

An Empirical Study on the Benefit Analysis of Enterprises across the Strait Using ERP Systems

Ting-Sheng Weng¹ & Chin-Ju Liu²

¹ Department of Business Administration, National Chiayi University, Chiayi County, Taiwan, R. O. C.

² Business Administration, National Chiayi University, Taiwan, R. O. C.

Correspondence: Ting-Sheng Weng, Department of Business Administration, National Chiayi University, No. 580, Sinmin Rd, Chiayi City 60054, Taiwan (R. O. C.). E-mail: politeweng@yahoo.com.tw

Received: February 14, 2013

Accepted: May 13, 2013

Online Published: August 8, 2013

doi:10.5539/ijbm.v8n17p35

URL: <http://dx.doi.org/10.5539/ijbm.v8n17p35>

Abstract

As the world economy evolves with the process of globalization and internationalization, it has been a huge challenge for the enterprises of Taiwan confronting the mobility and toughness throughout the global market. In order to respond to the flourishing development of enterprises across the strait and the expansion on new sector, “inquiry processed in Taiwan, manufactured in Mainland China, and marketed toward the entire world.” is a very critical strategy for Taiwan’s enterprises to respond to the rise of China and globalization. The production and marketing strategy must be conducted and reacted closely to the market; furthermore, the manager of enterprises must be well informed of the movement of the industry worldwide, and be capable of integrate all the resources available. In addition to the HR, finance, material, technology, information, and production within an enterprise, enterprises should be vertically synergize the upstream and downstream supplier to present a complete supply-chain model and operation procedure, so to possess sufficient information during the process of decision making.

For the enterprises across the strait, establishing a factory in China does enjoy the low cost advantage, yet the problems of enterprise operation management cannot be ignored relatively. Previous studies rarely focused on the beneficial analysis of enterprises across the strait by installing ERP systems. This dissertation is dedicated to elaborate the motivation of the enterprises across the strait use ERP system by sorting and demonstrating relative studies of the previous studies, and shared the successful case of how ERP system installed have contribute to individual companies. It can serve as a solid reference for companies across the strait who is planning to install ERP systems and furthermore benefits in their planning to establish a effect-improvement strategies while doing so.

In this study sets to analyze the benefits by conducting questionnaire survey, and thorough interviews with employee of case study to gather and sort the benefit of management of case study from both sides of the strait, and take other enterprises as reference on problem solving. According to the result, it is evident that necessity and effectiveness for enterprises to implant ERP. The benefit of implanting ERP like strengthening the internal control and reduces operational risk, as a consequence it does increase of enterprise’s value, the enhancement of decision quality to accelerate the reaction ability, and elevates the competitiveness assumed by digitized information. All the above benefits have its remarkable effect. It can make the enterprise of across the strait gain instant control of the condition and information, and respond the dynamic market immediately to deal with the competition of globalization.

Keywords: the enterprises across Taiwan Strait, enterprise resource planning, the trade of diversification, ERP benefit, information integration

1. Introduction

1.1 Research Background and Motivation

As the Internet Era we are living in right now, countless of network communication devices have made up this massive communication network; and the network communication industry is the provider of all of these devices. During the 1990’s, enterprises in Taiwan brought in the Enterprise Resources Planning system (ERP System) as a conceptual framework to integrate and automate all the internal operation functions. ERP system is

a fully automate system which efficiently combines and integrates a corporation's internal resources, to enhance the corporation's competitive leverage that eventually brings bigger benefits to the corporation. Due to the layout of corporate globalization and ERP systems, manufacturers are faced with the problem of having trouble interpreting the factory information and operating performance. With the increase in the cross-strait exchanges and based on the corporation's global management planning and the considerations of manufacturing labors and costs, most of the Taiwanese corporations transferred their manufacturing facilities to mainland China, and kept their high-value sales teams and research and development units in Taiwan. Therefore, these corporations urge a higher demand for integration on their information systems. Regarding the use of corporate information for the cross-the-strait corporations, the research by De-Chin Kuo (2004) pointed out that since Taiwan has officially entered the TWO, Taiwan's foreign trade and planning for the cross-the-strait operations have become the top priority for Taiwanese corporations to enhance their competitiveness. Also, due to the economic environment and political environment factors, and government policies, the investment combinations for cross-the-strait Taiwanese corporations become more complex. How to optimize the advantages and benefits from the integration of their information systems across the strait with information technology, and whether the strategies of using these information technologies will impact the development and future of these corporations directly.

1.2 Research Purposes

As time and environment evolves, corporations' business has also expanded due to globalization. But the ever changing fast paced technology improvement have caused the traditional information technology to be outdated and cannot satisfy the unpredictable competitive environment such as price war became more fierce, product life time became shorter, market demands became more rapid, and the management of multi-national corporation became harder, etc. The difficulties in operating, economic scales, process, environment and management faced by the corporations in the globalization have all increased. So the system must help the managers to be fully in control of both internal and external environment as well as people, materials, resources, funds, and demands and supplies, and also assist the corporation to obtain advantages among the competitors. The ever changing external environment not only affects the marketing demands but also the directions of the corporations and their decisions. Whether it's for the corporations already enter the China market or are planning for global operations, they must eventually think how to enhance their core competitiveness. However, global planning does not equal to global operation. When globalized corporation wanted to import information system, they will first target its finance, environments, and organization, as well as the degree of acceptance of their employees. The corporation's core strategy of the operations is speed; a great utilization of the information system could simplify the management and enhance the intra-department communication and speed up the data transfer between departments. Eventually, resources would be better integrated, shared, controlled, and distributed to enhance the corporation's competitiveness.

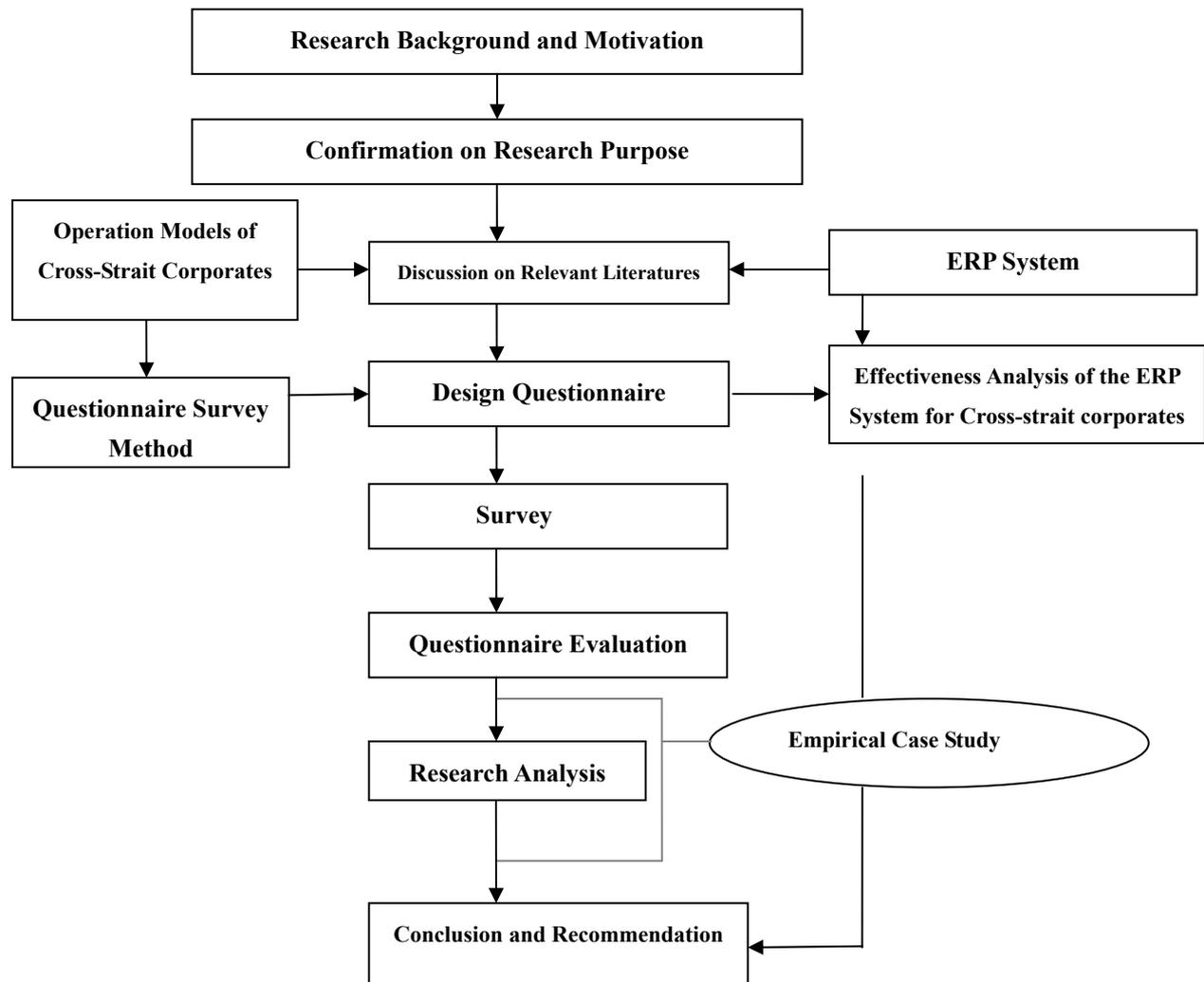
In the past, when a Taiwanese corporate wanted to invest in China, the process was initiated through a Tripartite Exchange, which got its name of triangular trade. But as time goes on, the trading process became more flexible and allowed more than 3, or 4, or 5 corporations in a single trade, the name was changed to the better matching polygonal trade.

This research used "order received by Taiwan and product produced in China" as an example to investigate the benefits of using the ERP system by the cross-strait corporations in order to enhance their competitiveness. I hope this research could bring more empirical experience in polygonal trades to the cross-strait corporations, so when they decide to bring in information technology, we could provide them with a practical and suitable plan as important reference for the decision makers.

1.3 Research Process and Range

The Research Process of this research is as follow:

Based on the initiation by the research backgrounds and motives, we conducted related literatures collection and discussion, and based on the literature discussion we further confirmed our research purpose and used it as our foundation to develop our research structures and procedures. We used questionnaire data method and used the ERP system of our subject cross-the-strait corporation to design the questionnaire and obtain information. We hope by proposing an effective information system import mechanism, we could find out their level of satisfaction based on the truths and adaptability toward the survey questions. Finally, we conducted data analysis after we collected the questionnaire. According to the analysis results, we proposed suggestions and conclusion on the benefits of importing information system for cross-the-strait corporations. Our research process is as shown in the flowchart below:



2. Literature Discussion

2.1 The Needs of Cross-Strait Corporations and the Applicability of the Application

Due to the development of modern corporations, the coordination between units within a corporation, and externally became more frequent and more important. A well-established ERP framework could support the requirements in multiple regions of an international corporation, multiple factories, multiple languages, and multiple currencies. The cross-strait corporation needs and the applicability of the ERP application are the key factors of successfully introduce ERP to the corporations. Same software would have differences in its applicability due to different organization structures, management policies, management styles, and corporation cultures; also the ERP system would perform differently due to different software providers, consultant teams, and whether the customer services have the professional practical cross-strait experience, technical support, and after sales service ability. Through mature and complete import mechanism, software customization, and the professional knowledge and marketing experience of the consultants would all effectively and successfully assist the performance of the system (Huang, 2005).

2.2 ERP System and the Internal Control Mechanism

ERP is an information management system which provides optimization to management resources. Many scholars (Tseng, 2001; Kuo, 2007) have proved that it could integrate all kinds of processes upstream and downstream, and enhance the corporation's ductility. After the ERP system is imported, the system could lower the risk of operation and avoid fraudulent practices by mutual inspection method, and could provide more self-diagnostic functions and limit test functions to increase the strength of quality control.

2.3 Assisting Management to Better Manage and Improve through Information Integration

When outside investors want to understand a corporation's financial status, they could only conduct analysis based on the financial reports provided by that corporation. Therefore, when this important financial information is provided by the ERP system, the integrity of the information is crucial. If the corporation management makes operation decisions, and the outside investors evaluate the corporation's invest potential, all based on the financial information generated by the ERP system, then the reliability and correctness of the information became very important (Tzang, Chang, & Wu, 2008).

2.4 Increase Competitiveness by Integrating the Upstream and Downstream through ERP

ERP is a large process oriented, modulized, and integrated system which integrates a corporation's internal financial accounting, production, and warehousing information, to provide rapid decision making information to enhance the corporation's operation performance and rapid response ability. ERP is the foundation and crucial component to a corporation's e-business. Applicable systems such as e-commerce, customer relation management, and supply chain management all use ERP as foundation (Davenport, 1998).

2.5 The Enterprise Level Benefits of Importing ERP System

Ng. (2001) pointed out that the enterprise level benefit of importing ERP system is to become the key factor for the system to continuing maintains activities. The research by Holsappe and Sena (2005) also pointed out that the ERP systems have decision support efficiency that can increase the reliability of the decision, and enhance the speed needed to make such decision and the ability to handle large and complicated problems.

3. Research Methods

3.1 Research Framework

The research framework formulated by this research is as follow:

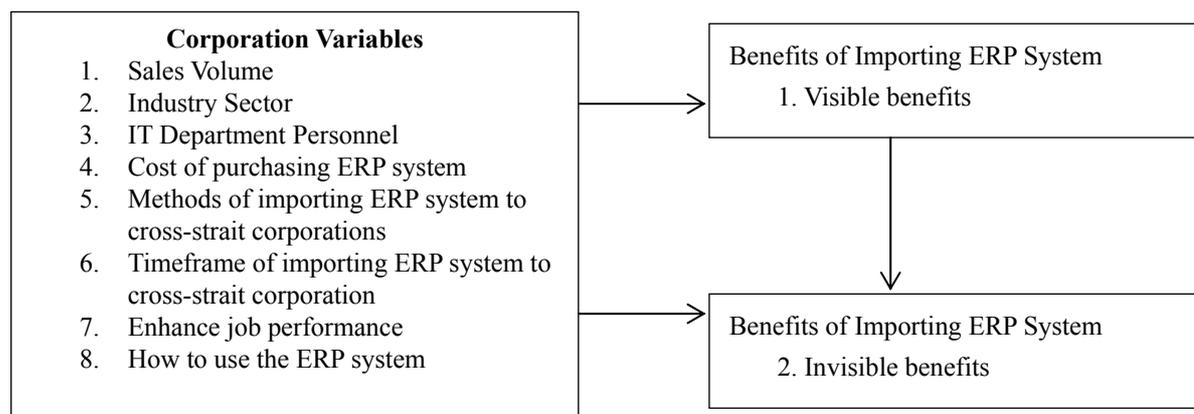


Figure 1. Research framework

3.2 The Establishment of Research Hypothesis

Based on the summary of literatures, research purposes, and frameworks, I proposed the following Hypothesis:

Hypothesis 1: Different corporation background variance show significant differences in "visible benefits".

Hypothesis 1-1: Different Sales Volume as Corporation variance show significant differences in "visible benefits".

Hypothesis 1-2: Different Industry Sector as Corporation variance show significant differences in "visible benefits".

Hypothesis 1-3: Different IT Department Personnel as Corporation variance show significant differences in "visible benefits".

Hypothesis 1-4: Different Cost of purchasing ERP system as Corporation variance show significant differences in "visible benefits".

Hypothesis 1-5: Different Methods of importing ERP system to cross-strait corporations as Corporation variance show significant differences in "visible benefits".

Hypothesis 1-6: Different Timeframe of importing ERP system to a cross-strait corporation as Corporation variance show significant differences in “visible benefits”.

Hypothesis 1-7: Different Enhance job performance as Corporation variance show significant differences in “visible benefits”.

Hypothesis 1-8: Different How to use the ERP system as Corporation variance show significant differences in “visible benefits”.

Hypothesis 2: Different corporation background variance show significant differences in “invisible benefits”.

Hypothesis 2-1: Different Sales Volume as Corporation variance show significant differences in “invisible benefits”.

Hypothesis 2-2: Different Industry Sector as Corporation variance show significant differences in “invisible benefits”.

Hypothesis 2-3: Different IT Department Personnel as Corporation variance show significant differences in “invisible benefits”.

Hypothesis 2-4: Different Cost of purchasing ERP system as Corporation variance show significant differences in “invisible benefits”.

Hypothesis 2-5: Different Methods of importing ERP system to cross-strait corporations as Corporation variance show significant differences in “invisible benefits”.

Hypothesis 2-6: Different Timeframe of importing ERP system to a cross-strait corporation as Corporation variance show significant differences in “invisible benefits”.

Hypothesis 2-7: Different Enhance job performance as Corporation variance show significant differences in “invisible benefits”.

Hypothesis 2-8: Different How to use the ERP system as Corporation variance show significant differences in “invisible benefits”.

Hypothesis 3: Visible benefits and invisible benefits are significantly correlated.

Hypothesis 4: Personal variables, corporation variables, and visible benefits are significantly correlated to invisible benefits.

3.3 The Measuring of Questions for the Benefits of Importing ERP

Based on the literature reviews, the research discussed the related factors on the benefits of cross-the-strait corporations using the same ERP system, which focus on the corporations that imported ERP system on both side of the strait, including both visible benefits and invisible benefits. We also tried to understand whether factors such as “company background variables” would make any difference in “visible benefits” and “invisible benefits” and their connections. We hope our research could provide recommendations to related agencies.

Table 1. The measuring of questions for the benefits of importing ERP

Level	Question Category	Question
Visible Benefits	Lower Cost	
	Increase Productivity	
	Improve Product Quality	
	Enhance Administration Efficiency	
	Increase Inventory Turnover Rate	
	Provide All Kinds of Check Statements	
	Reduce Error Rate by Providing Reliable Information	
	Reduce Redundant Information Entry and Process to Lower the Labor Costs	
	Increase the ability to rapidly handle massive information	
	Increase Sales or Corporate Profits	
Level	Question Category	Question
Invisible	Improve Corporation Process Effectiveness	
	Provide Correct and Immediate Market Information to Enhance Market Competitiveness	

Benefits	Enhance Interdepartmental Information Obtaining and Operational Efficiency
	The Integrity and Reliability of Information Collected
	Reduce Operation Management Risk
	Integrate the Supply Chain Information of Upstream and Downstream
	Enhance Customer Service Quality and the Customer Satisfaction and Loyalty
	Execute Internal Control of Corporation Management and to Avoid Fraudulent Activities
	Respond to Changes in the Market Rapidly
	Assist Management to Better Manage and Improve

3.4 Prediction Analysis

This research adopted the principal component analysis to conduct extraction of factors, and used the maximum variance method in orthogonal rotation; this is to maximize all the variables in the same factor loading squared variance, in order to reduce the explanation to the factors (Wu, 2006), and to retain common factor with eigenvalues greater than 1, and to build effective segmentation variables, to conduct tangible benefit dimension analysis.

Table 2 could be divided into 2 sub-dimensions; the explain variance of factor 1 is 43.49%, loading value is between 0.64 to 0.82, so we name factor 1 “strengthen the reported control to reduce operational risk”; the explain variance of factor 2 is 34.22%, loading value is between 0.84 ~ 0.92, so we name factor 2 “enhance corporation productivity”.

Table 2. Factor analysis table for visible benefit investigation

Question Category	Factor 1	Factor 2
	Strengthen the Reported Control to Reduce Operational Risk	Enhance Corporation Productivity
Reduce Cost	0.82	
Increase Productivity	0.82	
Improve Product Quality	0.81	
Enhance Administration Efficiency	0.70	
Increase Inventory Turnover Rate	0.64	
Provide All Kinds of Check Statements	0.81	
Reduce Error Rate by Providing Reliable Information	0.76	
Reduce Redundant Information Entry and Process to Lower the Labor Costs		0.86
Increase the ability to rapidly handle massive information		0.92
Increase Sales or Corporate Profits		0.84
Eigenvalue (pivot)	63.51	77.71
Explained variance (%)	4.35	3.42
Cumulative explained variance (%)	43.49	34.22

Table 3 can be divided into 2 sub-dimensions; the explain variance of factor 1 is 47.16%, loading value is between 0.81 to 0.87, since the loading value of “Enhance Customer Service Quality and the Customer Satisfaction and Loyalty” is lower than 0.5, therefore we omitted this question, and renamed Factor 1 “Strengthen decision quality and increase response speed”. The explain variance of factor 2 is 29.67%, loading value is between 0.82 to 0.89, so we name factor 2 “Increase competitiveness by digitized electronic information”.

Table 3. Factor analysis table for invisible benefit investigation

Question Category	Factor 1 Strengthen decision quality and increase response speed	Factor 2 Increase competitiveness by electronic information
Improve Corporation Process Effectiveness	0.81	
Provide Correct and Immediate Market Information to Enhance Market Competitiveness	0.83	
Enhance Interdepartmental Information Obtaining and Operational Efficiency	0.85	
The Integrity and Reliability of Information Collected	0.83	
Reduce Operation Management Risk	0.87	
Integrate the Supply Chain Information of Upstream and Downstream	0.87	
Enhance Customer Service Quality and the Customer Satisfaction and Loyalty	0.47	
Execute Internal Control of Corporation Management and to Avoid Fraudulent Activities		0.82
Respond to Changes in the Market Rapidly		0.89
Assist Management to Better Manage and Improve		0.88
Eigenvalue (pivot)	4.72	2.97
Explained variance (%)	47.16	29.67
Cumulative explained variance (%)	47.16	76.83

This research conducted a reliability analysis on the visible benefits and the invisible benefits; the reliability for the visible benefits is 0.91 and the reliability for the invisible benefits is 0.94. This showed that the question category has a nice internal consistency.

Table 4. Reliability analyses of all the scales

Levels	Number of Questions	Cronbach's α Coefficient
Visible Benefits	10	0.91
Invisible Benefits	9	0.94

4. Research Analysis

4.1 Variance Analysis

In this section, we used independent sample t test and one-way ANOVA to investigate the differences of the background variances of different interviewed corporations on their visible and invisible benefits. If the single-factor analysis of variance F test is significant (set $\alpha = .05$), then we will run a comparison later by the Scheffé's method.

This research summarized the variance analysis of the visible and invisible benefits of the corporation backgrounds as shown in Table 5.

Table 5. Variance analysis summary

Hypothesis	Establishment
Hypothesis 1: Different corporation background variance show significant differences in “visible benefits”	
Hypothesis 1-1: Different Sales Volume as Corporation variance show significant differences in “visible benefits”	Partially Established
Hypothesis 1-2: Different Industry Sector as Corporation variance show significant differences in “visible benefits”	Partially Established
Hypothesis 1-3: Different IT Department Personnel as Corporation variance show significant differences in “visible benefits”	Partially Established
Hypothesis 1-4: Different Cost of purchasing ERP system as Corporation variance show significant differences in “visible benefits”	Established
Hypothesis 1-5: Different Methods of importing ERP system to cross-strait corporations as Corporation variance show significant differences in “visible benefits”	Partially Established
Hypothesis 1-6: Different Timeframe of importing ERP system to a cross-strait corporation as Corporation variance show significant differences in “visible benefits”	Established
Hypothesis 1-7: Different Enhance job performance as Corporation variance show significant differences in “visible benefits”	Established
Hypothesis 1-8: Different How to use the ERP system as Corporation variance show significant differences in “visible benefits”	Partially Established
Hypothesis 2: Different corporation background variance shows significant differences in “invisible benefits”	
Hypothesis 2-1: Different Sales Volume as Corporation variance show significant differences in “invisible benefits”	Partially Established
Hypothesis 2-2: Different Industry Sector as Corporation variance show significant differences in “invisible benefits”	Partially Established
Hypothesis 2-3: Different IT Department Personnel as Corporation variance show significant differences in “invisible benefits”	Partially Established
Hypothesis 2-4: Different Cost of purchasing ERP system as Corporation variance show significant differences in “invisible benefits”	Partially Established
Hypothesis 2-5: Different Methods of importing ERP system to cross-strait corporations as Corporation variance show significant differences in “invisible benefits”	Established
Hypothesis 2-6: Different Timeframe of importing ERP system to a cross-strait corporation as Corporation variance show significant differences in “invisible benefits”	Established
Hypothesis 2-7: Different Enhance job performance as Corporation variance show significant differences in “invisible benefits”	Established
Hypothesis 2-8: Different How to use the ERP system as Corporation variance show significant differences in “invisible benefits”	Partially Established

5. Empirical Case Study Research

5.1 Case Subject Introduction

The case subject corporation of our research was established in 1982. Its main product lines include commercial lighting equipment such as track lights, spotlights, and wall washers, etc., and it focus mainly on export markets. It established a factory facility in Kunshan, Jiangsu Province, China in 2002 which manufactures commercial lighting equipment with several thousands of employees. The head quarter of this corporation is still in Taiwan, which houses R&D, purchasing, marketing, sales, and accounting personnel.

The subject corporation started using ERP system since 1989. But the old ERP system didn't have polygonal trading functions and group account; and the system mainframes in Taiwan and China are different, so the process and data weren't unify which caused difficulty in management, and could not provide the correct information to the management and decision makers to make the optimal decisions. Therefore, they have

decided to search and import a new ERP system.

5.2 Participant Flow

The subject corporation of our research receives orders in Taiwan and produces and ships out products in China. We tried to solve their accounting process problems so their logistics and cash flow in the systems would be consistent.

A. ERP System Order Process:

After Taiwanese corporation received orders from customers and entered into the Taiwan ERP system, with the multi-point trade system of the cross-the-strait ERP system, it automatically transferred the Taiwanese order into a PO to the off-shore corporation. Then it automatically transferred the PO into an order for the off-shore company and again transferred it into a PO for the factory in China. It generates 4 orders with just 1 input. If there are 2 off-shore companies involved, then it can be set to produce 6 orders.

The process of transferring document through the polygonal trading function of the ERP system when an order is received by the Taiwan Company is as follow:

- 1) Taiwan Company ERP System: after entering the order, the ERP system will automatically generate an order to Overseas Company.
- 2) Overseas Company ERP System: automatically generates an order for the Overseas Company to the China Company.
- 3) China Company ERP System: automatically generates an order for the China Company and issues an invoice to the Overseas Company.

Advantages: After the Taiwan Company receives an order, through the execution of the ERP system polygonal trading functions, by the time the order is passed to the China Company, the unit price has already been setup in the ERP system, which leaves reasonable profits with the Overseas Company. Furthermore, the part numbers and BOM table would also be fully transferred, so the chance of the China Company to use the wrong parts during production would be eliminated.

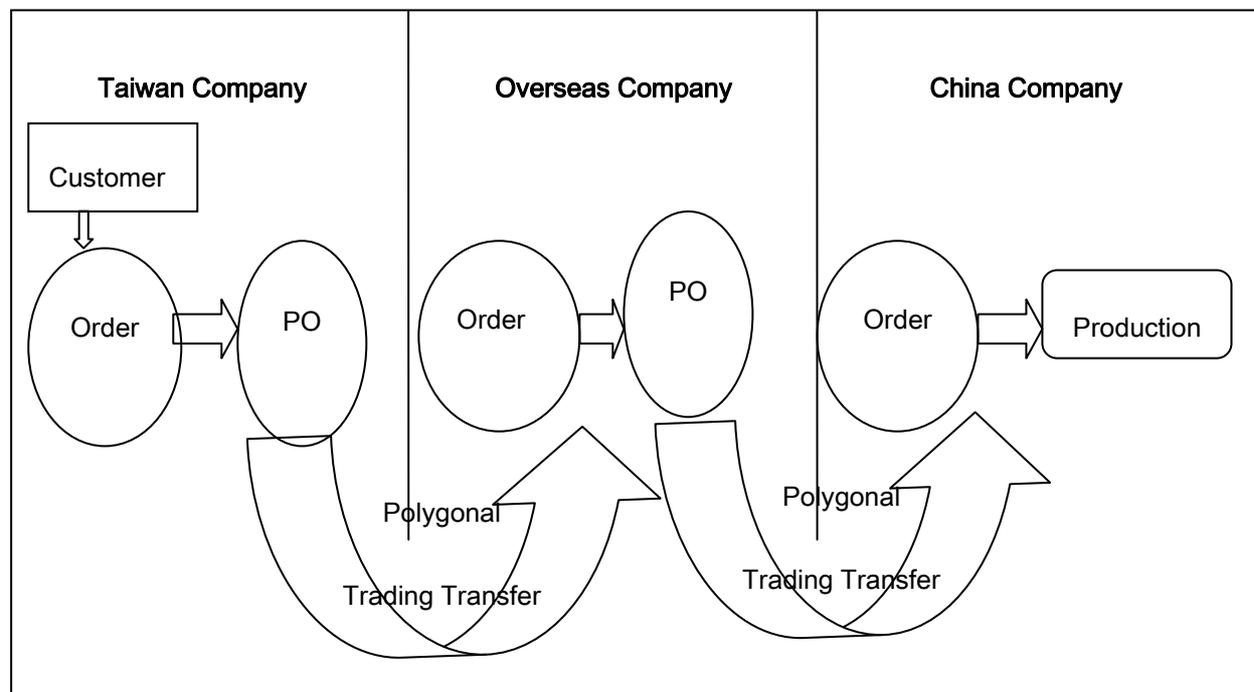


Figure 2. ERP system order process

B. ERP System Shipping Process

When the factory in China has finished the production and ready for shipment, they just need to input the shipping notice in the China ERP system and the system will automatically generate a sales slip. With the

execution of the ERP's multi-point trade system, the sales slip in China will automatically transferred to the receiving notice for the off-shore corporations, and again it will be transferred into the sales slip for the off-shore corporation and becomes the receiving notice for the Taiwanese corporation.

The process of transferring document through the polygonal trading function of the ERP system when the China Company ships out is as follow:

- 1) China Company ERP System: after entering the order for production, the ERP system will automatically generate sales invoice.
- 2) Overseas Company ERP System: automatically generates PO for the Overseas Company to the China Company and generates sales invoice to the Taiwan Company.
- 3) Taiwan Company ERP System: automatically generates PO for the Taiwan Company to the Overseas Company and generates sales invoice to the Customer.

Advantages: After production, the China Company ships directly to the customer. The ERP system polygonal trading function is able to generate POs, sales invoices, packing lists, and all kind of document for each and every company. The ERP system will also automatically correspond to the POs and invoices to offset the close account.

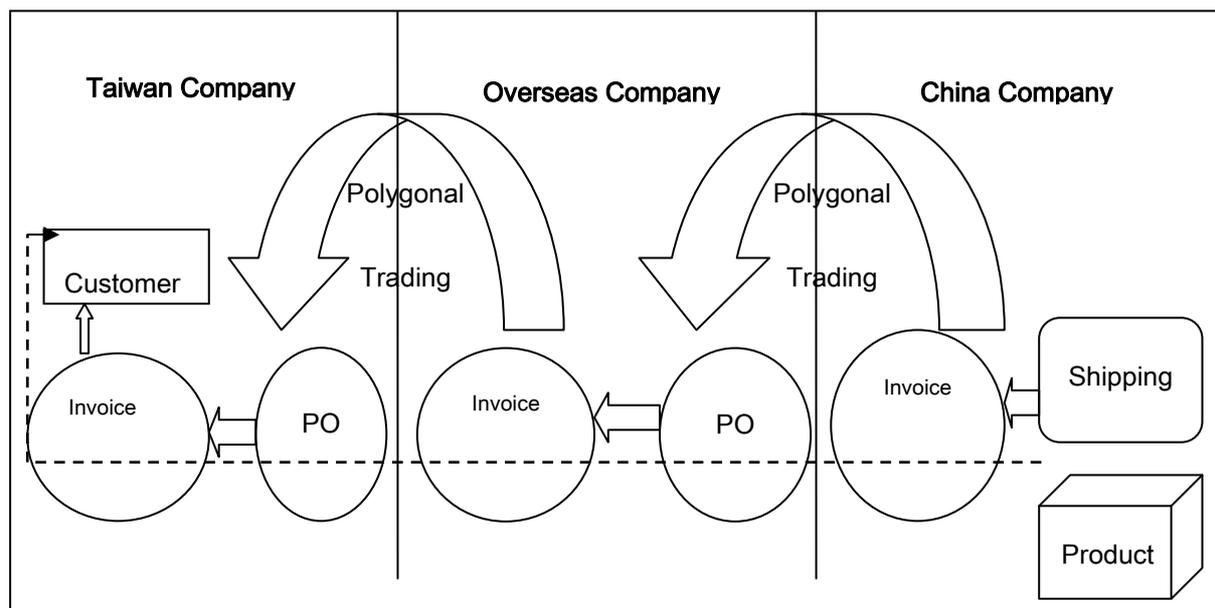


Figure 3. ERP system shipping process

C. ERP System Accounting Process

When the ERP system transfers shipping process through the polygonal trading functions, the system simultaneously generates and distributes all the shipping and invoice document to each and every company. This function saves the labor from having to manually to enter data for all documents, and could make sure that the accounting information for all 3 companies are correct.

Advantages: After the order has been shipped, the ERP system would automatically generate all the accounts payable and accounts receivable information for the 3 companies. This could help avoid the man-made error when have to enter the data manually, and could increase efficiency and correctness of the process. The system could also help to carry out proper financial planning according to the corporation's plan.

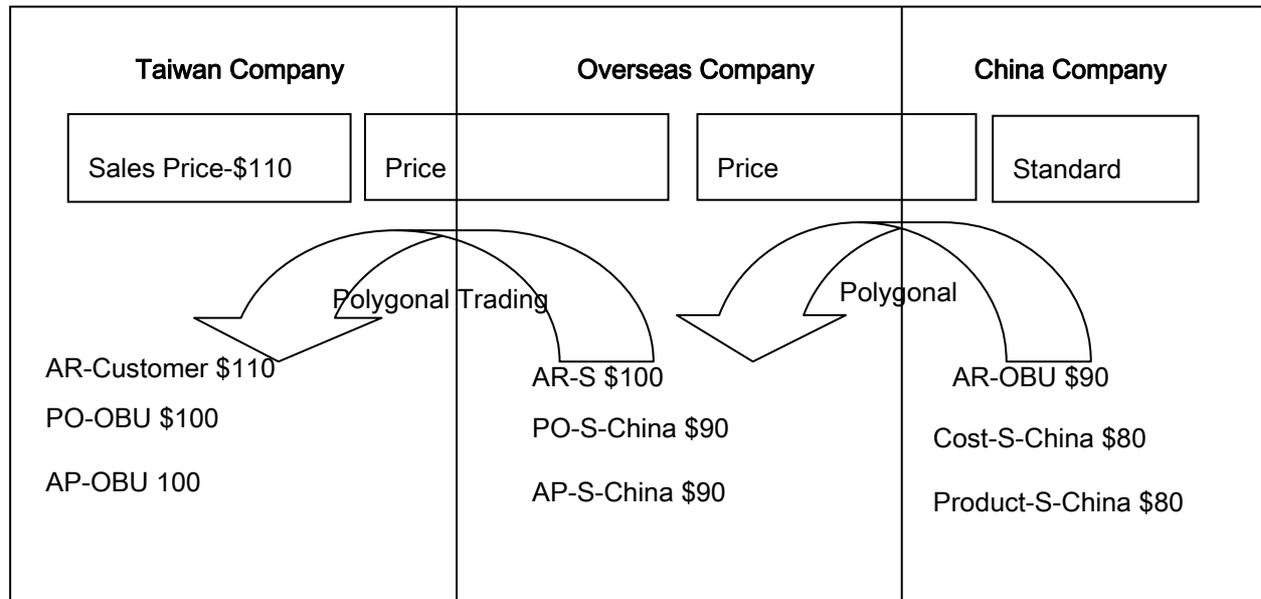


Figure 4. ERP system accounting process

5.3 The Benefit Analysis of the Subject Corporation after Importing the ERP System to Their Cross-Strait Companies

It has been almost 2 years since the subject corporation imported the ERP system to their cross-strait companies, and the benefits of using the system by each department became more obvious. Therefore, with depth interview with the system users of every department, we were able to obtain the empirical answers of every benefit dimension by focusing factor analysis to discuss the benefits of importing the ERP system to the cross-strait companies. The summary of the interviews with each department is categorized into 4 efficiency indicators, and they are explained below:

A. Research & Development Department

- 1) Strengthen internal control to reduce operational risk-the basic information about the product is the same as in Taiwan. Unifying parts number BOM table across the strait is the beginning of the ERP operation which makes sure there won't be any errors of purchasing the wrong parts or making the wrong products or any differences in the BOM structure.
- 2) Increase enterprise output value-only the R&D personnel in Taiwan have to increase their workload as they don't need to maintain part numbers and BOM table, so the output value in Taiwan didn't have significant increase; the R&D personnel in China don't need to maintain part numbers and BOM table anymore, so they significantly reduce the man power as they eliminate the redundant data entry process.
- 3) Strengthen decision quality and increase response speed-whenver the part numbers and BOM changes, the ERP system will record and follow up with any modifications in order to maintain the integrity and completeness of the data to reduce error.
- 4) Increase competitiveness by digitized electronic information-makes the communicating language unify across the strait.

B. Sales Department

- 1) Strengthen internal control to reduce operational risk-this could avoid the wrong entry of part numbers and quantities by China Company, and to reduce the chance of unsymmetrical information, thus reduce operational risk.
- 2) Increase enterprise output value-When the sales of the Taiwan Company receives an order, they could immediately check the prices, inventory level in China, and the currently production status in the ERP system, and could respond to customer request promptly.
- 3) Strengthen decision quality and increase response speed-increases the unification of the information among all cross strait companies, and generates all document needed for ship out at the same time to reduce the

amount of data entry and document.

- 4) Increase competitiveness by digitized electronic information-through the sales analysis of the ERP system, we could understand the current sales status faster to increase the customer service quality, customer satisfaction and their loyalty.
- C. Materials Department
- 1) Strengthen internal control to reduce operational risk – a. effectively and correctly generates the purchase order for the China Company to satisfy the procurement needs; b. effective in increasing the inventory turnover ratio and reduce cost; c. precisely finishes all the reconciliations by end of the month to the Financial Department to enhance administration efficiency.
 - 2) Increase enterprise output value – eliminates the redundancy in data entry.
 - 3) Strengthen decision quality and increase response speed-a connects the upstream and downstream of the supply chain across the strait in order to control all the information; b. provides immediate and correct material information in order to rapidly procure necessary materials for precise delivery time, and to enhance operation efficiency and information retrieval for all departments.
 - 4) Increase competitiveness by digitized electronic information-follows the delivery schedule from the purchasing to production to shipping.
- D. Manufacturing Department
- 1) Strengthen internal control to reduce operational risk-the ERP system is mostly used in functions like production transfer, workload reporting, and product transfer; personnel in Taiwan could precisely control the production progress and completion status easily with the ERP system.
 - 2) Increase enterprise output value-the manufacturing department still requires labor efficiency to increase output value. The importing of ERP system doesn't obviously affect the output value.
 - 3) Strengthen decision quality and increase response speed-a strengthen the information system connection between Taiwan and China which could automatically generates the production needs of the manufacturing company; b. the production scheduling and the increase in productivity could make the operation efficiency better among all the departments across the strait, and increase the response speed of the corporation.
 - 4) Increase competitiveness by digitized electronic information-Taiwan Company could faster control the inventory and production status of the China Company, which is better for the corporation to make quality decision.
- E. Financial Department
- 1) Strengthen internal control to reduce operational risk-a greatly reduces the risk of man-made errors; b. saves the time in reconciliation the accounts and rapidly finishes the combined financial statements for the corporation.
 - 2) Increase enterprise output value-a the corporation could adjust the unit prices anytime according to financial policy, increase inventory level and better manage financial and tax management; b. leaves reasonable profits in the Overseas Company to achieve tax saving purpose.
 - 3) Strengthen decision quality and increase response speed-a there is no delay in collecting AR and no currency exchange issues; b. ensures the promptness, correctness, and completion of the information across the strait; c. allows the management to get in control of all the financial information.
 - 4) Increase competitiveness by digitized electronic information-provides immediately operation status to high level management.
- F. Operation Department
- 1) Strengthen internal control to reduce operational risk-a the Taiwan Company and the China Company could audit each other to reduce management cost; b. provides combined financial statements to the management to better control the latest information of the corporation.
 - 2) Increase enterprise output value-a the Taiwan Company and the China Company would use the same database, which is easier to integrate and reduces the needs for hardware equipment and maintenance personnel; b. importing ERP system would greatly enhance the add values to the corporation as well as its competitiveness.

- 3) Strengthen decision quality and increase response speed-a by setting the Taiwan Company as the order receiving trading company and the China Company as the manufacturing company, it's beneficial to the corporation to reduce some operational risk; b. by separating the corporation into multiple sub-companies, it's beneficial to the management that each companies could operate independently, but could also control the information of other companies to enhance efficiency; c. could provide immediate information that reflects the decision making process, and could solve customer problem sooner.
- 4) Increase competitiveness by digitized electronic information-by providing immediate and correct decisive information is helpful to increase market competitiveness, and has direct benefits to all the departments in collecting correct and complete information. This is helpful to the corporation to have better internal control, avoid fraudulent activities, have rapid response to the changing market, and provide all kinds of audit reports to the management for better operations, and eventually increase sales and profits for the corporation.

6. Conclusion and Recommendation

This research focused on the discussion of the benefits of using the enterprise resources planning (ERP) system for the cross strait corporations. We used questionnaire interview method to conduct the research, and used the research analysis in Chapter 4 of this research as the basis, and combined with the benefit structures with the empirical case of our subject corporation in Chapter 5, and the empirical research benefit analysis by interviews with the professionals, to explain the benefits of importing the ERP system to a cross strait corporation. We also provided key references to relevant corporations for setting up or planning to import the ERP system, as well as provided recommendations to scholars for future researches.

6.1 Research Conclusion

After analyzing the research results in Chapter 4, we summarized the benefits of the cross strait corporations adopting the ERP system as follow:

- A. After ERP system has been imported, both visible benefits and invisible benefits showed significant differences to the corporations. Whether the ERP system could enhance performance, under the visible benefits' "Strengthen internal control to reduce operational risk" and "Increase enterprise output value", as well as invisible benefits' "Strengthen decision quality and increase response speed" and "Increase competitiveness by digitized electronic information", and "invisible benefits" all show significant difference. Therefore it does appear to us that enterprise resource planning system does offer assistance to corporation to achieve both visible and invisible benefits. From this research result, we could see that, to the interviewees, after importing the ERP system, they all thought "Strengthen internal control to reduce operational risk" and "Increase enterprise output value", "Visible benefits", "Strengthen decision quality and increase response speed", "Increase competitiveness by digitized electronic information", and "Invisible benefits" have all improved. ERP system does help the corporations to develop and also help the corporation to reduce unnecessary spending and wastes, which is beneficial to a corporation's long term survival. Also, most of our research targets came from manufacturing, trading, services industry and retail industry, so we know that in general, an ERP system not only helps in strengthening the internal control to reduce operational risk and to increase enterprise output value, more importantly, it is suitable for every industry. So as long as a corporation wants to import an ERP system, disregard the industry they are in, they can still utilize this system to reduce the time to enter the market, and at the same time, they could strengthen their internal control to reduce overspending and waste. It could also help the corporation in precision of their decision making, increase the response speed of both the system and their personnel to reduce operational risk and enhance corporate competitiveness.
- B. For the visible benefits of the ERP system, they showed significant differences in "Strengthen internal control to reduce operational risk" and "Visible benefits", but showed insignificant difference in "Increase enterprise output value". ERP system can provide necessary assistance based on the corporation's need, and due to its electronic operation, man-made mistakes are reduced to make the corporation "strengthen internal control to reduce operational risk", and show significant difference in "visible benefits". But because enterprise value can be associated with sales volume, global economy, customer demands, etc, so for "Increase enterprise output value", there is no significant difference.
- C. For the invisible benefits of the ERP system, they showed significant differences in "Increase competitiveness by digitized electronic information" and "Invisible benefits", but showed insignificant difference in "Strengthen decision quality and increase response speed". After the corporation imported the ERP system, it will mainly rely on the digitized process provided by the ERP system to serve managerial

functions for the corporations to operate that reduces man-made error from operation and associated risks; therefore, in “Increase competitiveness by digitized electronic information”, the “Invisible benefits” showed significant difference. But due to the final decision of the corporation is still made by the decision-maker; therefore “Strengthen decision quality and increase response speed” does not have significant difference.

- D. The visible benefits and the invisible benefits provide by the ERP system displayed a positive correlation relation. From our research results we observed that: “Visible benefits”, “Strengthen internal control to reduce operational risk” and “Increase enterprise output value” have all shown significance with “Invisible benefits”, “Strengthen decision quality and increase response speed”, “Increase competitiveness by digitized electronic information” and their correlation is positive. Therefore, we know when strengthening internal control to reduce operational risk and to increase enterprise output value. They will reduce the managerial risks for the corporation and will increase the material supply and control precision. When under well managed operation, it enhances invisible benefits such as decision quality, and decision correctness. The precise statistic data also provide a good direction for material supply, and will send out notice promptly to help employees to make faster and better decision more precisely. The correct electronic information provided by the ERP system will help reduce operational cost and increase corporate efficiency and production as well the corporate competitiveness. The positive correlation between visible benefits and invisible benefits means when ERP effectively increase the visible benefits, the invisible benefits it brought will also increase. This kind of positive cycle will help the corporation with better development and promotes internal management of the corporation and its external competitiveness.

6.2 Research Recommendations

This research proposed the following 3 recommendations to the corporations interested in importing an ERP system to optimize the benefits:

- A. There is a necessity to import the ERP system:

From the research results we could know that the ERP system can effectively enhance the internal operation of a corporation, reduce operational risk, increase corporation output value, etc. It could also increase the corporation sales, reduce management cost, and increase corporation profits by improving the management quality. From this we could know what by importing an ERP system, not only it will bring more convenient operation process to the corporation; it will also enhance enterprise output value that leads to the corporation's income, reduce man-made error and enhance efficiency. Therefore, if a corporation tries to expand to cross-the-strait operation or globalization development, importing an ERP system is necessary. Not only the ERP system will effectively make the corporation enter the market in shorter time, it will also help the corporation to reduce unnecessary labor, materials, and managerial wastes that can shorten the time for the corporation to enter the market, increase corporate income and competitiveness. As long as the corporation can overcome the adaptability and adjustment period initially, the benefits it brought will be rewarding. We highly recommend those corporations who want to developed into a higher end, more dynamic company, they must import an ERP system, to shorten the time to enter the market, and use the time to turn into more profits, in the same time, to reduce labor, materials, and wastes.

- B. The planning of the ERP system must matches the needs of the corporation:

A corporation must follow their needs when importing an ERP system. In order to customize a suitable ERP system, after numerous discussions internally, the accurate data and requirement are passed to the program designer to customize an ERP system that suits just that corporation. After the program is completed, the IT personnel will test it carefully to debug the program and solve any potential problems to make the ERP system perfect for that customer needs, to the corporation needs will optimize the benefits and help the corporation to achieve their targets.

- C. The corporation must have aggressive ambition in setting targets, and be flexible to change and modify the system to the actual operation, in order to maximize the best effectiveness of the ERP system. There would be a transition period initially when ERP system is imported to replace the old system (Davenport, 1998). The ERP system operator should handle it carefully and precisely come up with a system that suits this corporation. The leaders of the corporation should also be aggressive to set out corporate goals and enter them into the system to help guide the corporation to pursue those goals. The IT personnel should monitor and correct the system constantly to make the ERP system have optimal effects to help the corporation achieving the targets.

6.3 Research Limitations

Due to the limited timeframe, man power, budgets, materials, and spaces, this research faced a lot of harsh conditions; therefore we proposed the followings to scholars as future research suggestions:

- A. This study conducted a research on different industry sectors among the cross strait corporations to obtain a macro result, and to understand the benefits of importing an ERP system to a corporation. However, we didn't focus on a single industry sector to conduct analysis. We suggested the future scholars could focus on a corporation or corporations of a single industry sector and cross check the results with this study to verify the integrity of this research.
- B. Globalization does not limit to just Taiwan and China. This research only focused on the cross strait corporations, and the results were limited to the Chinese population. Future scholars could expand their researches to Southeast Asian countries such as Vietnam, India, Indonesia, etc., to obtain a broader result.

References

- Davenport, T. H. (1998). Putting the Enterprise into the Enterprise System. *Harvard Business Review*, 76(4), 121-131.
- Holsapple, C. W., & Sena, M. P. (2005). ERP plans and decision-support benefits. *Decision Support Systems*, 38(4), 575-590. <http://dx.doi.org/10.1016/j.dss.2003.07.001>
- Huang, Y. J. (2005). *A research of Critical Success Factors of Hospital Information System induction*. MA: I-Shou University.
- Jan, S. J., Chang, S. Y., & Wu, D. X. (2008). The establishment of internal control in ERP system-a case study of a Telegraph and Telephone Corporation. *Electronic Commerce Studies*, 2(6), 159-188.
- Kuo, D. C. (2004). *Resolution for cross-the-strait corporations importing the ERP system-Subject analysis on distribution*. Master Thesis, Information Management Institute of National Taiwan University.
- Ng, C. S. P. (2001). A decision framework for enterprise resource planning maintenance.
- Wu, M. L. (2006). *Practical SPSS: applied statistics and questionnaire analysis*. Taipei: Bookcity.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).