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## ACCOUNTABILITY AND INNOVATIVE FINANCIAL REPORTING TO THE MOSQUE

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### Abstract

This research aims to reveal of financial accountability, and as material of evaluation of mosque management as a whole with Case Study method. This research was conducted at the largest mosque in the province of East Java, this mosque is used as a place of research because it can reflect the mosques that exist in this province. Informants in this researcher is a manager related to financial reporting and general public. This research is very important to be done at religious organization of mosque, because in financing of mosque operational use fund which sourced from wider society, and obliged to be accounted well and open as expected by public society. The result of this research is the financial management which has been done by the mosque manager is very good, the evaluation material which still have to be done is to always publish the financial report to the public, as a form of financial responsibility by the manager of mosque to all parties.

Keywords: Financial Accountability, Mosque, A Clash Of Jurisdictional

### Introduction

Accountability is the way to be responsible for the success or failure of organizational missions to achieve

previously set goals and objectives, through a periodic accountability media (Mardiasmo, 2006). Islam has also required accountability as to which has

been described in the Qur'an. According to the commentary (Katsir, 2008), Qur'an letter or Surah Al Baqarah page 282 above explains that if you do mua'malah to be written to be awake to what is agreed and become a legal force for witnesses. Then regarding the phrase "Let not the writer be reluctant to write it as Allah taught it, then let him write" Ibnu Katsir explains, people who are experts in the science of writing should not refuse if there are people who ask for help and prohibited them. From the above interpretation can be concluded that the recording of any transaction activity will also provide good information in accordance with the state of the order for the creation of accountability that is needed by all interested parties.

In the year of 2015 the Al-akbar Surabaya mosque or MAS manages funds derived from donor funds, infaq boxes, infaq use of MAS facilities, donations or Infak of educational institutions, and other infaq amounting to Rp.13.970.818.095, the number is very large and Requires good management and record keeping to be accountable for its use to all stakeholders. The financial statements of religious or non-profit organization has been set in the Financial Accounting Standard (PSAK) 45 financial year 2011 related to the preparation of non-profit organizations. Non-profit organizations must also create the financial statements and reported to stakeholders. In this case (Adebayo, 2013), adding that any form of organizational ownership requires appropriate management of its activities for the sake of good accountability. Accounting is an art of recording financial activities that can later be used as a business communication tool that can provide information. According to

(Harahap, 2001), the purpose of accounting is to provide financial information to be used in the decision-making process.

Accountability is actually there because the result on the relationship between the management (agent) and the public (principal) consequently appears linkage is agent-principal relationship. Appropriate information will reduce the circumstances under which managers have access to information on the prospect of a company that is not owned by an outsider called information asymmetry. Principal or pilgrims in this case given the authority intact to the agent as the manager in order to perform the operations of an organization, and therefore the agent expected to be responsible for all the operational organization of the principal or the community (Muhammad, 2006), But the practice of accounting outside business entities, especially religious organizations, is neglected (Simanjuntak and Januarsi, 2011), there is generally a perception that the practice of accounting practices in religious institutions is somewhat less advanced where religionists are still practiced and traditionally practiced.

As an organization that manages donation funds from the general public, religious organizations such as mosques should be managing the incoming funds and reporting them in detail in order to be accountable for the use of funds already donated by donors to the religious organization's board in order to avoid libel. Accountability is not just about compliance with applicable law or standards, but rather of organizational goals and public trust. Leaders of nonprofit organizations are encouraged to pay more attention to

forms of accountability strategies that can help them to achieve their mission of establishing such organizations to create public trust (Alnoor, 2003). But accounting practices outside business entities, especially religious organizations, are highly neglected (Simanjuntak and Januarsi, 2011), there is generally a perception that the practice of accounting practices at religious institutions is somewhat less advanced where religionists are still practiced and traditionally practiced. Meanwhile, according to A Clash of jurisdictional theory that introduced (Abbot, 1988), to obtain good results there should be a separation of authority between each profession that is impossible to understand each other so there is no conflict between professions. In research in the organization of the mosque during this financial management is done by religionists, so the results obtained are not maximal.

In the research (Siskawati and Surya, 2016), explains that accountability practices are well under way in the of West Sumatra, as evidenced by traditionally well-dressed, neat and transparent financial management but not yet appropriate. So far only made a simple financial report by writing income and expenditure, but there are no records such as record-related assets owned and reports periodically for the progress of the mosque and the benefit of the people. Because the mosque's organization is very rarely the concern of other researchers who always focus with large organizations or entities, based on this researchers interested in researching at Al Akbar Surabaya mosque.

## Research Methods

One of the methods used in the interpretive paradigm is descriptive case study method. This research is a case study. In his book (Kamayanti, 2016), this case study is a disciplined comparative type that attempts to compare the problems and theories used in the research. Qualitative research has a purpose (Sugiyono, 2010) explains that qualitative research aims to reveal qualitative information so as to emphasize the process and meaning problem by describing something problem. This research is done by case study method (Case Study). Case studies are non-mainstream (qualitative) research that emphasizes the process by which the researcher must interact regularly with the research subject in the research location, and focus on the understanding, and the researcher's interpretation of the research object (Basuki, 2016). The research conducted is descriptive that is to reveal and describe the object and the subject of research as it is, the researchers only reveal and tend to just photograph the research. The case study approach in this study is useful to reveal the accountability done by the board of Al Akbar Surabaya mosque.

To obtain information and data to be in though in this research, then procedure that will be done is as follows.

1. Field research (field reseAcrch), data retrieval method used to support this research (Sugiyono, 2010) is an interview using semi structured method so that the atmosphere does not become formal, more to the conversation Media used is written record. The in-dept interview process is conducted by in-dept interviews with face-to-face interviews between interview-

ers and informants involved with using or without using interview guidelines. By directly interviewing the parties involved in this research such as management of finance, administration and mosque congregation. The interview was conducted on January 3, 2017 at the office of Al Akbar mosque Surabaya.

2. Freely and structured observations aimed at presenting a realistic picture of behavior while performing activities or events to help answer research questions. In this study the observer can see directly the incident as it is without can be influenced by the researchers.

3. Library research (library research) Literature research is obtained from studying library materials such as journals related to the discussion in this study.

Qualitative data analysis done on the data that has been obtained from the results of interviews with researchers MAS board then in the analysis so it becomes a finding. Data obtained include Report of plan and realization of budget of mosque revenue and expenditure (RAPBM), Mosque balance report, financial report of surplus deficit, facility usage facility data and rental fee form, application usage and cash receipt form to be analyzed, The analysis is as follows: Data collection of documents, archives, other information will be selected in accordance with the needs of researchers, Data interviews with MAS board and observations that have been done will be arranged systematically and then will be selected to get good data in accordance with the needs of research, The accountability implementation in MAS will be compared with the literature that the researcher can find on the

standards and regulations relating to the nonprofit entity, and the data that has been collected will be compared with the theoretical basis and drawn conclusions, The findings gathered will be analyzed and interpreted through the penulian structure.

This study is limited to accountability practices implemented at the mosque al akbar surabaya. the largest mosque in the eastern jaa region became a form of accountability practices in the province.

## Discussion

To build confidence in the management of a good religious organization, the need for accountability in carrying out its operations in order to create a good organization and can be accountable by the manager to all parties. The studies that will be carried out in this research include mosque financial reporting, accountability definition, accountability objectives and accountability benefits and accountability forms in terms of honest and legal accountability, process accountability, program accountability, and financial policy accountability (Mardiasmo, 2000), as well as theory Stewardship used in the study to determine the behavior of the manager is more concerned with the purpose or benefit of the individual or organization that makes the mosques gain the trust of the public in managing funds from the public.

The theory used in this research is the stewardship theory is the theory that describes that in conducting the work manager can work optimally in the interests not the interests of the organization or individual goals (Podrug,

2010). This research also uses previous research as a reference comparison of research, so that the practice of religious organization accountability of Al Akbar Mosque Surabaya can be managed well and gain trust from the public for the prosperity of the mosque.

### Financial Reporting Mosque

The mosque is a public institution whose property belongs to the people who are entrusted to the managers. Managers run its role based on the beliefs of the people, then the financial statements that are a form of accountability of the mosque board is needed to provide evidence to the public.

According to (Andarsari, 2016), the financial statements of a religious organization must include a report providing information covering assets / assets, liabilities / debt, equity / capital, income and cash flow. In the application note that the financial reporting of the mosque is very simple that only make a report related to cash receipts and disbursements alone without making other required financial statements. With a clear record between income and expenditure, donors and the public will not be negative thoughts to the mosque administrator, because the mosque board can prove that the funds provided to them are managed well in the presence of financial statements that have been made as a form of accountability from the manager to the public.

### Accountability

Every business entity needs good management, in order to increase the level of public confidence in the or-

ganization. Good management will make the organization will be trusted by the public because of increased trust by the public to its business entities special religious organization is needed so that people can entrust the management of funds that one source from the congregation. Accountability aims as a form of accountability of organizational managers to all interested parties in accordance with the goals and objectives that have been specified before it periodically (Mardiasmo, 2006).

Accountability is the relationship between the party in control and regulates the entity with the party having formal power over the controlling party (Mardiasmo, 2000). In the context of the organization of religious organization, accountability is needed as a proof of mosque management to the pilgrims, so the pilgrims trust the management of mosques that are entrusted to the managers well managed and in accordance with the expectations of all pilgrims for the benefit of the people.

From the perspective of the accountability system (Mardiasmo, 2006) mentions some of the key characteristics of this accountability system, namely: 1. Focus on results. 2. Using some indicators that have been selected for performance measurement. 3. Produce information useful for decision-making of a program or policy. 4. Generate data consistently from time to time. 5. Report the results and publish them regularly. From the above explanation can be concluded that to produce a good accountability then the above characteristics become one of the guidelines for the organization to ensure that any management of an



institution can be accounted properly to the community.

The Form of Accountability in the mosque can be done by reporting about all the activities of the mosque one of them with accounting practices in financial reporting. The financial report conducted by the mosque management is done to answer the suspicions of various parties about the financial management conducted by mosque board and done consistently. Such financial reporting includes assets, liabilities / debt, equity / capital, income and cash flow. From the results of financial reporting that has been done mosque board, should be published to dismiss the suspicions that had been felt by the pilgrims and the community. During this time the accountability of the mosque is very simple by just making a cash report in and out without any reports related to assets owned by the mosque so that often the loss of assets owned by the mosque therefore the encouragement of all parties needed to prosper the mosque with accountability practices.

#### Results of Analysis

The problem faced by MAS is related to the distrust of the congregation to the current mosque manager. This is caused by the lack of information obtained by the pilgrims. Therefore the stages of this research are started by analyzing accountability practices applied by mosque managers. Before analyzing to know the responsibility of managers to the management of the mosque then in need of ways to obtain data to know the accountability practices on the MAS.

#### *Financial Accountability*

Financial accountability is something that is very sensitive to an organization, because it involves everything in the operational processes of an organization, MAS in 2016 to manage the funds coming from grants and donors, donation box, use of facilities, donation of educational institutions, charity and shodaqoh, and other appropriate financial part of the narrative. 2016 managed funds amounted to 13,970,818,095, substantial funds are managed by the mosque, the mosque has a financial management plan and the realization of the budget revenues and expenditures are in short (RAPBM). In the use of funds belonging to the mosque of al akbar been very well proven by own the separation between the reception and budgeting, where each inclusion will be recorded and immediately submitted to the expenditure part. On the expenditure is also pretty good supervision where the expenditure can only spend money directly if the nominal money is not more than 5,000,000, if it exceeds that there should be a direct disposition of the head of the financial sector in order to be melted.

This study contradicts the studies (Triyuwono and Roekhuudin, 2000), which examines the amil zakat institutions, the studies found that the practice of internal controls are weak, where the dual position between the revenues and expenditures, it is a potential for the occurrence of acts - Action that lead to the occurrence of irregularities in financial management. In reporting MAS classified into a modern organization compared to similar organizations, are already using apps in recording all financial

statements. This study is contrary to the research (Simanjuntak and Januarsi, 2011) where the research that is carried out in one of the mosques in Tangerang, found that management and reporting is very simple where managers only use the financial reporting systems have traditionally only create four columns reporting ie column expenditure, income and balance and its reporting is not done consistently and periodically. Reporting that applied at the mosque has adopted regulation of financial accounting standards or PSAK 45 on profit entities in accordance with the regulations that apply to organizations such as the mosque. In this study, researchers given the financial statements of realization of government budget mosque, balance sheets, and statements of surplus deficit that is not given nominal, the mosque was opened her statements not to be open, the mosque invites to anyone that wants to see the report could live to see it.

Observations found by researchers found that financial reporting in the publication is not detailed, only the total of income alone. In observing that the giver of alms giving alms it directly to the charity box it does not have strong evidence that the person concerned alms formally, but if the congregation would give alms formally the mosque authorities invited directly to be given to the integrated service unit and will given the receipt of a formal charity in order to have evidence charity, things in handy for a monitoring system that clearly recorded revenues mosque. Financial management accounted mosque also to the provincial government each year. Overall financial accountability applied to the manager has been very good, proven by the

international nature of achieving certification as ISO 9001: 2008.

Researchers also had to find info about a mosque that obtained ISO 9001; 2008 that turned out to be true Masjid Al Akbar mosque to two in Indonesia to obtain the certification, in addition to Al Akbar mosque first obtain such certification is one of the mosques belonging not famous mosques in Jakarta, the mosque of Al-Ikhlash Jati Padang, located in Pasar Minggu, South Jakarta, the mosque was also the first time obtain such certification in southeast Asia.

One of the standards of quality management system (QMS) that has evolved is an ISO 9001 version 2008 more emphasis on patterns of business processes within the organization of the company. Thus almost all types of businesses can implement a quality management system ISO 9001. The 2008 version is the latest version of which was published in December 2008. ISO 9001: 2008 emphasizes on the effectiveness of the processes of an organization (Hendartho, 2014).

The accountability of the stewards always consider the risks will occur. Seen how the attitudes of managers consider the risks may be minimized by controlling Internal manner in an eye fixed on the internal and external parties, therefore to increase public confidence, managers apply a fairly strict supervision. This study contradicts the studies (Siskawati and Surya, 2016) by using case studies researchers probed the practice of accountability in the mosque Jami 'Sungai Jambu, found that the mosque is considered one of the mosques in West Sumatra is still weak in the manage-



ment of its activities, where internal existing control and monitoring and financial management is still weak, while MAS have good resources and facilities such support in financial management applications to create the financial statements and its supervision has also been doing well.

Therefore accountability applied by the MAS has been recognized by the international community. Controlling both internally and externally as well have been on the run well, therefore these achievements should be kept on hold for the creation of trust society for administrator to manage MAS is good, but there are still constraints related publications finances become a problem, it is proper caretaker publish financial related in owned media, the results of the observation that the manager does not publish financial media that can be accessed directly by the pilgrims, should the manager be able to publish in bulletin board even up on the official website of the mosque so that the public can access it directly, during this time the manager only allowed in limited financial related to direct society could ask to the manager in the office. Publication is important as a form of accountability Al Akbar mosque authorities to the whole congregation and the community to the negative thoughts that had been circulating can be proved with relevant financial statements published and can be accessed by all those who need it.

Theory stewardship experiences were visible where the manager sacrificing time for the benefit of the mosque not interests individuals and managers continue to improve their management by being open to criticisms and inputs provided by the con-

gregation for the sake of prosperity of the Al Akbar Surabaya mosque.

## Conclusion

Based on the description of the description and the results of the above discussion, it can take the conclusion of this study is the accountability of the MAS as a whole has been very well caused due accountability that produced well-documented and in accordance with the SOP and on show to the congregation as a principle even involve directly in some of its activities and accountability already reported to the East Java provincial government, still found weakness, where the directors and the governor can not empower internal employees to be in the position of Head of finance that the Head of finance coming from parties external to the organization, with the retirement age and has concurrent positions at other organizations that could interfere with its performance in the mosque because it does not focus.

Related publications are also the manager of the al akbar has not been able to maximize financial related to publicize the mosque, managers should be able to publish in all available media, including on his official website that can be accessed all the parties so that people can see directly and adversely minded managers.

A Clash theory of jurisdictional applies to the management of the mosque, which makes the financial statements are educated accounting who do the management maximally and full of sense of responsibility and selfless, ie regardless of what will be obtained after implementing, even managers sincerely receive income

which are given MAS or not given at all, because they have the principle of serving the congregation and work as worship instead of work. This research is very well publicized so that religious institution managers can make good financial reporting as in this research according to the prevailing provisions and publish it as a form of accountability to all parties

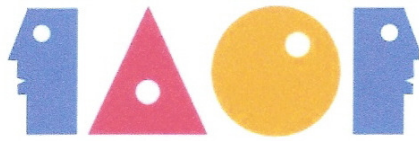
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APPLICATION AND EFFECTS OF CAPITAL BUDGETING AMONG  
THE MANUFACTURING COMPANIES IN VIETNAM

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Abstract

Vietnam is a developing country which joined the globalization (WTO) in 2007. Since that turning-point, Vietnamese companies have faced more challenges and business risk. To cope with these problems, especially to increase the effectiveness of financial operation, the application of capital budgeting techniques on evaluating investment projects becomes more and more significant for Vietnamese firms. Nevertheless, there has been no research revealing the capital budgeting practice in this country so far. Therefore, this study conducts a survey within 62 Vietnamese manufacturing companies to provide information about the current capital budgeting practice in Vietnam, regarding two aspects: the application of capital budgeting techniques and the effects of some factors on the application of these techniques.

By using Two-way ANOVA with Repeated Measures and Multivariate Analysis, the results indicate there is significant difference in the importance and application frequency of each capital budgeting techniques by the type of investment project. Fur-

thermore, the survey finds no significantly different application of evaluation techniques by the size of projects. However, empirical evidence in this study also implies that sophisticated capital budgeting technique is preferred by higher educated officers. It supports and extends the finding of previous researches regarding capital budgeting practice in developing countries.

Key Words: capital budgeting techniques, Vietnam, investment projects, application

### Introduction

In the form of either debt or equity, capital is a limited resource. To deal with limited capital sources, managers have to carefully implement capital budgeting with appropriate skills; otherwise, they could suffer the consequence for a long while. The terminology “capital budgeting” describes how managers plan long-term investment projects such as extending existing product or introduction of new products. Since most companies have many more potential projects than can actually be funded, so managers must carefully select those projects that promise the greatest future return. Besides, capital budgeting is also an extremely significant facet of a company's financial management. The result of capital budgeting could cause a considerable change in a company. For example, acceptance of an investment project may change the operational scope, field, business risks and profitability complexion of a company. These changes may further affect investors' assessment of that company (Osaze, 1996).

According to Ekeha (2010), the capital budgeting is critical especially in developing countries and should be approached much carefully and positively. Among Southeast Asian countries, Vietnam is a developing economy which joined the World Trade

Organization (WTO) in 2007. Since the turning-point, Vietnam has been connecting itself widely with the outside world and searching for more opportunities to develop the economy. In response to the blooming, the capital budgeting has already been implemented by Vietnamese companies since early 2000s. Nevertheless, so far, there has been no research revealing the capital budgeting practice in this country. Therefore, this study focuses on how capital budgeting is being applied in Vietnam, and tries to provide information by two important aspects: the application of capital budgeting techniques and the impacts of some factors on the application of these techniques.

### Literature Review

In recent decades, there is a trend that sophisticated capital budgeting techniques (CBT) have been applied increasingly across countries and benefits of applying these techniques were demonstrated by academic literature (Danielson & Scott, 2006; Dheeriyaa, 2008; Verma, Gupta & Batra, 2009). To evaluate potential project, firms could use some of financial techniques to appraise investments. Some popular financial capital budgeting techniques are Discounted Cash Flow techniques (DCF) (including net present value (NPV), internal rate of return (IRR), profitability index (PI)), payback pe-

riod (PB), and accounting rate of return (ARR).

### *Application of Capital Budgeting Techniques*

A number of research studies have been conducted on capital budgeting practice in many countries. By surveying this budgeting practice, researchers made an effort to address which project assessment technique got dominated and gained more application. For example, Parkash and Gaur (2004) found that in case of examining acceptance or rejection of a project, IRR technique does not conflict with NPV. But in case of comparing projects, these techniques give different results and ranking. An investigation into capital budgeting of Australia companies (Truong, Partington, & Peat, 2008) concluded that NPV, IRR and PB were the most applicable and popular investment evaluation techniques. In another research, Brijlal and Pradeep (2008) discovered the result indicated that followed by NPV, PB is preferred and applied across different sizes and business areas, after examining a number of variables relating to capital budgeting in small, medium and large size companies in the Western Cape Province of South Africa.

As mentioned above, research results showed that the application frequency of each evaluation technique significantly differs from each other as well as across surveyed areas. In common, DCF techniques such as NPV and IRR have increased their significance over the time, and non-DCF ones such as PB and ARR tend to be used as supplements to investment proposal evaluations. The diversity of such evaluation technique application

establishes the important basis for the hypothesis of this study which suggests examining if there is any difference in the use of each project evaluation technique in Vietnam. Additionally, the non-financial factors, sometime portrayed as non-traditional evaluation techniques such as competitive response, strategic linkage and growth potential, has increased its importance in today's business environment. Thus, this research also examined the relationship between investment project types and non-financial evaluation techniques.

### *Types of Investment Projects*

Analyzing the influence of investment project types in the application of capital budgeting tools is critical for isolating a potential confounding factor in evaluating proposed projects. Chen (1995) conducted a survey of capital budgeting in United States and specially focused on inspecting three types of investment projects: equipment replacement, extension of existing products and extension into new products. The study found that the role and importance of evaluation techniques over three types of investment projects are significantly different. For all three types of investment, DCF techniques are the most important, followed by Payback Period, and Accounting Rate of Return. The result proposes notable differences in the application of DCF techniques in assessing different investment types. DCF techniques are considered more important in appraising project on extension of existing products or extension to new products than in appraising equipment replacement projects. This finding is not contradictory with



previous surveys (Klammer, Koch, & Wilner, 1991).

Chen (1995) compared the utilization of non-financial techniques across three investment types, and showed that these techniques are more widespread for assessing projects on extension to new products. In addition, there is a significant increase in the use of these techniques for all three types of investment projects. This result is adequate to the supposition that companies tend to use more non-financial techniques as a supplement to DCF techniques in case of there are more uncertainty and intangible elements involved. The effect of investment types on the manner of utilizing evaluation techniques are the foundation of hypothesis one:

H1: There is no significant difference in the application of each capital budgeting technique by the type of investment projects.

#### *Sizes of Investment Projects*

Financial theory suggests that all projects should be formally analyzed. However, in practice there are a number of firms that fail to analyze projects unless projects' relative cost is above some fixed amount. The larger investment proposals, the more important they are and usually require more use of evaluation techniques to make careful considerations. Failure to analyze small projects may have a significant impact on firm value. Collectively, small projects consume a significant portion of a firm's capital budget. The opportunity cost of investing in a number of small projects is not having the funds to invest in a larger capital project. Thus, it is important that all

projects should be analyzed to ensure that resources are being used effectively.

One survey of USA manufacturing firms contained questions investigating whether smaller projects were exempt from formal financial analysis (Dheeriya, 2008). The results revealed that, for some firms, there is still no use of capital budgeting techniques in small projects. Even though these projects are mandated or required by government, they should be subjected to formal analysis in order to consider all viable alternatives. This relationship between sizes of investment projects and the use of evaluation techniques notably proposes to test the hypothesis:

H2: There is no significant difference in the application of each capital budgeting technique by the size of investment projects.

#### *Education Background*

Several surveys pointed out the correlation between working experience, education background of the finance personnel and the way of using capital budgeting techniques. Most of financial directors of surveyed companies believe that companies whose personnel are more educated and highly qualified usually prefer to use sophisticated techniques such as NPV and IRR whereas the non-discounted techniques like payback period criterion are often preferred by the less qualified ones. Graham and Harvey (2002) implied that companies whose CEOs got high degree such as MBA or PHD are more likely to use NPV method than firms whose CEOs did not. Furthermore, within small firms, managers with long

tenures but without MBAs more prefer to apply payback Period.

However, a survey of the capital budgeting practice within Indian companies showed a different result. Only the use of Payback Period is detected to increase with CEOs' education and qualification improvement. For all other methods, the relation was found to be insignificant between the methods (NPV, IRR, Profitability Index and ARR) and the CEO education (Verma, Gupta, & Batra, 2009). These practical findings proposed the suggestion to test the hypothesis as the following:

H3: There is no significant difference in the application of each capital budgeting technique by education background of decision-makers.

### Methodology

This research is conducted via a questionnaire survey. Since the objective respondents are usually top managers or chief financial officers, so the questionnaires are mostly handed to each target respondent with the purpose of attracting their interests in the research and increasing the response rate. Although the sampling is not completely random due to some limits, all the 62 return respondents are from the major manufacturing companies listed on the stock market. And also, it encompasses various manufacturing industries as well as various geographical areas of Vietnam.

The questionnaire applied in this survey is adopted from Chen (1995) and comprises two sections. In Section I, respondents are required to provide some information regarding job title,

working years and their highest degrees. The job title is to show if the respondent is suitable with the content of this survey. In addition, respondents' information about working years and highest degrees are use to assess the effect of their working experience and education background on the use of capital budgeting techniques. Also, respondents are required to give the average size of their company's investment projects.

In Section II, respondents are requested to estimate the percentage of each investment project type to the company's total investment projects. These percentages are used to calculate the weighted average index for the application of each type of capital budgeting technique by a company. This is a preparative step to test hypotheses. Respondents are also requested to evaluate the frequency of use of each evaluation technique across three types of investment projects on a five-point Likert-type scale for measurement which ranges from "1" (never use or not important) to "5" (always use or extremely important). The frequency can be seen as the importance of an evaluation technique. These assessments provided by respondents represent the practice of evaluation technique application.

Two-way ANOVA with Repeated Measures and Multivariate Analysis is utilized to test hypotheses. In each hypothesis, there are four dependent variables. Each one is the group of weighted average frequency of application of each capital budgeting technique (Discounted Cash Flow Models, Payback period, Accounting Rate of Return and Nonfinancial capital budgeting techniques). Each

weighted average frequency is calculated by using the Percentages of each type of investment project (Replacement Projects, Extension of Existing Products and Extension into New Products). That is, four dependent variables counted as four groups of capital budgeting techniques with the effect of three independent variables are examined.

## Results

### *Descriptive Statistics*

As shown on Table 1, among the 62 samples, 41.9% respondents are financial managers, 30.6% respondents are accountants. The Chief Executive Officers and Chief Operating Officers in turn account for 12.9% and 8.1% of the samples. Only 6.5% respondents are treasurers. 62.9% of the samples have the Master Degrees, 9.7% respondents have Doctoral Degree. Under the Master Degree, 25.8% respondents with Bachelor Degree, other degrees are only 1.6%. Thus, the respondents are highly educated, over 70% of them got the master and Doctoral Degree. Within the samples, respondents who are little experienced (less than 2 years) account for only 4.8%. The number of moderate (3-5 years) and quite experienced (6-8 years) respondents is larger, 32.3% and 40.3%, respectively. Other respondents who are very experienced also account for a fairly large percent (22.6%).

Besides, about the project size, the average investment project sizes of investigated firms vary from \$5,102 to \$36,500,000. For more details, 19.4% of projects belong to \$5,000-800,000 while 21% projects belong to \$801,000-\$1,571,000. The medium project

sizes, from \$1,571,100 to \$3,000,000 account for 19.4%. Larger project sizes, from \$3,000,100 to \$6,510,000 and \$6,510,100-\$36,510,000 are in turn 21% and 19.4% of the total projects.

### *Test for Hypothesis H1*

By testing first hypothesis, two aspects of capital budgeting practice are investigated. The first one is if there is any significant difference in the application of each assessment technique. The second one is whether types of investment projects affect this application practice. The first null hypothesis is rejected. Multivariate Tests shows highly significant results for all three Within-subjects Effects. For the technique effect, Wilkis' ( $\Lambda$ ) = 0.409,  $F(3, 59) = 28.410$ ,  $P = 0.000$ . For the Project effect, Wilkis' ( $\Lambda$ ) = 0.581,  $F(2, 60) = 21.679$ ,  $P = 0.000$ . It's also significant for the interaction effect of projects by each technique, Wilkis' ( $\Lambda$ ) = 0.361,  $F(6, 56) = 15.554$ ,  $P = 0.000$ . These results strongly indicate that the application of capital budgeting techniques differs across type of techniques as well as across type of project. Furthermore, the significant interaction effect proves that such application by the type of technique also depends on each type of projects.

As shown on Table 2, within three types of projects investigated, the average ratio of project 2, (Extension of Existing Products) is largest ( $M = .4385$ ), followed by the average ratio of project 1, (Replacement Projects) ( $M = 0.2905$ ) and project 3, (Extension to New Products) ( $M = 0.2710$ ). Therefore, in common, firms within the samples invest the most in project 2 and least in project 3.

Table 1. Descriptive statistics

Job title	Frequency	Percent
Financial manager	26	41.9
Treasurer	4	6.5
Chief Executive Officer	8	12.9
Chief Operating Officer	5	8.1
Accountant	19	30.6
Degree	Frequency	Percent
Doctoral Degree	6	9.7
Master Degree	39	62.9
Bachelor Degree	16	25.8
Other	1	1.6
Working years	Frequency	Percent
≤2 year	3	4.8
3-5 year	20	32.3
6-8 year	25	40.3
≥9 year	14	22.6

Table 2. Estimate marginal means of project\* technique

	T1(DCF)	T2(PP)	T3(ARR)	T4(NF)
P1 (Replace), M=.29	4.048	3.661	3.306	2.468
P2 (Existing), M=.44	4.274	3.952	3.339	3.694
P3 (Ext-New), M=.27	4.226	3.903	3.355	4.242
Weighted	W4.183	W3.839	W3.333	W3.468

For all three types of projects, the means of DCF techniques are always the largest among four techniques. Thus, regarding the capital budgeting practice in Vietnam, DCF is the most prevalent tool in assessing investment proposals, followed by the PB and ARR, respectively. For nonfinancial techniques, there is an increase of its application from project 1 to project 2 to project 3 (from 2.468 to 3.694 to 4.242). The finding proves the increasing role of nontraditional techniques as the uncertainty of business environment increases.

#### *Test for Hypothesis H2*

According to the result of multivariate tests, the Test of Roy's Largest Root indicates the effect of project size is significant at 0.01 significant level,  $F=4.463$ ,  $P= 0.003$ , the null hypothesis H2 is rejected. It is detected that only for technique 2, there is dissimilar application cross the sizes of investment projects,  $F= 2.528$ ,  $P = 0.05$ . As shown on Table3, for projects whose sizes are larger and very large, the means of application ( $M= 3.685$ ,  $M= 3.704$ ) are less than very small and moderate sizes

Table 3. Estimate marginal means of re pro size

Dependent Variable	re pro size	Mean
New T1	very small	4.202
	quite small	4.251
	moderate	4.379
	quite large	4.198
	very large	4.263
New T2	very small	4.225
	quite small	3.602
	moderate	4.058
	quite large	3.685
	very large	3.704
New T3	very small	3.515
	quite small	3.268
	moderate	3.095
	quite large	3.495
	very large	3.287
New T4	very small	3.183
	quite small	3.715
	moderate	3.365
	quite large	3.336
	very large	3.621

(M = 4.225, M= 4.058). The result supports previous studies that Payback Period technique tends to be less applied in appraising large projects.

However, based on the three Multivariate Tests (Pillai's Trace, Wilks' Lambda, and Hotelling's Trace), project size is no longer significant due to large P values (>0.1). Null hypothesis H2 is accepted. The later survey results find out no different application of every evaluation techniques by the size of projects. This outcome could result from the correlation between the sizes of firms and investment projects. In general, the project sizes are directly proportional to firm sizes. The larger firm, the more they could afford to invest sizable projects. One project that is perceived small or not significant to large firms could be significant toward smaller firms (Danielson & Scott, 2006). As a result, there is no

dissimilarity in the application of the rest three remaining techniques.

### *Test for Hypothesis H3*

Hypothesis H3 examines the capital budgeting practice under the impact of some human factors. According to Wilks' Lambda Test, education background affects the application of capital budgeting techniques with  $F = 2.966$ ,  $P = 0.001$  ( $<0.01$ ). Tests of between-subjects effects indicate that the application of technique 2 and 3, PB and ARR, do not differ across types of degree. However, for technique 1 and 4, DCF and nonfinancial techniques, there are dissimilar applications with P values are in turn 0.000 ( $<0.01$ ) and 0.063 ( $<0.1$ ).

Considering the means of each evaluation technique by the type of degree in Table 4, the result shows that

Table 4. Estimated marginal means of degree

Dependent Variable	Degree	Mean
T1-DCF model	Doctoral Degree	4.397 <sup>a</sup>
	Master Degree	4.322
	Bachelor Degree	4.325 <sup>a</sup>
	Other	2.000 <sup>a</sup>
T4-nonfinancial techniques	Doctoral Degree	3.763 <sup>a</sup>
	Master Degree	3.589
	Bachelor Degree	3.104 <sup>a</sup>
	Other	5.000 <sup>a</sup>
New T2	Doctoral Degree	3.737 <sup>a</sup>
	Master Degree	3.888
	Bachelor Degree	3.765 <sup>a</sup>
	Other	3.800 <sup>a</sup>
New T3	Doctoral Degree	3.807 <sup>a</sup>
	Master Degree	3.213
	Bachelor Degree	3.389 <sup>a</sup>
	Other	2.800 <sup>a</sup>

the application frequency of technique 1, DCF techniques, gradually decreases from respondents who have Doctoral degree to lower-degree respondents. The finding supports the theory about the application of such a sophisticated DCF model which is usually preferred by higher educated employees. For technique 4, there is also a decrease in the utilization of this technique from Doctoral degree to Master and Bachelor degree. However, this tendency is opposite to officers whose degrees are under Bachelor. It appears that the lowest-degree employees always utilize the nonfinancial, qualitative techniques to evaluate projects.

#### Conclusion

Due to the role and importance of capital budgeting toward company's finances as well as the national economic development, particularly developing countries, this study surveys 62 Vietnamese manufacturing companies in order to capture and judge the practice of applying capital budgeting techniques in Vietnam. In

summary, the test for hypothesis H1 points out strongly statistically significant results. Each capital budgeting technique remarkable differs from their role and application frequency in evaluating investment projects. Types of investment project are found as a significant factor that causes this difference. For testing hypothesis H2, another aspect of investment project, the size element is provided evidence about the relationship with only the application of Payback Period technique. Beside aspects related to investment projects, the impacts of human elements are also considered in hypothesis H3. Education background of investment decision makers provides empirical evidences of its influence on the manner of evaluating projects.

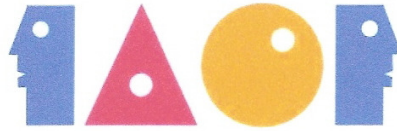
Since culture considerably influences the reasoning and thinking manners of decision makers, it could be a significant factor causing the variance in the application of capital budgeting techniques. The future study should take the effect of culture into account



to enrich the capital budgeting literature. In essence, the application of capital budgeting techniques is to enhance the effectiveness of investment activity of companies. Therefore, the future study may conduct surveys to investigate the link between the practice of applying these techniques and firms' performance represented in financial criterion such as profit, return on asset, and so forth.

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EVALUATING PERFORMANCE OF LOGISTICS IN THE  
FMCG INDUSTRY

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Abstract

The purpose of this paper is to consider the logistics performance of the fast moving consumer goods (FMCG) industry with the case study of L Company, so as to make recommendations for its logistics operation process and to be a reference for management decisions. We use dynamic network data envelopment analysis (DN-DEA) and Malmquist product index (MPI) methods to discuss the overall efficiency and the division efficiency of its three divisions and to investigate the change in productivity during the period 2011-2013. Supplemented by the Wilcoxon rank sum test method, we want to understand how the numerous divisions vary in their logistics performance efficiency in different years. The input items are freight & pick costs (FPC), accep-

tance costs (AC), and return handling costs (RHC); the output item is sales revenue (SR); while storage costs (SC) play a link across divisions from the Professional Products Division (PPD) to the Consumer Products Division (CPD), or PPD to the Active Cosmetics Division (ACD), or CPD to ACD. The inventory is carried over across periods  $t$  to  $t+1$ . The results indicate the following: (1) the logistic performances of the three divisions exhibit the same trend, which is 2011 shows the best performance, followed by 2013 and 2012; (2) the Frontier-shift effect is the main reason to cause the progress or reversion of total factor productivity; (3) total factor productivity of PPD presents significant differences when comparing between CPD and ACD.

**Keywords:** Dynamic network data envelopment analysis, Malmquist productivity index, FMCG industry, Logistic, Performance, Wilcoxon rank sum test.

(Note, this article is formatted in a single column to facilitate easier reading of the mathematical formulas. All Figures are shown at the end of this article).

## Introduction

The factors of economic globalization and trade liberalization in recent years have brought about shorter product life cycles, enhanced customer service levels, and driven enterprise strategic alliances, business process reengineering, and concerns for environmental issues. Logistics has become the main focus of global businesses and an important strategy to strengthen firms' competitive advantages, to make the best use of logistics to improve customer service levels, and to meet customer demand. Thus, enterprise management strategies are now targeting the promotion of logistics supply chain integration. Logistics management can maintain complete, stable operating procedures and create additional values such as reductions in costs and operational risk.

As businesses encounter more meager operating profits, how to reduce costs is a central issue, such as cutting logistics costs or even increasing logistics outsourcing. The logistics support department of firms is a non-core competency, especially the logistics center. When looking at efficient human resources management, expertise training, and capital equipment investment, logistics outsourcing is playing a bigger part among major strategic decisions.

In the last few years the research issues of logistics have targeted using a structure equation model to explore logistics outsourcing loyalty and logistics outsourcing management, such as Wallenburg et al. (2010), Juga et al. (2010), Liao et al. (2010), etc. Soni and Kodali (2011) and Talib et al. (2011) examined supply chain management practices. When employing data envelopment analysis (DEA) to assess performance, some studies compared the performances of different countries or companies in a single period, while ignoring division performances, the overall environment, and changes with time, such as Zhou et al. (2008), etc.

Trappey et al. (2010) utilized the two-stage cluster analysis to discuss the automotive industry's logistics services, they identified service needs, preferences, and outsourcing entrusted from 98<sup>th</sup> automotive industry units and found four distinctive groups: favored logistics, automotive aftermarket supplier outsourcing, original equipment manufacturer (OEM) parts suppliers, and tier suppliers. The highest proportions are in distribution and transportation outsourcing services. Wallenburg et al. (2010) studied the relation between logistics outsourcing performance and loyalty behavior cross inter-culturally.

Juga et al. (2010) investigated service quality and its correlation to satisfaction and loyalty in logistics outsourcing relationships. They looked at how perceived service quality influences both a shipper's satisfaction and loyalty in third-party logistics outsourcing relationships, using an empirically structured equation to identify critical service dimensions and their impacts on satisfaction and loyalty from a survey of 235 industrial companies in Finland. They found that the satisfaction-loyalty model in a logistics outsourcing context confirms that service perceptions do influence loyalty through a shipper's overall satisfaction with the service provider. Liao et al. (2010) proposed a model of supply management, supply flexibility and supply chain performance. They examined the relation between supply management and supply flexibility and extended the concept of supplier flexibility and supply network flexibility on relevant supply chain performance measures. They find that the results indicate strong positive relations between supply management practices and supply flexibility, as well as between supply flexibility and supply chain performance.

Hazen et al. (2012) discussed the issue of reverse logistics disposition decision-making. By developing a decision framework via content analysis, they identified the critical components of the reverse logistics (RL) disposition decision-making process and suggested a decision framework that may guide future investigations and practice. They further utilized a problem-driven content analysis methodology to analyze the RL literature from 2000 through 2010, extrapolated seven RL disposition decision components from a compilation of 60 variables identified in the literature, and presented a RL disposition decision-making framework. Thatte et al. (2013) investigated the impact of a firm's supply chain management (SCM) practices on its supply chain responsiveness and competitive advantage. They focused on the supply chain responsiveness construct and firms' practices in response to customer demands and constantly changing market conditions to create a competitive advantage. Using a structured equation to test the relations among SCM practices, they found that a higher level of SCM practices can lead to improved supply chain responsiveness and enhanced competitive advantage of a firm. Moreover, supply chain responsiveness

Liu et al. (2010) studied the issue of sources of competitiveness for logistics service providers (LSP's). Employing Porter's competitive advantage theory and the resource-based view (RBV) theories of strategic management, they found that the capability considered most important among the factors of competitiveness and the most critical aspect of an LSP's capabilities is service quality. Oliveria et al. (2011) proposed the relations among Internet utilization in business-to-business relationships, collaborative efforts, and their impacts over supplier and customer-oriented process

performances. They used descriptive statistics, reliability evaluations of the research model's internal scales, path analysis, and structural equation modeling to evaluate supply chain process collaboration through data from a survey of 788 companies from the U.S., China, Canada, the United Kingdom, and Brazil. The results show that Internet utilization in supplier and customer-oriented processes is positively related to collaborative practices in business-to-business relationships, with potential effects on the performances of collaborative practices in supplier and customer-oriented processes.

Bilgen and Günther (2010) applied block planning for integrated production and distribution planning in the fast moving consumer goods industry. In this industry, they found that there is an ongoing trend towards increased product varieties and shorter replenishment cycle times and hence suggested that manufacturers must use the proposed block planning approach - in particular, a rigid block planning approach and a flexible one are compared in how they differ in their degree of flexibility in the scheduling of the production lots. Hingley et al. (2011) studied the issue of using fourth-party logistics management to improve horizontal collaboration among grocery retailers. They selected three suppliers, three logistics service providers (LSPs), and one grocery retailer and used semi-structured interviews for their exploratory qualitative study. They investigated the benefits of and barriers to the use of fourth-party logistics (4PL) management as a catalyst for horizontal collaboration. They find that LSPs can establish 4PL management, but the significant investment required to do so is a deterrent, and that 4PL negatively influences the grocery retailer-supplier dynamic, but simultaneously provides key potential benefits. Talib et al. (2011) presented a set of total quality management (TQM) and supply chain management (SCM) practices through an extensive literature review and identified the relations among them by comparing the identified TQM and SCM practices. They showed six major TQM and SCM practices from 50 TQM practices and 40 SCM practices. They further compared these practices and found that management support and commitment, customer focus, and supplier partnership are the most common practices in both the TQM and SCM literature, noting that they have the strongest impacts in the integration of TQM and SCM across organizations. Mothilal et al (2012) uses the literature review to identify the key success factors of performance in the Indian third-party logistics service providers (3PL) sector.

Several articles have been devoted to evaluating logistics performances in the last few years through the data envelopment analysis (DEA) method. Janvier-James and Didier (2011) studied a benchmarking framework for supply chain collaboration. Applying data envelopment analysis (DEA), they measured the extent of both collaboration and trust in a supply chain as important components of organizational behavior that contribute to the performance improvement of a supply chain. They found that corporate managers in non-performing decision making units have a challenge that needs to be improved, such as underperforming research and development (R&D) units. Che and Chang(2016) provide the integrated method (including analytic network process, data envelopment analysis, and multiple objective) to a supplier selection problem of sphygmomanometer manufacturer in Taiwan.

Zhou et al. (2008) developed a benchmark of performance standards in an emerging market for Chinese third-party logistics providers (3PLs). They identified various factors that significantly affect the operational efficiency of the Chinese 3PLs and proposed ways to improve the competitiveness of the 3PLs. They used the DEA method to measure the operational efficiency of ten leading 3PLs in China and found that the declining efficiency due to the SARS outbreak and the slow adaptation of its economy, sales opportunities, and level of technical expertise are directly correlated with operational efficiency. In contrast with the 3PL industry in the U.S., the Chinese 3PLs tend to focus on traditional service offerings such as port management, transportation, and warehousing rather than playing the role as integrator or lead service provider.

Performance assessment denotes a continuous improvement in tools and techniques, with performance evaluations helping companies remain competitive by finding inefficiencies in existing processes in order to make for better job preparation and planning to meet customer needs and efficiency and to cut costs. Through this review of past literature, we find that most studies focus around some method of logistics performance evaluation like the traditional DEA method. Only a few attempts have so far been made at combining the period dynamic with the division network. This study follows up on Tone and Tsutsui (2014), to establish an efficiency measurement model of dynamic network DEA (DN-DEA) and Malmquist productivity index (MPI). We assume that the FMCG industry's business performances come from three divisions: Professional Products Division (PPD), Consumer Products Division (CPD), and Active Cosmetics Division (ACD). We then evaluate the performance of overall efficiency and division efficiency for the case study company. Lastly, we offer recommendations as a reference in future decision-making.

The remainder of this paper is organized as follows.  
Section 2 shows the DN-DEA method and MPI model.  
Section 3 presents the results of empirical evaluation.  
Section 4 reveals a discussion of the results.  
Section 5 offers conclusions.

## Methods

### *Framework of DN-DEA for Logistics in the FMCG Industry*

For the traditional DEA method, Charnes et al. (1978) assumed constant returns to scale (CRS) and Banker et al. (1984) assumed variable returns to scale (VRS) to measure a single efficiency indicator, which has long been used to evaluate overall efficiency. The network DEA model of Färe et al. (2007) improves upon conventional DEA's failure to analyze the performance of a division that is divided into individual sub-processes. The network DEA model explores the sources of inefficiency within individual sub-processes. Prieto and Zofio (2007), Mostafa (2009), Yu (2010), etc. utilized a multiple-stage model and developed it into a multi-stage and multi-division network framework.



Tone and Tsutsui (2009) proposed the weighted slack-based measures network DEA and in 2013 proposed the dynamic and network DEA and MPI. Tone and Tsutsui (2014) used the DN-DEA model to resolve the division linkages of a decision making unit (DMU) that carry over from periods  $t$  to  $t+1$ .

From the previous literature review, we find that issues of logistics are focused on using a structural equation model to explore the performances of logistics outsourcing processes and management. When employing the DEA method to evaluate logistics performances, it targets the comparisons of operating performances among different countries or companies at a single point in time, but fails to investigate the impact of the overall environment with time on logistics performances. This paper adds a time factor and divisions to use the DN-DEA method to evaluate logistics performances. We want to look at the relations among the effects of seasonal factors as well as the effects of transportation costs, delivery costs, picking and handling costs, return costs, etc. To assess the performance of the fast moving consumer goods (FMCG) industry, our case study is L Company and its three divisions as shown in Figure 1: Professional Products Division (PPD), Consumer Products Division (CPD), and Active Cosmetics Division (ACD). The input items are freight & pick-up costs (FPC), acceptance costs (AC), and return handling costs (RHC); the output item is sales revenue (SR); and storage costs (SC) are the link across divisions: PPD linked to CPD, or PPD linked to ACD, or CPD linked to ACD. The inventory is carried over across periods  $t$  to  $t+1$ .

#### *DN-DEA Model*

The dynamic network DEA (DN-DEA) deals with multiple divisions connected by network structure links within each period. Tone and Tsutsui (2014) proposed a dynamic network slacks-based measure (DNSBM), which combined network SBM (NSBM) (Tone and Tsutsui, 2009) with dynamic SBM (DSBM) (Tone and Tsutsui, 2010). The network structure is by means of carry-over activities between two succeeding periods. This model calculates the overall efficiency over the observed entire period, the dynamic change of a time period's efficiency, and the dynamic change of divisional efficiency.

This model has  $n$  DMUs ( $j = 1, \dots, n$ ) consisting of  $K$  divisions ( $k = 1, \dots, K$ ) over  $T$  time periods ( $t = 1, \dots, T$ ). Let  $m_k$  and  $r_k$  be the numbers of inputs and outputs of Division  $k$ , respectively. We denote the link leading from Division  $k$  to Division  $h$  by  $(k,h)$  and the set of links by  $L$ . Overall efficiency (OE) is evaluated by the following:

$$\theta_0^* = \min \frac{\sum_{t=1}^T W^t \left[ \sum_{k=1}^K W^k \left[ 1 - \frac{1}{m_k + \text{linkin}_k + \text{nbad}_k} \left( \sum_{i=1}^{m_k} \frac{S_{iok}^{t-}}{x_{iok}^t} + \sum_{(kh)_i=1}^{\text{linkin}_k} \frac{S_{o(kh)_i \text{in}}^t}{z_{o(kh)_i \text{in}}^t} + \sum_{k_l=1}^{\text{nbad}_k} \frac{S_{ok_l \text{bad}}^{(t,(t+1))}}{z_{ok_l \text{bad}}^{(t,(t+1))}} \right) \right] \right]}{\sum_{t=1}^T W^t \left[ \sum_{k=1}^K W^k \left[ 1 + \frac{1}{r_k + \text{linkout}_k + \text{ngood}_k} \left( \sum_{r=1}^{r_k} \frac{S_{rok}^{t+}}{y_{rok}^t} + \sum_{(kh)_i=1}^{\text{linkout}_k} \frac{S_{o(kh)_i \text{out}}^t}{z_{o(kh)_i \text{out}}^t} + \sum_{k_l=1}^{\text{ngood}_k} \frac{S_{ok_l \text{good}}^{(t,(t+1))}}{z_{ok_l \text{good}}^{(t,(t+1))}} \right) \right] \right]}$$

(1)

$$x_{ok}^t = X_k^t \lambda_k^t + s_{ko}^{t-} \quad (\forall k, \forall t)$$

$$y_{ok}^t = Y_k^t \lambda_k^t - s_{ko}^{t+} \quad (\forall k, \forall t)$$

$$e \lambda_k^t = 1 \quad (\forall k, \forall t)$$

$$\lambda_k^t \geq 0, \quad s_{ko}^{t-} \geq 0, \quad s_{ko}^{t+} \geq 0, \quad (\forall k, \forall t)$$

$$Z_{(kh) \text{free}}^t \lambda_h^t = Z_{(kh) \text{free}}^t \lambda_k^t \quad (\forall (k, h) \text{ free}, \forall t)$$

$$Z_{(kh) \text{free}}^t = (Z_{1(kh) \text{free}}^t, \dots, Z_{n(kh) \text{free}}^t) \in R^{L_{(h) \text{free}} \times n}$$

$$Z_{o(kh) \text{fix}}^t = Z_{(kh) \text{fix}}^t \lambda_h^t \quad (\forall (k, h) \text{ fix}, \forall t)$$

$$Z_{o(kh) \text{fix}}^t = Z_{(kh) \text{fix}}^t \lambda_k^t \quad (\forall (k, h) \text{ fix}, \forall t)$$

$$Z_{o(kh) \text{in}}^t = Z_{(kh) \text{in}}^t \lambda_k^t + S_{o(kh) \text{in}}^t \quad ((kh) \text{in} = 1, \dots, \text{linkin}_k)$$

$$Z_{o(kh) \text{out}}^t = Z_{(kh) \text{out}}^t \lambda_k^t - S_{o(kh) \text{out}}^t \quad ((kh) \text{out} = 1, \dots, \text{linkout}_k)$$

$$\sum_{j=1}^n z_{jk_l \alpha}^{(t,(t+1))} \lambda_{jk}^t = \sum_{j=1}^n z_{jk_l \alpha}^{(t,(t+1))} \lambda_{jk}^{t+1} \quad (\forall k; \forall k_l; t = 1, \dots, T-1)$$

$$Z_{ok_l \text{good}}^{(t,(t+1))} = \sum_{j=1}^n z_{jk_l \text{good}}^{(t,(t+1))} \lambda_{jk}^t - s_{ok_l \text{good}}^{(t,(t+1))} \quad k_l = 1, \dots, \text{ngood}_k; \forall k; \forall t$$

$$Z_{ok_l \text{bad}}^{(t,(t+1))} = \sum_{j=1}^n z_{jk_l \text{bad}}^{(t,(t+1))} \lambda_{jk}^t - s_{ok_l \text{bad}}^{(t,(t+1))} \quad k_l = 1, \dots, \text{nbad}_k; \forall k; \forall t$$

$$Z_{ok_l \text{free}}^{(t,(t+1))} = \sum_{j=1}^n z_{jk_l \text{free}}^{(t,(t+1))} \lambda_{jk}^t - s_{ok_l \text{free}}^{(t,(t+1))} \quad k_l = 1, \dots, \text{nfree}_k; \forall k; \forall t$$

$$Z_{ok_l \text{fix}}^{(t,(t+1))} = \sum_{j=1}^n z_{jk_l \text{fix}}^{(t,(t+1))} \lambda_{jk}^t - s_{ok_l \text{fix}}^{(t,(t+1))} \quad k_l = 1, \dots, \text{nfix}_k; \forall k; \forall t$$

$$s_{ok_l \text{good}}^{(t,(t+1))} \geq 0, \quad s_{ok_l \text{bad}}^{(t,(t+1))} \geq 0, \quad s_{ok_l \text{free}}^{(t,(t+1))} : \text{free}(\forall k_l; \forall t) \quad (2)$$

The period and division efficiencies are evaluated by the following:

$$\tau_0^{t*} = \frac{\sum_{k=1}^K W^k \left[ 1 - \frac{1}{m_k + \text{linkin}_k + \text{nbad}_k} \left( \sum_{i=1}^{m_k} \frac{S_{iok}^{t-}}{x_{iok}^t} + \sum_{(kh)_i=1}^{\text{linkin}_k} \frac{S_{o(kh)_i \text{in}}^t}{z_{o(kh)_i \text{in}}^t} + \sum_{k_l=1}^{\text{nbad}_k} \frac{S_{ok_l \text{bad}}^{(t,(t+1))}}{z_{ok_l \text{bad}}^{(t,(t+1))}} \right) \right]}{\sum_{k=1}^K W^k \left[ 1 + \frac{1}{r_k + \text{linkout}_k + \text{ngood}_k} \left( \sum_{r=1}^{r_k} \frac{S_{rok}^{t+}}{y_{rok}^t} + \sum_{(kh)_i=1}^{\text{linkout}_k} \frac{S_{o(kh)_i \text{out}}^t}{z_{o(kh)_i \text{out}}^t} + \sum_{k_l=1}^{\text{ngood}_k} \frac{S_{ok_l \text{good}}^{(t,(t+1))}}{z_{ok_l \text{good}}^{(t,(t+1))}} \right) \right]}$$

(3)

$$\delta_{0k}^{**} = \frac{\sum_{t=1}^T W^t \left[ 1 - \frac{1}{m_k + \text{linkin}_k + \text{nbad}_k} \left( \sum_{i=1}^{m_k} \frac{S_{io_k}^{t-}}{X_{io_k}^t} + \sum_{(kh)_i=1}^{\text{linkin}_k} \frac{S_{o(kh)_i \text{in}}^t}{Z_{o(kh)_i \text{in}}^t} + \sum_{k_i=1}^{\text{nbad}_k} \frac{S_{ok_i \text{bad}}^{(t,(t+1))}}{Z_{ok_i \text{bad}}^{(t,(t+1))}} \right) \right]}{\sum_{t=1}^T W^t \left[ 1 + \frac{1}{r_k + \text{linkout}_k + \text{ngood}_k} \left( \sum_{r=1}^{v_k} \frac{S_{rok}^{t+}}{Y_{rok}^t} + \sum_{(kh)_i=1}^{\text{linkout}_k} \frac{S_{o(kh)_i \text{out}}^t}{Z_{o(kh)_i \text{out}}^t} + \sum_{k_i=1}^{\text{ngood}_k} \frac{S_{ok_i \text{good}}^{(t,(t+1))}}{Z_{ok_i \text{good}}^{(t,(t+1))}} \right) \right]} \quad (\forall k) \quad (4)$$

$$P_{0k}^{r*} = \frac{1 - \frac{1}{m_k + \text{linkin}_k + \text{nbad}_k} \left( \sum_{i=1}^{m_k} \frac{S_{io_k}^{t-}}{X_{io_k}^t} + \sum_{(kh)_i=1}^{\text{linkin}_k} \frac{S_{o(kh)_i \text{in}}^t}{Z_{o(kh)_i \text{in}}^t} + \sum_{k_i=1}^{\text{nbad}_k} \frac{S_{ok_i \text{bad}}^{(t,(t+1))}}{Z_{ok_i \text{bad}}^{(t,(t+1))}} \right)}{1 + \frac{1}{r_k + \text{linkout}_k + \text{ngood}_k} \left( \sum_{r=1}^{v_k} \frac{S_{rok}^{t+}}{Y_{rok}^t} + \sum_{(kh)_i=1}^{\text{linkout}_k} \frac{S_{o(kh)_i \text{out}}^t}{Z_{o(kh)_i \text{out}}^t} + \sum_{k_i=1}^{\text{ngood}_k} \frac{S_{ok_i \text{good}}^{(t,(t+1))}}{Z_{ok_i \text{good}}^{(t,(t+1))}} \right)} \quad (\forall k; \forall t)$$

$$Z_{ok}^{(0,1)} = \sum_{j=1}^n Z_{jlk}^{(0,1)} \lambda_{jk}^l \quad (\forall l_k) \quad (5)$$

### MPI of the DN-DEA Model

The Malmquist index evaluates the efficiency change of a DMU between time periods  $t$  and  $t+1$ . It is defined as the product of Catch-up and Frontier-shift terms. The catch-up term relates to the degree of efforts that the DMU attained for improving its efficiency, while the frontier-shift term reflects the change in the efficient frontiers surrounding the DMU between the two time periods  $t$  and  $t+1$ .

The main variable is the division catch-up index (DCU), evaluated by the following:

$$DCU = \gamma_{ok}^{t \rightarrow t+1} = \frac{\rho_{ok}^{t+1*}}{\rho_{ok}^{t*}} \quad (t = 1, \dots, T-1; k = 1, \dots, K; o = 1, \dots, n) \quad (6)$$

$$\rho_{ok}^{t*} = \frac{1 - \frac{1}{m_k + \text{linkin}_k + \text{nbad}_k} \left[ \sum_{i=1}^{m_k} \frac{S_{io_k}^{t-}}{X_{io_k}^t} + \sum_{(kh)_i=1}^{\text{linkin}_k} \frac{S_{o(kh)_i \text{in}}^t}{Z_{o(kh)_i \text{in}}^t} + \sum_{k_i=1}^{\text{nbad}_k} \frac{S_{ok_i \text{bad}}^{(t,t+1)}}{Z_{ok_i \text{bad}}^{(t,t+1)}} \right]}{1 + \frac{1}{r_k + \text{linkout}_k + \text{ngood}_k} \left[ \sum_{r=1}^{v_k} \frac{S_{rok}^{t+}}{Y_{rok}^t} + \sum_{(kh)_i=1}^{\text{linkout}_k} \frac{S_{o(kh)_i \text{out}}^t}{Z_{o(kh)_i \text{out}}^t} + \sum_{k_i=1}^{\text{ngood}_k} \frac{S_{ok_i \text{good}}^{(t,t+1)}}{Z_{ok_i \text{good}}^{(t,t+1)}} \right]} \quad (k = 1, \dots, K; t = 1, \dots, T) \quad (7)$$

The values of DCU are  $>1$ ,  $=1$ , and  $<1$ , and they indicate progression, status quo, and reversion in the catch-up effect, respectively. We define the divisional frontier-shift effect (DFS) from  $t$  to  $t+1$  in the following equation (8) of the non-radial Malmquist model, which denotes DFS by  $\sigma_{ok}^{t \rightarrow t+1}$ . If a division has no inputs or no outputs, then its DFS is unity.

$$DFS = \sigma_{ok}^{t \rightarrow t+1} = \sqrt{\sigma_{ok}^t \sigma_{ok}^{t+1}} \quad (8)$$

Using DCU and DFS above, we define the divisional Malmquist index (DMI) by their product, evaluated by the following:

$$\mathbf{DMI} = \mathbf{DCU} \times \mathbf{DFS} = \mu_{ok}^{t \rightarrow t+1} = Y_{ok}^{t \rightarrow t+1} \sigma_{ok}^{t \rightarrow t+1} \quad (t = 1, \dots, T-1; k = 1, \dots, K; o = 1, \dots, n) \quad (9)$$

The overall Malmquist index (OMI) can be obtained from the weighted geometric mean of the divisional Malmquist indices, achieved by the following:

$$\mathbf{OMI} = \mu_o = \prod_{k=1}^K (\mu_{ok})^{w_k} \quad (o = 1, \dots, n) \quad (10)$$

Here,  $\mu_{ok}$  is the weighted geometric mean of  $\mu_{ok}^{t \rightarrow t+1} (t = 1, \dots, T-1)$ , and  $w_k \geq 0$  is

$$\sum_{k=1}^K w_k = 1$$

the weight to division  $k$  with

### *Definitions of Variables under Evaluation*

For the assumptions of input items and output items in the three divisions, we refer to Hazen et al. (2012), Bilgen and Günther (2010), and Thatte et al. (2013). The input items are freight & pick-up costs (FPC), acceptance costs (AC), and return handling costs (RHC), and the output item is sales revenue (SR). We employ the intermediate links between PPD and CPD or PPD and ACD or CPD and ACD as storage costs (SC). Tone and Tsutsui (2014) proposed that this indicates desirable carry-over, e.g. profit carried forward and net earned surplus carried to the next term. Thus, in this study inventory is assumed to carry over across periods  $t$  to  $t+1$ . The variables used to evaluate the division efficiencies of PPD, CPD, and ACD include individual FPC, AC, and RHC as the inputs and SR as the output. The intermediate link from PPD and CPD or PPD and ACD or CPD and ACD is individual SC.

From period  $t$  to period  $t+1$ , inventory is carried over in the divisions. We present the definitions of variables as follows.

- . Freight & pick-up costs: The individual costs are in accordance with the needs of the customer-ordered items that are removed from their storage spaces to the packing departments of the company's three divisions every month. The costs encompass positive products and accessories, measured in NT\$ (New Taiwan dollars).
- . Acceptance costs: The individual overall costs of removed containers, check boxes and batch number, valid period of the company's three divisions every month. The amount contains the overall costs of products removed from the container and all check processes, measured in NT\$.
- . Return handling costs: The individual total costs of handling returned products by the company's three divisions every month. The costs include the storage of returned products, post-classification to see whether sales can sell the products to a corre-

sponding warehouse, and scrap sorting information for reporting and follow-up treatment costs, measured in NT\$.

. Sales revenue: The individual sales revenue of the company's three divisions every month, measured in NT\$.

. Storage costs: The individual storage costs of the company's three divisions every month. They contain the provisions for goods purchase inspection, storage, shipping, returns, and staff expenses, measured in NT\$.

. Inventory: The individual inventory expenses of the company's three divisions every month, made up of normal products, dulled and damaged goods, and stored at third-party logistics providers, measured in NT\$.

The empirical data include information of annual reports and financial reports in the FMCG industry for the period 2011-2013, with L Company as our case study. Table 1 provides the detailed descriptive statistics of the empirical data. The mean and standard deviation of FPC are respectively NT\$157,000 and NT\$126,360; NT\$183,592 and NT\$12,449 for AC; NT\$61,485 and NT\$81,522.86 for RHC; NT\$2,812,200 and NT\$1,457,284 for SC; NT\$98,983,000 and NT\$6,274,820 for Inventory; and NT\$69,325,000 and NT\$44,354,800 for SR.

## Results and Discussion

Table 2 shows the overall efficiency and division efficiency of PPD, CPD, and ACD for the three divisions from 2011 to 2013. The mean values of overall efficiency (OE), PPD efficiency (PPDE), CPD efficiency (CPDE), and ACD efficiency (ACDE) in order are 0.9417, 0.9431, 0.9463, and 0.9606, while the standard deviation in order are 0.0227, 0.0266, 0.0297, and 0.0063. The best overall division efficiency during 2011-2013 is ACDE, followed in order by CPDE and PPDE. The better performance of OE is in February, April, November, and December, and the worst performance of OE is in June. PPDE shows good performance over 8 months, but the difference is very large between the good and bad performances; its worst performance value is in June at only 0.4406, and so the performance management strategy of this division could be improved. CPDE's better performances are in February, April, July, November, and December, while its worst performance is in March. ACDE's better performances are in February, April, November, and December, while its worst performance is in June. In order to compare the results of the mean values of PPDE, CPDE, ACDE, and OE, we also evaluate the efficiency scores for each period during 2011-2013, shown in Figure 2. The results indicate that the mean values of period efficiency for the FMCG industry in L Company have different variances. The operating performance of ACDE is the most stable during 2011-2013. The operating performances of CPDE, PPDE, and OE are relatively poor in 2012, implying that the overall business strategy should have been reviewed in 2012.

Figure 3 illustrates the operating performances during the period 2011-2013 for every month. We find the operating performance is relatively poor in June of 2011 and 2012, and for OE the operating performance is relatively poor in January 2013. We next compare the operating performances of 2011, 2012, 2013 and OE (overall efficiency), showing that it is the worst in March, June, and October of 2012.

The operating performance is good in January of 2011-2012, but significantly decreases in January of 2013. The operating performance of March significantly decreases in 2011 and 2012, but significantly increases in 2012 and 2013. The worst operating performance is June of 2012, and the operating performance is relatively poor in June of 2011 and OE. The operating performance of October significantly decreases in 2011 and 2012, but significantly increases in 2012 and 2013.

Table 1. Descriptive statistics

Variable	Max	Min	Mean	Std. Dev.
Freight & packing cost (NT\$)	4,898,985	373,310	157,000	126,360
Acceptance cost (NT\$)	701,114	37,376	183,592	12,449
Return handling cost (NT\$)	335,794	769	61,485	81,522.86
Storage cost (NT\$)	4,625,454	2,312,877	2,812,200	457,284
Inventory (NT\$)	252,000,000	27,257,535	98,983,000	6,274,820
Sales revenue (NT\$)	212,000,000	19,980,596	69,325,000	44,354,800

Table 2. Overall efficiency and division efficiency

Month	Overall efficiency		PPD efficiency		CPD efficiency		ACD efficiency	
	Mean	Standard	Mean	Standard	Mean	Standard	Mean	Standard
1	0.8928	0.1634	0.8838	0.2012	0.9429	0.0998	0.9429	0.0999
2	1	0	1	0	1	0	1	0
3	0.9582	0.0381	1	0	0.7782	0.2322	0.9999	0.0002
4	1	0	1	0	1	0	1	0
5	0.9572	0.0436	0.8895	0.1951	0.9684	0.0337	0.9725	0.0278
6	0.6598	0.1638	0.4406	0.1787	0.7925	0.1455	0.8153	0.1135
7	0.9777	0.0375	1	0	1	0	0.9284	0.1240
8	0.9999	0.0002	1	0	0.9997	0.004	0.9999	0.0001
9	0.9815	0.0166	1	0	0.9291	0.1222	0.9377	0.1080
10	0.8706	0.1556	0.6417	0.1898	0.9443	0.0965	0.9302	0.1208
11	1	0	1	0	1	0	1	0
12	1	0	1	0	1	0	1	0
Total	0.9417	0.0227	0.9431	0.0266	0.9463	0.0297	0.9606	0.0063



We note that MPI contains the catch-up effect (or called technical efficiency change) and the frontier-shift effect (or called technical change efficiency) terms. It is used to evaluate the efficiency change of a DMU between two time periods  $t$  and  $t+1$ . The catch-up effect is evaluated by the degree of efforts that the DMU put forth at improving its efficiency. The frontier-shift effect shows the change in the efficient frontiers surrounding the DMU between the two time periods. In this study the means of catch-up, frontier-shift, and MPI are contained in the three divisions of PPD, CPD, and ACD in every time period. When (catch-up), (frontier-shift), and  $MPI > 1$ , Tone and Tsutsui (2009) and Tone and Tsutsui (2014) stated it indicates progress in relative efficiency during the time period, while (catch-up, frontier-shift, and  $MPI = 1$ ) and (catch-up, frontier-shift and  $MPI < 1$ ) indicate the status quo and reversion in efficiency, respectively.

Table 3 lists the catch-up terms of PPD, CPD, ACD, and overall for the period 2011-2013. It shows that the mean value of technical efficiency change (TEC) is between 0.8072 and 1.1196. The mean values of PPD, CPD, ACD, and overall in order are 0.9921, 1.0007, 0.9998, and 0.9975, and the standard deviations in order are 0.0682, 0.0611, 0.0598, and 0.0629. There is a slight progress trend for TEC of CPD in the overall average, its  $TEC > 1$ , shows the slight reversion trend for TEC of PPD,

Table 3. Result of catch-up effect from 2011 to 2013

Month	Technical Efficiency Change			
	PPD	CPD	ACD	Overall
1	0.8072	0.9103	0.9103	0.8745
2	1	1	1	1
3	1	1.1196	1	1.0384
4	1	1	1	1
5	1.0202	1.0133	1.0134	1.0156
6	1.1139	1.0773	1.0790	1.0899
7	1	1	0.8862	0.9605
8	1.0002	1	1.0001	1.0001
9	1	0.888	1.1091	0.9949
10	0.9640	1	1	0.9879
11	1	1	1	1
12	1	1	1	1
Average	0.9921	1.0007	0.9998	0.9975
Std. Dev.	0.0682	0.0611	0.0598	0.0629

Here, the MPI numbers are the geometric mean.

ACD, and overall. The TEC of PPD shows a progressing trend in May, June, and August, but shows the status quo and reversion in the other months. The TEC of CPD shows a progressing trend in March, May, and June, but shows the status quo and reversion in the other months. The TEC of ACD shows a progressing trend in May,

June, August, and September, but shows the status quo and reversion in the other month. The TEC of overall shows a progressing trend in March, May, June, and August, but shows the status quo and reversion in the other months. The frontier-shift effect (technical change efficiency, TCE) term shows the change in the efficient frontiers surrounding the DMU between the two time periods. We employ TCE in order to totally evaluate the efficiency change of all months. Table 4 lists the TCE of all months in 2011-2013. The mean values of TCE for PPD, CPD and overall in order are 1.2709, 0.8539, 1.0721, and 1.0518, and the standard deviations in order are 0.2530, 0.1518, 0.1535, and 0.1831. This shows the TCE of CPD has a regressing trend, while the TCE of PPD, ACD, and overall has a progressing trend. The TCE of PPD shows a progressing trend in all months of 2011-2013. The TCE of CPD shows a progressing trend in February, March, and April versus a regressing trend in the other months. The TCE of ACD shows a regress trending in May, November, and December, while it has a progressing trend in the other months. The TCE of overall shows a regressing trend in January, May, September, and December versus a progressing trend in the other months.

Tables 3 and 4 present the MPI values in every month and PPD, CPD, ACD and overall. Figure 4 illustrates the progress ability of every month and PPD, CPD, ACD and overall in 2011-2013. The MPI value of overall has the largest progress ability in

Table 4. Result of frontier-shift effect from 2011 to 2013 years

Month	Technical Change Efficiency			
	PPD	CPD	ACD	Overall
1	1.1150	0.7328	1.1677	0.9845
2	1.1675	1.0054	1.0113	1.0588
3	1.0287	1.0820	1.2604	1.1195
4	1.0201	1.1317	1.2368	1.1261
5	1.2149	0.7564	0.9950	0.9706
6	1.5574	0.8019	1.1098	1.1149
7	1.8694	0.5894	1.0137	1.0375
8	1.2431	0.7942	1.2672	1.0775
9	1.1670	0.7187	1.1163	0.9783
10	1.2430	0.9164	1.0564	1.0636
11	1.5227	0.8619	0.8292	1.0286
12	1.1025	0.8562	0.8008	0.9109
Average	1.2709	0.8539	1.0721	1.0518
Std. Dev.	0.2530	0.1581	0.1535	0.1831

Here, the MPI numbers are the geometric mean.

June, while OE has the worst in the same month of Table 2, indicating that management strategies should have been improved. We define good efficiency when the OE value is greater than or equal to the total average value, whereas the reverse is called bad efficiency. The OE and MPI of overall exhibit that the operating perform-

ance is relatively poor in January. The MPI value of PPD has the largest progress ability in July, and PPDE is also good in Table 2, indicating good operating performance in this month. PPDE has the worst value in June, while the MPI value of PPD shows a progressing tend, meaning management strategies likely improved. The reasons for bad logistics performances come from FPC and RHC in June. CPDE has the worst value in March, but the MPI value of CPD shows a progressing tend, indicating management strategies likely improved. The reasons for bad logistics performances come from AC and RHC in March. ACDE has the worst value in June, and the MPI value of ACD shows a regressing tend, meaning business strategies should have been improved. June is a relatively slack season in ACD, and the path only has scattered shipments, resulting in relatively poor logistics performance.

We employ the Wilcoxon Scores test to see the relations among divisions' efficiency, TEC, TCE, and MPI between PPD and CPD or PPD and ACD or CPD and ACD. The findings show that  $p > 0.05$  for both division efficiency and TEC, and so the divisions do not have a significant correlation with each other. The p values of TCE and MPI for PPD and CPD in order are 0.0008 and 0.0034, as well as for PPD and ACD in order are 0.0406 and 0.0476 ( $p < 0.05$ ). The test results show that TCE of CPD is better than PPD, TCE of ACD is better than PPD, MPI of CPD is better than PPD, and MPI of ACD is better than PPD.

The PPD, CPD, and ACD divisions exhibit relatively poor efficiency and progressing trends of MPI in January, March, June, and October. This indicates that their distribution of resources must be improved. Moreover, the overall management strategy of the FMCG industry for the case study of L Company should adjust the inputs and output with the distribution of resources among divisions and various months, in order to achieve the target of high efficiency.

### Conclusions and Policy Implications

In this paper we consider the linking activities among our case study firm's three divisions and the carry-over activities between two consecutive periods, in order to evaluate the performance of the FMCG industry over the period from 2011 to 2013. We calculate overall efficiency from the division efficiencies of the three divisions, as well as TEC, TCE, MPI, overall MPI, etc.

The logistics performances present the same trend in the three divisions of PPD, CPD, and ACD, with the best performance in 2011 and the worst performance in 2012. The overall performance is showed as expected in 2012, as a result of it gets to pursuit of performance while allowing a small amount of shipments to meet customer demand. It is used the logistics outsourcing costs of the updated quote and outsourcing vendors move the warehouse. It leads to the need to pay two warehouse storage costs and outsourcing vendor employees are not familiar with the company's products, so it is resulting in inefficiency.

The TCE is the main reason to cause changes in average total factor productivity to have a progressing trend for CPD in 2011 to 2012 and 2012 to 2013. TCE shows a

progress trending due to the progressing trend of average total factor productivity for PPD in 2011 to 2012. TCE also show a regressing trend due to average total factor productivity showing a regressing trend for PPD in 2012 to 2013. TCE presents a regressing trend due to a regressing trend in average total factor productivity for ACD in 2011 to 2012. Lastly, TCE shows a progressing trend due to average total factor productivity showing a progressing trend for PPD in 2012 to 2013.

Through the DN-DEA and MPI of the Wilcoxon Scores tests, we see that the divisions' efficiency and TEC do not have any significant differences. In terms of TCE, CPD and ACD both show significant differences with PPD, because CPD and ACD have a change in logistics policy, such as increasing the value of a single order to increase the load factor of shipping boxes, thereby reducing FPC. Through the case study of L Company, we find that the FMCG industry should adjust the inputs and output through the distribution of resources among divisions and months, in order to achieve the target of high efficiency.

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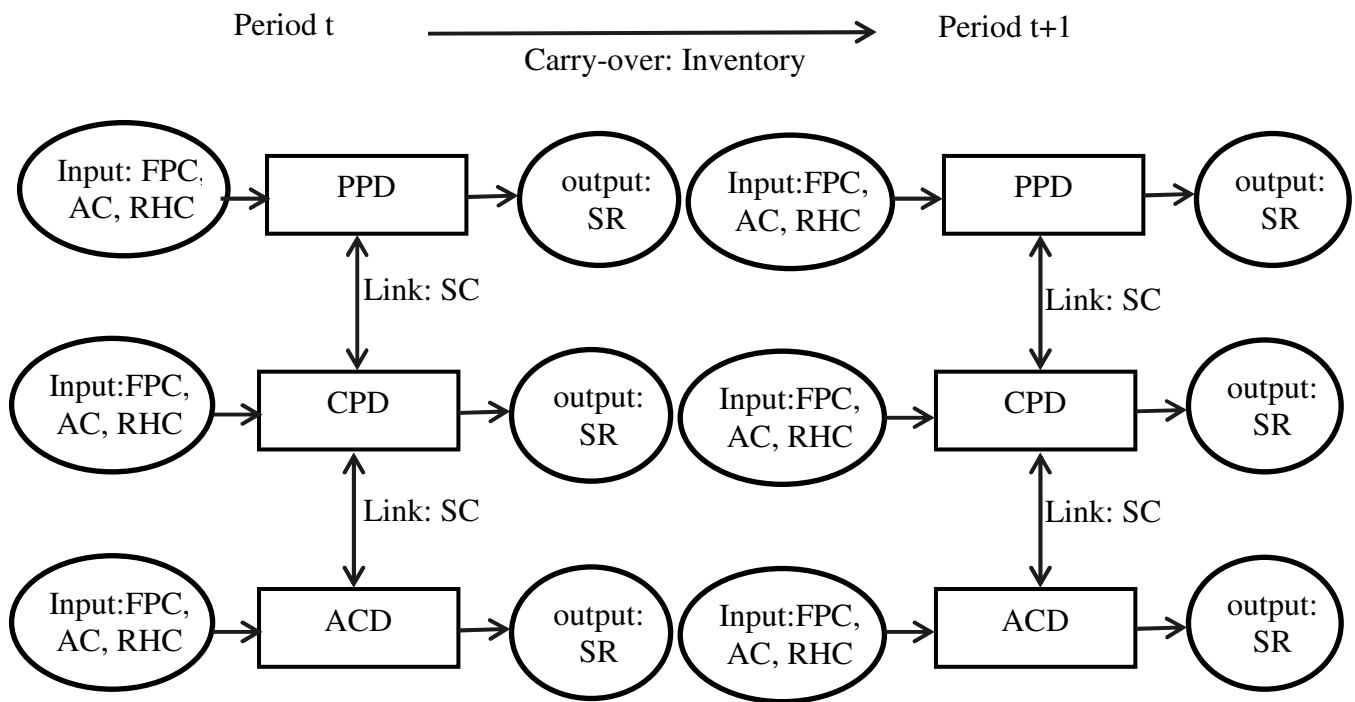


Figure 1. The structure diagram of this case study's DN-DEA

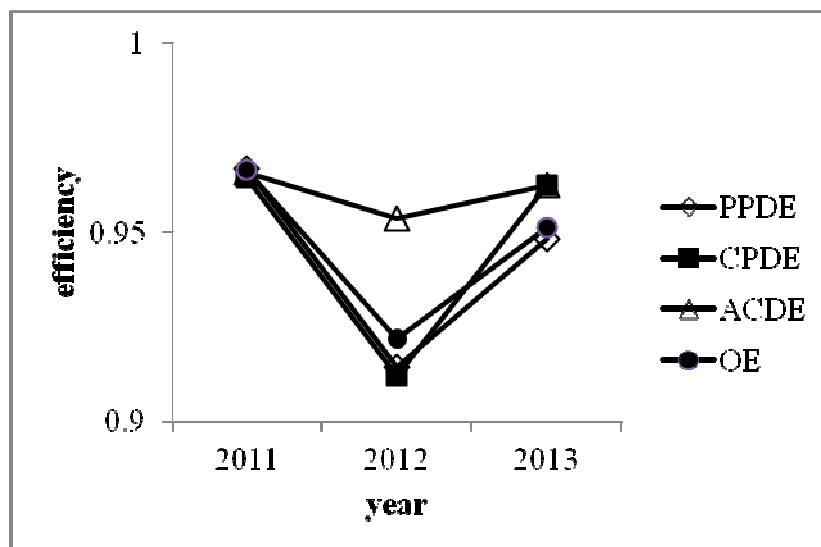


Figure 2. The division and overall efficiencies for the period 2011-2013

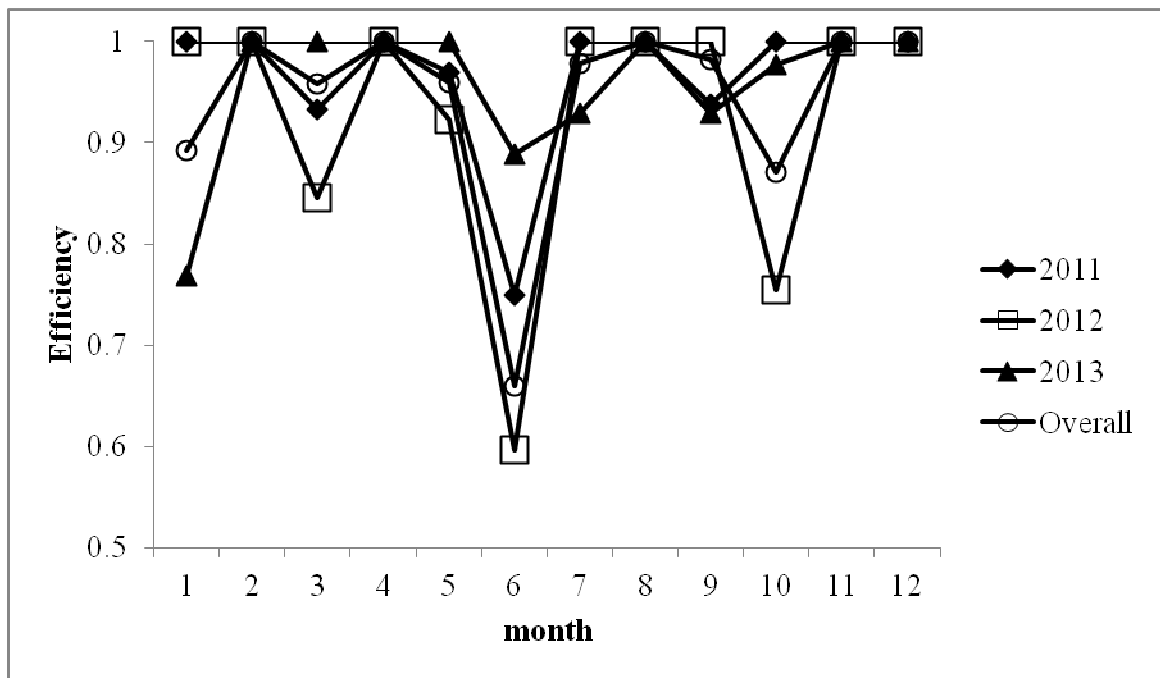


Figure 3. Overall efficiency of every month for the years 2011-2013

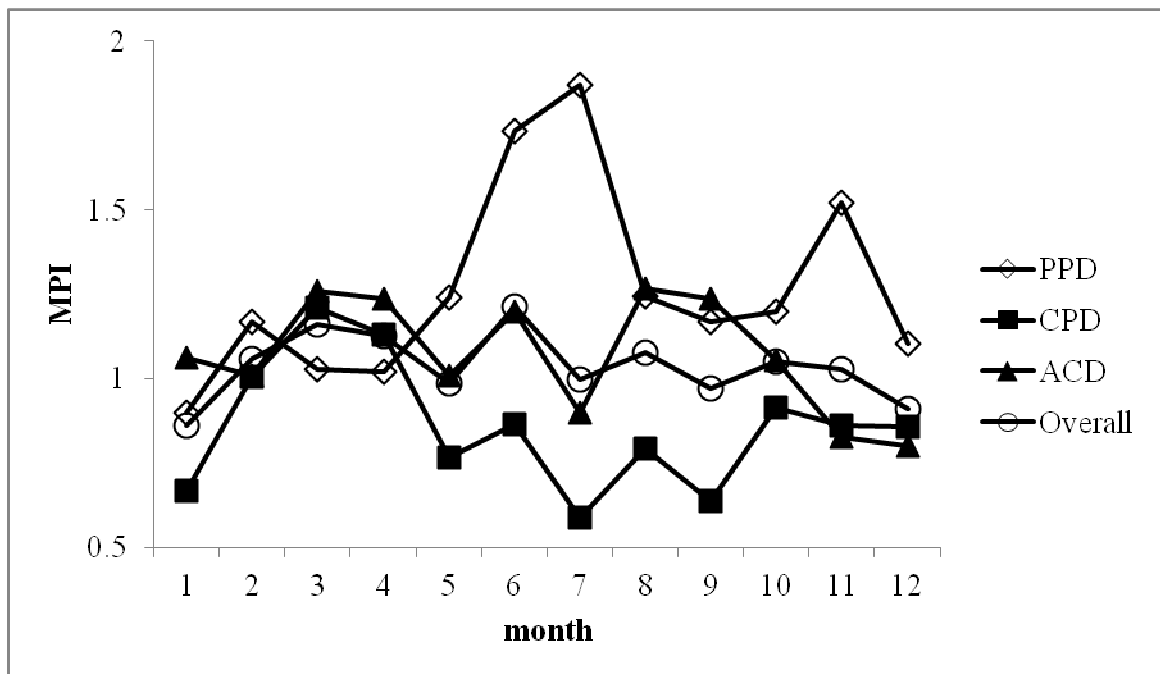
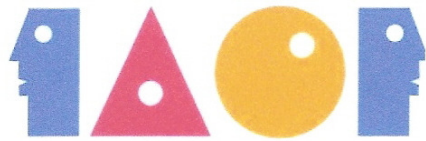


Figure 4. The divisions' MPI and overall MPI of every month



THE IMPACT OF PERCEIVED SUPERVISOR SUPPORT AND  
WORKPLACE FRIENDSHIP ON ORGANIZATIONAL CITIZENSHIP  
BEHAVIOR IN SPORT CENTER

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Abstract

The purpose of this study is to verify the relationship between the perceived supervisor support and workplace friendship on organizational citizenship behavior. Employees at 14 different sport centers in Taiwan are selected to be research respondents. A total of 500 questionnaires are distributed and 405 questionnaires are collected, with valid response rate of 88.2%. The results show that the perceived supervisor support and the workplace friendship have a positive impact on organizational citizenship behavior. The perceived supervisor support has a positive impact on the workplace friendship. The Workplace friendship has partially mediated effect. The study results can be used as a theoretical foundation for sport center management.

Keywords: Civil Sports Center, Concern of Supervisors, Friendship, Citizenship Behavior

## Introduction

In recent years Taiwan government has taken huge steps to encourage sports. In recognition of the importance of sports, the government has built sport centers in metropolitan areas to motivate and encourage local citizens to participate in sports of their choice. Sport centers primarily comprise of indoor facilities, and serve as a focal point for community. Indoor facilities typically include swimming pool, indoor sport court (for badminton, table tennis, and basketball), fitness classes, aerobic classes, indoor climbing facilities and combative sport programs (ex. taekwondo and karate). Local sports competitions are sometimes held in sports centers (Chou, Kang, & Kao, 2012). Since most sport centers are publicly owned and privately managed, citizens have easy access to the facility due to lower entry fee (Kuo, Hsieh, & Lee, 2016).

In fact, more and more enterprises start to believe that improved employees' organizational citizenship behaviors result in capabilities and competence for sustainable businesses (Lamm, Tosti-Kharas, & King, 2015). According to Norris-Watts and Levy (2004), employees' organizational citizenship behaviors are not learned through individual work achievement, but through teamwork and altruistic behaviors. Bratu (2015) further stated that demonstrable organizational citizenship behaviors tend to increase work efficiency, reduce production cost, and generate more profits.

Organizational research discovered that employees' high perceived supervisor support contributes positive work attitude toward the management and organization (Chi, 2014). Moreover, management concerns about employee wel-

fare increase employees' sense of responsibility at work and employees are thus more likely to give back to the organization (Othman & Nasurdin, 2013). As a result, the perceived supervisor support is a prerequisite that determines employees' work satisfaction (Gok, Karatuna, & Karaca, 2015) and enhances their organizational citizenship behaviors (Chen, Wang, Chang, & Hu, 2008).

Workplace friendship is another source of support. Kram and Isabella (1985) found that workplace friendship sticks employees together, creates an inspiring work environment, establishes a cohesive team, and retains employees. Such friendship has a significant positive impact on not only individual's work performance but also employees' organizational citizenship behaviors (Chen, 2011; Methot, Lepine, Podsakoff, Christian, 2016).

Based on literature, the present research intends to understand impacts of employees' perceived supervisor support and workplace friendship on organizational citizenship behaviors in sport centers. The research hopes that there are some positive effects that lead to organizational citizenship behaviors. The research hypotheses are proposed as follows.

### Literature Review and Conceptual Framework Development

#### *The Relationship between Perceived Supervisor Support and Organizational Citizenship Behavior*

Employees perceive management's care, concerns, and assistance as a support system. The higher employees perceive management support, the more

likely they are to stay at work (Chi, 2014). Actually management support has been reported to have positive impacts on employees in many different aspects. Organ (1988) defined organizational citizenship behavior as a person's voluntary commitment within an organization or company that is not part of his in-role behavior. From the perspective of social exchange theory, human interactions and exchanges are a kind of rational choices. Employees who receive management's support, encouragement, resources, and rewards are more likely to be motivated to give positive feedback back to management and organization. Simply put, they commit themselves to work harder to achieve better performance (Coffey, Samuel, Collins, & Morris, 2014; Clark, Zickar, & Jex, 2014). Empirical literature evidence suggested that perceived supervisor support has positive effects on employees' organizational citizenship behaviors. Even with no management's rewards, high level of perception of supervisor support still drives employees to complete their tasks (Cheung, 2013). Therefore, the hypothesis 1 of the research was proposed as follows:

H1: Employees' perceived supervisor support has a positive impact on the organizational citizenship behavior.

*The Relationship between Workplace Friendship and Organizational Citizenship Behavior*

Berman, West, and Richter (2002) indicated workplace friendship is a human relationship naturally developed within an organization or company. It creates a culture of commitment and trust, and with core values conducive to experience sharing (Yen, Lin, Huang, &

Teng, 2011). This friendship is strengthened through positive emotional support, information/equipment sharing, healthy competition, and resource assistance. More importantly, a positive workplace friendship builds a cohesive team and improves the service quality (Sias, Smith, & Avdeyeva, 2003).

In addition, Williams and Anderson (1991) considered organizational citizenship behavior to be an act of altruism and a voluntary commitment to organization outside the individual's responsibility. Similarly, a mutually beneficial relationship enhances peer interaction, which in turn builds team cohesiveness and maintains peer trust. In other word, close peer friendship usually leads to smooth business operations. Literature evidence showed that peer friendship has a positive effect on employees' organizational citizenship behaviors. Thus, the research hypothesis 2 was formulated as follows:

H2: Employees' workplace friendship has a positive impact on the organizational citizenship behavior.

*The Relationship between Perceived Supervisor Support and Workplace Friendship*

Perceived supervisor support refers to feelings of concerns, care, encouragement, acknowledgement, and motivation that an employee can possibly feel about his management (Chi, 2014). The level of employees' perception of supervisor support directly influences the supervisor-employee relationship (Chen, 2011). In social exchange theory, one party with an abundance of resources encourages the other to use some resources in order to complete tasks and attain team objectives, and the

idea of trading resources usually result in employees' voluntary feedback (Wang, 2009). In consistent with early study, Chin (2014) stated that supervisors who emotionally and financially support employees are more likely to establish trusting rapports with their employees and maintain a good relationship. As a result, employees demonstrate positive attitude at work and strive for improved work performance. Empirical evidence also discovered that employees' positive perception of supervisor support has positive significant effects on workplace friendship, and reduces workplace stress (Gok, Karatuna, & Karaca, 2015). Therefore, the hypothesis 3 was proposed as follows:

H3: Employees' perceived supervisor support has a positive impact on the workplace friendship.

## Method

### *Data Collection*

Research subjects were employees who at least have one year of work experience at sport centers in New Taipei city. They were staff, supervisors, directors and managers. Five out of 14 sport centers currently running were selected. A hundred surveys were distributed to each sport center. A total of 500 surveys were distributed and a total of 405 surveys (81%) were received for data analysis.

### *Measurements*

Basic variables were sex, age, education, marital status, job position, and years of work experience.

The perceived supervisor support scale was a modified version of Coffey,

Samuel, Collins and Morris (2014). It consisted of 8 items (4 items for instrumental support and 4 items for emotional support) on a 5-point Likert scale, ranging from 1 being strongly disagree, 2 being disagree, 3 being neutral, 4 being agree, to 5 being strongly agree.

The workplace friendship scale was adapted from Wang (2016). The scale was comprised of 5 instrumental support and 5 emotional support. Ten items were measured using a 5-point Likert scale, ranging from 1 being strongly disagree, 2 being disagree, 3 being neutral, 4 being agree, to 5 being strongly agree.

The organizational citizenship behavior scale was modified from Chen, Yu, and Wang (2007). The scale had three constructs and 13 items: 5 in-role behaviors, 5 organizational citizenship behaviors directed toward individual (OCB-I), and 3 organizational citizenship behaviors directed toward organization (OCB-O). Thirteen items were measured on a 5-point Likert scale, ranging from 1 being strongly disagree, 2 being disagree, 3 being neutral, 4 being agree, to 5 being strongly agree.

### *Measurement Model*

This study adopted a partial least squares model and the Warp PLS version 5.0 statistical software developed by Kock (2017) to verify all scales' validity and reliability. According to the suggestion by Hulland (1999), an analysis of the validity and reliability of all relevant scales in a model shall examine reliability, convergent validity, and discriminant validity.

### *Reliability*

According to Fornell and Larcker (1981), the composite reliability and the Cronbach's  $\alpha$  were acceptable if they were equal to or greater than .70. In this present study, the composite reliability and the Cronbach's  $\alpha$  all exceeded .70, showing the reliability of each scale was acceptable.

Table 1. Reliability analysis

Latent variables	Composite reliability	Cronbach's $\alpha$
<b>perceived supervisor support</b>	<b>.927</b>	<b>.909</b>
Instrumental support	.891	.830
Emotional support	.908	.865
<b>workplace friendship</b>	<b>.915</b>	<b>.896</b>
Instrumental support	.910	.876
Emotional support	.907	.870
<b>organizational citizenship behavior</b>	<b>.878</b>	<b>.852</b>
In-role behaviors	.922	.894
OCB-I	.903	.865
OCB-O	.882	.798

### Convergent Validity

In perceived supervisor support scale, actor loading of variables of instrumental support dimension is .55~.90, and actor loading of variables of emotional support dimension is .82~.86.

In workplace friendship scale, actor loading of variables of instrumental support dimension is .79~.85, and actor loading of variables of emotional dimension is .62~.88.

In organizational citizenship behavior scale, factor loading of variables of in-role behaviors dimension is .82~.86. factor loading of variables of OCB-I dimension is .77~.84 and factor loading of variables of OCB-O dimension is .76~.90.

All factor loading of variables are higher than .50. and match the standard

proposed by Hair, Black, Babin, and Anderson (2009). Thus, it has good convergent validity.

### Discriminant Validity

The test is based on square root of Average Variances Extracted (AVE) of individual latent variables proposed by Chin (1998). It should be higher than covariance relationship between the said latent variable and latent variables of other dimensions in the model. In addition, Venkatesh, Thong, and Xu (2012) argued that standard of AVE square root must be at least higher than or equal to .50. According to Table 2, AVE square root of all latent variables in research model is .63 ~.79 and they are all higher than .50. Besides, AVE of all latent variables are higher than all correlation coefficients in the same column and row. It matches the standard. Therefore, measurement model of this study has good discriminant validity.

Table 2. latent variable correlations

	PSP	WF	OCB
PSP	.79	.43	.42
WF	.43	.72	.48
OCB	.42	.48	.63

Note : PSP=perceived supervisor support, WF=workplace friendship, OCB= organizational citizenship behavior, Diagonals represent the average variance extracted (the square root of the average variance extracted in the parentheses) while the other entries represent the correlations.

## Results

### Demographic Analysis Results

A total of 405 surveys were selected for research analysis. The subject pool consisted of 164 (40.5%) male and 241 (59.5%) female respondents. Of all subjects, 46 (11.4%) were married and



359 (88.6%) were not. Subjects included 32 (7.9%) with high school education, 358 (88.4%) college degree, and 15 (3.7%) graduate school degree and above. The majority of subjects had one-year and less work experience (n=235, 58.8%), followed by 2-5 years (n=141, 34.8%), and 6 years and more (n=26, 6.4%). 257 respondents aged 18-25 made up 63.5% of the subjects, whereas 136 subjects aged 26-40 made up 33.6%, followed by those aged 41-58 making up 3.0%.

*Models hypotheses test*

Analytical results of all hypotheses in this study are shown below:

H1: Employees’ perceived supervisor support positively influences organizational citizenship behaviors. Analytical result is significant ( $\beta_1=.32, p<.01$ ). Thus, when employees’ perceived supervisor support is higher, their organizational citizenship behaviors are higher.

H2: Employees’ workplace friendship positively influences organizational citizenship behaviors. Analytical result is significant ( $\beta_2=.35, p<.01$ ). Thus, when employees’ workplace friendship is higher, their organizational citizenship behaviors are higher.

H3: Employees’ perceived supervisor support positively influences workplace friendship. Analytical result is significant ( $\beta_3=.46, p<.01$ ). Thus, when employees’ perceived supervisor support is higher, their workplace friendship is higher.

H4: Workplace friendship has indirect effects on the relationship between

employees’ perceived supervisor support and organizational citizenship behaviors, and the relationship is found to be significant ( $\beta_7=.16 \cdot p<.01$ ). Results suggest that workplace friendship has mediated effects.

As shown in Figure 2, coefficient for the relationship between perceived supervisor support and organizational citizenship behaviors decreases from .49 ( $p<.01$ ) to .16 ( $p<.01$ ) which represents mediated effects as presented in Figure 1. According to Baron and Kenny (1986), partial mediation is the case in which the dependent variable to independent variable is reduced, but still significant. In this study, workplace has partial mediation effects.

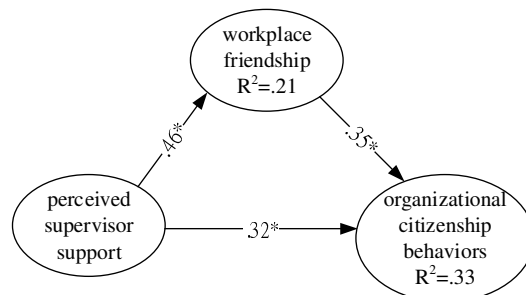


Figure 1. standardized parameter estimation of overall model  
Note: \* $p<.05$

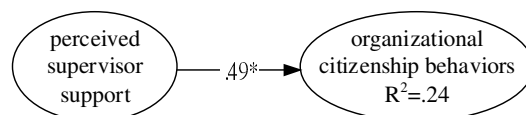


Figure 2. SEM results of the relationship between PSP and OCB  
\* $p<.05$

*Explanatory power*

R2 denotes predictive power of research model. It is percentage of explained variance of exogenous variables

on endogenous variables. It refers to predictive power of research model (Huang, Lin, Chang, & Chen, 2017). When the value is higher, predictive power is higher. Research finding in Figure 1 shows that perceived supervisor support can explain 21% variance of workplace friendship. Figure 2 shows that perceived supervisor support and workplace friendship can explain 33% variance of organizational citizenship behavior.

### Discussion and Suggestion

Research findings reported high level of employees' perception of supervisor support leads to high level of organizational citizenship behaviors, indicating that employees with high perceived supervisor support are more likely to display organizational citizenship behaviors. The findings were consistent with literature (Cheung, 2013; Chi, 2014). Results further suggested that employees with high perceived supervisor support play a key role in business development. In addition, supervisors can look to external source of support and social support to not only minimize stress at workplace but also encourage citizenship behaviors. Supervisors are also responsible for building team trust and avoiding internal conflicts. Chen, Yu, and Wang (2007) also stated that employees are motivated to demonstrate organizational citizenship behaviors if their contributions are recognized and rewarded accordingly. Recognition can vary, from verbal encouragement to emotional support and financial incentives. Employee perspectives and opinions can be helpful in management's decision-making process, and they are more likely to engage in organizational citizenship behaviors on a regular basis if they are heard.

In terms of the relationship between workplace friendship and organizational citizenship behavior, findings indicated that employees with high level of workplace friendship display more organizational citizenship behaviors. The results were consistent with Chen (2011) and Hsieh and Lin (2015) that employees with positive workplace friendship tend to encourage and motivate each other, share work responsibilities, and help improve organizational management and development necessary for their organization to function better. Hsieh and Lin (2015) elaborated that there is not denying that friendship at workplace lead to more knowledge sharing, open communication, and mutual learning. A gentle reminder of a kind and caring friend at work of how to show proper organizational citizenship behaviors is very helpful as well. Organizing training sessions, group trips, and social gatherings are some of good ways to boost office morale as well as to improve workplace friendship.

Furthermore, research results discovered that employees with high perceived supervisor support are more likely to demonstrate behaviors that show workplace friendship. In other word, workplace friendship develops when employees feel valued and appreciated by their supervisors. Chi (2014) and Gok, Karatuna, and Karaca (2015) had similar research findings that emotional support and financial assistance from management enhances mutual trust in the employer-employee relationship. Lin, Jiang, and Hsieh (2014) stated that management and employees bond with each other doing outdoor activities together. Findings also suggested that outdoor gatherings provide a great opportunity for management and employees

alike to share their life experience and create some personal connections, and possibly prevent workplace conflicts.

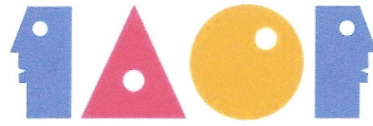
Future studies can consider including many different variables, such as supervisor support, workplace friendship, job stress, job burnout, and the intention to quit, and explore how they correlate with each other. Further study is also advised to verify the effects of positive psychology variables, such as perceived supervisor support and workplace friendship, on negative psychology of sport center employees.

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## CUSTOMER SATISFACTION ON THE PERFORMANCE OF SOCIAL SECURITY ADMINISTRATOR (BPJS) HEALTH IN CENTRAL JAVA, INDONESIA

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### Abstract

Social Security Administrator (BPJS) Health focuses on administering health insurance for all Indonesian society, hence, the service quality is still far from the expectation of BPJS members. This research aims to evaluate the performance of BPJS Health based on customer satisfaction, in this case BPJS members. The respondents of this research are 250 BPJS members from 5 different cities in Indonesia. This research uses importance-performance analysis, paired-sample t-test, and Cartesian Diagram to analyze the data. The findings show that the highest satisfaction level of BPJS members is on the dimension of empathy, while the lowest satisfaction level is on the dimension of assurance system. This is unique, where BPJS Health which has established for enhancing public welfare has not yet been able to satisfy the expectation of society. However, improving BPJS performance cannot be realized in a blink of eyes. It requires service enhancement strategy by improving some supporting aspects.

Keywords: BPJS Health, Customer Satisfaction, BPJS Performance, Public Welfare



## Introduction

Indonesia is a country which has fourth largest population in the world. The large amount of people has contribution in many fields including health issue. According to WHO (2012), Indonesia rank the 90th most healthy country in the world. This means that health quality in Indonesia is still low. The indicator to see the health quality is mortality rate and life expectancy. A high rate of mortality shows a low level of people health, while high life expectancy shows a good health level. The administration of public sector is very substantial to imply as it will impact the human welfare (Bennington, 2010).

Service Quality is how far the difference between expectation and reality about the service received by customers. It can be known by comparing between the service really received by customers and the expected service. If the received service is as the customer expectation, they will be satisfied, and vice versa. Service quality should be started from the customer needs and finished on the customer perception (Kotler, 2013). It can be said that a good quality is based on the perception of service provider, but customer perception.

One of the government's efforts to improve the community welfare is the establishment of business entities that manage the National Health Insurance, formerly known as Health Insurance (ASKES). Starting from January 1<sup>st</sup>, 2014 PT ASKES Indonesia (Persero) changed its name to BPJS Health and since that date, approximately 116, 122,065 of Indonesian people automati-

cally become the members of BPJS. Of this amount coming from ASKES own as much as 16.4 million civil servants (PNS) plus retired civil servants, retired army/police, and the independence pioneer. BPJS health is a non-profit social insurance and more focuses on providing protection for the community.

In the implication, BPJS has get many complain from the members because it is considered as more troublesome than the previous program (ASKES). For example, the patients have to queue longer in the locket, lab, pharmacy, and for consulting with doctors. Moreover, after waiting for long time, outpatients can only get medicine for 10 days (before BPJS, they can get medicine for 30 days), so they have to come to the hospital very often. This condition has not balanced by the number of doctors, paramedics, and quality of infrastructure in order to cut off the long queue. Thus, the given service quality have not satisfied BPJS members' expectation (Togarsilaban, 2014). Service quality becomes essential for BPJS in order to be maintained and acquire the members' trust. The success of BPJS in giving good quality of service is determined by the use of Quality Service approach developed by Parasuraman (Lupiyoadi, 2006:181).

Based on above explanation, BPJS patients' satisfaction should be considered if BPJS wants to have good quality. The problem occurs then is that the service quality of BPJS have not satisfy the members' expectation, so this research aims to evaluate the administration of BPJS Health in Central Java-Indonesia in giving service for society in



term of society satisfaction side and priority order determination in improving the service quality of BPJS Health.

## Literature Review

### *Service Quality*

#### *Public Health becomes the Government Responsibility (Good Governance)*

Good Corporate Governance (GCG) is essential thing to do for company in order to build a tough and sustainable organization condition. By applying GCG, the management of organizational resource is aimed to be efficient, effective, economical, and productive which is always oriented on organizational goals and consider stakeholders' interests. GCG is a system which manages and controls the organization to maintain value added for all stakeholders. In the Guidance of Good Corporate Governance in Indonesia (2006) has been mentioned that the implication of GCG needs to be supported by 3 interrelated pillars, such as 1. The state and its apparatus create regulations which support healthy, efficient, and transparent climate. 2. Business world as a market participant implement GCG as a basic guideline for business implementation. 3. The public as products and services members of private sectors and the affected party of the company existence shows care and social control objectively and responsibly. Then within the guidelines of Good Corporate Governance in Indonesia (2006), there are five principles of Good Corporate Governance as follows:

1. *Transparency*. The company should provide information which is easily accessed and understood by stakeholders. The company must take initiative to express not only problems required by the regulation but also substantial things for decision-making by shareholders, creditors and other stakeholders.

2. *Accountability*. The company must be responsible with its performance transparently and fairly. Therefore, the company must be properly managed, scalable, and in accordance with the company interests by considering the interests of shareholders and other stakeholders.

3. *Responsibility*. The company must obey the legislation and implement its responsibilities towards society and environment, so it can maintain the continuity of the long-term business.

4. *Independency*. The company must be independently managed, so each organ of the company does not dominate or threw the responsibility to others and cannot be intervened by other parties, and free from conflicts of interest. Thus, so decision-making can be made objectively.

5. *Fairness*. The company should always consider the interests of shareholders and other stakeholders based on the principles of fairness and equality. The company must provide fair and equitable treatment to stakeholders in accordance with the benefits and contributions made to the company.

According to the United Nations Development Program (UNDP), there are 9 indicators to measure good governance, such as: 1. Participation (community engagement), 2. Rule of law (enforcement of fair rules), 3. Transparency (freedom of information acquisition), 4. Responsiveness (quick and responsive), 5. Consensus Orientation (oriented to the community interests), 6. Equity (equal opportunity), 7. Efficiency and effectiveness, 8. Accountability (public accountability), 9. Strategic vision (their future vision). If principles of Good Governance are applied in BPJS administration, it will not be an easy task, because it takes intention and awareness of all managers involving in providing the best service to all stakeholders.

#### *Customer Satisfaction*

Satisfaction is the level of one's feelings after comparing the performance / results felt and the expectation. Therefore, the level of satisfaction is a function of the difference between the perceived performances with the expectation. If the performance is below the expectation, then the consumer will be disappointed, if performance is in line with expectation, the consumer will be satisfied. Meanwhile, when the performance exceeds the expectation, the consumer will be very satisfied. (Ranaweera & Prabhu, 2003) states that customer satisfaction has become fundamental determinant of long-term customer behavior. Consumer expectation can be established from past time experiences, comments from relatives, and appointments and information with marketers and rivals. Consumers who are satisfied will be loyal for longer time, less sensitive to

price changes, and give good comments about the company.

In order to satisfy all parties, BPJS is required to be able to provide qualified service for all BPJS members. Quality of service according to Kotler (2013) can be measured from:

1. Reliability is an ability to perform the promised service accurately and reliably.
2. Responsiveness is willingness to help customers and provide services quickly.
3. Belief is knowledge and courtesy of employees and their ability to generate trust and confidence.
4. Empathy is the company's understanding of customers' problems as well as action towards the customer interest, and provision of personal attention to customers.
5. Physical evidence is the appearance of physical facilities, equipment, personnel, and communication media.

#### *BPJS (Social Security Administrator)*

Starting from January 1<sup>st</sup>, 2014 PT ASKES Indonesia (Persero) changed its name to BPJS Health in accordance with Regulation no. 24 in year of 2011 about BPJS. BPJS Health (Social Security Administrator of Health) is a State-Owned Enterprise which is specially commissioned by the government to administer health insurance for all Indonesian people, especially for Civil Servants, Retired civil servants and

army /Police, Veterans, Independence Pioneers and their families, and other business entities or common people. BPJS is a non-profit social insurance which more on providing protection to the public, so health insurance can exist for Indonesian society.

It is an essential issue that BPJS Health which aims to fulfill the people needs in term of health insurance in fact is still far from satisfying the members' expectation. (Jansen, Beld, Goudriaan, Middelkoop, & Arbous, 2009) states that to satisfy patients, it is not only about providing medicine, but also about caring.

However, satisfaction in this case then will not only be about "people who feel satisfied" but more about their loyalty (Shaw, 2000). This is very important to measure "satisfaction".

#### *Preliminary studies*

Bennington (2010) suggests that the management and effectiveness of health sector is very important because it will impact on human welfare and economic sectors. Discussing about health management, the scope and scale are diverse, so cultural, economic and political, and other factors will need to be considered. This research inspires the authors to examine on how to optimize BPJS in order to provide welfare for people in Central Java.

Zhijian Li (2011) conducts a study entitled "On residents' satisfaction with community health services after health care system reform in Shanghai, China, 2011". The study measures the satisfac-

tion of the society on public health services in Shanghai China as a result of reformation on health care system. The research objective is to evaluate the effect of health care system reformation. To evaluate the result, the study uses of public satisfaction analysis, which then is measured using four dimensions: health insurance system, provision of treatment, primary health care clinics and public health services. All dimensions show progress and improvement on the satisfaction level of the public since the reformation is carried out, but it finds differences on the satisfaction level in all dimensions and groups. The society feels very satisfied with the services of clinics and public health but less satisfied with the health insurance system and the provision of treatment. The group which experiences loss (parents, unemployment, primary school, the poor) is almost entirely dissatisfied of all four studied dimension aspects due to the increased financial burden and the increased drugs cost. The results of this research become the main reference for authors in deciding the dimensions of service quality, aside of service quality dimension proposed by Kotler (2013).

Atinga (2011) conducts a study entitled "Managing healthcare quality in Ghana: a necessity of patient satisfaction" which test how communication variables, courtesy of service providers, support / care, environmental facilities and waiting time that significantly affect patients' satisfaction on the quality of healthcare in two hospitals located in Northern Ghana. This study is an exploratory study that aims to provide relevant information to policy makers and health managers on how to

effectively serve patients. The results show that three independent variables such as support / care, environmental facilities and waiting time affect the patient satisfaction on health service quality. Besides, communication and courtesy service providers do not affect the patient satisfaction on health care quality. The determination coefficient is 51 percent. The results of this study become reference for the author to take some variables to then be developed for further study by the author.

## Research Method

### *Data Collection Method*

The method used in collecting the data is by directly distributing questionnaires to the BPJS card members located in Semarang, Kudus, Demak, Purwokerto and Kendal (as many as 250 people). The variables used in this study are:

- 1). Insurance System with 11 indicators,
- 2).Tangible with 5 indicators,
- 3).Reliability with 3 indicators,
- 4). Responsiveness with 4 indicators,
- 5). Assurance by three indicators and
- 6). Empathy with two indicators.

### *Data Analysis Method*

There are three analyzes are performed, such as:

- 1) Importance-performance analysis or analysis of the interest and performance level, used to analyze the level of member satisfaction of BPJS program.
- 2) Paired sample t-test is used to test the differences between the consumers' expectations when they will use BPJS ser-

vice with the service really felt when using BPJS facilities.

3) Make a Cartesian diagram to map the average value of the hope score and the average value of the performance score to determine which priority order to improve the service quality that need to be done in BPJS.

## Findings

### *Respondent Description*

Respondents in this study are 250 people, consisting of 108 men and 142 women. 43.6% of them are 26-40 years old, above 40 years old there are as much as 43.2%. Other 26% of respondents work as civil servants and 55.2% of them is private sector employees. More than 60% of respondents use BPJS health of more than 2 times, while about 40% of respondents said that they used ASKES.

### *Public Satisfaction on BPJS Health Program*

The level of public satisfaction as BPJS card members on all indicators proposed in this study shows the different satisfaction level. The detail is presented in Table 1.

Table 1 shows that the expectation average score is 4.44, while the performance average score is 3.5. The level of members' satisfaction on BPJS program ranges about 67.17% to 96. 26%. The higher the percentage score, the better it will be. Of all attributes studied, none of them has reached a value of 100%, this means that there may be differences between the expectations of BPJS

Table 1. Satisfaction Level of BPJS Members

No.	Indicator	Expectation	Performance	Satisfaction Level
1	Quickness in card making	4,50	3,02	67,17%
2	Freedom in choosing hospital	4,46	3,00	67,21%
3	Easiness in medication bureaucracy	4,47	3,08	68,88%
4	Easiness in room arrangement rule	4,50	3,15	70,02%
5	Schedule punctuality of doctor examination	4,55	3,23	70,91%
6	The magnitude of inpatient cost	4,31	3,06	71,04%
8	The magnitude of outpatient cost	4,23	3,08	72,79%
7	Information clarity on patients' right and responsibility	4,51	3,29	72,97%
9	Quickness in responding patients comments and complaints	4,60	3,37	73,27%
10	Sophistication of medical tool facilities in the hospital	4,57	3,42	74,92%
12	The magnitude of drugs cost	4,20	3,14	74,93%
11	Quickness of staffs in giving service	4,56	3,42	74,96%
13	The magnitude of monthly cost	4,29	3,23	75,21%
14	Accuracy of doctors in examining	4,66	3,60	77,19%
15	Easiness of service procedure in the hospital	4,53	3,508	77,47%
16	Convenience of waiting room in the hospital	4,42	3,45	78,14%
17	Responsive to patients complaints	4,54	3,55	78,27%
18	Clarity on information sign board in the hospital	4,37	3,54	81,14%
19	Easiness in registration process	4,60	3,75	81,44%
20	Cleanliness of the hospital	4,56	3,75	82,12%
21	Kind of drugs covered by BPJS	4,61	3,79	82,25%
22	Doctors' ability in giving service	4,54	3,85	84,77%
23	Information clarity from the doctor about the patients illness	4,62	3,94	85,37%
24	Tidiness of employee performance in the hospital	4,12	3,74	90,79%
25	Doctors' reputation	4,03	3,73	92,53%
26	The hospital's reputation	4,01	3,72	92,89%
27	Hospitality of staffs and medical officers	4,46	4,29	96,26%

28	Staffs and medical officers do not differ the patients' social status	4,46	4,29	96,26%
	AVERAGE	4,44	3,50	78,86%

Source: primary data 2015

members and the services they actually receive.

Overall, of all indicators tested the average level of BPJS card members' satisfaction is 78.86%, with 17 of them place below the average satisfaction level (78.86%).

The lowest satisfaction level of BPJS card members is in the indicator of the quickness of cards making process, freedom of choice and easiness on Hospital medication bureaucracy. The third indicator shows the satisfaction level less than 70%.

The highest satisfaction level of BPJS card members is on the indicator of employee performance, Hospital tidiness, doctors' reputation, Hospital reputation, friendliness of the staff and medical personnel as well as that they do not distinguish social status. The fifth indicator has satisfaction level above 90%.

#### *Difference between Expectation and Performance*

To test the difference between consumer expectations when they will use BPJS with the service that is really felt when using the facilities of BPJS, paired samples t-test is used. The result is all the attributes of consumer expectations show a higher value than the perform-

ance, with significant difference about 0.00 to 0,027. Therefore, there is a significant difference between consumer expectations and the performance of BPJS. This result implies that all attributes of the studied yet achieve satisfaction. The result of the difference between expectations and performance can be seen in Table 2.

The significant difference between expectation and performance means that the consumers' expectation is higher than BPJS's performance. This is because the information given by BPJS, either through advertisement or other kinds of it, might be too much. Too much information will make the expectation of BPJS consumers high, while the performance does not directly be handled by BPJS but through BPJS partners, such as first and advanced health facility. This can impact on not optimal performance.

#### *Priority Order of Service Quality Improvement*

The priority order of service quality improvement that needs to be conducted by BPJS can be determined through mapping the average score of expectation and the average score of performance of all attributes in Cartesian Diagram. The result of the attribute mapping is illustrated in Figure 1.

Table 2. Result of Test on Difference between Expectation and Performance

No.	Indicator	Expectation	Performance	Sign
1	Easiness in registration process	4,60	3,75	.000
2	Quickness in card making process	4,50	3,02	.000
3	Easiness in room arrangement rule	4,50	3,15	.000
4	Information clarity on patients' right and responsibility	4,51	3,29	.000
5	Easiness in medication bureaucracy	4,47	3,08	.000
6	Freedom in choosing hospital	4,46	3,00	.000
7	Kind of drugs covered by BPJS	4,61	3,79	.000
8	The magnitude of monthly cost	4,29	3,23	.000
9	The magnitude of inpatient cost	4,23	3,08	.000
10	The magnitude of drug cost	4,20	3,14	.000
11	The magnitude of outpatient cost	4,31	3,06	.000
12	Sophistication of medical tool facilities in the hospital	4,57	3,42	.000
13	Cleanliness of the hospital	4,56	3,75	.000
14	Convenience of waiting room in the hospital	4,42	3,45	.000
15	Clarity on information sign board in the hospital	4,37	3,54	.000
16	Tidiness of employee performance in the hospital	4,12	3,74	.000
17	Schedule punctuality of doctor examination	4,55	3,23	.000
18	Quickness of staffs in giving service	4,56	3,42	.000
19	Accuracy of doctors in examining	4,66	3,60	.000
20	Easiness of service procedure in the hospital	4,53	3,508	.000
21	Responsive to patients complaints	4,54	3,55	.000
22	Quickness in responding patients comments and complaints	4,60	3,37	.000
23	Information clarity from the doctor about the patients' illness	4,62	3,94	.000
24	Doctors' reputation	4,03	3,73	.000
25	The hospital's reputation	4,01	3,72	.000
26	Doctors' ability in giving service	4,54	3,85	.000
27	Hospitality of staffs and medical officers	4,46	4,29	.027
28	Staffs and medical officers do not differ the	4,46	4,29	.027



patients' social status		
AVERAGE	4,44	3,50

Source: primary data 2015

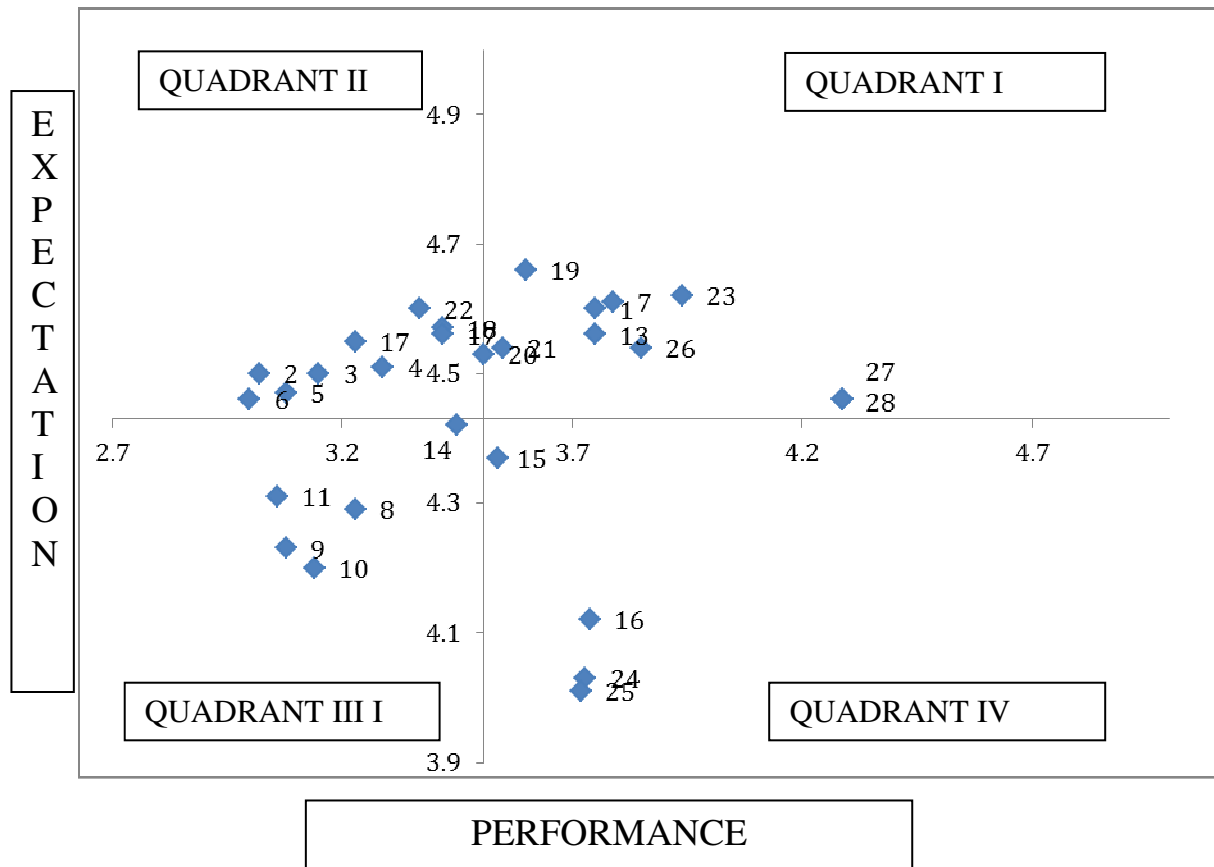


Figure 1. Cartesian Diagram between Expectation and Performance

Table 3. Position in Quadrant I

No. of Attribute	Name of Attribute	Variable
1	Easiness in registration process to be BPJS member	Assurance System
7	Kind of drugs covered by BPJS	Assurance System
13	Cleanliness of the hospital	Tangible
19	Accuracy of doctors in examining (diagnosing the illness)	Reliability
21	Responsive to patients complaints	Responsiveness
23	Information clarity from the doctor about the patients' illness	Responsiveness
26	Doctors' ability in giving service	Assurance
27	Hospitality of staffs and medical officers	Empathy
28	Staffs and medical officers do not differ the patients' social status	Empathy

From the result of attribute mapping, it can be explained as follows:

*Quadrant I:* The first quadrant is a position where the BPJS patients' expectation is high which is higher than the average (4,44), while according to patients the BPJS's performance is also high or above the average (3,50). This position is placed by some attributes as showed in Table 3.

The first quadrant is a position where the BPJS patients' expectation is high and according to patients the BPJS's performance is also high. This shows that the performance of these attributes at least are maintained because it is good.

*Quadrant II:* The second quadrant is a position where the BPJS patients' expectation is high or above the average (4,44), while according to the patients the BPJS's performance is low or below the average (3,50). This position is placed by some attributes as showed in Table 4.

The second quadrant is a position where the BPJS patients' expectation is high and according to the patients the BPJS's performance is low. This shows that the performance of above attributes becomes the Main Priority Scale need to be improved.

*Quadrant III:* The third quadrant is a position where the BPJS patients' expectation is low or below the average (4,44), while according to the patients the BPJS's performance is also low or below

Table 4. Position in Quadrant II

No. of Attribute	Name of Attribute	Variable
2	Quickness in card making process	Assurance System
3	Easiness in room arrangement rule	Assurance System
4	Information clarity on patients' right and responsibility	Assurance System
5	Easiness in medication bureaucracy	Assurance System
6	Freedom in choosing hospital	Assurance System
12	Sophistication of medical tool facilities in the hospital	Tangible
17	Schedule punctuality of doctor examination	Reliability
18	Quickness of staffs in giving service	Responsiveness
20	Easiness of service procedure in the hospital	Reliability
22	Quickness in responding patients comments and complaints	Responsiveness

Table 5. Position in Quadrant III

No. of Attribute	Name of Attribute	Variable
8	The magnitude of monthly cost	Assurance System
9	The magnitude of inpatient cost	Assurance System
10	The magnitude of drug cost	Assurance System
11	The magnitude of outpatient cost	Assurance System
14	Convenience of waiting room in the hospital	Tangible

the average (3,50). This position is placed by some attributes as showed in Table 5.

The third quadrant is a position where the BPJS patients' expectation is low and according to the patients the BPJS's performance is also low. This shows that the performance of the above attributes becomes the Priority Scale II which needs to be improved.

*Quadrant IV:* The fourth quadrant is a position where the BPJS patients' expect-

tation is low or below the average (4,44), while according to the patients the BPJS's performance is high or above the average (3,50). This position is placed by some attributes as showed in Table 6.

The fourth quadrant is a position where the BPJS patients' expectation is low and according to the patients the BPJS's performance is high. This shows that the performance of these attributes is not the main priority to be improved, but at least has to be maintained.

Table 6. Position in Quadrant IV

No. of Attribute	Name of Attribute	Variable
15	Clarity on information sign board in the hospital	Tangible
16	Tidiness of employee performance in the hospital	Tangible
24	Doctors' reputation	Assurance
25	The hospital's reputation	Assurance

From the above explanation, it can be concluded that the improvement of the attribute performance on Quadrant II and III will be able to improve the BPJS patients' satisfaction level. BPJS system for patients is gradual system which is started from family doctor then to hospital (BPJS partner), so any service given by BPJS partners directly impacts the patients' satisfaction. Therefore, the performance of BPJS partners for attributes in Quadrant II and III become the main and the second priority to be improved.

## Discussion

28 attributes examined in this research all show significant difference between the expectation of BPJS members and the performance of BPJS service really felt by the members of BPJS Health card. The highest satisfaction of BPJS members is on the dimension of empathy with 2 indicators: staffs and medical officers do not differentiate social status and the indicator of hospitality of staffs and medical officers. The result of this research is in contrast to from a study conducted by Atinga (2011) which shows that communication and courtesy of service provider do not impact the

patients' satisfaction on service quality. This is understandable as this research is conducted in Central Java where the population upholding their culture has empathy, while Atinga's research is conducted in Ghana.

Dimension with lowest satisfaction level is Assurance System dimension. Almost all indicators of this dimension show low satisfaction level. This result is in line with research conducted by Zhijian Li (2011) which examines people satisfaction level on people health service in Shanghai China. The result of Zhijian Li's study shows that people feel less satisfied with health assurance system and medication provision.

In order to make BPJS performance high, the Main Priority Scale which the performance is improved is as follows:

- Dimension of Assurance system, the performance need to be improved is on attributes Quickness in BPJS Card making process, easiness in room arrangement rule, Information clarity on BPJS members' right and responsibility, Easiness in medication bureaucracy/ procedure/ order, and Members' freedom in choosing hospital.
- Dimension of Tangible, the performance need to be improved is on attribute Sophistication of medical tool facilities in the hospital.
- Dimension of Reliability, the performance need to be improved is on attributes Schedule punctuality of doctor examination and Easiness of service procedure in the hospital.

- Dimension of Responsiveness, the performance need to be improved is on attributes Quickness of staffs in giving service and Quickness in responding patients' comments and complaints.

### Conclusion

The satisfaction level of BPJS card members on all indicators proposed in this study shows that there is none of them has reached 100% value, which means that there is difference between the expectation of BPJS members and the service that is actually received. The lowest satisfaction level of BPJS card members is in the indicators of Quickness in BPJS Card making process, Freedom in choosing hospital, and Easiness in medication bureaucracy. The highest satisfaction level of BPJS card members is on the indicators of Tidiness of employee performance in the hospital, Doctors' reputation, The hospital's reputation, Hospitality of staffs and medical officers, and Staffs and medical officers do not differ the patients' social status.

There is a significant difference between consumer expectation when they will use BPJS and the service they really accept when using BPJS facility. The result means that overall attributes examined in this research show that BPJS members have not reached members satisfaction.

### *Future Research Agenda*

BPJS is a state-owned enterprise which is specially commissioned by the government to organize health insurance for all Indonesian. To optimize BPJS performance, it needs to evaluate the

BPJS administration. The evaluation is done by considering the point of view of BPJS members BPJS providers and BPJS institution itself. The agenda of the first year research is evaluating the BPJS implementation seen from the point of view of BPJS members, such as the BPJS cardholders. Research in the first year has discovered how people's satisfaction on the implementation of BPJS health. It has also been described how the priority scale optimizes BPJS, so BPJS card members feel satisfied with the service received. The second year research will study the evaluation of BPJS implementation seen from the point of view of BPJS partners, i.e. first-

level health facilities, Doctors, Hospitals, and Pharmacies. Variables studied using service quality approach developed by Parasuraman (Lupiyoadi, 2006) and the variable of health assurance system developed by Li Zhijian (2011). The results of the study in the first year and the second year will then be used as a basis to examine how the implementation of Good Corporate Governance in BPJS health is. In the third year, it will investigate how the implementation of Good Corporate Governance in BPJS institution is. Research in the third year is based on the results achieved in the first year and the second year of study.

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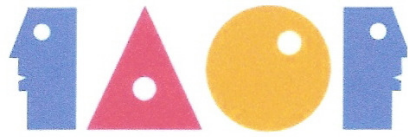
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kat Lanjutan dalam Penyelengga-  
raan Program Jaminan Kese-  
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## AFFECTS OF DIETARY BEHAVIOR AND RISK PERCEPTION ON INTERNET FOODS

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### Abstract

The internet plays the role of a convenient platform for the public to voice their opinions, vent their emotions, and exchange professional knowledge. However, the Internet is overburdened with tantalizing graphical and textual depictions of high-fat, high-calorie, high-sugar, and high-sodium snacks, pastries, beverages, and fried foods, which only trigger consumers' motivation to buy such foods and in turn incur burdens to their own health. The aim of this study is to understand consumer's involvement with risk behaviors as well as the correlation between dietary behaviors and risk perception. This study used the partial least square method to conduct reliability and validity tests and overall model analysis. The results find that consumers' behavioral factors will affect their risk perception and behavioral intention.

Key Words: Risk Perception, Dietary Behavior, Risk Behavior, Behavior Intention

## Introduction

As the internet has become a part of people's daily lives, consumers can share and disseminate a variety of information online, which makes online media important intermediaries for information exchange. As indicated by the internet world stats (2012), the united states, which is home to approximately 245 million internet users, enjoy a 78.1% internet penetration rate. According to the 2013 pew internet project, 72% of internet users in the united states have developed the habit of using social networks, which are fairly popular among middle-aged and elderly users, despite such social networks' more prominent popularity among users in younger age groups. In the united kingdom, there are 53 million internet users and an 83% internet penetration rate (research, development and evaluation commission, executive yuan, 2013). As revealed by surveys in taiwan, the rate of internet usage among people aged 12 or older increased from 73.0% in 2012 to 76.3% in 2013, and 20.8% of people identified searching for information online as the main reason for using the internet. From the above statistics, it can be inferred that acquiring daily life information from the internet has become a common practice for internet users.

Internets play the role of a convenient platform for the public to voice their opinions, vent their emotions, and exchange professional knowledge. As consumers in modern society are too busy with work to prepare three meals a day, they have more chances to eat out or search for delicious and comforting foods online to fulfill their psychological

needs. In a way, foods' function has been extended from satisfying one's physical hunger to soothing one's emotions. However, the internet nowadays is overburdened with tantalizing graphical and textual depictions of high-fat, high-calorie, high-sugar, and high-sodium snacks, pastries, beverages, and fried foods, which only trigger consumers' motivation to buy such foods and in turn incur burdens to their own health.

Positive dietary behaviors and low-involvement health risk behaviors help the public to maintain good health. However the majority of food-related blogs only provide enticing news of cuisines and shopping tips, whereas warnings about health risks are rarely seen. Such partial reports of health information are likely to cause consumers to ignore food-related risks and develop dietary habits that are prone to result in illness.

Aiming to promote individuals' accurate concepts of eating and develop accurate attitudes toward health, this study chose internet users as research subjects to understand their involvement with risk behaviors as well as the correlation between dietary behaviors and risk perception. Furthermore, this study examined whether internet users' behavioral intention is triggered by the cuisines recommended on blogs, so as to analyze the relevance between the appeal of blogs and consumers' purchase intention.

## Literature Review

### *Risk behaviors*

Risks refer to behaviors that may incur negative results or potential loss to individuals while bringing certain benefits concurrently. Such negative and positive outcomes may achieve a certain balance (moore and gullone, 1996). Risk-taking behaviors are seen as voluntary behaviors which may generate results that are possibly but not necessarily negative (irwin, 1993). Those risks include behaviors that are harmful to one's physical and psychological wellbeing or results that endanger one's wellbeing and life due to one's own behaviors (bethin, slovice and severson, 1993). As indicated by research, there is a link between risk behaviors and risk perception (bethin, slovice and severson, 1993), and people with higher involvement in risk behaviors have weaker food risk perception. Based on the above, this study put forth the following hypothesis:

H1: users with higher involvement in risk behaviors have a lower level of risk perception in delicious foods.

#### *Dietary behaviors*

As indicated by the research, improper dietary behaviors may result in obesity and a higher likelihood of illness (kruger et al., 2006; hlebowicz et al., 2011). Therefore, a healthy diet plays an imperative role for an individual's healthy growth and development as well as a key for precluding obesity, cardiovascular diseases, cancers, and other chronic diseases (chiou et al., 2012). As indicated by studies, dietary habits that are recommended to be avoided or to take on are more likely to make a deep impression on people's minds and are

beneficial to weight loss. (chiou et al., 2012). Therefore, appropriate behavioral interventions must be adopted to effectively change people's dietary habits (chiou et al., 2012). People with proper dietary behaviors already possess accurate concepts of foods. Based on the above, this study put forth the following hypothesis:

H2: users with more proper dietary behaviors have higher risk perceptions in delicious foods.

#### *Appeal of blogs*

Scholars have pointed out that an individual who is attracted to other individuals or objects may fall into a state of intense focus, become oblivious to oneself, and engage in indulgence. Of these, intense focus is the most commonly seen effect. Therefore, a blog is deemed as engaging if the blog successfully draws readers' attention to its content. Further, obliviousness of self, which refers to users' behaviors as a result of being drawn to the content of a blog, is enthusiasm in the most appropriate degree. Indulgence, on the other hand, is revealed in users' engagement in issues addressed on a blog (jeng, 1992). Therefore, an attractive depiction of foods on a blog will attract consumers to read the entire blog article, search for more articles in relation to various foods, encourage family members, relatives, or friends to eat these foods which were recommended on blogs. Based on the above, this study put forth the following hypothesis:

H3: the appeal of a blog is positively related to users' behavioral intention.

### *Risk perception*

As a type of judgment on behaviors that is influenced by an individual's previous experience, significance of the event, and an individual's ability to handle information, risk perception refers to behaviors of judgment and decision-making on the probability that events may result in a negative influence (tseng, 1994). People's risk perception is subject to the influence of social, cultural, psychological, and cognitional factors; however, experts and the general public show a wide divergence in risk perception (wang et al. , 2005). Scholars have pointed out that risk perception could cause decision-makers to overestimate or underestimate risks, misjudge uncertain circumstances, therefore make wrong decisions. Based on the above, this study put forth the following hypotheses:

H4: risk perception has a mediation effect on risk behaviors and behavioral intention.

H5: risk perception has a mediation effect on dietary behaviors and behavioral intention.

### *Behavioural intention*

Behaviors are derivatives of an individual's knowledge and attitudes, meaning that an individual's behaviors result from his/her attitudes (hong and fu, 2012). Ajzen (1991) put forward that behavioral intention may be subject to the influence of any or all the following three factors: attitudes toward behaviors, subjective norm, and perceived behavioral control. Baker and crompton (2000) suggested that the behavioral intention

of intending visitors refers to the intending visitors' willingness to revisit the same destination, i. e. , their tourism destination loyalty. Delicious foods which produce a more memorable impression on people are usually associated with publicity gained through media, which enhances people' likelihood of purchasing and creates enhanced effect of word of mouth. After their shopping, users may even be willing to recommend the same food to their families or friends and cause their families or friends have a stronger intention to eat.

### Experimental design

#### *Participants*

This study used interviews to collect data in private universities in Taiwan. The samples were people who had viewed online Taiwanese foods' blogs. There were 390 valid questionnaire samples in this study.

#### *Measures*

In this study, the construct of risk behaviors was modified from the scale developed by Weber et al. (2002). Measurements were based on a Likert 7-point scale, with scores ranging from 1 (strongly disagree) to 7 (strongly agree). In the variable of dietary behaviors, this study modified the scale developed by Povey et al. (2000) , which has seven items. The measurement was based on a 7-point Likert scale. This study defined the variable of risk perception as the construct concerning if people understand street side foods would bring health risks. The scale was adapted from Siegrist et al. (2000) and contained a

total of six items. This study sought to measure the construct of blog's attractiveness by referring to Power et al. (2008) for eight items which were also measured using a 7-point scale. Finally, the behavioural intention construct referred to whether people would buy these Taiwanese foods which were introduced on the blogs. Measurements were based on the scale of Zeithaml et al. (1996), which features a total of five items.

This study used the partial least square method (PLS) to conduct reliability and validity tests as well as overall model analysis and used SmartPLS software for analysis. The reliability and validity of the overall dimensions are shown in Table 1. The measurement model's dimensions indicated good reliability, with a composite reliability of over 0.7, and the average variance extracted was also above the standard of 0.5, thereby reaching the standard for convergent validity.

## Results

This study established five

hypotheses, which were confirmed using PLS in structural equation modeling analysis. The results are shown in Table 2. Standardization coefficients and significance test values showed that when people had higher risk behaviors, their risk perception would be poorer (estimate value = -0.187,  $p < 0.001$ ), thus supporting H1. Furthermore, the results indicated that when people had better dietary behaviors, they would have better risk perception (estimate value = 0.223,  $p < 0.001$ ); thus, H2 was supported. Finally, it was observed that when people had been attracted by the blog's information about Taiwanese foods, they would have better behavioral intentions (estimate value = 0.466,  $p < 0.001$ ); therefore, H3 was supported. The model of this study has the average  $R^2 = 0.3611$ , which was greater than 0.35 (Cohen 1988) and the  $GOF = 0.3939$ ; thus, the model had a good fit. To further examine the mediation hypotheses, this study used the Sobel test to confirm the mediating effects (Sobel 1982). Preacher and Hayes (2004) suggested that for computations based on the path coefficient and standard error, a Z value greater than 1.96 indicates a significant

Table 1. Fit indicators of the measurement model

Construct	AVE	Composite Reliability	Cronbach's Alpha	Communality
Risk Behavior	0.779744	0.865468	0.818	0.479744
Dietary Behavior	0.580754	0.824705	0.876	0.580754
Blog's Attractiveness	0.665706	0.932807	0.880	0.665706
Risk Perception	0.521943	0.903400	0.790	0.521942
Behavior Intention	0.722364	0.928357	0.901	0.722364

Table 2. Results of structural model analysis

	Structural Path	Estimate Value	t value	p value	Verify
H1	Risk Behavior→Risk Perception	-0.187	4.518	p<0.001	Support
H2	Dietary Behavior→Risk Perception	0.223	5.245	p<0.001	Support
H3	Blog's Attractiveness→Behavior Intention	0.466	10.537	p<0.001	Support

Table 3. Results of Sobel test

	Mediating Path	Sobel z test	p value
H4	Risk Behavior→Risk Perception→Behavior Intention	-4.058	p<0.001
H5	Dietary Behavior→Risk Perception→Behavior Intention	4.558	p<0.001

mediating effect, which shows that the risk perception plays a mediating effect between risk behaviors and behavior intentions (estimate value = -4.058, p<0.001) as well as dietary behaviors and behavior intentions (estimate value = 4.558, p<0.001). Thus, H4 and H5 were supported by the results, as shown in Table 3.

#### Discussion and Conclusion

From the perspective of risk, this study examined Internet users' state of involvement in different risk behaviors, the relationship between users' dietary behaviors, their risk perception of Taiwan street snacks, and the influence of risk perception on their behavioral intention. In addition, this study also probed into the influence of blog content on behavioral intention and reached the conclusion that both the personal causes of users and the presentations on the blogs influence

behavioral intention for Taiwan street snacks.

Regarding the correlation between risk behaviors and risk perception, the results of the structural equation indicated a significantly negative correlation between risk behaviors and risk perception, which was the same result as in studies of other scholars (Weber et al., 2002). Users who are more likely to take on risk behaviors have a lower degree of risk perception of whether snacks are healthy or not. In addition, this study demonstrated a positive correlation between risk perception and behavioral intentions, as well as the mediation effect of risk perception. When viewing delicious foods on blogs, Internet users with higher involvement in risk behaviors and lower perception of health-related food risks and they will not make a special effort to do develop purchase intention.

Concerning the correlation between dietary behaviors and risk perception, the results of this study revealed that consumers with proper dietary behaviors have more discerning risk perception of foods recommended on blogs. Moreover, risk perception has a mediation effect on dietary behaviors and behavioral intentions, i. e. , consumers with more correct dietary concepts and behaviors are more willing to purchase foods despite their heightened perception of food risks. However, when under the temptation of delicious foods, people with accurate dietary notions will also be willing to try such foods. As accurate dietary behaviors and purchasing behaviors are the ultimate goals of nutrition education, accurate dietary behaviors should be taught from the inception of education. Consumers facing the temptation of various foods online still need to be aware of the risks of foods to ensure their subsequent healthy purchasing behaviors.

This study found that consumers are more susceptible to being influenced and further developing behavioral intention when blog information about certain foods is more appealing. The results of this study indicated that presentations on blogs have cast an influence on consumers' behavioral intention. Therefore, in the world of the Internet, information sharing among consumers has become an important source of information.

To summarize the results of this study, online media have an important influence on consumers' buying behaviors, and Internet education should start with developing consumers' correct health concepts, so that consumers can have the ability to make the right

choices when facing media that are loaded with foods that may inflict risks to health. However, this study was limited to research on blogs about Taiwan street snacks instead of conducting extensive research on other media such as Facebook; therefore, it is suggested that researchers in the future use Facebook to conduct relevant analysis.

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## THE PRACTICE AND FACTORS OF TAIWAN STEEL PLANT TO ADOPT CSR

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### Abstract

According to the research about the CSR, the CSR can effectively better not only the corporate financial performance, but also can reduce various production costs and improve the corporate image. Thus, the CSR has become an important indicator for bettering the corporate performance, enhancing the corporate image, improving production environments and increasing the centripetal force of employees in recent years. In order to change the old viewpoints that most people consider steel plants being of high pollution, high power consumption and bad working environment, the steel plants selected to be the cases of the study have introduced the CSR five years ago to increase the recognition from people and their employees. The study adopts in-depth interview and questionnaire survey to ask top management about how to promote the CSR and use questionnaire to collect the viewpoints of the employees for their companies promoting the CSR in order to analyze whether the CSR can result in obvious influence to the performance of these companies. The result shows that the social performance can better several indicators, such as business performance, corporate image, product image and purchase intention; the environment performance can positively increase the centripetal force of the employees. If one company promotes one of the CSR performance indicators, the viewpoint and the outcome of the company's employees will be also improved.

Keywords: CSR (corporation social responsibility), performance, steel plant

## Introduction

The major object of the operation of enterprises is to acquire profit in order to survive and allow their employees to make a living. However, as many events occur in a lot of multinational enterprises, such as cooking the books, escaping tax, exploiting labors and illegal hiring child labor and excessively polluting environment in recent years, the social members start to think that the object of the existence of the enterprises should not be only making profit, but also should bear more responsibilities so as to make a contribution to the country, the society, people and employees.

Therefore, the concept of the corporation social responsibility (CSR) gradually attracts more attention from people.

There are many research studies about the CSR; many scholars, such as Bowen (1953) & Arrow (1973), consider that enterprises obtain profits from the society, and the activities of enterprises are very relevant to the members of the society; thus, the members of the society should be included in the stakeholders of enterprises. The researches of Leonardo, Stefania & Damiano (2008), Becker-Olsen, Cudmore & Hill (2006), Tsoutsoura (2004), Simpson & Kohers (2002), McWilliams & Siegel (2001), Ruf, Muralidhar, Brown, Janney & Paul (2001), Hillman & Keim (2001), and Preston & O'Bannon (1997) indicate that the benefit of enterprises bearing the social responsibility is higher than the cost they will pay, and the enterprises adopting the CSR will also achieve better performance. Moreover, regarding the researches related to the CSR and the manage-

ment of enterprises, Turban & Greening (1997) find that if enterprises can provide good and safe working environments for their employees, their production will also increase. The researches of Bowman & Haire (1975), Alexander & Bucholtz (1978), Porter & van der Linde (1995), and Fombrun, Gardberg & Bameett (2000) find that if enterprises engage in or make a contribution to the public welfare, their reputation and trust will be better to increase their brand image and competitiveness, so the cost will be reduced; meanwhile, they can attract more attention from the investment institutes, and the occurrence probability of special negative events will also decrease and their capability for handling negative events will increase (Tsoutsoura, 2004), which just likes purchasing insurance for their brand image and financial performance (Werther & Chandler, 2005; Pelozo, 2006). Cornell & Shapiro (1987) and Preston & O'Bannon (1997) consider that if an enterprise can satisfy the anticipation of the stakeholders from all levels of the society, its financial performance will be positively benefited; higher social performance will result in better financial performance, both of which is in a positive relation. To sum up, many previous researches show that enterprises can create better image via implementing the CSR, and can exert positive assistance for the society to increase their influence to the society in order to achieve the win-win situation.

Most people always consider that the steel plants are the industry of high pollution and high-power consumption, in particular to the south area of Taiwan; there are many steel factories and high-pollution industries in south

area of Taiwan, and the air pollution resulted from these factories are the serious problem for everyone. The steel plants selected as the cases of the study have strived to promote the CSR; they hope they can better their corporate image and business performance via environmental protection, employee welfare, and friendly community. The study adopts in-depth interview to ask the top management of these case steel plants about how to promote the CSR and use questionnaire to collect the viewpoints of the employees for their companies promoting the CSR in order to analyze whether the CSR can result in obvious influence to the performance of these companies.

### Literature Review

Cooperation social responsibility  
The standards for defining the CSR in the world are still different; however, most of these standards are about the enterprises' impacts to economy, society, politics and environment and the relation management between all stakeholders. According to the definition of World Business Council for Sustainable Development (WBCSD) for the corporate social responsibility (CSR): "continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large".

The corporate social responsibility working team of WBCSD classifies the coverage of the CSR into: human right, employee right, environmental protection, community participation, supplier relation, supervising (com-

pany management), stakeholder and the like. The classification method of WBCSD is to gradually extend from the internal corporate environment/stakeholders to the external corporate environment/ stakeholders, just like a concentric circle extending from inside to outside. The extension process does not need to completely extend from the inner ring to the outer ring; enterprises can select the desired part to do. The classification method of WBCSD does not have a fixed order.

Regarding the rating standard of the CSR, the CSR rating standards of Oekom Research AG use the most comprehensive ethics standards as the determination principles, which classifies the CSR rating standards into three aspects, including the company's influence to individual (social sustainability), social and culture (culture sustainability) and natural environment (natural sustainability); then, the above three parts are calculated by different weighting sum to obtain the social culture rating, environmental rating, and the rating of the enterprise's responsibility. The CSR rating standard data of Oekom Research AG mainly obtain from the data provided by companies and the investigation results of experts, including the ratings conducted according to the data of companies' annual reports, society and environments, interviews of companies' representatives, examination of media, interview of independent experts, results of evaluation reports implemented by independent experts for governments and public institutes, occupational labor unions, social and environment research institutes and consumer protection groups (Leonardo, Stefania & Damiano, 2008; Becker-Olsen, Cudmore & Hill, 2006).

Regarding the CSR rating standards of Taiwan, Ministry of Economic Affairs has proposed the indicators for evaluating the levels of the enterprises in Taiwan implementing the CSR; the indicators include three major parts, including society, environment and financial performance, where the social performance has the highest weight, 66.4%, the next is the environment performance, 20.8%, and the last is the financial performance, 12.8%. A small enterprise will also can obtain high CSR performance just by higher social participation and strictly engaging in environmental protection. The social performance is the rating item attracting most attention, which includes employee right, ethics responsibility, laws regulations, stakeholders, community participation, and supplier relation. Regarding environmental performance, the important items include environmental policies, performance management system, environmental information disclosure, and ecological effect of products and services. The financial performance includes financial policies/management systems, corporate financial performance, and company management practices (Lin & Gao, 2008).

## Methodology

### *Framework*

The study cites the CSR indicators (social performance, environment performance, and financial performance) proposed by Ministry of Economic Affairs to investigate the methods and influence factors of the case steel plants in Taiwan promoting the CSR, and assumes that the three CSR performance indicators will influence the business of the steel plants.

Regarding the implementation method of the study, the study simultaneously adopts in-depth interview and questionnaire survey to obtain the desired data from the directors and employees respectively. Regarding the in-deep interview, the study interviews 4 directors to understand how the company promotes the CSR. Regarding the employees, the study collects the viewpoints of 128 employees about the company promoting the CSR, and tries to understand whether the employees consider that the promotion of the CSR is helpful for the performance of the company via the standpoint of the employees. Finally, the study compares the interview result of the directors with the statistic result of the employees, and combine which with each other so as to propose the conclusion and the suggestions of the study.

### *Interview outline*

For the purpose of understanding the viewpoints of the directions about the company promoting the CSR, the study develops the following 10 questions of the in-depth interview summary according to social performance, environment performance, and financial performance, and asks the director interviewed by us to evaluate the performance of the company in relation to each of the questions (very satisfied - 5 points; satisfied - 4 points; normal - 3 points; unsatisfied - 2 points; very unsatisfied - 1 point). The following questions are the in-depth interview summary.

1. How does the company protect the working right of the employees?
2. How does the company create a great working environment?

3. Do the welfare policies of the company take care of the family of each employee?
4. Does the company incur any legal dispute event within 5 years?
5. Do the company take part in the community-based services or actively make a contribution to the local community?
6. Does the company have a good relation with the suppliers?
7. Does the company promote the policy benefiting the environmental protection, or promote the behavior helpful for environmental protection?
8. Do the products of the company take the environmental protection into consideration in design, production and recycling?
9. What is the management style of the company?
10. How is the company's financial performance?

### *Questionnaire*

The study develops the questionnaire of the study according to the CSR indicator proposed by Ministry of Economic Affairs, and makes the evaluation according to Likert Scale (very satisfied - 5 points; satisfied – 4 points; normal – 3 points; unsatisfied – 2 points; very unsatisfied – 1 point).

The questions 1-17 belong social performance of the CSR, the questions 18-22 belong to the environment performance of the CSR, the questions 23-25 belong to the financial performance

of the CSR, and the questions 26-30 belong to the business performance of the CSR. The questions of the social performance are mainly to ask how the employees consider the company's performances in employee right, ethics responsibility, legal regulations, stakeholders, social participation, and supplier relation. The questions of the environment performance are to mainly ask the employees how the employees consider the company's performances in the promotion of environmental policies, disclosure of environmental information, and ecological effect of products and services. The questions of the financial performance are to mainly ask what the employees' viewpoints are in the financial policies/management system, financial performance, and management practices, etc., of the company. The questions of the business performance are to ask whether the employees consider that the corporate business performance, corporate image, product image and consumers' purchase intentions, and employees' centripetal force of the company can be better after the company promotes the CSR.

### *Result*

#### *Interview result*

1. How do the company protect the working right of the employees?

The 4 directors consider that the company has protected the rights and obligations of the employees according to the regulations of Labor Standards Act; when the behaviors of the employees fail to conform to the regulations of the company, the company will try to change the behaviors of the employees by persuasion and interview, which can provide more protec-



tion for the employees. Regarding the promotion, the company provides a systematic and complete assessment system, so the ground-level employees can have proper raise and assessment. The directors consider that the score of the company in the performance of protecting the rights of the employees is 4.71.

2. How do the company create a great working environment?

In common departments, the senior employees are willing to guide the junior employees in order to establish great interactive relation and active attitude; in the production line, the company has good environment (the company provides the rest time, takes care of the employees after the employees are off-duty, and provides the sign-in system for the employees to behave themselves). Regarding the office environment, the overall design of the offices and the plant houses are spacious and bright, and the company also hires the cleaners to clean the environment, so the company provides excellent environment, rest time and create great working environment and quality. The interviewees consider that the score of the company in the performance of creating great working environment is 4.48.

3. Do the welfare policies of the company take care of the family of each employee?

All 4 directors indicate that the company has tried the best to take care of all employees; for example, the company has fulfilled the responsibility and morality to take care the employees, and can participate in the weddings and funerals of the employees; besides, the company also provides the company trip and the bonus

systems. However, one of the directors also indicates that the salary paid by the company is just enough for personal expense rather than the whole family. Thus, the interviewees consider that the score of the company in the performance of the welfare policies is 3.70.

4. Does the company incur any legal dispute event within 5 years?

During the past 5 years, if the company incurs lawsuits, the legal staff of the company can always properly handle all lawsuits. If the company incurs disputes with the supplies or the downstream vendors in cooperation, the company can always solve the problems via negotiation to prevent from the following problems. Therefore, all of the interviewees provide high evaluation to the company in handling the lawsuits and dispute events. The interviewees consider that the score of the company in the performance of handling lawsuits and disputes is 4.22.

5. Do the company take part in the community-based services or actively make a contribution to the local community?

Two directors indicate that the company can encourage the employees to take part in the community services and achieve good interactions; in addition, the company also actively joins the charity activities of Kaohsiung City. However, two directors indicate that they often saw that the company frequently participated in the reactive activities with the industry, but seldom or never saw that the company participated in the community services. The interviewees consider that the score of the company in the performance of the community contribution is 3.47.



6. Does the company have a good relation with the suppliers?

Three directors consider that the company and the suppliers are cooperative partners; one of the directors considers that the company and the suppliers are not only cooperative partners, but also compete with each other. As a whole, the relation between the company and the suppliers is excellent. The interviewees consider that the score of the companies in the performance of the relation with the suppliers is 4.73.

7. Does the company promote the policy benefiting the environmental protection, or promote the behavior helpful for environmental protection?

All 4 directors indicate that the company pays a lot of attention to the environmental protection policies, and exactly implements the resource recycling, and total quality management (TQM), sewage treatment, planting and greening, waste recycling and the “Keep Trash Off The Ground” policy, and observes the relevant regulations of the environmental protection of the ISO, so all directors feel very satisfied. The interviewees consider that the score of the company in the performance of promoting the policies and the behaviors helpful for environmental protection is 4.62.

8. Do the products of the company take the environmental protection into consideration in design, production and recycling?

All 4 directors consider that the company always holds the environmental protection standards to implement design, production and recycling in the items of the product design, production and recycling. Regarding the design, green is considered first with-

out chemical substances; regarding the production, all products adopt environmental materials; regarding the recycling, the company provides the waste metal recycling mechanism. It is worthy to point out that the company can always implement energy-saving and carbon-reduction policies from design, production to recycling in order to improve the production process. The interviewees consider the score of the company in the performance of whether the design, production and recycling conform to the environmental protection is 4.26, which is very close to “very satisfied”.

9. What is the management style of the company?

Three of the directors indicate that the company adopts the dual system of the democratic management and group decision-making to allow all employees to express their viewpoints; in particular, to the design aspect, the company specially encourages all employees to brainstorm in order to provide more creative ideas. Only 1 of the directors considers that the decision-making of the company is authoritative, but the management method adopts the group decision-making. The interviewees consider that the score of the company in the performance of management style is 4.02.

10. How is the company’s financial performance?

Two of the interviewees indicate that the financial performance of the company is not good during the past 5 years; thus, the company will more actively to expand the business to increase the profit. 1 of the interviewees indicates that the current financial status of the company is not satisfactory, so it is necessary to change some

bad conditions. Only 1 of the interviewees indicates that the current financial status of the company is satisfactory; however, for the purpose of solving the problem of the poor financial status of the company last year, all employees should exactly implement the tasks allocated by the directors. The interviewees consider that the score of the company in the financial performance is 3.41, which is just the “normal” score.

### *Descriptive statistics*

#### *Social performance.*

The employee interviewed consider that the overall average performance of the company in the social performance is 3.71, so they tend to agree the item. The top 3 questions most recognized by the employees about the social performance are: “3. The company keeps developing novel technologies.” ( $M = 4.91, SD = .57$ ), “17. The company always honestly pays the tax every year.” ( $M = 4.88, SD = .61$ ), and “16. All employees of the company are on the basis of fair competitiveness” ( $M = 4.79, SD = .44$ ). The questions which the employee interviewed are the salary problems ( $M = 2.92, SD = .79$ ); they hope that company can keep giving raise. Regarding the reliability analysis, the overall reliability of the social performance is .901.

#### *Environment performance.*

The employee interviewed consider that the overall average environmental performance of the company is 3.69, so they tend to agree the item. The top 3 questions most recognized by the employees about the environment performance are: “18. The company has established the department

for implementing the environmental protection policies and behaviors” ( $M = 3.88, SD = .56$ ), “19. The company tries hard to promote the environmental policies and behaviors” ( $M = 3.68, SD = .49$ ), and the third one is “22. The company is devoted to develop the products benefiting the environmental protection” ( $M = 3.61, SD = .56$ ). Regarding the reliability analysis, the overall reliability of the environment performance is .924.

#### *Financial performance.*

The employee interviewed consider that the overall average financial performance of the company is 3.56, so they tend to agree the item. Regarding the comparison order of the questions, the employees interviewed most recognize “25. The financial performance of the company is great” ( $M = 3.62, SD = .51$ ), and the next is “24. The financial management system of the company is great” ( $M = 3.55, SD = .61$ ), and the third one is “23. The financial policies of the company are great” ( $M = 3.50, SD = 1.39$ ). Regarding the reliability analysis, the overall reliability of the financial performance is .914.

#### *Business performance.*

The employee interviewed consider that the overall average business performance of the company is 3.74, so they tend to agree the item. Regarding the comparison order of the questions, the employees interviewed most recognize “26. The company can better the corporate business performance by promoting the CSR.” ( $M = 3.89, SD = .61$ ); the other questions are orderly “29. The company can increase the customers’ purchase intention by promoting the CSR.” ( $M = 3.81, SD = .48$ ), “27. The company can better the

corporate image by promoting the CSR” ( $M = 3.76, SD = .63$ ), “30. The company can increase the centripetal force of the employees by promoting the CSR” ( $M = 3.66, SD = .58$ ), and “28. The company can better the product image by promoting the CSR” ( $M = 3.57, SD = .67$ ). Regarding the reliability analysis, the overall reliability of the corporate business performance is .925.

#### Multiple Regression Analysis

The social performance can better several indicators, such as business performance, corporate image, product image and purchase intention; the environment performance can positively increase the centripetal force of the employees.

According to the multi regression analysis result, if the employees interviewed feel that the social performance of the company is higher, the company will also have higher business per-

formance, corporate image, product image, purchase intention, and environment performance index. It means that if the company has higher performance in the employee right, ethics responsibility, legal regulations, stakeholders, community participation, and supplier relation, the company can be better in the above business performance index (please refer to Tables 1, 2, 3, and 4). Further, if the employees interviewed consider that the environmental performance will increase the centripetal force of the employees. The representative of the employees interviewed considers that if the company can have higher performance in the environmental protection policies, environmental behaviors, announcing environmental information about the company, providing the products with higher environmental protection effect, and developing more products benefiting environmental protection, the centripetal force of the employees can be stronger (please refer to Table 5.).

Table 1. Factors To Influence Business Performance

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-1.077	.712		-1.513	.143
Social performance	.975	.435	.598	2.243	.034*
Environment performance	.230	.217	.218	1.058	.301
Financial performance	.109	.238	.097	.456	.653
R Square			.583		
Adjusted R Square			.555		
F			28.791		
Sig.			.000***		
Durbin-Watson			2.359		

\*  $p < .05$ , \*\*\*  $p < .000$

Table 2. Factors To Influence Corporate Image

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-1.761	.690		-2.551	.018
Social performance	.541	.422	.472	5.313	.000***
Environment performance	-.283	.211	-.288	-1.345	.191
Financial performance	-.443	.231	-.423	-1.915	.067
R Square			.565		
Adjusted R Square			.536		
F			26.056		
Sig.			.000***		
Durbin-Watson			1.632		

\*\*\*  $p < .000$

Table 3. Factors To Influence Product Image

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-2.090	.700		-2.985	.006
Social performance	.377	.428	.410	5.556	.000***
Environment performance	-.319	.214	-.313	-1.494	.148
Financial performance	-.474	.234	-.438	-2.023	.054
R Square			.574		
Adjusted R Square			.546		
F			27.419		
Sig.			.000***		
Durbin-Watson			2.120		

\*\*\*  $p < .00$

### Correlation analysis

According to the relevant analysis results, the employees interviewed consider that the social performance, environment performance and financial performance have positive and strong relation with the business performance, and the social performance, environment performance, and financial performance are also strongly and positively related to one another; in other words, if the company promotes one of

the CSR indicators, the viewpoints and generations of the employees for other CSR performances will also generate (Table 6).

### Discussion

According to the result of the questionnaire survey of the study, the employees consider that the company can improve the corporate business performance, corporate image, product image and purchase intention. This

result is the same as the result of the researches of Leonardo, Stefania & Damiano (2008), Becker-Olsen, and Cudmore & Hill (2006) – the effect of an enterprise bearing the social responsibility is higher than its cost; the company adopting the CSR can have better performance. Further, if the company emphasizes on the environment performance, the employees will have higher centripetal force; this result is the same as that of the research of Turban & Greening (1997) – if an enterprise can provide great and safe working environments, its production will also increase. In addition, it is worthy to point out that we can understand that if an enterprise promotes one of the CSR performance indicators, the business performance and other performance indicators of the enterprise will also increase; this result is similar to that of the researches of Cornell & Shapiro (1987) and Preston & O'Bannon (1997), etc. If an enterprise can satisfy the anticipation from stakeholders, the financial performance of the enterprise can also be better; higher social performance will result in higher financial performance. However, the difference between the study and research of Cornell et al is that the employees interviewed also consider that the social, financial and business performances will be increased by promoting the environment performance. Obviously, all items of the CSR are positively and strongly related to one another; once a company starts to introduce one indicators of the CSR, all aspects of the company will also be influenced.

According to the in-depth interview of the directors, the directors interviewed indicate that the welfare policies, community services and fi-

nancial performance of 10 promoted CSR items are relatively weak ( $M < 3.71$ ). Regarding the satisfaction of the employees interviewed in the promotion of the CSR, the scores 4 indicators are lower than 3.75 (social, environment, financial and business performance). It is obvious that the viewpoint of the directors interviewed is different from that of the employees interviewed in the promotion of the CSR; however, some directors have mentioned that the salaries are quite low; the above viewpoint is the same as that of the employees; the question with low satisfaction of the employees is salary ( $M = 2.92$ ). The problem of improving salary involves the whole development of the economy of Taiwan, which cannot be improved in a short time; however, the result of the study seems to provide a method capable of increasing the morale of employees and business performance without increasing salaries. The study suggests enhancing the social and environment performance first, and the improvement of the other CSR indicators can also increase the morality and business performance of employees. For example, designing, producing and recycling products based on the viewpoints of environmental protection and green color can win not only good corporate reputation for enterprises, but also can avoid that employees are polluted toxic substances when the enterprises adopt green raw materials and equipment, which can naturally increase the centripetal force of employees. Alternatively, the enterprises can establish the departments in charge of managing and implementing environmental policies and behaviors to announce that the enterprises try hard to make a contribution to and improve the environmental protection; in this way, employees can

Table 4. Factors To Influence Customer Purchase Intention

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-1.332	.558		-2.388	.025
Social performance	.655	.341	.577	4.854	.000***
Environment performance	.015	.170	.017	.091	.929
Financial performance	-.324	.187	-.335	-1.733	.096
R Square			.520		
Adjusted R Square			.598		
F			36.475		
Sig.			.000***		
Durbin-Watson	2.501				

\*\*\*  $p < .000$

Table 5. Factors To Influence Internal Cohesion

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-.505	.556		-.910	.372
Social performance	.687	.340	.466	2.023	.054
Environment performance	.377	.170	.395	2.224	.036*
Financial performance	.090	.186	.088	.481	.635
R Square			.538		
Adjusted R Square			.517		
F			41.269		
Sig.			.000***		
Durbin-Watson			1.911		

\*  $p < .05$ , \*\*\*  $p < .00$

Table 6. Correlation Analysis Matrix

	Environment performance	Financial performance	Business performance
Social performance	.885***	.893***	.919***
Environment performance	.885***	.812***	.810***
Financial performance	.893***	.815***	.778***

$N=128$ , \*\*\*  $p < .000$

take part in the promotion of the CSR in person. In addition, the social participation of the social performance can increase not only the financial performance, but also can better the corporate image and viewpoints of different cycles in the society to the enterprises, so it is worthy for the enterprises to keep increasing their contribution to the society. For example, the enterprises can provide the motivations for the employees to participate the public community affairs; the employees can participate in the community environmental protection volunteer teams, community volunteers, public-welfare beach cleansing, public-welfare road running, community elderly care, and donate second-hand books to nearby communities and schools, etc.

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EDITORS' NOTE: TO VIEW THE REST OF THIS ISSUE, GO TO THE LINK ENTITLED VOL 10 NUM 4 APRIL 2018 SECTION C. IT STARTS WITH PAGE 200.