Global Stock Exchange. The decrease of index as a result of the global financial crisis is only temporary and it will rise back to its original position or even higher than usual due to the completion of the crisis (see Table 1). Problems in this study, in addition to determine the influence of the Global Exchange to the Indonesia stock exchange; it is also to know how the development of the resurrection (recovery) after experiencing adversity is. Moreover, it is also to identify which market recovering faster than others.

Research Problem

Based on the issues and empirical evidence presented before, the formulation of the problems in this study is:

1. How is the influence of the Global Stock Exchange (DJI, NIKKEI, FTSE, KOSPI, ASX, HSI, and STI) toward IHSG after the 2008 global financial crisis?

2. How is the Global Stock Exchange performance (DJI, NIKKEI, FTSE, KOSPI, ASX, HSI, STI and IHSG) after the 2008 global financial crisis?

Research Objectives

Based on the background and formulation of research problems, the research objectives can be formulated as follows:

1. To determine and analyze the influence of Global Stock Exchange (DJI, NIKKEI, FTSE, KOSPI, ASX, HSI, and STI) toward IHSG after the 2008 global financial crisis.

2. To determine and analyze the performance of Global Stock Exchange (DJI, NIKKEI, FTSE, KOSPI, ASX, HSI, STI and IHSG) after the 2008 global financial crisis.

Significance of Research

The findings of this study are useful for:

1. The Repertoire of science and knowledge, finding of the study is expected to provide additional overviews and understanding supported by empirical evidence related to the development of Global Exchange and its influence on the Indonesia Stock Exchange (IHSG) after the global financial crisis of 2008.

2. For stock investors in the Indonesia Stock Exchange, the findings are expected to be a consideration and guidelines for the establishment of an investment portfolio in stocks.

Literature Review And Hypotheses

The Origin of the Global Financial Crisis

Subprime.

The economic crisis in the United States is caused by the breakdown of property loans (subprime mortgages) along with the collapse of financial institutions in the United States of America. Residential loans which are originally intended to excellent customer, started to be extended to clients who are not prime (worth). Customers afflicted by bad credit obtain a new credit back. In addition, many loans are with very low down payment or no payment (cash advance) at all. Even, there are many loans that only require to pay interest only and do not require any principal repayments at all.

Why did American banks do such carelessness? It is because the property prices rise sharply for years without stopping. The house prices continue to rise, the value of collateral (house prices) also increases, while the principal amount of loan remains the same. Therefore, in the calculation of the bank, although no cash advance, if price guaranteed up to 20% per-annum, then the value of the guarantee will be 120% of the initial price. So

that, the value of the loan compared to the bail will be dropped. The situation is what makes the bank dared to give mortgages without a down payment. These assortment of loans are called as subprime.

The increase in homes that occurs continuously will still be there, if people keep purchasing it more and more. and banks also continue to supply the housing loans to be higher and higher. Yet, because the banks previously also give credit to those who are not prime besides the prime ones, as a results, the mortgage payments begin to drag. Based on this situation, the bank begins to lend selectively and as its impact, the banks' selectiveness cause the house prices stop rising, and even begin to fall. The price drop causes some mortgage customers begin to think whether to continue paying debt or to go of installment. Finally, bad credit is enlarged and the congestion of mortgage problems becomes larger throughout the world like a rolling snowball.

Subprime Derivatives.

Housing loans by banks in charge are collected and then securitized. It is a process of transforming mortgages into securities. The term is often used for securities secured by the mortgage back securities (MBS) with a variant called as collateralized debt obligation (CDO).

Fixed housing loan customers keep paying their home mortgage to the bank, and then the banks forward the payment to investors who bought the MBS or CDO. If the current mortgage payment runs well, the payments from the banks to the holders of MBS and CDO will be good as well. However, because the mortgage payments begin to drag, the payment to the buyer of securities is also faltered.

The two securities securitization process is helped by the financial insti- tution originally established by American government, Fannie Mae and Freddie Mac. They serve as a guarantor (underwriter), because of these functions, eventually they also have MBS and CDO securities by reasons that there is a weak-demand or personal owned. With those kinds of roles, the chaos of MBS and CDO payments happen. It is estimated that the market shares of these two institutions listed on the NYSE have a definite big loss. Investors and shareholders of both institutions do sell their shares, causing the drop in stock prices, and finally, the government helps both institutions.

Another institution possessing MBS and CDO is Citigroup. Because the value of the two types of bonds fall, it makes the bank losses, and investors also sell their stocks, so that their share price is also dropped. Some investment banks

who also have MBS and CDO suffer a massive loss as well.

Capital Market.

The capital market is a market in which many types of long-term financial instruments can be traded. Includes bonds (bonds), equities (stocks), mutual funds, derivative instruments and the other the financial instrument (Jsx. Co.. Ids, 2007). The capital market is a source of funding for companies and other institutions (e.g., government), and as an investment tool. Therefore, the capital market facilitates the infrastructure of buying and selling process and other related activities.

If in the capital market is traded some financial instruments such as stocks, bonds, warrants, rights, convertible bonds, and various derivative products (derivatives) as an option (put or call), then in the money market is traded instruments such as Bank Indonesia Certificates (SBI), Securities Money Market (SBPU), Commercial Paper, Promissory Notes, Call Money, Repurchase Agreement, Banker's acceptance, Treasury Bills and others.

The regulation No. 8 of 1995 about Capital Market defines more specific about capital market that is "activities concerned with public offering and stock trading, Public Company

related to the issuance stock of securities and the institutions and professions related to the stock exchange". Basically the capital market is similar to other markets. For every successful buyer, there must always be a successful seller. If the numbers of people who want to buy more than that want to sell, the price will be higher; if the opposite happens then the price will go down.

There are many sources of funds that can be used to finance an investment. But the capital market can be classified as a modern financing source. It is told as a modern source of finance, because there is a traditional financing source. A popular traditional funding source is the bank. One important advantage possessed by capital markets compared to banks to obtain funds is that a company does not need to provide collateral as required by the bank. Only by showing good prospects, then the securities of the company will be sold in the market. In addition, by utilizing funds from the capital market, the company does not need to provide funds for every month or every year to pay the interest. In return, the company must pay dividends to investors.

For investors, to invest their funds in capital markets also provide benefits that cannot be provided by the bank, in the form of dividend payments that is likely to exceed more than the amount

paid by the bank for the same value of investment, although this advantage is also accompanied by risks that are not small. If the company suffers losses, for example, the investors often do not get their dividends.

Jeff Madura (2003:243-244) states that the capital markets (Equity Markets) has several functions: (1) to facilitate the flow of funds from individual or institutional investors to the company, so that they (the stock market) allow companies to finance new investment or business expansion, (2) to facilitate the flow of funds among investors, and (3) to facilitate investors (equity) to get into the company. Capital markets have essential role for the economy of a country because they have two functions (JSX.Co.id). First, capital market is a vehicle for funding or a tool for companies to obtain funds from public investors. The funds received from the capital market can be used for business development, expansion, working capital, and so on. Second, capital market is a medium for the public to invest in financial instruments such as stocks, bonds, mutual funds, and others. The public can put their funds according to risk and return characteristics of each instrument they want.

The Stock Price Index.

One of the most popular commodities traded on the Stock Exchange is a stock itself. Actually, there are several categories of stocks, namely ordinary stocks of Series A, B and preferrent stock. Each of these categories has different characteristics. For example, series A, it is usually owned by the company's founder (Founding Father) and has special privileges such as the election of directors. The preferrent stock has a constant dividend right, it remains the same no matter whether the company profit or loss. Moreover, Series B also have the right to dividends, dividends will be distributed or not, it largely depends on whether the company gain profit or not. From the three types of common stock popular in a lot of people is the Stock of series B.

In the Indonesia Stock Exchange (IDX) there are about 400 listed companies whose shares are traded on the Exchange. Every hour, shares traded on the exchange at any time will experience a price change, up or down. Indeks Harga Saham Gabungan (IHSG) is one of the existing indexes on the Indonesia Stock Exchange reflecting the weighted average of the yield (return) of stocks in a certain period. This Index can serve as an indicator of the performance of a particular stock exchange or a portion of the overall market. With this index, investors can do a comparison of the performance of individual stocks with the broader

market indicator (Madura, 2003:260). Stock price index is an indicator that shows the movement of the stock price. The index is used as an indicator of market trends, it means that the movement of the index illustrates the market conditions at any time, whether active or not. Through the index, we can acknowledge the trend of the stock price movement whether rising, constant, or down. Therefore, if we want to see how the state and development of the existing shares on a stock exchange, we should look at the price of related stocks. This study will examine the correlation and the development of global markets. Yet, almost countries in the world have stock exchanges. So, not all of them will be investigated. It is only eight (8) leading stock market representing several continents that will be studied as conducted by Mansyur (2005) and Darmawan (2010). Data to be examined from the global market is the index of each market; the FTSE from UK, NIKKEI from Japan, DJI from America, ASX from Australia, KOSPI from Korea, HSI from Hong Kong, STI from Singapore and IHSG from Indonesia.

The index values lay on a global range of thousand to ten thousands. Before the crisis of 2007, Hong Kong Stock Exchange (HSI) had the highest index value 23455 and the Korean stock exchange (KOSPI) was the lowest one by

1625. While, after crisis in 2009, The highest index is Japan (NIKKEI) by 10456 and the lowest is KOSPI by 1683 (yahoo, finance). The index values vary, therefore if we want to make a comparison between the stock performance and development, it could not be compared directly. We need to make the percentage change of the index, which is known as tradeoffs (return) market, e.g. through market returns (Rm), IDX (BEI) is calculated with the following formula:

$$R_m = \frac{IHSG_t - IHSG_{t\text{-}1}}{IHSG_{t\text{-}1}} \times 100$$

The formula is used to calculate market returns through the entire global stock exchanges used as the object of this study.

The Linkage of Global Stock Exchange.

The process of globalization includes business and financial products. For Financial field, it has more significant and greater power than the business products. Financial business includes foreign exchange (FX) and investment activities, directly or indirectly. Here, Capital market is one of the media to conduct the business of direct investment from the financial sector. Investment on capital mar- ket can be done throughout the world, including in Indonesia Stock Exchange (IDX). Investors can make

investment activities in accordance with their preferences over risk and return.

Since entering the era of globalization, every country in the world began to participate in the globalization process. If there is an adverse event occurs in one country or region, the others will inevitably drag down as well. Issues of integration among countries stock markets had been studied since the end of the decade of the 80s, especially after the fall of Wall Street, 1987. Since then, several experts undertake similar studies in different parts of the world. As a result, they agree that the international stock exchanges intertwined with each other. Indonesian capital market through the Indonesia stock exchange is an integral part of the activities of global stock markets. In addition to the usual stock exchanges in adjacent location, it often has the same investors. Therefore, the changes in the stock exchange will also be transmitted to other countries. In this case, usually the larger stock will affect the smaller ones. One of the largest capital markets in the world is in New York (NYSE), where approximately 2800 companies are listed on the Stock Exchange. It is fantastic enough when compared to companies listed on the Indonesia Stock Exchange which is about 400 companies. The development across capital markets of various countries around the world strongly is influenced by

that occurs on Wall Street, that is the NYSE. According to the study carried out by Eun and Shim 1989, the U.S. market is the most influential capital market in the world, so that, the changes in the U.S. market will be able to affect the other capital market movements.

One of the studies related to the issue of global stock exchanges linkage is done by Darmawan (2009) with the title "The influence of DJI, FTSE100, NKY 225, and HSI Index Toward Index Harga Saham Gabungan (IHSG) Before, During, and After the Subprime Mortgage In 2006-2009". Based on Contagion Effect Theory (Tan, Jose Antonio, 1998, in Darmawan: 2009), which states that the economic condition of a country will affect the other sectors, and by the help of statistical tools of Granger test of causality test and Chow Break Point; he notes that the DJI, FTSE100, NKY225 index have an influence on IHSG. Yet, HSI does not influence IHSG and so that for the opposites. Moreover, Mansyur (2005) also conducts a similar study entitled "The Effect of the Global Stock Exchange toward the price of IHSG In Jakarta Stock Exchange (JSX) in the Period of 2000-2002". In this study, The Global stock exchanges are represented by Japan (NIKKEI-225), Korea (KOSPI), Taiwan (TAIEX), American (DJI), Hong Kong (HSI), London (FTSE) and Australia (ASX). The study is conducted

by using path analysis to determine and analyze the influence of those global markets either simultaneously or partially towards IHSG. The finding shows that those seven exchanges influence IHSG, but partially, it is only on KOSPI, Nikkei 225, TAIEX and ASX that influence IHSG.

Based on the findings of Darmawan (2009) and Mansyur (2005), then in this study will be discussed whether in the case of subprime mortgages originated in the United States influence the world capital markets. More precisely, after the end of the crisis, does the world capital market rise and recover as usual or even become better than the previous conditions?

Briefly, we need to know that almost every country in the world has stock market, there are hundreds of markets stretching from Europe, North America, Asia, Oceania, South America and even Africa. The same with many other studies discussing the global market, this study only takes a few stock exchanges representeing every continent in the world. The data and analysis that will be discussed is the index of the relevant market as one indicator of the performance of the stock exchange. The global stock exchanges to be studied here are the United States index by the Dow Jones Industrial (DJI), Japan with NIKKEI, U.K with FTSE, Korea with KOSPI, Australia with ASX, Hong Kong with HSI, Singapore with STI, and Indonesia with IHSG. Based on the description above, the hypothesis proposed in this study is:

H1: there is a significant influence either partially or simultaneously between world stock exchanges (DJI, NIKKEI, FTSE, KOSPI, ASX, HSI and STI) toward the Indonesia Stock Exchange (IHSG).

The resurrection stock exchange after the 2008 Financial Crisis.

As a cycle, the market condition reflected in the index is not static but always dynamic and parallel with the condition of economic activities attached to them. At one point, the market is in a bullish condition, on other occasions, it is on a bearish as when the global financial crisis happened in which all markets in the world, including IHSG, are collapsed. The up and down cycle of economic activity in the long-term has the same characteristics as follows: A). Any increase in the prevailing of economy will eventually reach a peak and followed by the decrease in the activity level, b). The decline is not going to continue, at a certain level of economic, it will experience growth again, and this situ-

ation will continue for some time before it gets back to fall again (Sukirno, 1985:167). As illustrated in graph-1 in the background of problems, the conditions of the world market will rise and fall as a cycle. After crisis around September 2009, the bulk of the stock has bounced back and get recovered. So, The question is: which one of the world stock Exchange rose more rapidly from the ground?, What factors accelerate the aggravation? And these are some important questions to be researched and analyzed in this study. Related to the description above, the second hypothesis proposed is:

H2: there is a difference performance of market return of the significant World Stock Exchange after the global financial crisis.

Research Method

Population and Sample

The population in this study is the entire existing stock exchanges in the world. The sample is 8 stock exhanges representing the continent of Europe, America, and Asia, they are DJI from America, NIKKEI from Japan, FTSE from UK, KOSPI from Korea, HSI from Hongkong, , STI from Singapore, ASX from Australia and IHSG from Indonesia.

Methods of Data Analysis

This study would like to know the infuence of the world stock exchanges toward the Indonesia Stock Exchange (BEI) after the 2008 global financial crisis in the period of September 2009 to June 2011. The influence of the world stock market is deteremined by the market return of every Stock Exchange in the world. This period is chosen because the global financial crisis have started to end, the market rate index is rising as usual, and, even some of the stock exceeds the index of the current crisis, (see Table 1 on the background of the problem). In addition to the effects, this study also wants to determine the ratio of return of each stock market after the global financial crisis. This is done to determine where the market is recovered faster than others.

To determine the influence, it will be used the multiple regression analysis, while to know the comparison of performance, it will use the standard deviation test. Both of these statistical methods will be assisted by Eviews5 program, as follows:

1. Multiple regression analysis, which is to know the influence of the world stock exchanges toward the Indonesia Stock Exchange. There will be partial

and simultaneous influence hypotheses.

a. The partial influence hypothesis testing uses the t-test as follows:
Ho: the world stock exchanges partially do not influence the Indonesia Stock Exchange.

H1: The world stock exchanges partially influence The Indonesia Stock Exchange.

If, t-Table $\leq$ t-count $\leq$ t-Table or the probability is > 0.05 then Ho is accepted and if t-count $\leq$-t-Table or t-count $\geq$ t-Table or the probability is <0.05 then H1 is accepted.

b. Testing hypotheses test the effect of simultaneous use-F as follows:

Ho: the world stock exchanges simultaniously do not influence the Indonesia Stock Exchange.

H1: The world stock exchanges simultaniously influence The Indonesia Stock Exchange.

If, F-count $\leq$ F-Table or the probability is > 0.05 then Ho is accepted and if F-count $\geq$ F-Table or the probability is < 0.05 then H1 is accepted.

2. ANOVA test, which is to see whether the entire sample have the same average market return. The test is conducted with the formulation of hypothesis as follows:

Ho: The entire population has identical average.

H1: The entire population does not have identical average.

If the probability is >0.05 then Ho is accepted and the entire population average is identical. Yet, if the probability is <0.05 then H1 is accepted. It means that the entire population average is not identical. In conclusion, there are some differences in the performance of market return among the world's stock exchanges.

Findings And Discussion

Findings

The Return of the World Exchange Markets.

This study examines 8 world stock exchange (ASX, HSI, FTSE, HSI, STI, KOSPI, NIKKEI and DJI) after the global financial crisis, how their performances, whether it starts to recover as conditions before the crisis or not. There are some indicators to look at the merits of the

exchange, two of which are the tradeoffs (return) which reflect the market rise and

fall and the standard deviation which reflect fluctuations as seen in Table 2.

Table 2. Market Average Return after the 2008 Global Financial Crisis

	ASX	DJI	FTSE	HSI	JKSE	KOSPI	NIKKEI	STI
Mean	0.036527	0.224563	0.146092	0.168377	0.365344	0.084352	0.099646	0.126296
Median	-0.056900	0.138391	0.162131	0.093549	0.245377	0.045084	-0.007104	0.139927
Maximum	1.953517	1.246476	1.618653	1.739059	1.522086	1.726325	1.568163	1.751719
Minimum	-2.270941	-0.395982	-1.361198	-0.409016	-0.280945	-0.912879	-0.672243	-1.547207
Std. Dev.	1.016099	0.419618	0.691272	0.455107	0.461338	0.579619	0.511670	0.616390
Skewness	0.070341	0.954798	0.240905	2.196201	0.865701	0.800335	0.918365	0.106255
Kurtosis	2.900570	3.263243	4.005715	8.072808	3.112704	4.309352	4.242465	5.637806
Jarque-Bera	0.028441	3.561028	1.191786	43.15046	2.885020	4.098357	4.712407	6.711380
Probability	0.985880	0.168551	0.551070	0.000000	0.236334	0.128841	0.094779	0.034885
Sum	0.840114	5.164944	3.360120	3.872681	8.402923	1.940095	2.291864	2.904803
Sum Sq. Dev.	22.71406	3.873737	10.51285	4.556692	4.682319	7.391073	5.759726	8.358602
Observations	23	23	23	23	23	23	23	23

Sources: Data processed from yahoo finance (2011).

Description:

ASX = Australian Securities Exchange

DJI = Dow Jones Industrial

FTSE = Financial Times Stock Exchange

HSI = Hang Seng Index

JKSE = The Jakarta Composite Index

KOSPI = The Korea Composite Stock Price Index

NIKKEI = Japanese stock exchanges

STI = Singapore stock exchanges

Table 2 shows that the average tradeoffs (return) all global stock markets have shown a positive value. From the eight markets as the object of study, the largest index increase is on the Indonesia Stock Exchange (JKSE), that is 0.37% followed by America (DJI) 0.22%, Hong Kong (HSI) 0.17%, UK (FTSE) 0.15%, Singapore (STI) 0.13%, Japan (NIKKEI) 0.10%, Korea (KOSPI) 0.08%, and Australia (ASX) 0.04%. The performance of world markets, if viewed from the value of the standard deviation, the best (with the smallest SD values) in a row is the DJI (0.42%), HSI (0.45%), JKSE (0.46%), NIKKEI (0.51 %), KOSPI (0.58%), STI (0.62%), and the largest is the ASX (1.02%). Data in Table 2 in the graph is in Figure 1 below.

Based on Figure 1, the eight world stock exchanges in the period of the first to the fourth quarter of 2010 have almost same fluctuation patterns. During that period, the graph shows the same pattern of support and resistance points, they both rise and fall equally despite the different points of support and resistance. Meanwhile, in the first and second quarter of 2011, it shows that the fluctuation pattern starts to have a random variation. The most extreme point of resistance and support is on the Australian stock exchange (ASX) because the value of the standard deviation of ASX is 1.02%.

The Influence of the world stock exchange towards the Indonesia Stock Exchange.
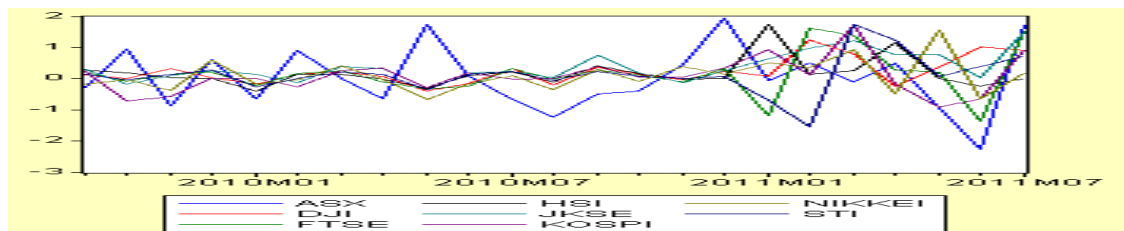
Sources: Data from yahoo finance (2011)

Figure 1.   Market Average Return after the 2008 Global Financial Crisis

T able 3. Multiple Regression Summaries

Dependent Variable: JKSE
Method: Least Squares
Date: 07/25/11   Time: 22:19
Sample: 2009M09 2011M07
Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.148771	0.065031	2.287698	0.0371
DJI	0.351377	0.159917	2.197248	0.0441
FTSE	0.287815	0.115425	2.493517	0.0248
KOSPI	0.147612	0.113681	1.298475	0.2137
STI	0.096565	0.093391	1.033986	0.3175
NIKKEI	0.134301	0.116352	1.154270	0.2664
HSI	0.350689	0.131329	2.670307	0.0175
ASX	-0.039920	0.064944	-0.614687	0.5480

R-squared	0.804356	Mean dependent var		0.365344
Adjusted R-squared	0.713055	S.D. dependent var		0.461338
S.E. of regression	0.247126	Akaike info criterion		0.310371
Sum squared resid	0.916069	Schwarz criterion		0.705325
Log likelihood	4.430735	F-statistic		8.809972
Durbin-Watson stat	1.673005	Prob(F-statistic)		0.000235

Source: Data processed of yahoo finance

Multiple regression analysis is used to determine whether there is a significant influence both partially and simultaneously of the return of the world stock exchange toward the Indonesia Stock Exchange. Outputs of regression analysis with Eviews5 of the Indonesian Stock Exchange (JKSE) and the world Stock Exchange (DJI, ASX, NIKKEI, HSI, STI, FTSE and KOSPI) are fully summarized in Table 3.
The Partial Influence.

Based on the output of Eviews5 in Table 3, from the world's seven stock exchanges, there are only three stocks that partially influence JKSE of Indonesia, those are DJI with a regression coefficient of 0.35 and a significance level of 4.4% (<5%), FTSE with a regression coefficient of 0.29 and a significance level of 2.5% (<5%), and HSI with a regression coefficient of 0.35 and a significance level of 1.8% (<5%). Those three indexes (DJI, FTSE, and HSI) significantly have positive regression coefficients. It means that, if the market of them rises, JKSE will also go up and so that for the opposites. From those three, it is only HSI that influences dominantly because it has the highest t-count of 2.67. Outside of those three exchanges (KOSPI, STI, ASX and NIKKEI); they do not have any significant partial influence on the Indonesia Stock Exchange since each of them has a significance level of more than 5%. Therefore, the hypothesis that the world's stock exchanges partially influence the Indonesian stock exchange is not fully accepted.

The Simultaneous Influence.

If partially three are only 3 world stock exchanges (DJI, FTSE & HSI) that have a significant influence on the Indonesia Stock Exchange, but, simultaneously, the world stock exchanges have a very significant influence on the Indonesia Stock exchange. It shown by the probability (F-statistic) that far under 5%, which is 0.0 2%, and supported by the coefficient of determination (R^2) that is quite high, 80%. This empirical evidence can be interpreted that the entire world stock exchanges have a significant influence on the Indonesia Stock Exchange. If the index of the world stock exchanges increase, the Indonesian stock exchange will increase as well and so that for the opposite. Therefore, the hypothesis that the world's stock exchanges simultaneously influence the Indonesian stock exchange is fully accepted.

The Comparison of the World Stock Exchanges Development.

Analysis of Variance (ANOVA) is used to test whether there are any differences in the development of the World Stock Exchanges after the global

financial crisis as seen from the average tradeoffs (return) market or not. ANOVA output with the help of Eviews5 is fully summarized in Table 4.

Table 4

ANOVA test Summaries

```
Test for Equality of Means Between Series
Date: 07/25/11    Time: 22:20
Sample: 2009M09 2011M07
Included observations: 23
```

Method	df	Value	Probability
Anova F-statistic	(7, 176)	0.615723	0.7425

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	7	1.661553	0.237365
Within	176	67.84906	0.385506
Total	183	69.51061	0.379839

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
ASX	23	0.036527	1.016099	0.211871
DJI	23	0.224563	0.419618	0.087496
FTSE	23	0.146092	0.691272	0.144140
HSI	23	0.168377	0.455107	0.094896
JKSE	23	0.365344	0.461338	0.096196
KOSPI	23	0.084352	0.579619	0.120859
NIKKEI	23	0.099646	0.511670	0.106690
STI	23	0.126296	0.616390	0.128526
All	184	0.156400	0.616311	0.045435

Sources: Data of yahoo finance (2011).

Based on Table 4, the largest average tradeoffs (return) of market is the Indonesian Stock Exchange (JKSE), that is: 0.36%, then, it is followed by DJI (0.22%), HSI (0.17%), FTSE (0.15%), STI (0.13%),

NIKKEI (0.1%), and the smallest is KOSPI (0.08%). Absolutely, it seems that there is a difference average of tradeoffs (return) market of the stock exchanges. However, based on ANOVA, those eighth world's stock exchanges have no significant differences because ANOVA F-test probability is 74%, it is greater than alpha 5%. In line with hypothesis proposed, if the significance level (74%) greater than the alpha (5%), then the hypothesis is rejected. It means that, there is no significant difference on the performance of those 8 world stock exchanges.

Discussion

The Return of the World Stock Exchange Market

Tradeoff (return) of market is calculated based on the ups and downs of an index as one indicator of the performance of a stock. After the 2008 global financial crisis, the world stock market shows the passion and resurrection. It is proven that the 8 world stock exchanges give improvement on the increase of positive index, although the rate of increase still vary. Based on the average increased index, the Indonesia Stock Exchange (JKSE=IHSG) has the best performance with the highest rates growth index of 0.36%. It outperforms the major stock exchanges of the world such as the U.S. market (DJI) and Japan (NIKKEI). This condition indicates that Indonesia has the best chance of other countries in the world to invest, especially in the capital market for both domestic and foreign investors, individual and institutional.

Based on the ratio aspect measured by the standard deviation value, the Australian market is the most at risk (SD = 1.02%) if compared to other countries. Compared to Indonesia, it can be said that JKSE (IHSG) dominates the Australian (ASX) as it has the market tradeoffs (return) of 0.36%. It is higher than Australia which is only 0.04%. From the aspect of risk, IHSG has a standard deviation of 0.46% and lower than the ASX, 1.02%. it means that, the Indonesia Stock Exchange (IHSG) has a higher and low risk market tradeoffs (return).

The Influence of the World Stock Exchange toward the Indonesia Stock Exchange

Based on regression analysis, simultaneously the seven world stock exchanges have significant positive influence on the Indonesia Stock Exchange. Compared with the results of previous study, the empirical finding of this study supports the earlier study by Mansyur (2005) and Darmawan (2009) which state that the global market simultaneously influence the Indonesia Stock Exchange (JKSE=IHSG). While partially, there are three world stock exchanges that have significant positive influence on the Indonesia Stock Exchange, they are U.S. markets, London and Hong Kong. The most dominant is HSI. It is different with Mansyur and Darmawan findings which state that ASX, KOSPI and NIKKEI partially have a significant a positive influence on the Indonesia Stock Exchange. Yet, there is a bit of similarity with Eun and Shim, 1989 (Darmawan: 2009), that the U.S. market is the market with the most influential of capital, so that changes in the U.S. market will be able to affect other capital market movements. The result also supports the earlier study by Kayani, Ghulam Mujtaba; Xiaofeng, Hui; Gulzar, Saqib (2013) which state that the volatility of the NYSE rate of return has significant spillover impact on means rate of returns of BSE (Bombay Stock Exchange-India) and SSE (Shanghai stock Exchange-China).

This empirical finding can be interpreted that the rise and fall of global stock markets will affect the rise and fall of the Indonesian stock exchange. If the global stock index rises then so does the Indonesian stock exchange index (JKSE= IHSG) and so that for the opposites. The 2008 global financial crisis impacts negatively on economic conditions around the world, so that the world's stock exchanges also suffer from this impact, which is a significant decline in the index rate, including the Indonesia stock exchange. Once the crisis has subsided, then, the world stock exchanges, including Indonesia stock exchanges, begin to stretch to bounce back as usual. The correlation of the World Stock Exchange both up and down is supported by empirical findings that the State exchanges of a certain country cannot be separated from the other world stock exchanges condition. For instance, the findings in this study show the World Stock Exchanges simultaneously have a significant positive influence on the Indonesia Stock Exchange. Theoretically, this empirical finding is also in accordance with the Contagion Effect Theory which states that the economic condition of a country will influence the economic condition of other countries. The global financial crisis occurred in the United States influences the economic condition of every country around the world. Therefor, the decline of DJI index as a result of the crisis will be followed by the decline in the stock indexes of other countries around the world, as shown in Table 5.

Table 5. THE DEVELOPMENT OF GLOBAL STOCK EXCHANGE
IN THE PERIOD OF 2007-2009

YEAR	DJI	HSI	JKSE	NIKKEI	ASX	FTSE	STI	KOSPI
2007	12650	23455	2627	13592	2522	5880	2982	1625
2008	8776	14387	1355	8856	1935	4434	1762	1124
2009	10428	21873	2519	10546	2448	5413	2898	1683

Source: yahoo finance (2011)

In 2008 (Table 5) is the year of the global financial crisis, as a result, the entire global stock market index decline, even the decline is almost 50% even more, such as Hong Kong stock exchange (HSI) and the Indonesia Stock Exchange (JKSE). In 2009, as the crisis has begun to subside, the global markets have started to rise again despite not recover as usual. This empirical evidence supports that simul-taneously the regression results of the global stock significantly influence the Indonesia stock exchanges (IHSG).

The other factor driving the cor-relation of the world stock exchanges is

the globalization era of financial and non-financial. The Indonesia stock exchange is no exception, it has also been affected by globalization and integrated with several exchanges in other countries, so that, the future prospects of the Stock Exchange are determined by the global stock markets. The development of the entire capital market of various countries is influenced by developments on Wall Street as an influential global market. This also proven by the finding of this study that DJI both simultaneously and partially has a significant positive influence on IHSG. With globalization, an investor, both individual and institutional in addition to buying shares in their own country, they can easily buy shares in other countries as well. Kustodian Sentral Efek Indonesia (KSEI) records ownership of foreign investors in stocks in February 2011 upto 1.12 trillion of stocks. It rise upto 2.75%, if compared to January 2010 with 1.09 trillion stocks (www.indonesia-financetoday.com). They can easily form a national and international portfolio. Therefore, the economic downturn (e.g., financial crisis) will influence their perceptions of their portfolio both nationally and globally. As a result, their actions in domestic result in their action in the global market. Consequently, the decline of the index in one country, especially DJI, will inevitably influence and cause a decline in world stock indexes in other parts of the world.

The Development of the Global Stock Exchange After the 2008 Global Financial Crisis

The average market return is calculated on the basis of the rise and fall of closing stock index. It will reflect the progress and performance of the stock in a certain period. Based on ANOVA analysis, the results show that there is no significant difference between the averages of global stock market return after the global financial crisis. It means that, after the global financial crisis, the market stock is recovered in general with the same level of recovery, there is no difference average market return reflected by the eight significant global market as the object of the study.

If studied more in depth, in fact, the global market has not fully recovered. It is proven that there are two exchanges with negative average tradeoffs (return) market, namely NIKKEI (-0.01%) and KOSPI (-0.001%). Investors in the two exchanges are on average not gaining, but they still suffer a loss even though the percentage is very small, that is close to zero percent. The other Six global markets, except KOSPI and NIKKEI, have all positive average tradeoffs (return) market, i.e, DJI, HSI, ASX, FSTE, STI and IHSG. The largest average is possessed by IHSG, it is equal to 0.15%.

This means that the average investors in the Stock Exchange get the highest gain, if compared to other global stock exchanges. On average, shares on the Indonesia Stock Exchange experience the highest percentage of increase in stock price if compared to other seven stocks (DJI, ASX, FSTE, HSI, NIKKEI, KOSPI and STI). IHSG has the highest growth index after the global financial crisis, this happens because of the stronger economic fundamentals (a stable exchange rate, the inflation rate remains in single digit) and more stable security and political situation in Indonesia (the success of general election).

Conclusion and Recommendations

1. After the 2008 global financial crisis, exactly in the period of September 2009 to December 2010, the global stock market index has started to recover though not as normal as before the crisis. It is characterized by the average value of returns (return) market which is positive.

2. After the 2008 global financial crisis, the global exchanges (DJI, ASX, FTSE, HSI, NIKKEI, STI, and KOSPI) simultaneously have a significant influence on the Indonesia Stock Exchange (IHSG). However, partially, it is only 3 stock exchange that significantly influence IHSG, they are DJI, FTSE and HSI.

3. The developments of global exchanges after crisis do not show any difference. It is proven by the presence of no significant difference among the average tradeoffs (return) market.

4. Post-crisis, the market having the highest growth is the Indonesia Stock Exchange. It is characterized by highest average tradeoffs (return) market, if compared to other global markets.

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THE EFFECT OF DEFERRED TAX AND TAX PLANNING TOWARD EARNINGS MANAGEMENT PRACTICE: AN EMPIRICAL STUDY ON NON MANUFACTURING COMPANIES LISTED IN INDONESIA STOCK EXCHANGE IN THE PERIOD OF 2008-2012

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Abstract

This study aims to analyze the relationship among deferred expense and tax planning toward earnings management on the non-manufacturing companies listed in Indonesia Stock Exchange in 2008 to 2012. The samples used in this study are 207 non-manufacturing companies. The analysis method used is multiple regression analysis. Multiple regression analysis is used to determine the effect that occurs between deferred tax expense and tax planning toward earnings management. The deferred tax has an influence on earnings management in the company which is done by minimizing its taxable income. The company size is used because it has a role as a wide stakeholder; the company provides earnings management to give a good impression on the public. In addition, tax planning also has a role in earnings management in term of minimizing tax payments. These results indicate that, (1) The Deferred Tax Variable has significant effect toward the earning management, (2) Company Size Variable has no significant effect toward the increase in earning management practices, (3) Tax Planning Variable has no significant effect on the increase in earning management practices.

Keywords : Deferred Tax Expense, Company Size, Tax Planning, and Earning Management.

Introduction

Earnings management is a choice performed by manager to determine accounting policies to achieve some specific purposes (Scott, 2003). Earnings management occurs when managers choose a particular accounting policy with the aim to regulate a reporting related to amount of income to be reported to the stakeholders which can influence the reporting of agreements based on the accounting numbers. One of earnings management concepts that can be used is the agency theory. The agency theory explains that earning management is influenced by conflicts of interest between the parties concerned and the management in charge. This conflict arises when a company wants a certain profit level.

In earnings management, tax is one way to lower the profit of company in accordance with the interests of the company. A company intends to increase the internal and shareholder wealth. The company is also trying to reduce the tax to be paid to the government because the company considers the tax as a burden for companies that should be minimized since the company does not gain benefit from the tax payment (Mangoting, Suratno 1990 and 2008). Nonetheless, the government also wants the company to pay a tax as much as possible by the consideration that tax is other resources of the government's acceptance of oil and non-oil sources. If the tax burden is felt to be too heavy for the company, it can encourage management to cope with a variety of ways, one of them is by manipulating the company's earnings, or often called earnings management (Anggraeni, 2011).

By consideration that the management wants to minimize tax payments, then, under PSAK No. 46 (IAI, 2009), it is described that the value of the recorded deferred tax assets should be reassessed (on the balance sheet date). Based on this PSAK No. 46, the management needs to redefine the balance of deferred tax assets and reserves annually, whereas, to determine the balance of the annual tax reserve management assessment, it is done subjectively. In addition to the deferred tax expense, other efforts are often referred to as tax planning or *tax sheltering* (Suandy, 2008). Tax planning is a method that can be used by taxpayer in the conduct of business or income tax management, but it should be noted that the tax in question is tax planning management without violating the Constitution or Act applicable on taxation. Tax is one of the important sources of state revenues in order to finance the development of the country.

One way for the government to reduce earnings management practice is to revise the regulation on tax. In law No. 36, 2008, there is a change to the rate of tax collection agency which initially adopts a single tax rate of 28% (percent) from January 1, 2009, now becomes 25% (percent) from January, 01, 2010 until today. Therefore, regardless of taxable income, the rate used is 25% (percent). In addition to the companies that *go public,* they get a decrease in the rate of 5% (percent) of the normal fare with the other terms. In 2009, the go public company tax rate is 23% (percent). In 2010, its tax rate is 20% (percent). From the revised legislation on the tax, then the companies do earnings management by minimizing the amount of taxable income in the year prior to the enactment of new tax rates, so that the burden of the company becomes smaller (Wijaya and Martani, 2011).

In addition, the other management's efforts to take advantage of changes in tax rates of other entities are by *tax shifting* as a transfer of profit for the year before changes in corporate tax rates to a year after the change in tax rates. According to accounting field, this effort adheres to the principle of *accrual basis* which is used for the recognition of income (revenue) and load (expense) which occurs regardless of the time or cash outlay of income or load concerned.

In the earnings management practices, in addition to the deferred tax and tax planning, the other factors affecting it is the company size. The company size has a very important role in the practice of earnings management. The smaller size firms are considered to do more earnings management than the larger ones. This is because the larger the size of the companies is, the more the information available to investors in making investment decisions related to the shares of the company will be. Moreover, the large companies are often overlooked by the public. In contrast to the small companies, they tend to do earnings management practices because they want to show that the condition of the company is good, so that, the investors are interested to plant stock in that company.

The changes of PPH rates of 28% to 25% from January 2010 may affect the behavior of the company in managing financial statements. According to Wijaya and Martani (2011), the changes in tax rates could provide incentives for companies to perform earnings management by minimizing the taxable income, so that, the corporate tax burden is getting smaller. The deferred tax is increasing when the company accelerates the recognition of expenses (suspend the revenue) for accounting purposes compared with the company tax purposes. In

addition to the tax burden, Wijaya and Martani (2011) also show that the company size also has no significant effect on earnings management practices. In addition to deferred tax expense and the size of the company, tax planning is also used in the practice of earnings management. In the study by Yana Ulfah (2013), it is said that tax planning has a positive effect on earnings management practice in manufacturing companies, tax planning is done by regulating how earnings are reported to show that earnings management is active. Tax planning is a means to fulfill tax obligations properly but the amount of tax paid can be minimized.

In contrast to previous studies (Wijaya and Martani, 2011) and (Yana ulfah, 2013), in this study, the writer uses non-banking and non-manufacturing companies listed on the Stock Exchange (2008 - 2012) and the latest corporate income tax rates based on the law No. 36 of 2009 amounted to 25% from January 1, 2010 and adds factor of the company size. In the study by Martani and Wijaya (2011) on the company earnings management practices in response to a decrease in the tax rate in accordance with Law No. 36 in 2008, advocated for further research is by using the latest tax rate of 25%, it is used to determine whether the company does earnings management practice after a decrease in the corporate tax rate. This

factor is considered to provide the different results of studies on the effect of deferred tax expense and tax planning to earnings management.

Literature Review

Earnings management practices undertaken by management are based on two theories, the *agency* and the *positive theory*.

Agency theory

Hendriksen and Breda (1992) illustrates that the agency relationship is a contract between the *agent* and the *principal. An agent* closes a contract to do a certain thing for the *principal,* as well as a *principal* closes contracts to reward *agents.* If analogized, it is like owner and manager of the company. Jensen and Meckling (1976), in Setiowati (2007), define an agency relationship as a contract in which one or more *principal* (owner) uses other parties or *agent* (manager) to run the company.

In agency theory, the principal or shareholder or owner facilitates and funds the agents for the needs of the company's operations. *Agent* is the management with the obligation to manage the company mandated by *the principal* to him. *Agency theory* assumes that each individual is motivated by the personal welfare and interests. The *principal* is motivated to

make a contract for the personal welfare through the distribution of dividends and stock price increases. *Agents* are motivated to improve it with an increase in ompensation. Conflicts of interest increase when the principal does not have enough information about the performance of the agent as principal inability to monitor the activities of agents in the company. However, the agent has more information about the capacity of self, work environment, and the company as a whole. This has resulted in an imbalance of information held by the principal and agent, and known as the asymmetry of information.

Positive Accounting Theory

Earnings management behavior can be explained through *Positive Accounting Theory* (PAT). PAT explains the factors that affect management in selecting the optimal accounting procedures and with a specific purpose. Watts and Zimmerman (1986) explain that a certain economic factor can be attributed to the behavior of the manager or the preparers of financial statements. This is because the positive accounting theory recognizes the existence of three agency relationship, (1) between the management and the owners (the bonus plan hypothesis), (2) between management and creditors (the debt to equity hypothesis), and (3) between the

management and the government (the political hypothesis).

Under PSAK No. 46 (IAI, 2009: 8), the definition of deferred tax is the balance in the balance sheet as a tax benefit in which its amount is the estimated amount in need for the upcoming period as a result of temporary differences between the financial accounting standards and tax regulations as a result of balance loss to be utilized in future periods.

The company size can be expressed in total assets, sales and market capitalization. These three measurements are often used to identify a company because the larger the size of the assets owned by the company is, the greater the company doing turnover and market capitalization will be. In addition, the company size can also be explained by a scale which can be clarified by the company size. The company size will affect the manager in making the financial statements.

Tax Planning by Hoffman (1961) is one of a capacity owned by the taxpayer (TP) to prepare financial activities in order to get expenditure (expense) of minimum tax. Tax planning is theoretically known as the effective tax planning that a person must try to get tax savings tax through the procedure of tax

avoidance systematically in accordance with the tax laws.

According Sitorus (2006), earnings management is a management action to deal with accounting policies of a particular standard to affect the profit expected through the management of internal factors owned or used by the company.

Theoretical Framework and Development Of Hypotheses

The Effect of Deferred Tax Expense toward Earning Management

In principle, deferred tax is the tax impact of future income due to temporary differences between the tax and accounting treatment of tax losses which can still be compensated in the future. Yulianti (2005) states that the liabilities (assets) of deferred tax increases when companies accelerate revenue recognition or suspend recognition of load (load accelerate or defer income) for accounting purposes compared with the company tax purposes. Based on this pattern, the company will report the accounting profit higher than the profit according to the tax, thereby increasing the net deferred tax liability of the company, and vice versa. Based on the study by Yana Ulfah (2013), it is proven that there is a positive

impact of deferred tax expense and tax planning for earnings management practices, which means the increase on the deferred tax expense and the tax planning will increase the profit of company management. From this study, this study hypothesizes:

H1: the greater the deferred tax expense is, the greater the probability of the company to perform earnings management will be.

The Effect of Earnings Management toward Company Size

The company size is the size of the company measured by using total assets or property owned by the company. There are various options that are usually used to represent the size of the company, i.e. the number of employees, number of sales, total assets and market capitalization. The greater the asset is, the greater the invested capital will be; the more the sales are, the more the total turnover will be; and the greater the market capitalization will be, the more well-known the company in the community will be.

The large companies usually have a role as wider stakeholders. This makes the big companies have a large impact on the public interest than the smaller ones. Large companies have more atten-

tion by the public so that they are more careful in presenting the financial statements. As a result, they do earnings management to give the best impression on the community. In the study by Wijaya and Martani (2011) proves that large companies are more likely to reduce profits of financial statements in delaying the taxable income as a response to the reduction in corporate tax rates. Based on previous study by Wijaya and Martani (2011), the hypothesis of the size of the company is:

H2: the company size negatively affects earnings management.

The Effect of Tax Planning toward Earning Management

Political cost hypothesis is one of the hypotheses in the positive accounting theory. *Political cost hypothesis* states that companies with large scale tend to lower their profit by reason of the violation of government regulations (Watts and Zimmerman, 1986). In this case, government regulations are related to taxation. If a large company lowers its earnings, the company tax is also small.

Yin and Cheng (2004) in Wijaya and Martani (2011) state that companies that have good tax planning, will benefit from *tax shields* and be able to minimize their tax payments. Income tax is one of

the sectors of tax revenues accounted for most major countries. In 2009, there is a change in legislation of income tax law from a single tax of 28% to the tax rate of 25% in 2010. Through this change, many companies want to take advantage of it by minimizing the amount of tax to be paid by way of earnings management. Efforts to minimize the tax burden are commonly referred to as tax planning.

Based on previous studies that discuss the earnings management practices studied by Martani and Wijaya (2011) and Ferry and Anna (2012) which are able to prove that the tax planning measured by using tax retention rate is capable of detecting earnings management practices, and based on these results, the writer formulates the hypothesis as follows:

H3: tax planning positively affects earnings management practices

Methods

Types of Research

This study is an empirical study by analyzing the non-manufacturing companies listed in Indonesia Stock Exchange in 2008 to 2012.

Population and Sample.

In this study population used is non-manufacturing companies listed on the Indonesia Stock Exchange from 2008 until 2012. In Ferry and Anna (2013), it is stated that the non-manufacturing companies are used because they have higher probability in earnings management practices, while banking and other financial companies are not used as sample to avoid industrial or special regulations that may affect the use of *Discretional Accrual (DA)*.

The method development samples used in this study is purposive sampling, i.e. the population who does not qualify is not taken. Moreover, sampling is only from the population who meet the following requirements:

1. The company has profit which always rises during the year of observation. This is due to the tendency of companies that report earnings to always rise to attract investors and keep the business competitive.

2. The company's financial statements are presented in the rupiah currency.

3. Non-manufacturing companies except banks that have complete data as needed for the study.

Variables of the Study

The variables used in this study are the dependent and the independent variables.

Dependent Variables

The dependent variable in this study is the earnings management. Earnings management is defined as a choice by management in determining accounting policy to achieve some specific purposes (Scott, 2003). While Healy and Wahlen (1999) define earnings management as financial reporting which is not neutral (unbiased) and managers are also intervened to generate personal finance.

Earnings management is measured by the scale of measurement probability variable of firm i to do earnings management in year t. EM (Equity Market Value) is net income divided by the value of the equity markets in the early year to show expectations of the company reported earnings.

$$EM = \frac{Net\ Profit}{Early\ Year\ Equity}$$

Independent Variables

In research by Yana Ulfah (2013) explains that the measurement of variables, including:

a. Deferred tax expense (H1) should be weighted for every company that has the same deferred tax expense not necessarily have the same weight, because the deferred tax expense is dependent on the total assets.

H1 = DTEit x Total Assets

Based on the study by Yulianti (2005), Wijaya and Martani (2011) and Yana Ulfah (2013), the calculation of deferred tax expense (DTEit) is calculated by dividing the deferred tax expense of firm i in year t (H1) with total assets at the end of the year t-1.

$$DTEit = \frac{Deferred\ Tax\ t\ (H1)}{Total\ Assets\ t-1}$$

b. Company size is the size of the company (H2) which is measured by Ln total assets as a control variable in the study.

c. Tax incentives are measured from business tax planning. Tax planning is a step taken by the tax payer to minimize tax payments for the current year or years to come. The variable of tax planning (H3) is measured by using the formula:

Tax Plan (In) = $\dfrac{\sum_t^{t-1}(25\%\ PTI - CTE)/5}{TAt}$

In which;

Tax Plan: Tax Planning

PTI: Pre Tax Income

CTE: Current portion of total tax expense

Tax Intensive is measured from the business tax planning. The Calculation is from 2008 to 2012, the calculation of rates uses appropriate presentation of 25% in line with tax law No. 36 of 2008 which is 25%.

Finding And Discussion

Statistical Description

Based on the statistical data, it can be known that the total of observation which is used in this study contains 95 observations, where DTE variable which is measured by using EM results -0.0081240000 of average value with standard deviation of 0.03188540. The value of DTE variable is between -0.06180 and 0.16511. The TA variable results 28.694473 of average score with standard deviation of 1.32281839. The value of TA variable is between 26.22082 and 32.34387. The IN variable results 6.536234800 of average value with standard deviation of 4.3950840600. The value of variable IN is between -2.32891000000 and 2.58707000000.

Hypothesis Test

The test on the hypothesis is conducted through testing regression equation model partially toward each independent variable. The results of the test on regression equation model partially are as follows.

1. The effect of DTE on Equity Market Value

The first hypothesis which measures the effect of DTE on Equity Market Value shows that based on the t test, it results -3.667 of t-count and the significant level is 0.002 (<0.05). This result shows that DTE has significant effect on Equity Market Value, so that the first hypothesis in this study is supported. The coefficient value has negative course which shows that if companies do the DTE so their Equity Market Value will be decreasing.

2. The effect of TA on Equity Market Value

The second hypothesis which measures the effect of TA on Equity Market Value shows that based on the t test, it results – 0.031 of t-count and the significant level is 0.975 (>0.05). This result shows that TA has no significant effect on Equity Market Value, so that the second hypothesis in this study is not supported. The coefficient value has negative course which shows that if companies do the TA so their Equity Market Value will be decreasing.

3. The Effect of IN on Equity Market Value

The third hypothesis which measures the effect of TA on Equity Market Value shows that based on the t test, it results 0.965 of t-count and the significant level is 0.348 (>0.05). This result shows that IN has no significant effect on Equity Market Value, so that the third hypothesis in this study is not supported. The coefficient value has positive course which shows that if companies do the TA so their Equity Market Value will be increasing.

Discussion

The Effect of Deferred Tax Expense toward Earning Management

The result of the test on deferred tax expense and earning management statistically shows that the deferred tax expense has negative significant effect on the earning management, which means if the deferred tax expense is raising so the probability of companies to manage their profit will be decreasing. This means that the deferred tax expense affects earning management. However, the result of this

study is not in line with the first hypothesis which states that "the higher the deferred tax expense, the higher the probabilty of companies to manage their profit". This study is also not in line with the study conducted by Yana Ulfah (2013) which points out that deferred tax expense has positive significant effect on earning management.

This is possible because the lose is given by GAAP to the company to choose the method of accounting in arranging the financial report of the commercial. Meanwhile, the fiscal financial report is arranged by the company based on taxation rules that do not make looseness for the management to select the accounting model (only cash-based accounting model) and accounting method. This is why the company needs to do a fiscal correction and also causes differences between fiscal profit and accounting profit. Thus, it causes the increase of postponed obligation tax consistent with the company that owes more revenue.

The Effect of Company Size Toward Earning Management

The result of tests done to the variable size of the company to the earning management is statistically proven that the size of the company has no significant negative effect on earning management. The value of the coefficient

has a negative direction, which means that the greater the size of the company is, the earning management done is smaller or down. While the insignificant one proves that the company size has no effect on earning management. Different with the previous study in Wijaya and Martani (2011), who are able to prove the existence of a significant negative effect of company size on the earning management. Thus, the second hypothesis in this study is not supported.

The performance of large company work will be viewed by the public so that the company will report its financial condition more carefully, more informative in the information contained in it and more transparent so that the company will be less in doing earning management (Suryani, 2010).

The Effect of Tax Planning on Earnings Management

The result of tests done to the variable tax planning and earning management statistically shows that tax planning has not significant positive effect on earning management, which means the higher the tax planning is, the greater the company conducts earning management. This means that tax planning does not affect earning management. The result of this study has no same direction with the third hypothesis, which

states that "tax planning has significant effect on the increase in earning management practices". The result of this study differs from research conducted by Yana Ulfah (2013) which states that tax planning has positive significant effect on earning management.

Company conduct tax planning as effective as possible, not only to take advantage of the fiscal terms, but in fact the company also gains advantages to obtain additional capital from investors through the sale of shares of the company. In doing tax saving strategies, company must conduct it legally to avoid the sanctions of taxes in the future.

Conclusions, Limitations and Recommendations

Conclusions

Based on the result of the data analysis and discussion that has been described, it is known that from the relevant variables and independent variables used, it can be concluded as follows:

1. The Deferred Tax Variable has significant effect toward the earning management.
2. Company Size Variable has no significant effect toward the increase in earning management practices.

3. Tax Planning Variable has no significant effect on the increase in earning management practices.

Limitations of Study

This study has some limitations that may cause disruption to the result of the study, such as:

1. This study only take a sample of non-manufacturing companies except banks listed in BEI, so that the results would be different or cannot be generalized if it uses of all companies listed in BEI.
2. This study gains the Adjusted R-square value of 53.3%, this result shows the effect that is given to the deferred tax expense, the size of the company and tax planning toward the earning management practices. So, there are other variables that have a considerable effect on the cost of debt.

Recommendations

Concerning the existence of some limitations as it has been delivered, so the further study needs to pay attention to some recommendations as follows:

1. In the next study, it is expected to use a sample of the entire company and use the longer year of observation so that the results can be generalized to the entire capital market companies.

2. In the next study, it is suggested to add other variables to affect earning management, the managerial owner-ship, institutional, sales growth, and so forth.

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Deferred Tax (H1) ──────┐
                        ├──→ Earning Management
Company Size (H2) ──────┤
                        │
Tax Planning (H3) ──────┘
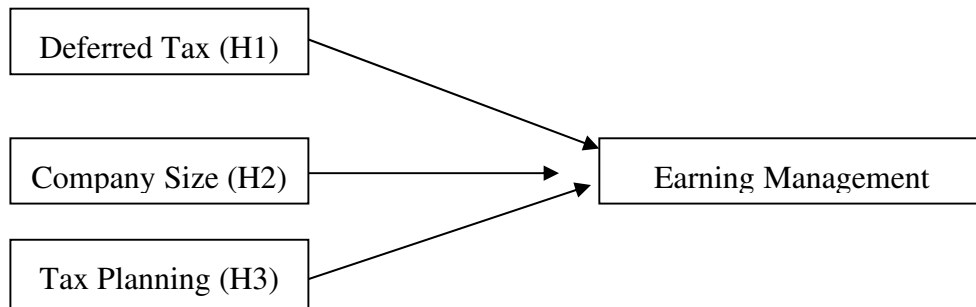
Figure 1. The Research Model

Table 1. Sample selection process:

Information	Total
Non-manufacturing companies listed on the Stock Exchange (except banking)	207
Companies that do not have financial statements for 5 years in a row (data incomplete)	(134)
Companies whose financial statements are not measured by using the rupiah unit (U$ Dollar)	(5)
Companies that have a profit decline	(49)
Sample firms (which always have profit rise)	19

Table 2. Statistical description

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
DTE	95	-.06180	.16511	-8.1240000E-3	.03188540
TA	95	26.22082	32.34387	2.8694473E1	1.32281839
IN	95	-2.32891E11	2.59707E11	6.5362348E9	4.39508406E10
Valid N (listwise)	95				

Table 3. The results of multiple regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4673	12 545		-.373	.714
	DTE	-79 999	21 815	-.635	-3667	.002
	TA	-.014	.458	-.009	-.031	.975
	IN	3.379E-10	.000	.290	.965	.348

a. Dependent Variable: LNEM
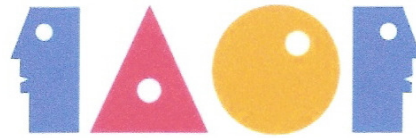
KEY SUCCESS FACTORS IN DIGITAL MARKETING IN SERVICE INDUSTRY AND THE DEVELOPMENT STRATEGIES: A CASE STUDY ON FLEUR DE CHINE AT SUN MOON LAKE

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Abstract

The digital marketing environment is formed because of the popularity of network infrastructure, the enhancement of connecting bandwidth, wireless network, the dense coverage of mobile signal base stations, the decrease of connecting charge, and the increase of mobile phone users and network users. Enterprises attempt to grasp the opportunities for such new marketing media. Nevertheless, digital marketing cannot unchangeably transplant the marketing experiences of traditional mass media because of the numerous varieties and different properties, with which the users would change the behaviors under digital environments. Such factors, on the other hand, connect and affect each other that it might yield the twice results with half efforts by understanding the idea of digital marketing, mastering the characteristics of digital marketing media, and realizing the key success factors in digital marketing to develop the strategies of digital marketing media combination.

The department supervisors and employees in Fleur De Chine at Sun Moon Lake are investigated in this study. Total 120 copies of questionnaires are distributed, and 77 valid copies are retrieved, with the retrieval rate 64％. The research results show the hierarchical weight ranking of the assessment indicators as 1. Interesting Title, 2. Low Technical Requirements, 3. Customer Privacy, 4.I nstant Information, 5. Personalized Characteristics, 6. Exclusive Interoperability, 7. Entertaining, 8. Clear and Simple, 9. Omnidirectional Options, 10. Cross-industry Cooperation, 11. Marketing Integration, 12. Request for Response, and 13. Customer Exclusive Notes.

Key words: service industry, digital marketing, key success factor, development strategy

Research Background and Motivation

The development of the Internet has networks become an essential element in the life. Life information or interpersonal information could be propagated through networks, which therefore become an important channel for the public collecting information and are gradually developing more diverse application services. The progress of the Internet makes new changes for business models and marketing in hotel service industry. With the trend of applying electronic systems and the fiercely competitive environments in hotel service industry, enterprises need to master customer demands and behaviors in time. The Internet provides a favorable transaction and communication channel, which allows the communication between the enterprise and customers through the interactivity of the Internet so that the provided products and services better conform to personal demands and enhance the message exchange among customers. The customer word-of-mouth therefore generates different benefits. The future development of online service businesses is expectable. How could hotel service industry provide the most valuable services in the fiercely competitive global market? In addition to provide richer tourism information and quality services to attract the purchase of consumers, the establishment of corporate image and brand awareness is also a key factor in the development strategies. More than three-fourth of online shoppers mentioned that the purchase of products related to a tourist hotel relied on the online information. In this case, it is worth noticing to reinforce consumers' purchase confidence and the word-of-mouth of hotel service industry with

favorable digital marketing.

Marketers are losing the confidence in the complex marketing environments and media environments. Traditional marketing gradually passivates the marketing effectiveness that the emergence of new marketing tools and media are urgently eager. To some degree, digital marketing brings the expectation. Since 2009, advertising agencies and media agencies have turned such expectations to strong involvement (Adm DigitalxCreative, 2010). When the network infrastructure becomes popular, the formation of digital environments is closely related to the life (Cotler& Rizzo, 2010; Kim, Jeong, &Lee, 2010). The emergence of various digital marketing media technologies forces an enterprise searching for new digital marketing models and re-confirming the status of the enterprise in digital environments. The digital marketing competition becomes the contest of virtual channels; one understands more of digital marketing and masters the characteristics of digital marketing media could have better advantages. Meanwhile, how virtual channels are treated, how digital marketing is executed, how digital marketing media are operated, and what the key success factors in digital marketing are in hotel service industry are the primary issues in this study.

Literature Review

Definition of Digital Marketing

Digital marketing is a different marketing based on the essence of marketing that the meaning of marketing is first understood in this study. American Marketing Association (AMA) defined marketing as the organizational function, which generates a series of processes for creating, communicating, and delivering value to customers, and managing customer relationship as well as has the stakeholders of an organization acquire profits (Solomon et al., 2006). Kotler (2009), a marketing scholar, proposed 12 concepts for marketing, including (1) Marketplace, Marketspace, and Metamarket, (2) Marketers and Prospects, (3) Needs, Wants, and Demands, (4) Product, Offering, and Brand, (5) Value and Satisfaction, (6) Exchange and Transactions, (7) Relationships and Networks, (8) Marketing Channels, (9) Supply Chain, (10) Competition, (11) Marketing Environment, and (12) Marketing Program (Dwivedi & Merrilees, 2013).

Huang (2009) pointed out digital marketing as a non-traditional marketing model. Generally speaking, marketing activities using information technology and digital instruments could be regarded as digital marketing (Blickle et al., 2009). Digital marketing is

affected by marketing, technology, and economics; and, an enterprise could foresee and plan the Internet marketing architecture according to the trend of digitalization, networking, and personalization (Liu, 2007).

Lin (2009) called the marketing behaviors in the digital era as e-marketing, i.e. an individual or an enterprise transmitting data, information, knowledge, and intelligence through digital instruments, largely selling to consumers through formalization, and further changing the purchase decision for marketing activities (Lin, 2009). It was stated in Business Next (2011) that evolution appeared when digital media channels were used for most marketing in a company. Digital media channels could be addressed and allowed marketers proceeding continuous, two-way, and personalized conversations with consumers. Chiang, the executive and business supervisor of Medialand, considered that digital marketing presented the characteristics of viscous and loyal media, high interactivity, smaller restrictions to the production scale, and the sole medium whose effectiveness could be inspected (Business Next, 2011).

When discussing digital marketing, the difference with traditional marketing is often associated. Comparing to traditional marketing, Huang pointed

out three characteristics of digital marketing. (1) High Efficiency. Informatization instruments could assist marketers in the vertical and horizontal integration. (2) Penetrating Power. Various types of media and communication channels allowed marketers more easily contacting with potential customers. (3) Interactivity. The real-time information measurement allowed the potential customers' demands being more accurately and personalized responded (Chailom& Kaiwinit, 2011). Accordingly, the three characteristics of digital marketing proposed by Huang (2009) are utilized as the research dimensions in this study.

Key Success Factors In Digital Marketing

The interactive and interdisciplinary characteristics of digital marketing constantly warm up the digital marketing effect. The key of digital marketing is to allow an enterprise's advertising information being highly exposed. To effectively achieve the anticipated digital marketing effect, the characteristics of digital marketing media need to be thoroughly understood. Nonetheless, there are various types of digital marketing media, and the classifications are distinct that different discussions about digital marketing media have been proposed.

Flanagan (2003) proposed several

methods to enhance digital marketing effects with electronic mails.

(1) Interesting mail titles. A well-designed mail title would urge people to read, and a lengthy title which could reduce reading willingness should be avoided.

(2) Establishment of customer exclusive notes. The list of all customers and potential consumers should be firmly mastered for filing the database so as to deliver electronic mails with distinct information to different customers.

(3) Seeking allowance and maintaining customer privacy. The Opt-Out function should be provided for customers in the first electronic mails in order to respect the choice of customers, and the personal information in the list could not be spread or sold to others.

(4) Entertaining mails. Popular music or animations could be built in the mail to promote the marketing products or services.

(5) Personalizing mails with clearness and simplicity. Personalized mails could enhance the relationship between customers and advertisement as well as promote the response rate. However, the mail content should not be lengthy.

(6) Request for response. Efficient electronic mail communication could be established on the favorable relationship with customers. The receivers could be invited to click on the hyperlink to a webpage where detailed information and personalized pages are designed so that the receiver feels being respected.

(7) Not attaching files. The use of hyperlinks could lead customers to understand detailed information, as a lot of mail systems are restricted to the capacity that the attached files are often deleted.

According to the functions and characteristics of mobile phones, Wertine & Fenwick (2008) proposed 10 major points for digital marketing (Tian & Borges, 2012).

(1) To clarify the total control of the personalized device for customers. Mobile phones were highly personalized devices, with which the acceptance of mobile marketing was voluntary. Customer demands, expectations, and objectives were the driving force of mobile marketing, while the fundamental demand was "receiving agreement".

(2) Utilization of personalized characteristics in mobile phones. A mobile phone represented the "individual"

of the user. The background data of the mobile phone user were the precious data, allowing businesses proceeding effective personalized marketing through mobile communications (Brown, 2011).

(3) Establishment of local mobile phones and the exterior interoperability. Mobile marketing aimed at instant satisfaction, the lock of exterior customers, and the time point of purchase behaviors.

(4) Identification of instant information really meaningful to consumers. Being clear of consumer demands and providing the required services and information could induce the active responses of consumers.

(5) Well-use of waiting time. Modern people were accustomed to use mobile devices for killing time during the waiting time. Mobile phones could relatively attract consumer attention.

(6) Not making spam message. Both mobile phones and electronic mails presented the potential of active promotion. However, inaccurate, improper, or useless messages could reduce the efficiency and trust of media. A business therefore had to avoid the marketing message becoming spam message.

(7) Omni-directional considerations of all mobile options. The point was to have consumers actively contact, cut in the points with short responses, provide consumers with benefits, and build in interactive relationship with consumers.

(8) Integration with other marketing. Marketing with mobile phones was merely a part of marketing; an overall marketing should be focused.

(9) Cooperation with other businesses. Activities beneficial to all cooperative partners in the mobile circle should be created.

(10) Being effective with other broadcast channels not meaning the effectiveness of mobile phones. It was necessary to understand the essence of mobile phones. Some TV-played films might not be played on mobile phones because of the screen scale (Nielsen, 2012).

Kotler & Armstrong (2013) stated that digital media rapidly growing globally lied in the "use" with following characteristics (Chou, 2005; Hsieh, 2006).

(1) Low Technical Requirements. The "publication" process was simplified for the easy creation of an individual, without the technical

ability of webpage compiling design, and to easily use blogs.

(2) Personalized cross-platform interaction. A blog allowed the user constructing texts, links, pictures, music, and even videos to reach the media spirit and the panel autonomy.

(3) Real-time publication and sharing. A blog allowed publishing real-time message. Besides, it not only allowed the author publishing the opinions and ideas, but could have the friends exchange with each other.

(4) Multiple applications. Diverse contents covered politics, living, network technology, literature, and art comments. Moreover, a blog could be used for making network camera and news diary.

Digital marketing media would appear different results because of distinct classifications. Such abundant varieties of digital marketing media and the distinct characteristics allow the users following the characteristics to operate. Among digital marketing media, mobile phones, mobile devices, and community websites are often proposed by researchers that they are regarded as the trend of modern and future media to plan the digital marketing strategies in advance.

Hotel Characteristics

Hotels are the enterprise with comprehensive arts. Regardless the scale, they reveal the consistent goal of providing the public with services for clothing, food, accommodation, education, entertainment, and customer demands. From a part of Act for the Development of Tourism, "tourist hotel enterprises" are defined in Article 2 Item 7 as a profit-taking enterprise providing tourists with lodging and related services. Yang (1983) defined hotels as public facilities offering accommodation, food and drink, and other services. Chan (1992) considered hotels as public facilities which acquired reasonable profits by supplying services of meal and accommodation.

Wen (1993) also regarded hotel enterprises as service industry with the following characteristics.

(1) Intangibility. Services were intangible products and normally a kind of behaviors that they were more difficult to set the consistent quality than tangible products. Customers could not see, touch, and hear the content and value of services before the purchase. Sometimes, it was hard to judge a tourist hotel after purchasing the services.

(2) Inseparability. Services were close-

ly related to the providers or machines. Normally, a server and the ones being served had to complete services at the same time and location. In other words, services were the process of activities, and the provision and consumption of services occurred spontaneously.

(3) Variability. Same services would appear distinct changes by time, locations, providers, and customers; besides, most services required the contact between servers and consumers. The emotion, attitudes, skills, and spirits of service personnel were different, and consumers would show different perception according to the time and space that there was great variance in services.

(4) Perishability. Services normally could not be stored. In terms of demand and supply, when demands were less than supply, abundant rooms could not be stored as stocks that the loss could not be made up. On the other hand, when demands exceeded supply, some consumers might not have available rooms (products). Moreover, excessive demands would directly affect the service quality of service personnel as well as the classification, development, and management of a hotel enterprise.

Development Strategies Of Hotels And Tourist Hotel Enterprises

According to different management systems, domestic hotel enterprises are divided into tourist hotel enterprises and regular hotel enterprises. The former refers to "a profit-taking enterprise that operates international tourist hotels or regular tourist hotels to provide tourists with lodging and related services". The latter refers to profit-making businesses, in addition to tourist hotel enterprises, which offer accommodation and rest and being licensed by the central administrative authority. This research sample, Fleur De Chine at Sun Moon Lake, is a tourist hotel enterprise; the development is described as below.

(1) Conducting tourist hotel rating assessment. To guide tourist hotel enterprises with balanced development of software and hardware and enhance the product quality so that visitors could select the suitable consumption value, Ministry of Transportation and Communications formulates the tourist hotel rating assessment standards and has the tourism bureaus and local governments conduct the rating assessment of international tourist hotels and regular tourist hotels.

(2) Guiding the brand image of tourist hotel enterprises. According to

various tax preferences in Act for Industry Enhancement, tourist hotel enterprises are guided for chains, strategic alliance, or ISO9000 certification to establish the international brand image. Tourist hotels are also guided to improve the pollution prevention and energy conservation measures so as to conform to the global trend of Green Hotel.

Research Design And Methodology

Delphi Method

According to above factors in digital marketing, Delphi Method is applied to establish the AHP criteria. Delphi Method, also named expert survey, is a communication method with which all questions are individually mailed to experts for the comprehensive opinions; such opinions and predicted questions are feedback to the experts for more opinions; and, the experts would revise the original opinions according to the comprehensive opinions. After several runs, a comparatively consistent prediction result is acquired as the decision.

Based on the system programming, anonymous opinions are applied to Delphi Method. That is, there is no discussion among experts, but merely relationship with the researcher. After repeatedly inquiring, concluding, and revising the experts' opinions about the questions, the consistent opinions are summarized as the prediction result. Such a method presents broad representativeness and is more reliable.

Establishment of Assessment Indicators

The questionnaires are sent to the experts of digital marketing in service industry through emails. Five experts in industry, official, and academia are included. Literatures and factors in digital marketing are first organized for the statistical considerations of digital marketing. Such factors with similar properties are classified into a category and delivered back to the experts for further opinions through emails for several runs. Finally, an expert would call a conference for all experts making the key success factors in digital marketing in service industry from major categories. The key factors are regarded as the AHP dimensions, and the classified criteria are made the AHP questionnaire.

Research Subjects

Fleur De Chine at Sun Moon Lake, a fashion hotel located on the north of Sun Moon Lake, provides wide accommodation with spa, outdoor swimming pools, and free wireless Internet connection. Beautiful French windows and a private balcony to view the lake or mountains are equipped in the room.

Each room is prepared tea/coffee, a flat TV, and a bathtub with natural spring. Guests could enjoy massage and beauty services in Shisedo salon and spa. There are outdoor swimming pools and water therapy hot spring in the hotel, and a hiking tour could also be arranged for the guests. Eau Cloud offers Taiwanese, Cantonese, and Sichuan cuisine, and Sky Lounge offers drinks for the guests while viewing the overall view of Sun Moon Lake. With free parking lots, Fleur De Chine at Sun Moon Lake is about 1 hour drive from Taiwan High Speed Rail Taichung Station, and 90 min driving from Taiwan Railways Taichung Station and Taichung Airport. The department supervisors, employees, and consumers of Fleur De Chine at Sun Moon Lake are distributed 120 copies of questionnaires. Total 77 effective copies are retrieved, with the retrieval rate 64%.

Data Analysis Results

Assessment Indicators

Figure 1. shows the research framework of this study after being revised with Delphi Method.

Data Analysis Of Digital Marketing In Service Industry

After completing all hierarchical weights, the relative importance of the indicators in each hierarchy is distributed to present the importance of the hierarchy in the entire evaluation system as well as to generate the overall weight of key success factors in digital marketing in service industry. (See Table 1.)

Conclusion

Based on the experimental result, the questionnaire survey is analyzed as Table 1. The following conclusions are proposed, expecting to provide a definite guidance and direction for the digital marketing development strategy in service industry.

From the overall weight of assessment indicators among the key success factors in digital marketing in service industry, Penetrating Power, weighted 0.371 about 37.1% of overall weight, is mostly emphasized in Hierarchy 2, followed by Interactivity (weighted 0.322) and High Efficiency (weighted 0.307). The result reveals Penetrating Power as the mostly emphasized dimension of digital marketing in service industry.

The hierarchical weights of the assessment indicators in Hierarchy 3 are sequenced as below.

The assessment indicators in High Efficiency are ranked Instant Information, Entertaining, Clear and Simple, Cross-industry Cooperation, and Customer Exclusive Notes。
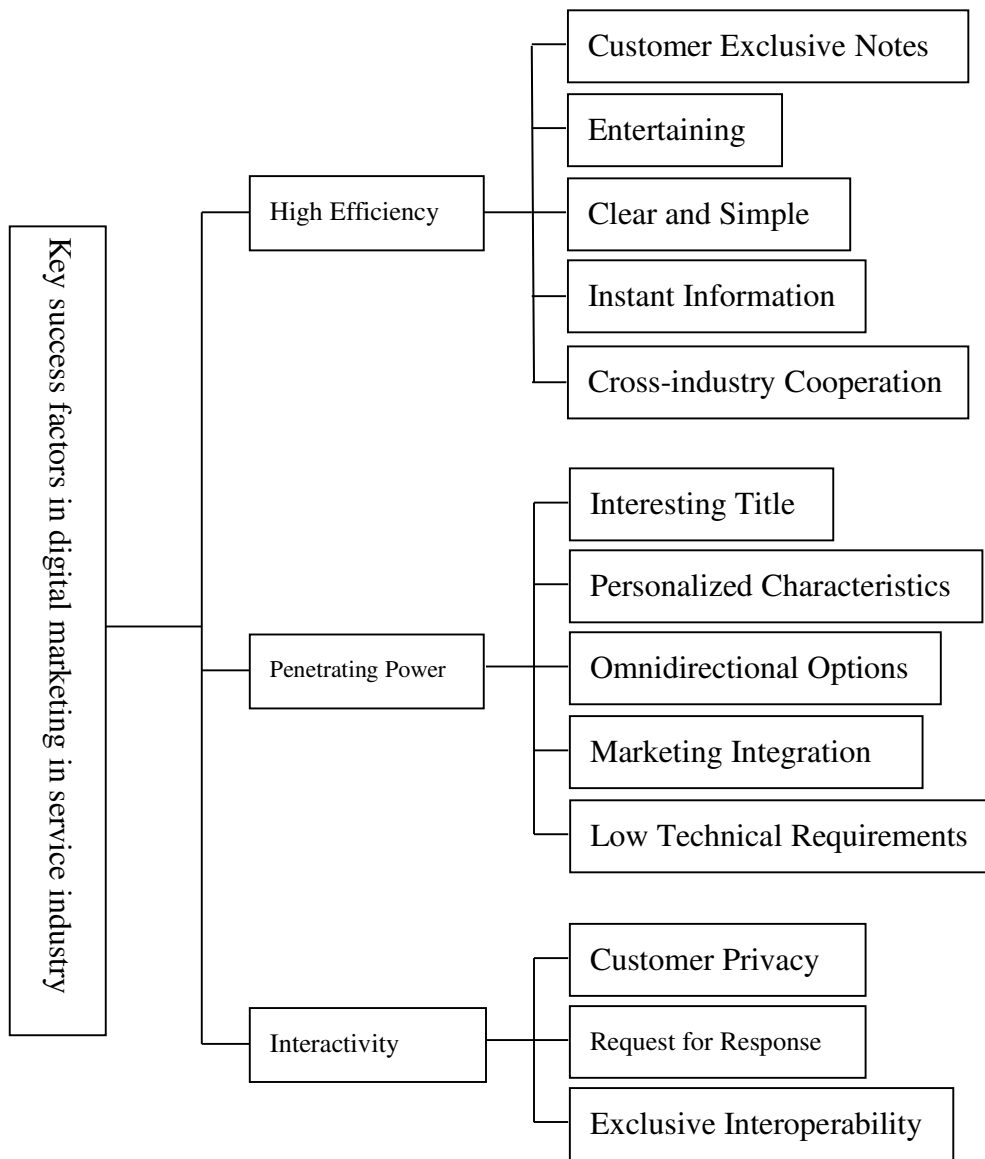
Figure 1.   Research framework

Table 1. Overall weight of digital marketing in service industry

Dimension	Hierarchy 2 weight	Hierarchy 2 sequence	Indicator	Hierarchy 3 weight	Hierarchy 3 sequence	Overall weight	Overall sequence
High Efficiency	0.307	3	Customer Exclusive Notes	0.135	5	0.033	13
			Entertaining	0.243	2	0.063	7
			Clear and Simple	0.194	3	0.060	8
			Instant Information	0.262	1	0.097	4
			Cross-industry Cooperation	0.166	4	0.055	10
Penetrating Power	0.371	1	Interesting Title	0.253	1	0.136	1
			Personalized Characteristics	0.183	3	0.082	5
			Omnidirectional Options	0.169	4	0.058	9
			Marketing Integration	0.167	5	0.057	11
			Low Technical Requirements	0.227	2	0.129	2
Interactivity	0.322	2	Customer Privacy	0.376	1	0.115	3
			Request for Response	0.273	3	0.041	12
			Exclusive Interoperability	0.351	2	0.074	6

1. The assessment indicators in Penetrating Power are ranked Interesting Title, Low Technical Requirements, Personalized Characteristics, Omnidirectional Options, and Marketing Integration.

2. The assessment indicators in Interactivity are ranked Customer Privacy, Exclusive Interoperability, and Request for Response.

Among the assessment indicators in Hierarchy 3, the hierarchical weights are

sequenced 1. Interesting Title, 2. Low Technical Requirements, 3. Customer Privacy, 4. Instant Information, 5. Personalized Characteristics, 6. Exclusive Interoperability, 7. Entertaining, 8. Clear and Simple, 9. Omnidirectional Options, 10. Cross-industry Cooperation, 11. Marketing Integration, 12. Request for Response, and 13. Customer Exclusive Notes. From the result, interesting titles would have consumers hard to refuse knowing the content. The formation of digital environments changes the purchase behaviors of consumers. More participation of sensory media in the digital marketing media combination could create deeper consumer experiences that technical requirements are regarded as critical factors. Consumers present strong autonomy, are used to make their own decisions, and pay attention to personal privacy that the leak of personal data is considered as the result of digital information progress. Customer Privacy therefore is a concern of modern consumers. Digital marketing is not restricted to time and locations that consumers could receive hotel information on the Internet at any time. Instant Information is considered as a great advantage.

Suggestions

From above conclusions of key success factors in digital marketing in service industry, the following suggestions are proposed in this study for the digital marketing development strategy in service industry.

1. Marketing should be planned focusing on consumers. Hotel marketing has to cater to consumer behaviors that it is suggested that hotels could plan Interesting Titles and Timely Low Price when operating digital marketing in order to induce consumer interests. The strategy of "low price" could cater to consumers' mind so that they would feel better when seeing the title.

2. Marketing interaction should allow the participation of consumers. In the marketing era, the behavior model of Web2.0 needs to be caught up in digital environments, i.e. to allow the participation of consumers, to have consumers create the marketing content, and to pay attention to the technique to prevent consumers from stepping back. It is suggested that Community Websites and Video Websites would be applied to media. Such marketing encouraging consumers uploading pictures and videos and requesting consumers sharing their blogs or Facebook could be well applied.

3. Users of digital marketing media are better consistent to product customers. The crowd contacting with digital marketing media is different. For instance, students often use

mobile phones, community media, and BBS, while office workers do not contact with BBS as much as students do. What is more, customers of different products would be

distinct. The media subject and the product customers should be consistent so as to have consumers reach the marketing.

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ELEVATING THE QUALITY OF STAFFS AT JEWELRY BOUTIQUE STORES: IMPLEMENTING CHINKLESS-TEACHING CONCEPT FOR COURSE TRAINING AND PLANNING

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Abstract

The performance of jewelry boutiques is closely connected to the effectiveness of staff training; therefore, jewelry boutique owners must be aware of what knowledge and skills are critical for the employees to learn in their training. This study explored the types of courses should that teaching units should design and plan to ensure close and effective coordination between identifying professional needs and designing courses. The most critical knowledge and skills for jewelry boutique staff were selected according to industry expectations and by using a proposed of expert weighting method. In addition to inviting course instructors to provide the names of relevant course, the Charnes, Cooper, and Rhodes efficiency evaluation model for

data envelopment analysis was employed to evaluate high-priority courses according to industry needs. The results indicate that interpersonal relationships and marketing strategies are the most critical courses. This result is consistent with industry expectations, in which service training and sales skills were regarded as the most crucial. In this study, courses designed based on the Chinkless-teaching Concept were tightly integrated with the experiences and needs of jewelry boutique owners and university courses. The courses are expected to provide a valuable reference for the jewelry industry and teaching units planning courses.

Key Words: Charnes Cooper and Rhodes (CCR) model, Chinkless-teaching Concept (CTC), Data Envelopment Analysis, Expert Weighting Method, Jewelry Boutique

Introduction

The greatest predicament encountered by brick-and-mortar jewelry boutiques lies in that in addition to the intense competition from online stores and television shopping, considerations must also be made on how to draw customers' attention back to physical stores. Many jewelry boutique owners must consider this key issue to improve extant business models. For customers, jewelry and boutiques are products for decoration, display, and personal satisfaction. Customers expect high-quality service and professional advice when purchasing goods from jewelry boutiques. Therefore, jewelry boutique owners expect their sales staff to effectively and swiftly establish a long-term relationship with customers because such relationships can elevate customer satisfaction and sales per-formance (Crosby, Evans, & Cowles, 1990; Franke & Park, 2006).

Most conventional business methods adopted by jewelry boutique owners are sales-oriented instead of customer-oriented. In sales and marketing, customer targeting and retention are the primary focus, in which quantitative data and knowledge are applied to develop and manage customer relationships, identify customer needs, market products, and resolve complaints (Moncrief & Marshall, 2005). Because of the various types and wide price range of jewelry, most customers possess a limited understanding on the characteristics of jewelry. Therefore, to develop effective market differentiation strategies, some jewelry boutique owners have begun emphasizing customer interactions based on the concept that the key is not

what you can do to the customer, but what can you do for the customer (Worthington & Horne, 1998).

Professional knowledge is frequently considered an essential attribute for sales and public relations personnel to influence consumers, and it also refers to the product knowledge and service ability of sales personnel, both of which are perceived by customers based on information they receive from sales staff (Busch & Wilson, 1976; Taylor & Woodside, 1981). Sirdeshmukh et al., (2002) regarded professional competence as the professional knowledge and competence of trusted personnel in a specific field such as the level of responsiveness and professional competence and knowledge. These factors are antecedents for customers in developing a trust relationship with jewelry boutique staff. However, compared with other curriculum, education in gemology encompasses a broad scope of topics because it incorporates applying various methods for identifying gems and artificial gemstones. Since learners required a lengthy period to be trained with these skills, jewelry boutique owners are concerned about whether relevant training courses are difficult to learn or if they lack high practicability, because learners may lack confidence if their

skills are acquired only through coursework, in which case training would bring few benefits to their job performance.

When jewelry boutique owners recruit sales personnel or train their employees, apart from considering whether candidate employees possess adequate professional knowledge, assessing their behavior and attitude is also crucial. Doubtlessly, professional knowledge in gemology is extremely critical for jewelry boutique personnel and thus its acquisition should be considered a necessity. However, according to the current consumer trends, customers can easily acquire knowledge on gemology and gemstone design from the Internet before making a purchase. Previous research argued that customers have become more careful and more skilled when purchasing products; therefore, customers are likely to devote more time and effort into purchasing products (Mitchell, 1997).

Most jewelry institutes, vocational training units, and gemstone teaching centers have focused on transferring knowledge and skills related to gemstones. Instructors often teach students according to their years of learning experience and their own education. Nevertheless, the knowledge and skills

that students learn from relevant courses do not necessarily according with the expectations and needs of jewelry boutique owners. Therefore, the primary topic discussed in this paper is what knowledge and skills should jewelry boutique employees possess and what courses should prioritized by schools and training units? If schools and training units cannot design detailed courses for students, then the knowledge and skills they learn might not meet industry needs. Specifically, although jewelry boutique employees receive training in their courses, the skills and knowledge they acquire might not necessarily create the talent that owners need; thus, educational resources might be wasted and job performance might not be elevated.

A gap has persisted in jewelry training and education between course content and industry needs, resulting in an inconsistency between the two. Currently, some of the course is difficult and irrelevant to the industry, which has had a detrimental effect on student learning attitudes (Bao et al., 2013). Consequently, to analyze the methods for selecting what professional knowledge students should learn to meet the expectations of jewelry boutique operators, three dimensions were selected to enhance the validity and reliability of the survey data:

practicability, necessity, and learnability

The chinkless-teaching concept (CTC) was developed to bridge the gap between theoretical learning and practical application (Bao et al., 2012). This method involves applying the concept of value chain to design the most applicable courses and to improve teaching methods. The production consideration of CTC is customer-oriented, and CTC is a production-guiding technique for developing, innovating, and producing new products on a mass scale. The CTC is applicable to every stage of product development and production (Sullivan, 1986). Bao et al., (2013) also applied the CTC to bakery manufacturing processes in the catering industry.

Regarding the conventional courses suggested by jewelry boutique owners or offered by training units, the courses selected for training jewelry boutique employees are mostly based on subjective beliefs. Therefore, employees who receive training frequently experience difficulty, and the knowledge they learn is not always practical. To overcome this deficiency, the CTC was employed and the needs of jewelry boutique owners and course designers were considered to ensure that employees learn the most practicable

knowledge and skills in their training courses as quickly as possible and under the conditions that the courses are accepted by and easy for employees to learn.

For selecting learning items that are required by the industry, an expert weighting method was adopted to evaluate the importance of each item. Items were selected according to the weights derived from the evaluation. In analyzing the importance of the various types of courses, because each course has its own perceived effectiveness the Charnes, Cooper, and Rhodes (CCR) efficiency evaluation model in data envelopment analysis (DEA) was adopted to confirm the weight of each designed course with each course viewed as a decision-making unit (DMU). Through a two-stage evaluation, the most suitable efficiency evaluation model can be selected according to industry and course design needs; thus, the findings may serve as a reference can be provided to for jewelry boutique staff and course planners. This study explored how to effectively and closely connect industry needs and course design in a CTC-based jewelry design course. The chart in Fig. 1 depicts the CTC-based course concept in the context of professional industry needs and academic course design:
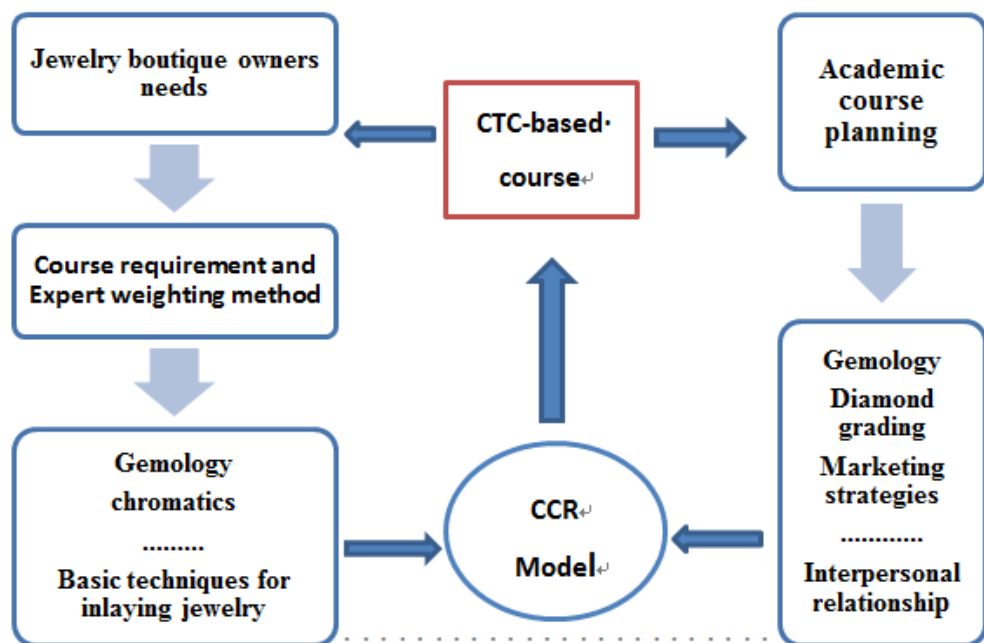
Figure 1.   CTC-based course concept according to professional industry needs and academic course design.

The remainder of this paper is organized as follows: First introduces the research method and comprises three aspects: discussion with business experts, expert weighting method, and DEA; Secondly presents a question analysis and questionnaire survey; Third reports the analysis and results of the expert weighting method and CCR model for designing academic courses; Finally concludes this study.

Research Method

The research method introduced in this study can be divided into the following three types: Semi-structured interviews, expert weighting method, and DEA.

➤ *Semi-structured interviews*

Discussions were conducted with industry experts (i.e., jewelry boutique owners and executive officers) based on questions that were arranged by the researchers of this study. According to the responses from the various respondents, additional questions were developed to explore the professional needs of jewelry owners in training sales staff and other employees.

➤ *Expert weighting method*

Determining appropriate weights for each variable is highly challenging because the weights affect the subsequent evaluations on efficiency considerably; thus, numerous studies have discussed how to weight each variable (Dyson & Thanassoulis, 1988; Thompson et al., 1990; Wong & Beasley, 1990), recommending that the weights be determined through conducting expert questionnaires regarding their perceptions and opinions on the study topic. Among the various methods for evaluating efficiency in degrees of job performance (high vs low), the CCR model is the most appropriate. However, if a DMU requiring evaluation is not can be improved (e.g., the importance of each variable that this study seeks to evaluate), then the CCR model may be an inappropriate choice. Accordingly, the method proposed in this study was based on the scores allocated by experts according to their professional knowledge and experience; subsequently, the importance of variable i is divided by the importance of variable j; thus, the degree to which i exceeds j is obtained. If the total number of variables is s, then several s ratios can be employed to evaluate the average of the importance of variable i. Before introducing the steps of the implementation process, the following definition is provided:

Definition: The ratio obtained from dividing the importance of variable *i* by the importance of variable *j* is called a

degree, in which i can exceed j. Accordingly, if the degree in which i exceeds j is >1, then the importance of i is higher than that of j (and vice versa). The steps of the implementation process are described as follows:

Step 1: A 5-point Likert scale was employed and k experts were invited to score the importance of s variables; thus, a relationship matrix X with importance was established:

$$X = \begin{bmatrix} x_{11} & x_{12} \cdots \cdots \cdots & x_{1s} \\ x_{21} & x_{22} \cdots \cdots \cdots & x_{2s} \\ \cdots & \cdots \cdots \cdots \cdots \cdots & \cdots \\ x_{k1} & x_{k2} \cdots \cdots \cdots & x_{ks} \end{bmatrix}$$

Step 2: After dividing the elements of each jth column in matrix X by the i elements in the other columns, a total of s matrices with relative importance can be obtained: $i, j = 1, \ldots, s$. By summing the elements of kth row in s matrices, the following matrix T arranged in sequence was obtained:

$$T = \begin{bmatrix} t_{11} & t_{12} \cdots \cdots \cdots & t_{1r} & t_{1s} \\ t_{21} & t_{22} \cdots \cdots \cdots & t_{2r} & t_{2s} \\ t_{r1} & t_{r2} \cdots \cdots \cdots & t_{rr} & t_{rs} \\ \cdots & \cdots \cdots \cdots \cdots & \cdots \cdots & \cdots \\ t_{s1} & t_{s2} \cdots \cdots \cdots & t_{sr} & t_{ss} \end{bmatrix}$$

The element of the first row in matrix T is the sum of each row obtained after dividing the element of the first column in matrix X by each of the other column. The data in each of the other rows were obtained in a similar manner. The data t_{ij} in each row indicate the ratio of importance of ith variable compared with the jth variable. A large t_{ij} value indicates a high degree of importance in which the ith variable exceeding the jth variable. In addition, the value of t_{rj} indicates the degree in which the rth variable is exceeded by the jth variable, in which a large t_{rj} value indicates that the jth variable is more crucial than the rth variable.

Step 3: Each variable r has a degree exceeding variable j, denoted as t_{rj}, and also the degree of being exceeded by variable j, denoted as t_{jr}; subsequently, $[t_{i1}/t_{1i}, t_{i2}/t_{2i}, \ldots, t_{is}/t_{si}]$, where $i = 1, \ldots, s$. Therefore, each element in the vector can be presented as the degree in which variable i exceeds variable j was divided by i exceeded by j. The sum of the elements in each ith row was calculated, in which high values indicate a relatively high degree of importance of the ith variable to the other variables.

Conventionally, for each variable, after summing the scores provided by the various experts, the sum of the scores can serve as a basis for evaluating the importance of the weight assigned to each variable; furthermore, the sum of each row in matrix T can be adopted for evaluating the weight of each variable.

However, under certain conditions, this method can be ineffective at discriminating between variables. For example, a total of four variables were established and seven experts were invited to score on their importance (Table I).

Table 1: Scores Provided by the Seven Experts

Variable / Expert	I	II	III	IV
A	2	3	3	4
B	2	1	2	2
C	3	2	3	2
D	3	3	3	3
E	2	3	2	2
F	2	4	2	2
G	4	2	3	3
TOTAL	18	18	18	18

Step 1: After summing the scores in each column, as shown in Table I, the total for each column is 18; thus, conventional methods cannot distinguish the importance of each variable.

Step 2: After matrix T was obtained, the scores in each row in matrix T were added together (Table II):

Table II: Matrix T

				Total
7	8.333333	7	7.333333	29.66667
7.666667	7	7.333333	7.416667	29.41667
7.25	8.166667	7	7.25	29.66667
7.416667	8	7	7	29.41667

Specifically, the results of the first and third rows were obtained, and the total is the same for the second and fourth rows. However, judging which row is more favorable remains impos- sible. To enable discrimination, matrix T was transposed to enhance the distinction, which can result in the originally evaluation data being rad- ically expanded according to the internal variation and the discrim- ination can therefore be elevated. Table III presents the transposed matrix:

Table III: Matrix T^t : The Transpose of Matrix T

7	7.666667	7.25	7.416667
8.333333	7	8.166667	8
7	7.333333	7	7
7.333333	7.416667	7.25	7

Table IV was acquired after dividing the sum of the matrices T and T^t. From the sum obtained by summing the scores in each row, a substantial difference can be seen in the total for each row, thus raising the level of discrimination.

Table IV: Results of Dividing the Sum of Matrix T and Matrix T^t

				Total	Ranking
1	1.08696	0.96552	0.98876	4.04124	3
0.92000	1	0.89796	0.92708	3.74504	4
1.03571	1.11364	1	1.03571	4.18506	1
1.01136	1.07865	0.96552	1	4.05553	2

This example indicates that through comparing the matrix and transpose of the matrix, the expert weighting method could superior to conventional methods for highlighting the internal variance of each datum, and can therefore raise the level of discrimination for each variable.

➢ *Data envelopment analysis*

DEA is an evaluation model

introduced by Charnes, Cooper, and Rhodes (1978) after adapting a fractional programming model into a linear programming model. Without needing to know the production function in advance, DEA can be employed to obtain the efficiency values of the input and output variables for a DMU derived from the CCR model, which was proposed by Charnes, Cooper, and Rhodes. The evaluation method of DEA in assessing the effectiveness of DMU_k is based on the comparison between the output and input weighted data and the other DMU. Therefore, the evaluated efficiency is the relative efficiency of each DMU. The basic concept of the CCR efficiency evaluation model is described as follows.

Assume that there are n DMUs, m input variables, and s output variables; Charnes et al. (1978) proposed the following linear programming model for evaluating the efficiency of DMU_k. The efficiency evaluation of DMU_k through using the CCR-input orientation model is presented in (1):

$$
\begin{aligned}
&\text{Max: } \sum u_r y_{rk} \\
&\text{St } \sum v_i x_{ik} = 1 \qquad\qquad\qquad (1) \\
&\qquad \sum u_r y_{rj} - \sum v_i x_{ij} \leq 0 \\
&u_r , v_i \geq 0 \quad , r = 1 \ldots s , i = 1 \ldots m , j = 1 \ldots n
\end{aligned}
$$

where Y_{rj} represents the rth output variable of the jth DMU; x_{ij} denotes the ith input variable of the jth DMU;

u_r indicates the weight of the rth output variable; and v_i is the weight of the ith input variable: $r = 1,\ldots , s$; $i = 1,\ldots, m$; $j = 1,\ldots, n$.

Question Analysis and Questionnaire Survey

➤ *Selection of the professional needs*

Based on the discussions on the professional needs of the jewelry boutique owners and executive officers, 15 professional needs were initially selected according to their opinions: gem knowledge, diamond grading, color matching, service training, fair trade act, etiquette training, sales skills, communication skill, English listening, jewelry design, consumer psychology, introduction to fashion boutique, precious metals classification, metal craft and computer graphics. These professional needs were regarded as the basic knowledge and skills that owners expect their employees to possess.

Because too many professional needs items were collected, jewelry boutique owners and executive officers were invited to select the most critical ones and to identify the professional knowledge and skills that employees should receive training for first. A total of 32 questionnaires that divided the 15

Table V: Scale of the Sum of the Scores Obtained Regarding Experts' Opinions on Professional Needs

	Gems Knowledge	Diamond Grading	Color matching	service training	Fair trade act	Etiquette training	Ssale skills	communication skills	English listening	Jewelry design	consumer psycholog	conspectus of fashion boutique	Precious Metal classification	Metal Craft	Computer Graphics
1	12	12	14	15	14	15	15	15	9	12	15	15	14	10	10
2	12	12	14	15	14	15	15	15	9	12	15	15	14	10	10
3	9	15	15	15	15	14	15	15	9	15	11	15	15	12	14
4	9	12	12	13	15	13	13	14	14	11	11	10	12	8	7
5	13	14	10	13	7	13	11	12	8	8	14	12	10	9	7
6	12	12	13	11	11	11	12	12	13	11	11	12	11	11	11
7	13	12	13	15	12	14	14	14	9	9	15	12	12	9	7
8	11	14	10	9	11	13	9	11	11	14	12	10	9	12	9
9	11	13	9	12	10	11	11	9	11	11	11	12	11	11	13
10	11	11	12	13	11	14	12	12	11	15	13	12	15	14	11
11	9	11	11	14	12	12	13	12	11	5	12	8	9	8	6
12	14	9	9	14	10	13	14	12	8	8	11	13	10	10	7
13	13	14	12	15	13	13	13	13	9	13	13	13	10	7	8
14	15	15	15	13	13	13	15	15	10	12	14	9	11	9	12
15	13	13	15	14	14	13	13	13	14	14	14	14	13	12	12
16	11	9	11	12	10	8	12	12	12	7	12	10	12	6	7
17	12	10	10	15	12	15	12	10	10	6	10	6	9	9	10
18	15	12	14	15	15	15	15	15	8	9	15	13	10	7	4
19	15	15	15	15	15	15	15	15	13	11	15	11	13	11	7
20	10	12	9	11	11	10	11	11	10	11	11	11	11	11	11
21	13	12	14	12	14	12	12	12	12	12	13	10	12	10	10
22	12	15	9	12	8	12	11	11	9	8	11	11	11	7	6
23	10	8	11	11	11	11	12	10	11	11	12	11	11	12	11
24	11	10	7	10	9	11	12	12	11	8	11	11	11	12	9
25	12	13	11	14	14	14	14	14	11	12	11	12	10	10	11
26	15	15	10	12	13	13	10	12	10	8	9	9	11	8	8
27	12	11	10	13	12	14	15	12	11	8	9	11	12	10	7
28	11	12	11	14	10	12	11	9	9	10	10	9	9	9	8
29	12	9	11	14	8	11	12	11	11	6	8	12	10	6	7
30	13	12	10	12	12	13	13	14	12	11	12	11	13	11	14
31	12	15	9	12	8	12	11	11	9	8	11	11	11	7	6
32	12	14	9	13	14	11	12	11	9	7	8	8	13	9	7

Table VI: Expert Weighting Method Analysis of the Degree of Importance of Matrix T

32	32.03943	34.82344	29.82454	33.89853	30.79748	30.83195	31.55765	37.95946	41.07551	33.22321	35.57626	34.45384	42.16252	47.0775
33.11088	32	35.55633	30.55677	34.54778	31.40998	31.66699	32.23652	38.72299	41.35257	33.96459	36.2883	35.0449	42.80945	47.57781
30.7786	30.34032	32	28.03236	31.41084	29.04053	28.89879	29.58334	35.6655	38.01442	31.04941	33.35313	32.29953	39.61432	43.90187
35.29441	34.95416	37.52071	32	36.54042	33.31096	33.2128	34.23135	41.27857	44.82874	36.0929	38.58689	37.31236	45.83553	51.00421
31.98154	31.37196	33.56324	29.10116	32	30.03973	29.94633	30.65607	36.88052	39.53323	32.50367	34.94126	33.45956	40.79062	45.4737
34.13463	33.69476	36.41442	31.21068	35.32203	32	32.25973	33.08543	39.93416	42.85501	34.80794	37.34429	36.13427	43.80812	49.1376
34.20929	33.94595	36.3241	31.14848	35.20446	32.29044	32	32.95159	39.8174	43.04798	34.83237	37.14192	35.96523	44.05303	49.14875
33.38846	32.92132	35.40642	30.55647	34.35474	31.54481	31.38356	32	38.87746	41.71616	33.86996	36.17443	35.08342	43.10101	48.02579
28.43137	28.08153	30.20934	26.14738	29.23319	27.02491	26.86185	27.52414	32	35.43661	28.97604	30.99681	29.7457	36.13546	39.78627
27.44548	26.63328	28.63752	25.1931	27.80181	25.68171	25.85507	26.32411	31.42928	32	27.40524	29.05012	28.42753	34.01111	37.30824
31.98366	31.66173	33.90671	29.39622	33.23366	30.29564	30.26057	30.90571	37.38016	39.75974	32	34.64697	33.78279	41.1482	46.08158
30.36855	30.00991	32.25633	27.76173	31.61441	28.68883	28.56166	29.25181	35.42796	37.28773	30.70847	32	31.72899	38.84333	43.1708
30.97314	30.452	32.85199	28.28919	31.83939	29.28157	29.0976	29.80769	35.6854	38.26108	31.47801	33.33525	32	39.32951	43.51491
26.15512	25.73485	27.89308	24.09128	26.82689	24.54069	24.66898	25.32532	29.84613	31.68323	26.41914	28.14749	27.17515	32	35.63793
24.49336	23.97367	25.86658	22.46593	24.93274	23.06531	23.0208	23.65599	27.7559	29.23155	24.74809	26.326	25.31459	30.01353	32

Table VII: Matrix T^t as the Traspose of Matrix T

32	33.11088	30.7786	35.29441	31.98154	34.13463	34.20929	33.38846	28.43137	27.44548	31.98366	30.36855	30.97314	26.15512	24.49336
32.03943	32	30.34032	34.95416	31.37196	33.69476	33.94595	32.92132	28.08153	26.63328	31.66173	30.00991	30.452	25.73485	23.97367
34.82344	35.55633	32	37.52071	33.56324	36.41442	36.3241	35.40642	30.20934	28.63752	33.90671	32.25633	32.85199	27.89308	25.86658
29.82454	30.55677	28.03236	32	29.10116	31.21068	31.14848	30.55647	26.14738	25.1931	29.39622	27.76173	28.28919	24.09128	22.46593
33.89853	34.54778	31.41084	36.54042	32	35.32203	35.20446	34.35474	29.23319	27.80181	33.23366	31.61441	31.83939	26.82689	24.93274
30.79748	31.40998	29.04053	33.31096	30.03973	32	32.29044	31.54481	27.02491	25.68171	30.29564	28.68883	29.28157	24.54069	23.06531
30.83195	31.66699	28.89879	33.2128	29.94633	32.25973	32	31.38356	26.86185	25.85507	30.26057	28.56166	29.0976	24.66898	23.0208
31.55765	32.23652	29.58334	34.23135	30.65607	33.08543	32.95159	32	27.52414	26.32411	30.90571	29.80769	35.6854	25.32532	23.65599
37.95946	38.72299	35.6655	41.27857	36.88052	39.93416	39.8174	38.87746	32	31.42928	37.38016	35.42796	35.6854	29.84613	27.7559
41.07551	41.35257	38.01442	44.82874	39.53323	42.85501	43.04798	41.71616	35.43661	32	39.75974	37.28773	38.26108	31.68323	29.23155
33.22321	33.96459	31.04941	36.0929	32.50367	34.80794	34.83237	33.86996	28.97604	27.40524	32	30.70847	31.47801	26.41914	24.74809
35.57626	36.2883	33.35313	38.58689	34.94126	37.34429	37.14192	36.17443	30.99681	29.05012	34.64697	32	33.33525	28.14749	26.326
34.45384	35.0449	32.29953	37.31236	33.45956	36.13427	35.96523	35.08342	29.7457	28.42753	33.78279	31.72899	32	27.17515	25.31459
42.16252	42.80945	39.61432	45.83553	40.79062	43.80812	44.05303	43.10101	36.13546	34.01111	41.1482	38.84333	39.32951	32	30.01353
47.0775	47.57781	43.90187	51.00421	45.4737	49.1376	49.14875	48.02579	39.78627	37.30824	46.08158	43.1708	43.51491	35.63793	32

From Tables VI and VII, Table VIII shows the order of importance for the professional needs (derived from the expert weighting method).

Table VIII: Matrix for the Order of Importance of the Professional Needs

1.000	0.968	1.131	0.845	1.060	0.902	0.901	0.945	1.335	1.497	1.039	1.171	1.112	1.612	1.922	17.441	0.074	0.845	6	Gems Knowledge
1.033	1.000	1.172	0.874	1.101	0.932	0.933	0.979	1.379	1.553	1.073	1.209	1.151	1.663	1.985	18.037	0.076	0.874	5	Diamond Grading
0.884	0.853	1.000	0.747	0.936	0.798	0.796	0.836	1.181	1.327	0.916	1.034	0.983	1.420	1.697	15.407	0.065	0.746	10	Clor matching
1.183	1.144	1.338	1.000	1.256	1.067	1.066	1.120	1.579	1.779	1.228	1.390	1.319	1.903	2.270	20.643	0.087	1.000	1	Service training
0.943	0.908	1.069	0.796	1.000	0.850	0.851	0.892	1.262	1.422	0.978	1.105	1.051	1.521	1.824	16.472	0.069	0.798	8	Fair trade act
1.108	1.073	1.254	0.937	1.176	1.000	0.999	1.049	1.478	1.669	1.149	1.302	1.234	1.785	2.130	19.342	0.082	0.937	3	Etiquette training
1.110	1.072	1.257	0.938	1.176	1.001	1.000	1.050	1.482	1.665	1.151	1.300	1.236	1.786	2.135	19.358	0.082	0.938	2	sales skills
1.058	1.021	1.197	0.893	1.121	0.953	0.952	1.000	1.412	1.585	1.096	1.237	1.177	1.702	2.030	18.434	0.078	0.893	4	Communication skills
0.749	0.725	0.847	0.633	0.793	0.677	0.675	0.708	1.000	1.128	0.775	0.875	0.834	1.211	1.433	13.062	0.055	0.633	12	English listening
0.668	0.644	0.753	0.562	0.703	0.599	0.601	0.631	0.887	1.000	0.689	0.779	0.743	1.073	1.276	11.610	0.049	0.562	13	Jewelry design
0.963	0.932	1.092	0.814	1.022	0.870	0.869	0.912	1.290	1.451	1.000	1.128	1.073	1.558	1.862	16.837	0.071	0.816	7	Consumer psychology
0.854	0.827	0.967	0.719	0.905	0.768	0.769	0.809	1.143	1.284	0.886	1.000	0.952	1.380	1.640	14.902	0.063	0.722	11	Conspectus of Fashion boutique
0.899	0.869	1.017	0.758	0.952	0.810	0.809	0.850	1.200	1.346	0.932	1.051	1.000	1.447	1.719	15.658	0.066	0.759	9	precious metal classification
0.620	0.601	0.704	0.526	0.658	0.560	0.560	0.588	0.826	0.932	0.642	0.725	0.691	1.000	1.187	10.819	0.046	0.524	14	Metal Craft
0.520	0.504	0.589	0.440	0.548	0.469	0.468	0.493	0.698	0.784	0.537	0.610	0.582	0.842	1.000	9.084	0.038	0.440	15	Computer Graphics
															237.108	0.087			

professional needs into three characteristics: practicability, necessity, and learnability, were distributed to the experts. A 5-point Likert scale was employed to measure the three characteristics. The scores were summed and combined into a scale indicating the sum obtained from experts' opinions on professional needs (Table V). After obtaining the questionnaire scores, the expert weighting method was employed to analyze the 32 questionnaires to construct the relationship matrix and determine how the professional needs should be prioritized according to the jewelry boutique owners. Table VI shows the relationship matrix T for each of the professional needs (derived from the data in Table VIII), which was obtained using the expert weighting method. In Table VIII, for the matrix of the order

of importance of the professional needs, the total values were acquired by calculating the sum each row. For the sequence of the second column from the right, the weights of service training, sales skills, and etiquette training were the highest, indicating the service industry's emphasis on frontline services. Metal crafting and computer graphics were ranked 14th and 15th. These two had the lowest weights, indicating that jewelry boutique owners regarded customer service as critical under current economic conditions and with the high intensity of sales competition in business environments. Because computer graphics and metal crafting are difficult skills to acquire, learners may give up before mastering these skills, which is a waste of training resources and time. Therefore, the

experts did not have a positive attitude toward learning these two skills.

➢ *Academic course design*

Fullan (1993) indicated that transforming education is critical and indicated that experts and teachers must take action to carry out education transformation. However, scholars generally believe that their field of specialization is the most important. To prevent course planning from becoming overly subjective, resulting in such consequences of too many courses being introduced and employees being unable learn the knowledge and skills they require within a reasonable time, only the most relevant 14 courses for the jewelry boutique industry were selected (Table IX).

Table IX: Academic Course Design

No	Courses	No	Courses	
1	Gemology	8	Consumer behavior	
2	Quality management	9	Materials science	
3	Digital jewelry design	10	Marketing strategies	
4	Management	11	Chromatics	
5	Basic jewelry inlaying	12	Brand management	
6	Diamond grading	13	English conversation	
7	Operations management	14	Interpersonal relationship	

Given adequate time for training, operators would willingly accept the course planning suggested by the academics. However, if the time for training employees is limited, then the owners are suggested to follow the CCR model (described in the following section) to select the acceptable courses with most importance.

Expert Weighting Method on Professional Needs and CCR Model on Academic Course Design

The order of importance of professional needs was evaluated according to expert opinions. Depending on the professional needs, different courses provide different advantages. Therefore, any evaluation should not be

based solely on expert opinions; instead, the CCR-input orientation model should be used to evaluate each course regarding its suitability for the professional needs.

➤ *CCR-Input orientation model*

To employ the CTC to minimize the gap between the industry and academia, this study selected the eight professional needs with the highest weights as the output variables from the ranked professional needs (Table VIII). From the course design for academic teaching (Table IX), the 14 courses were DMUs and the CCR-input orientation model was employed. In addition, by incorporating the regulation for each weight of the variable emphasized in this study, the stochastic data envelopment analysis (SDEA) proposed by Hadad et al. (2008) was employed to obtain the minimum threshold of each weight as an objective efficiency value, and did not overemphasize the importance of other courses.

➤ *Regulation for the weight of each variable in CCR efficiency evaluation model*

Through the two-stage analysis and evaluation of professional needs and course design, the planned course design was optimized to correspond to industry needs; in addition, within the time and energy constraints for learning, the most appropriate courses for training employees in the jewelry boutique industry were designed.

In this study, the CCR model was employed to evaluate the efficiency of each course design; specifically, each course design was viewed as a DMU, and the efficiency value determined the order in which courses be prioritized in the future. However, the greatest feature of adopting the CCR model for efficiency evaluation is that the greatest advantage of each DMU can be identified; however, a great disadvantage of applying this model is that an unapparent discrimination of the efficiency evaluation may frequently occur. The main reason for this unapparent discrimination of the efficiency evaluation is that there is no restriction on the weight assigned to each variable in each efficiency evaluation model; in other words, the efficiency evaluation model does not account for the limitations of the weight of each variable.

Hadad.et.al (2008) proposed an SDEA model to test the hypothesis that n DMUs existed and that each DMU has m input variables x_j $(j = 1,…, m)$ and s output variables y_r $(r = 1,…, s)$. The following criteria was proposed

according to the model on the weight of each variable:

$$U_r \geq \frac{1}{(m+s)\max(y_{rj})} , \quad r=1\ldots s$$

$$V_i \geq \frac{1}{(m+s)\max(x_{ij})} , \quad i=1\ldots m \cdots\cdots (2)$$

The two constraints of u_r and v_i indicate the minimum threshold for the weight of each variable. This study employed the lower limit of weight in the SDEA model to restrict the mutual weights to ensure an objective efficiency evaluation of each course. Consequently, the CCR-input orientation model for efficiency evaluation was modified by incorporating (1) into (3):

$$\text{Max:} \sum u_r y_{rk}$$
$$\text{St} \quad \sum v_i x_{ik} = 1$$
$$\sum u_r y_{rj} - \sum v_i x_{ij} \leq 0$$
$$u_r \geq \frac{1}{(m+s)\max(y_{rj})} , \quad r=1\ldots s \cdots\cdots\cdots (3)$$
$$v_i \geq \frac{1}{(m+s)\max(x_{ij})} , \quad i=1\ldots m$$

where the target of (3) was the efficiency value (θ) of each of the evaluated course.

➤ *Evaluation of the importance of academic course planning on professional needs*

According to the professional needs of the jewelry boutique industry, six experts were invited to evaluate the importance of each course suggested by the academics. A 5-point Likert scale was employed to measure the questions. Table X shows the total scores of the experts.

Table X : Scores from the Questionnaire on the Importance of Professional Needs for the Industry and Academic Course Planning

	Gems Knowledge	Diamond Grading	Consumer psychology of customers	Service training	Fair trade act	Etiquette training	Sales skills	Communication skills
Gemology	25	23	19	15	19	11	17	19
The study of diamond	25	25	18	15	20	12	18	18
Chromatics	23	21	20	18	18	15	20	17
Quality management	22	22	19	17	20	13	17	18
Operations management	21	19	17	18	17	14	13	15
Interpersonal relationship	18	18	24	23	20	23	23	25
Management	19	19	20	19	19	17	20	20
Marketing strategies	24	23	24	23	22	22	24	23
English conversation	17	14	14	18	15	18	21	22
Digital jewelry design	21	21	21	21	20	20	22	21
Consumer behavior	15	15	15	14	13	12	18	16
Brand management	16	16	20	20	17	14	23	23
Materials science	19	18	19	15	16	9	16	15
basic jewelry inlay	24	22	21	15	10	10	10	10

Table X lists the DMUs in the first column and the following eight output variables across the top row: professional knowledge on gems, diamond grading, consumer psychology, service training, fair trade act, etiquette training, sales skills, and communications skill.

➤ *The order of importance for the training courses recommended by the academics and industry:*

Table XI: Efficiency Value and Sequence Obtained by CCR-Input Orientation Model

Course		θ	Sequence
Gemology		0.829929	8
The study of diamond		0.850512	4
Chromatics		0.839033	5
Quality management		0.820317	9
Operations management		0.744675	11
Interpersonal relationships		0.962115	2
Management		0.832978	6
Marketing strategies		1	1
English conversation		0.77942	10
Digital jewelry design		0.904802	3
Comsumer behavior		0.652106	14
Brand management		0.831793	7
Materials science		0.699278	13
Basic jewelry inlay.		0.70185	12

After the data in Table X were input into the CCR-input orientation model in (3), Table XI shows the efficiency value of importance, denoted as θ, and the order of importance for the training courses recommended by the academics and industry:

According to Table XI, marketing strategies, interpersonal relationship, digital jewelry design, the study of diamond, and chromatics were the five highest priority courses considered by training units and the academia and under conditions of time constraints. The other low-priority courses can be arranged as elective courses according to the requests of students and needs of jewelry boutique owners.

Conventionally, sales personnel are the frontline of business marketing in the jewelry boutique industry, and therefore they must possess a high level of professional knowledge on gems,

and receptionists must be capable of drawing designs. Consequently, over the past several decades, curricula on gemstones worldwide have been focused mostly on teaching knowledge about gemstones. However, the major focus of customer relations is elevating service quality and catering to customer needs in order to understand how their needs can be satisfied. This business model provides a path that promotes firm development and success (Stank et al., 1999).

Conclusion

CTC-based course training and planning has seldom been applied in the jewelry boutique industry. To date, most jewelry boutique owners select courses offered by training centers to train their employees according to their subjective personal experiences and needs. In addition, the training units and instructors at schools commonly offer courses that are determined based on the opinions of course designers that their field of specialization is the most important one. Occasionally, some courses are offered in accordance to the preferences of jewelry boutique owners. Given these conditions, there is frequently a sizeable gap between the needs of professional and design of courses.

In this study, an expert weighting method and DEA were employed. The two-stage evaluation model revealed that jewelry boutique owners emphasized the importance of whether employees can demonstrate a high level of knowledge when providing customer service at the frontline, which can be acquired through courses such as service training and sales skills. Moreover, the three courses with the least importance are jewelry design, metal crafting, and computer graphics. According to the employment of CCR-input orientation model on the professional needs required in the industry and the course planning by the academia, the highest priority courses are marketing strategies and interpersonal relationships, which can be incorporated into service training and sales skills.

These results accord with industry expectations. However, digital jewelry design was unexpectedly ranked third, perhaps because the academic experts regarded digital design as an imperative skill for relevant business operations in jewelry boutique stores, and the skill is easier to acquire and more practical than in the past. The study of diamonds was ranked fourth, indicating the importance of diamonds continuing to be the leading product sold in jewelry boutique stores. Chromatics was ranked fifth, most likely because current teaching methods on

chromatics involve a considerable amount of information technology content, which has made learning a more entertaining experience. Alternatively, the high ranking of chromatics may be attributed to the fact that knowledge acquisition of metal crafting, jewelry design, and computer graphics are more time consuming, causing the importance of these courses to be overlooked. Thus, the learnability of metal crafting and digital jewelry design could be elevated through innovating teaching methods or using computer software as a teaching aid for teaching how to design jewelry inlays. Such an approach might transform employee attitudes toward course-based learning from fear to enjoyment; accordingly, this is the goal that jewelry boutique owners and teaching units should aim to achieve when designing courses. Regarding workplace training, boutique owners are expected to focus both on professional knowledge and customer service, and they should communicate and coordinate closely with training units because these are beneficial for business development.

The proposed method for selecting the course for education training was focused on specific jewelry boutique owners and teaching units. However, using the results of this study, future studies can further explore the outcome of having jewelry boutique owners modify the training courses. Moreover, the method for selecting courses designed for education training can be applied to the beauty industry, luxury goods industry, or other related industries to evaluate whether perfectly integrated outcomes can be achieved between professional needs and course design.

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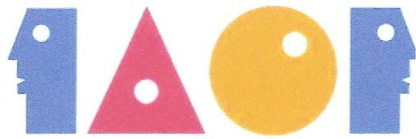
A STUDY AFFECTIVE FACTOR EXTRACTION USING METHODOLOGY FOR KANSEI ENGINEERING

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Abstract

In recent years, the study affective factor selection (AFs) for Kansei engineering (KE) has been an important issue in the industrial design field. Consumers' affective responses (CARs) are usually presented in the form of a choice of adjectives. Based on the KE concept, this study conducted Factor Analysis (FA), Clustering Analysis (CA) and Procrustes Analysis (PA) to select the CARs from mobile phones product's shape. First, in the initial stage of the study, 60samples of mobile phones were collected from the fashion market place. Twenty-two pairs of adjectives describing the mobile phones were used for a Semantic Differential (SD) experiment. K-means was implemented to find the clustering segmentations of the CARs according to the factor loading from FA, and to obtain representative pairs of adjectives within the clustering segmentations. In the meanwhile, PA was also used to decide adjective priorities according to the sorting rule. Finally, these two methods were analyzed and compared.

Keywords: Kansei engineering, Affective factor, Methodology, Clustering analysis, Procrustes analysis.

Introduction

In the field of consumer market, the appearance of a product tends to be an important factor affecting consumers' purchasing decision - making. If product designers can notice product forms features selection (PFFs), they can effectively meet the expectations of consumers. Therefore, during the development of a new product, it is

an important issue to effectively meet consumers' affective responses (CARs). CARs are usually presented by adjectives. As a result, this study focused on the investigation of Affective Factor Selection (AFs). The investigation on product design should focus on consumers' subjective feelings and psychological needs. In recent years, KE-related theories and models are frequently used in the studies concerning development of new products. KE is a consumer-oriented technique transforming individuals' feeling and image into product design. It assesses the adjectives used by consumers to describe the product modeling to understand the correlation between product modeling and adjectives. The basic assumption of KE is the existence of a cause-and-effect relationship between PFFs and CARs (Han & Hong, 2003), as shown in Figure 1.

Shinya Nagasawa (2004) summarized many studies concerning KE. Although many scholars published their studies, the observation showed that there are still some misunderstandings and problems in the studies of KE in the field of product design, and the main cause is that there are still some controversies over the usefulness of KE. Owing to these controversies, more experts and scholars have discussed and studied KE more comprehensively.
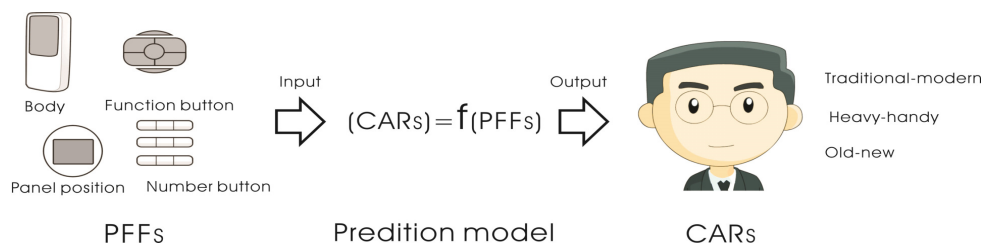

Figure 1.   KES concept model (modified from Han & Hong, 2003).

Literature Review

There are only few KE-related studies in AFs. In relevant AFs studies, Semantic differential (SD) and other statistical analysis methods were firstly used to summarize the variables of adjectives. Jindo (1995) treated office chairs as an example to investigate the relationship between appearance components of chairs and psychological evaluation variables of users where adjectives were used as input factors and 3D image as output. Han (2003) verified that there is a cause-and-effect relationship between PFFs and CARs. To obtain CARs, Osgood (1957) used SD to conduct an experiment where consumers were invited to select adjectives to assess product samples.

Moreover, Salvador (2005) also used SD to study cutting machines. Hsu (2000) used SD to test the relationship between the appearance characteristics of telephone samples and psychological evaluation of users. Furthermore, in a sneakers-related study, Alca´ntara (2005) used FA to define semantic axes and used SD to construct semantic meanings.

Consumers' perception and preference can represent the semantic meanings of products and can also strongly reflect their level of acceptance of products. Hsu (2000) used FA to investigate the difference between users and designers in CARs.

In addition to FA, CA is also frequently used to analyze the data obtained from SD experiment. For example, Chen (2010) used a new approach with both breadth and priority. It is a graphic structure-based clustering method. In the use of FA, when the dimensions of variables are similar factors and the factor loadings are close, a satisfactory result cannot be obtained. Therefore, CA is further used to analyze the factor loading obtained from the use of FA to obtain a more satisfactory result. Vigneau (2003) suggested that the dimensions of variables can be arranged in to a homogenous group according to their factor loadings. Moreover, Sahmer (2008) indicated that the application of clustering

technique to factor loadings can screen out important clusters.

The other approach is to use PA to select the key dimensions of variables, as well as to avoid the diversified structural data. The study using PA to select subsets of variables was firstly conducted by Krzanowski (1987). He also used Principal Component Analysis (PCA) to process some analytical data of Kansei. Andrade (2004) proposed the "Procrustes rotation" and general appearance method to process two research cases. The concept of "Procrustes rotation" is a simple process and is extremely useful in the application of some Stoichiometry software. He also described the basic knowledge and some cases of the use of "Procrustes rotation" to demonstrate its actual application.

Research process and analysis

Factor analysis and results

Factor analysis is a statistical method, which can reduce the number of variables and be used for categorization. It is frequently used in psychological studies in early days. It is now comprehensively applied to the studies in various fields of science. This study used FA to obtain the SD of questionnaire survey and to obtain the latent factor and factor loading of CARs.

(1) Selection of representative product sample

Mobile phones are some of the most popular items in daily use; thus, this study chose the mobile phone as its experimental product. In the initial stage of research, 120 pictures of the most popular mobile phone brands were collected. In order to avoid any interference to a subject's perception, the backgrounds of the 120 pictures were removed, and a standard size and number were assigned and administered. Six mobile phone salespeople and four mobile phone designers were invited to select 60 representative pictures for the final statistical analysis.

(2) Selection of initial adjective pair

In product design research, either single or pair wise adjectives can be used to describe consumers' affective dimensions; pair wise adjectives are more suitable for describing consumers' affective dimensions (Han & Hong, 2003). Common adjectives can be obtained from numerous sources in the literature. For analysis, we chose 22 pairs of adjectives that describe mobile phones from Chuang (Chuang, Chang & Hsu, 2001), as shown in Table 1. These were used as adjectival pairs in the following experiment.

(3) Experiment and questionnaire design

First, a questionnaire was prod-uced using 22 adjectival pairs and 60 mobile phone pictures. Forty participants: eight salespeople who are familiar with mobile phones, twelve consumers who are general users, fifteen college students from the department of design, and five mobile phone product designers were invited to partake in a survey experiment concerning the psychological images projected by mobile phone products. A user-friendly questionnaire interface was designed to collect the evaluation data in a more effective way. The order of presentation of the products were randomized to avoid any systematic effects, and on a scale between -1 to +1.

(4) Result of Factor analysis

Based on FA, using image survey data of the previous experiment and according to the principle component analysis results, a maximum variance of orthogonal rotation was adopted. When the eigenvalue is greater than 1, three factors are obtained with a total loading value of explained variance of 86. 89%. The KMO value is 0. 897(>0. 8), which shows it is appropriate for FA. Meantime, for an examination among the outliners of every adjective, data show the values are greater than 0. 5; and, there is no double loading phenomenon in the component matrix after rotation, indicating that there are no outliners, as shown in Table 2. Cronbach's Alpha value is 0. 92(>0. 5),

indicating considerable consistency in the reliability of every adjective in every factor. Meanwhile, the SMC value is greater than 0. 5, which shows an extremely good contracted validity for every adjective. We extracted three factors from FA, the three factors were Evaluation, Potency, Activity (Osgood, 1957).

The analysis process and result for cluster analysis

Representative CARs still could not be obtained based on the results of FA. Therefore, this study further performed a cluster analysis on the factor loadings of FA. CA was used to assemble variables with similarity in the same cluster according to logic procedure and the similarity and dissimilarity of variables. The homogeneity of the variables in the same cluster was high, while the heterogeneity of variables in different clusters was high.

(1) Hierarchical cluster analysis

After FA, we use the HCA shown in the result of the Walter Method, indicating the cluster condition of every adjective without obtaining enough clusters. To obtain the required clusters, we analyze every adjective in the cluster analysis process. There are 21 stages in the combination process, as shown in Table 3. The combination

coefficient is very low from the first to the eleventh stage, which can be ignored. While we select the last ten stages (1~10 groups) in the twelfth to the twenty-first stages for analysis, the coefficient increase for the next stage will be calculated using the combination coefficient of every stage as shown in Table 4.

In Table 4, when four groups were combined into three groups at the fourth stage we found that the percentage increase of the combination coefficient was 77.94%, indicating an increasing trend. Therefore, we can determine the three groups is the best number of clusters.

(2) K-means clustering method

From the calculate result of combination coefficient increase ratio, the best cluster number was three clusters. The K-means clustering method was be implemented two-stage cluster analysis, the result as shown in Table 5. In Table 5, the bold underlined numbers indicate the shortest distance from adjectives to the seed point, the three adjective (1)

The Procrustes analysis process

After obtaining the factor loadings from FA, the backward elimination process using PA is conducted to analyze the importance of the adjectives; their ranking can also be determined. The

relative importance of each adjective

Table 1. The initial affective dimensions.

adj. No.	The initial affective dimensions	adj. No.	The initial affective dimensions
1	Traditional-Modern	12	Unoriginal-Creative
2	Hard-Soft	13	Simple-Complicated
3	Old-New	14	Conservative-Avant-garde
4	Heavy-Handy	15	Standard-Outstanding
5	Obedient-Rebellious	16	Common-Particular
6	Nostalgic-Futuristic	17	Plain-Luxurious
7	Coarse-Delicate	18	Decorative-Practical
8	Masculine-Feminine	19	Inert-Active
9	Rational-Emotional	20	Personal-Professional
10	Hand Made-Hi Tech	21	Obtuse-Brilliant
11	Childish-Mature	22	Discordant-Harmonious

Table 2. The result of Factor analysis.

Affective dimensions	Factor			communality	Cronbach's Alpha	SMC
	1	2	3			
Old	**0.969**	0.057	0.085	0.949	0.908	0.964
Standard	**0.964**	0.106	0.137	0.958	0.908	0.980
Common	**0.956**	-0.180	-0.054	0.950	0.909	0.975
Traditional	**0.956**	0.119	0.046	0.930	0.908	0.961
Conservative	**0.953**	-0.115	-0.121	0.935	0.910	0.961
Unoriginal	**0.938**	-0.130	-0.103	0.908	0.910	0.950
Plain	**0.923**	0.063	-0.088	0.863	0.911	0.911
Nostalgic	**0.920**	0.193	0.068	0.888	0.909	0.952
Obtuse	**0.848**	0.275	0.400	0.955	0.910	0.967
Inert	**0.782**	-0.456	0.173	0.850	0.914	0.893
Coarse	**0.782**	0.287	0.466	0.911	0.910	0.952
Personal	0.303	**0.887**	0.073	0.884	0.921	0.908
Hard	0.075	**-0.854**	0.251	0.798	0.926	0.837
Rational	0.224	**-0.842**	0.378	0.903	0.924	0.924
Decorative	-0.301	**0.815**	0.276	0.831	0.931	0.872
Childish	0.426	**0.757**	0.341	0.871	0.917	0.925
Hand made	0.569	**0.712**	0.119	0.845	0.916	0.897
Discordant	0.322	0.277	**0.833**	0.874	0.918	0.950
Obedient	0.373	0.005	**-0.802**	0.783	0.923	0.787
Heavy	0.254	-0.126	**0.738**	0.625	0.920	0.738
Simple	0.573	0.161	**-0.651**	0.778	0.920	0.834
Masculine	0.095	-0.638	**0.643**	0.830	0.928	0.885
Final statistics						
Eigenvalue	10.735	4.904	3.476			
Variance(%)	47.775	22.702	16.415			
Cumulative(%)	47.775	70.477	86.892			
KMO	0.897					

Table 3. Cluster combined and coefficients

stage	cluster combined		coefficients	stage cluster first appears		next stage
	cluster1	cluster2		cluster1	cluster2	
1	5	6	0.000	0	0	5
2	1	2	0.003	0	0	6
3	4	8	0.007	0	0	6
4	9	11	0.011	0	0	17
5	3	5	0.016	0	1	14
6	1	4	0.025	2	3	8
7	13	14	0.044	0	0	13
8	1	7	0.071	6	0	15
9	16	17	0.107	0	0	11
10	19	21	0.150	0	0	18
11	12	16	0.207	0	9	16
12	18	20	0.296	0	0	17
13	13	22	0.399	7	0	20
14	3	10	0.547	5	0	15
15	1	3	0.802	8	14	18
16	12	15	1.213	11	0	19
17	9	18	1.658	4	12	19
18	1	19	2.924	15	10	20
19	9	12	4.193	17	16	21
20	1	13	7.461	18	13	21
21	1	9	10.996	20	19	0

Table 4. The combined coefficients increase ratio.

	Coefficient	Increase ratio of the coefficient
10	0. 296	34. 80%
9	0. 399	37. 09%
8	0. 547	46. 62%
7	0. 802	51. 25%
6	1. 213	36. 69%
5	1. 658	76. 36%
4	2. 924	43. 40%
3	4. 193	**77. 94%**
2	7. 461	47. 38%
1	10. 996	

can be examined according to the calculated RSSDs values during the elimination process. In this study, a total of 22 adjective pairs, the deletion process is divided into 21 steps, due to space limitations, here list only four stages. For example, the RSSDs values calculated in Steps 1, 9, 15 and 21 are shown in Figure 2(a), 2(b), 2(c), 2(d).

In Figure 2., x-axis shown the 22 adjective pairs, y-axis shown the RSSD

value size, from each stage and each adjective pair of rectangular diagram, we can see the RSSD value changes in circumstances.

For Step 1, shown in Figure 2(a), the RSSD value of adj. 8 (Masculine-Feminine) is the largest which implies that if it were to be eliminated from the adjective subset, the loss of information would be the greatest compared to the other adjectives. The adj. 9 (Rational-Emotional) gave the second greatest RSSD value, which means that it is of the second most importance. In Step 9, shown in Figure 2(b), adj. 8 and adj. 9 remains the most

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important, however, in Step 15, shown in Figure 2(c), adj9 is the most important, but the importance of adj19 exceeds that of adj8. This elimination process of adjectives still remains very stable even when the number of variables is small. In Step21, shown in Figure 2(d), the final step was adj. 14 、 adj. 8. We observe the final step of the removal process, it has continued to maintain the overall structural.
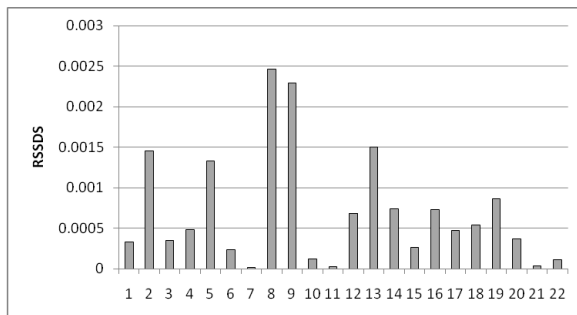
(2) Results of the adjective ranking

The results of the final adjective ranking obtained by the backward elimination process of PA are shown in Table 6.

Table 5. The result of K-means cluster analysis.

| cluster	adj. No.	affective dimensions	X	Y	Z	The distance
1		Seed point	0.300	0.820	0.28	0
	1	Traditional-modern	0.961	0.003	-0.076	0.177
	2	Hard-soft	-0.01	0.881	0.148	0.224
	3	Old-new	0.970	0.070	-0.046	0.240
	4	Heavy-handy	0.325	0.244	0.678	0.166
	5	Obedient-rebellious	0.267	-0.058	-0.842	0.202
	6	Nostalgic-futuristic	0.938	-0.072	-0.041	0.199
	7*	Coarse-delicate	0.865	-0.133	0.380	0.103
	8	Masculine-feminine	0.088	0.718	0.553	0.208
	9	Rational-emotional	0.155	0.903	0.253	0.499
	10	Hand made-hi-tech	0.670	-0.619	0.111	0.531
	11	Childish-mature	0.564	-0.654	0.355	0.566
	19	Inert-active	0.729	0.564	0.013	0.900
	21	Obtuse-brilliant	0.921	-0.121	0.304	0.685
2		Seed point	0. 57	0.16	-0.65	0
	12*	Unoriginal-creative	0.892	0.228	-0.246	0.169
	15	Standard-outstanding	0.978	0.027	0.011	0.556
	16	Common-particular	0.909	0.285	-0.206	0.228
	17	Plain-luxurious	0.905	0.037	-0.209	0.340
3		Seed point	0.10	-0.64	0.64	0
	13	Simple-complicated	0.503	-0.169	-0.704	0.538
	14	Conservative-avant-grade	0.906	0.212	-0.264	0.449
	18	Decorative-practical	-0.152	-0.806	0.399	0.772
	20	Personal-professional	0.426	-0.829	0.122	0.359
	22*	Discordant-harmonious	0.458	-0.133	0.804	0.236
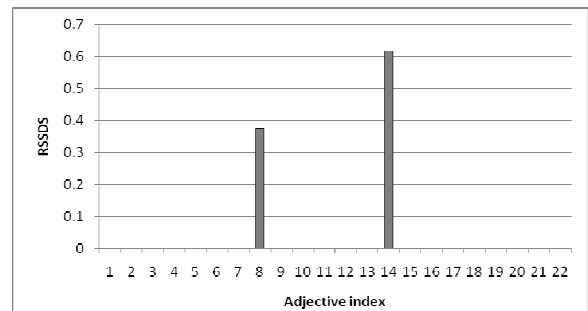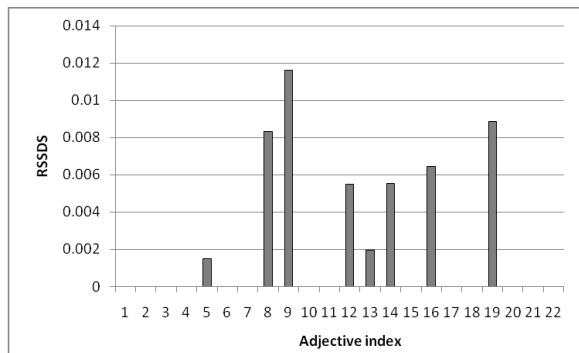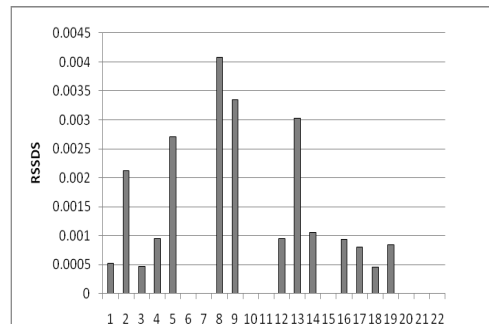
Figure 2. The RSSDs value of adjectives calculated in (a)Step 1, (b)Step 9, (c)Step 15, (d) Step 21

Table 6. Results of adjectives ranking using PA

Rank		Affective dimension	Rank		Affective dimension
1	**14**	**Conservative-avant grade**	12	17	Plain-luxurious
2	**8**	**Masculine-feminine**	13	4	Heavy-handy
3	**12**	**Unoriginal-creative**	14	18	Decorative-practical
4	**16**	**Standard-outstanding**	15	10	Hand made-hi tech
5	**9**	**Rational-emotional**	16	15	Standard-outstanding
6	13	Simple-complicated	17	20	Personal-professional
7	19	Inert-active	18	6	Nostalgic-futuristic
8	5	Obedient-rebellious	19	22	Discordant-harmonious
9	3	Old-new	20	21	Obtuse-brilliant
10	2	Hard-soft	21	11	Childish-mature
11	1	Traditional-modern	22	7	Coarse-delicate

During the reduction of adjectives at each stage, RSSD value could be calculated. Therefore, PA approach provided a standard method for assessing information loss. The results of the final calculation also determined the priority order of variables of adjectives.

The comparison for CA and PA

The three adjective pairs selected by CA were Coarse-Delicate, Unor-

iginal -Creative, Discordant -Harmonious; the adjectives selected by PA were Masculine - Feminine, Rational- Emotional, Unoriginal -Creative, Conservative - Avant - garde and Common - Particular. It is important to note that only Unoriginal-Creative are the same, and the remaining pairs of adjectives chosen by the two methods are different. The results show that there were differences between these two methods.

For comparing the differences of CA and PA, the distribution of all adjectives were marked in the space of three extracted factors in Figure 3(a) and 3(b). In order to examine the relationship between the selected adjectives and the Osgood's three factors, the areas of factors Evaluation, Potency, and Activity are drawn in red, green, and blue, respectively.
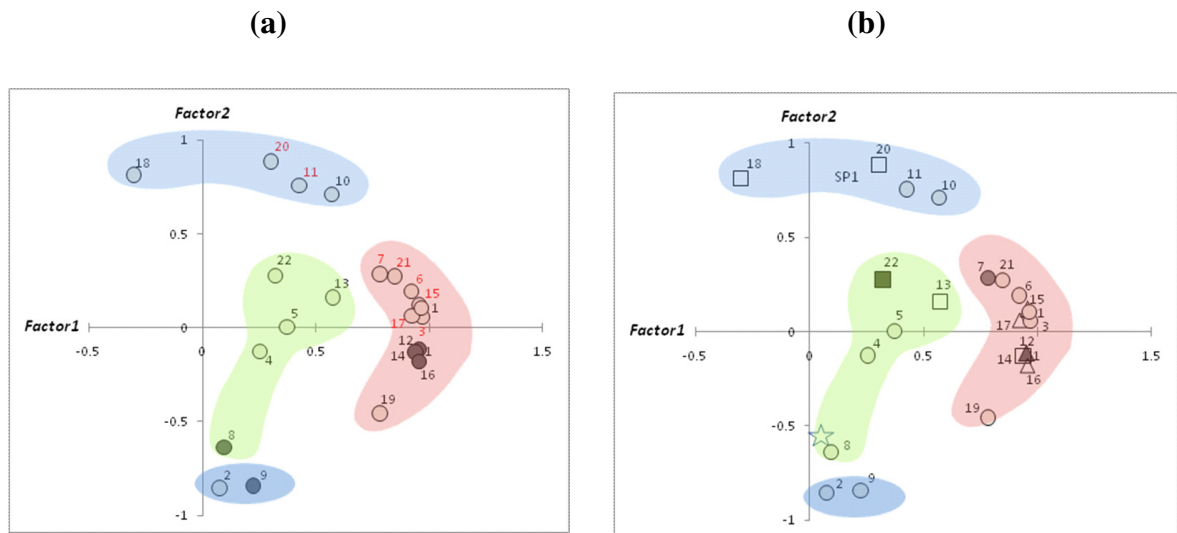
(a) **(b)**

Figure 3. The adjectives exhibited against (a) factor 1-factor 2 and (b) factor 3-factor 2

As shown in Figure 3(a), the top five adjectives selected using PA are marked in solid circle. The last seventeen adjectives in the ranking are marked by an empty circle. Among the top five adjectives, there are three adjectives (adj. 12, adj. 14 and adj. 16) picked from the Evaluation factor, one adjectives (adj. 9) from the Potency factor, and one adjective (adj. 8) from the Activity factor. This is the clearest evidence that the proposed PA approach is capable to preserve the global

structure of the initial affective dimensions. That is, the distribution of these five adjectives exhibit similar global structures compared to all the other adjectives.

Figure 3(b) shows the distribution of all adjectives in the factor space for two-stage CA. The adjectives in clusters 1 to 3 are marked in circle, triangle and square, respectively. The top four selected adjectives, which are closest to each centroid of the clusters, are drawn

in solid marks. In Figure 3(b), it can be seen that there are two adjectives (adj. 7 and adj. 12) picked from the Evaluation factor, one adjective (adj. 22) from the Activity factor. However, there is not one adjective selected from the Potency factor. The result of CA is failure to select the representative adjective from the Potency factor. This is due to that the two groups of the Potency factor are located far from each other.

Conclusions

The research results show that there are some differences in the best affective dimensions obtained by the PA and CA methods. The CA method puts emphasis on classifying adjectives with similar factor loading into the same clustering according to the relationship between them. While PA emphasizes maintaining the overall structure of the data, it cannot be analyzed based on the local relationship between the adjectives so the natures of the two methods are completely different. When using CA, the distance are very close to some adjective and seed point each other, this is not easy to determine whether which one is the most appropriate adjective. Therefore, to extract adjective is still difficult using CA, for example, in figure 3 (b), the adj. 12 and adj. 16 are very close to each other on the group's seed point.

PA can be used to analyze the proper process for deleting the adjectives for which their influences to the overall structure is minimized. It provides researchers with a "global" analyzing tool in conjunction with the "local" analyzing tool of CA.

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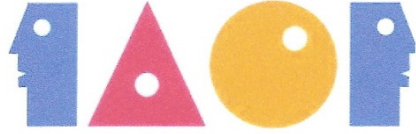
CHALLENGES IN THE PUBLIC SCHOOL SYSTEM:
AN ASSESSMENT OF MANAGEMENT DISEASES IN SCHOOLS IN THE UNITED STATES

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Abstract

The purpose of this paper is to examine the existing framework of public schools in the United States to identify barriers that impede the institutions from being effective. To explore barriers within the system, the researchers apply the Deming method to run diagnostics to determine what organizational diseases exist and how these diseases inhibit growth and productivity in public schools. The results of these tests illustrate how the public school system is infected with at least three diseases: *lack of constancy of purpose*, *emphasis on short-term thinking*, and *evaluation of performance*. In order to cure these

diseases, the scholars develop starting recommendations to aid in reforming the public school system for the future.

Key Words: W. Edwards Deming, Management Diseases, Organizational Systems, Leadership, Organizational Studies, Public School System Challenges, Teachers

Introduction

One of the main functions of an organization is to improve an existing product or service, or provide a new one entirely (Ivanov, 2015). However, in order to do so, it is important to assess the current state of the organization's product or service before attempting organizational change.

One organization that is central to our global society is the public school system. Public education throughout the world is universal and represents a cornerstone for developing knowledge and talent. It is a system that should be void of any major weaknesses as that would be an impediment on child learning and development. Therefore, it is important to examine the existing operations in the public school system in order to discover any disparities to rectify them so schools could educate and empower youth more effectively.

The purpose of this paper is to identify the current framework of a school in a large metropolitan area by running diagnostics tests in order to discover any existing organizational diseases using the Deming method to organizational analysis. This analysis will serve to illuminate the core challenges that are present in schools and would aid in informing solutions.

Finally, this paper hopes to provide strategic recommendations how the public school system could improve its current structure to operate on a higher level to remain viable for the future.

Need for the Study

The school to which one of the researchers has had access is a public school in a metropolitan area in the United States. There are many challenges this organization faces, especially:

- funding (tax increment financing (TIF))
- testing, and
- teacher burnout and turnover.

Tax Increment Financing / Funding

Tax increment financing is a challenge for the organization because it represents disproportionate resources. A certain portion of the property taxes in the neighborhood where the school is located is supposed to go towards the school funding. Moreover, the type of neighborhood that surrounds the school is an important factor that contributes to the amount of TIF money that is available. There is always some dissension because TIF funds, instead of supporting the local schools, are not always directed towards them, but spent on new developments in other pricier areas.

Testing

The testing component also produces a challenge. The students are required to be tested at different levels during various times of the year. The goal of the administration is to have students reach a level of proficiency or above relative to their grade. However, if they fail to do so, then the school and administration are penalized. Often times, teachers struggle with whether to teach the curriculum that is expected of them or to teach the material that will be reflected on the test which would enable the students to pass.

Teacher Retention and Burnout

One of the major challenges that face all schools in the United States is teacher retention and burnout. There exists a high turnover rate. Often, teachers remain in their positions less than three years before leaving the school and pursuing new career opportunities elsewhere. One of the reasons that may lead to employee turnover is burnout. As a result of the constant demands and stress placed on the teachers, burnout is very common. Therefore, this challenge needs to be addressed in the public school system to reduce teacher burnout and provide coping mechanisms in order to retain their faculty over the long-term.

The School

The school to which one of the researchers has had access was established as part of a merger between a high school, junior high school, and elementary school. Prior to the merger,

the elementary and junior high schools were independent of each other until 2008, when they consolidated. In order for the students to attend the school, they must apply and be accepted through the application process. As of 2013, approximately 284 students were enrolled in the school.

Less than 30% of students that applied for admission reside within the formal boundaries of the school zone. The remaining students at school were accepted through the lottery process. The school also houses a program for those who are blind and have visual difficulties.   The leadership of the organization includes: the principal, associate principal, and the assistant principal.   The school has approximately seventy employees excluding the administration. The mission of the school is to provide a service to students incorporating an experiential and college preparatory program to advance learning.

Methodology

Following the identification of the organizational flaws in the school, the methodology used is W. Edwards Deming's "health check" for the occurrence of deadly organizational diseases (1992, 1994). Deming postulates that deadly diseases hinder the transformation potential of an organization. In order for an organization to change and improve, one must first run a diagnostics on the organization in order to determine if there is a presence of any organizational diseases (Ivanov, 2011, 2012, 2013, 2014, 2015).

The first disease, lack of constancy of purpose, focuses on the absence of a plan to sustain long-term products and/or services. At the school there is a lack of constancy of purpose because instead of focusing on long-term planning, most of the work is geared towards getting through the school year.

Disease 1:
Lack of Constancy of Purpose

Also, as a result of the school being on a closure list two years ago, there are many day-to-day factors that coincide with the daily operations of the school, leaving the organization and those in it with no time to plan ahead, but to emphasize the organization's current state and short-term activities.

In addition, it would be challenging for the school to focus on the long-term-constancy of purpose when the government has no clear picture for how the public schools need to test and assess their students. This confusion and uncertainty trickle down to the school causing the principal to be also confused and uncertain how to assess the students in the school.

Deming's Deadly Diseases in Management and Organizations

Disease	Presence
Lack of constancy of purpose	Yes
Emphasis on short-term thinking	Yes
Evaluation of performance	Yes
Mobility of management	No
Management by use only of visible figures	No
Excessive medical costs	No
Excessive costs of liability	No

Disease 2:

Emphasis on Short-term Thinking

The second disease, emphasis on short-term thinking, is also a by-product of a lack of constancy of purpose. Since there is no consistency at any level of the organization, especially testing and assessment of the students (which is key to their development and academic success), here is no clear plan for the future on how to sustain the school's enrollment and performance. All efforts are pointed towards achieving goals year-to-year.

Disease 3:

Evaluation of Performance

Evaluation of performance is a disease that is prevalent at the school. According to Deming, the presence of a

formal evaluation system imposes fear in employees and creates a culture of competition amongst staff (1992, 1994). Ivanov describes this paradigm of fear further as *feararchy* (2011, 2012, 2013, 2014, 2015).

Throughout the academic year, teachers are monitored, evaluated, and reviewed several times with little or no advanced notice. Furthermore, these observations by different "evaluators" who are basing their reports on numerous criteria create high-pressure situations and negatively impact a teacher's performance that year.

Recommendations

Following the analysis of the challenges presented in the public school system and identifying initially three deadly diseases that hinder the organization from transforming and improving its service, the following recommendations have been developed in order to reflect the findings and help prepare the organization to become more effective by providing a healthier service.

Recommendation 1:

Invest in Future

In order to cure the lack of constancy of purpose and emphasis on short-term thinking in the public school system, the school should implement long-term strategic planning to ensure future. One way the school could do this is by finding ways to increase enrollment and maintaining high academic performance.

For example, the school system could increase enrollment by diversifying its programs. The school could conduct a needs assessment in order to determine activities in which the students desire to participate. The school could use the findings of that research in order to develop novel ideas to create a new service that could help sustain the school in the future.

Another recommendation to create a constancy of purpose and engage in long-term thinking is to provide faculty members with flex breaks. Often times, teachers are overwhelmed by the amount of time they spend with their students because of a lack of timely breaks throughout the day. By implementing flex breaks, they could provide teachers with an opportunity to take short breaks to come back to the classroom refreshed and ready to continue with the rest of the day.

In order to allow for teachers to take breaks, more teacher aides need to be hired in order to assist in the classroom. By having an aide, the teacher is not as burdened and could rely on another adult in the classroom to help with teaching and helping ease the high demands that are placed on the teacher. The use of flex time and aides could help establish constancy of purpose because it would reduce employee burnout and turnover, thus creating a more constant workforce that is invested in the future direction of the school. This, of course, would require funding, which the school system currently lacks.

Recommendation 2:
Engage in Communicative Dialogue

As opposed to using a formal performance evaluation system in the public school system, by taking an alternate approach and engaging in dialogue with faculty members about their performance could reduce the amount of fear evaluations cause and lessen competition between staff. In its place, regular communication between teachers and the principal should occur in order to receive feedback and interact in a constructive manner.

In addition to removing the formal evaluations, teachers should be afforded the opportunity to observe best practices at other schools. By visiting other schools, teachers could witness firsthand how specific teaching methods may or may not be effective in a wider range of settings. Teachers could also reflect on the teaching styles occurring at other schools and engage in dialogue about their perspective based on new observations. Opening up communications in the public school system could allow for growth and development of all teachers.

Conclusion

The issues present in the public school system are two-fold. Some of the challenges that exist are the result of a system that is not operating at its highest capacity because it is being hindered by lack of resources, employee turnover, employee burnout, poor communication, and other systemic diseases.

In order to analyze the challenges facing the organization, the Deming method of identifying deadly diseases should be applied. The presence of any of the seven deadly diseases is enough to cause concern because of the impediment it places on the organization. This analysis has discovered that the public

school system is suffering from at least three of the deadly diseases: lack of constancy of purpose, emphasis on short-term thinking, and evaluation of performance. This methodology helped develop two recommendations: invest in the future, and engage in dialogue.

If implemented, it would help to start to transform the public school system to improve the existing services and develop new programs for the future generations of American citizens.

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