

**SUCCESS FACTORS FOR MANAGING BENCHMARKING
PROCESS**

by

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**Research report submitted in partial fulfilment of the requirements for the
degree of Master of Business Administration**

April 1998

ACKNOWLEDGEMENTS

I wish to express my deepest gratitude, sincere appreciation and thanks to my project supervisor, Associate Professor Muhamad Jantan, for his guidance throughout the course of this project. I will always be thankful to him for making my research project a profound experience.

I would like to thank my friends who had supported this research by helping to distribute , administer and collect the questionnaires in their organisations, namely Mr. TH Koay, Ms. CH Lian, Mr. GY Tan, Mr. KK Liang, Mr. ET Ong, Mr. HC Ng and Mr. Narinder Singh.

My fellow classmates have been a source of inspiration in their contribution of ideas and sharing of knowledge. Through numerous other projects where we have worked together, they have made a very positive impact in my academic pursuits.

Finally, I would like to thank my mother, Pek Ah Noo, my wife, Nancy and my kids, Raymond, Jason and Joanne for their patience, understanding and support throughout the course of my study. We are great!

Deou Seang Sin

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ABSTRAK

Kajian ini bertujuan menyelidik sejauh manakah penggunaan 'benchmarking' dan apakah faktor-faktor yang menyumbang kepada kejayaan 'benchmarking' oleh syarikat-syarikat elektrik dan elektronik di Pulau Pinang. Data diperolehi melalui borang kaji-selidik yang dibantu oleh seseorang untuk syarikat-syarikat yang terpilih. Hasil kajian menunjukkan bahawa kebanyakan syarikat-syarikat elektrik and elektronik di Pulau Pinang melaksanakan 'benchmarking' yang kian meningkat tetapi, kebanyakan syarikat masih pada peringkat permulaan proses ini.

Secara umum, syarikat-syarikat elektronik dan elektrik mempunyai kefahaman yang baik tentang konsep 'benchmarking'. Hasil kajian menunjukkan bahawa kedua-dua industri ini tidak ada perbezaan tanggapan yang ketara tentang 'benchmarking'. Walau bagaimanapun, terdapat perbezaan yang ketara dalam beberapa tanggapan pernyataan di antara syarikat multinasional barat dan kedua-dua syarikat multinasional timur dan syarikat-syarikat tempatan. Oleh kerana itu, timbul salah fahaman konsep 'benchmarking' oleh syarikat-syarikat tempatan dan multinational timur.

Analisis seterusnya menunjukkan bahawa hanya latihan untuk pekerja-pekerja mempunyai sumbangan yang bererti terhadap kejayaan dalam 'benchmarking'. Faktor-faktor lain seperti komunikasi, penglibatan pihak atasan, 'benchmark partner' dan penglibatan pekerja-pekerja juga memainkan peranan yang penting.

Implikasi hasil kajian ini adalah syarikat-syarikat tempatan, syarikat multinasional timur dan syarikat-syarikat dengan bilangan pekerja kurang daripada 1000 orang, perlu lebih memahami konsep “benchmarking”. Pihak pengurusan perlu memberi latihan ‘benchmarking’ yang sewajarnya kepada pekerja-pekerja yang terlibat dalam proses ini.

Yang penting sekali ialah penyerapan ‘benchmarking’ dalam budaya syarikat-syarikat dan proses perniagaan amat digalakkan. Secara keseluruhan, adalah dicadangkan bahawa, Pusat Produktiviti Nasional boleh memainkan peranan yang amat penting dalam perkembangan penggunaan ‘benchmarking’.

ABSTRACT

This study intends to investigate the extent of benchmarking practices and the success factors for benchmarking process by electrical and electronics companies in Penang. Data collection method was through the use of mail questionnaires that were administered through personal contacts for all the companies selected. The result indicated that the electrical and electronics companies in Penang are increasingly making use of benchmarking, a trend expected to continue for the next five years. Most of the companies are still in the early stage of practising benchmarking.

Generally, electrical and electronics companies have a good understanding of the benchmarking concept and there is no significant difference on perceptions of benchmarking between these two industries. However, the research indicated that there are significant differences on a number of statements on perceptions between western multinationals and both eastern multinationals and local companies. As a result, there are some misconceptions on benchmarking among the local companies and eastern multinationals.

Multiple regression analysis indicated that only employee training contributed significantly to the success of benchmarking. However, other factors such as top management commitment, communication, employee involvement and benchmark partner are also important factors for implementing the benchmarking process.

The implication of this research is that local companies and eastern multinationals as well as those smaller size companies (< 1000 employees) need to improve their understanding of benchmarking concept and the management needs to provide the

necessary benchmarking training to its employees. Most importantly , the benchmarking needs to be incorporated into part of the company culture and its business process. At the same time, the National Productivity Centre (NPC) being a national organisation, can rightly position itself to assume its role to promote, facilitate and improve benchmarking practices

Chapter 1

INTRODUCTION

1.1 Introduction to Benchmarking

Benchmarking is simply a process of comparing practices and procedures to those of the best to identify ways in which an organisation can make improvements. In this way, organisations can add value to their customers and distinguish themselves from their competitors.

Ever since Rank Xerox became trail-blazers of benchmarking in the late 1970s and 1980s, management consultants have predicted that benchmarking will revolutionise organisational performance. Benchmarking has become a part of the US Malcolm Baldrige Quality Awards. The topic took off to such an extent that in the United States television commercials referred to their products as 'best in class'.

For the Malaysian industry, the key factor to survival, growth and success in the 90s and beyond is the ability to sustain and to enhance competitiveness. Small incremental continuous improvement is not going to be sufficient for us because there are often vast differences between the best companies and the average companies in terms of productivity, quality, delivery costs, services and practices. Therefore it is imperative that benchmarking be an invaluable tool in helping Malaysian companies compete in this area. The National Productivity Centre, which assists the industrial sector to enhance its competitiveness, is introducing a service to promote and provide training in benchmarking in Malaysia.

Benchmarking brings many advantages to an organisation. It helps to accelerate and manage change, improves processes, sets performance goals and generates an understanding of world-class performance of an organisation. There are various types of benchmarking namely, internal, competitive, functional, and generic. Internal benchmarking is a comparison of internal operations. It means benchmarking against another internal operation. Specific competitor-to-competitor comparisons for the product or process or function of interest is known as competitive benchmarking. Functional benchmarking deals with comparisons to similar functions within the same broad industry or to industry leaders. Generic benchmarking involves comparison of business functions or processes that are the same regardless of industry.

1.2 Scope of the Study

This project has chosen to focus on a fast changing and highly competitive industry - Electrical and Electronics industry. This study investigates the extent of benchmarking practices and the success factors for benchmarking in electrical and electronics industry. A total of 140 electrical and electronics firms in Penang from various industrial bases were selected for the study. The scope of this study is only limited to factories within Penang. The reason for this is to reduce cost and time required for the study. Due to the diversification of bases, these companies are divided into 3 categories, namely western multinational corporations, eastern multinational corporations and local based companies. This will allow us to have a comparative dimension toward the subject of interest.

1.3 Problem Statement

The research questions to be addressed are:

- 1) What is the extent of benchmarking practices among the electrical and electronics firms in Penang?
- 2) What are the factors contributing to the success of the benchmarking process in electrical and electronics firms in Penang?

Five factors have been identified and to be investigated for managing successful benchmarking processes. They are top management commitment, employee training, employee involvement, communication and benchmark partner.

Chapter 2

LITERATURE REVIEW

2.1 History of Research

Cook (1995) defined benchmarking as a process of identifying, understanding and adapting outstanding practices from within the same organisation or from other businesses to help improve performance. Main (1994) defined benchmarking as a focused, systematic way of improving quality by finding out how others do something better than you do, and then applying what you learn to your own company. Camp (1989) defined benchmarking as the search for industry best practices that lead to superior performance.

Empirical evidence about the success factors on managing benchmarking processes is limited. There exists, however, a growing number of case studies of successful companies in using the benchmarking to combat the competition. For example, Xerox Manufacturing Operation in early 1979 went to benchmark the way its photocopiers were built, the cost of production, the cost of selling, the quality of the service and many aspects of its business against its competitors. Not only has Xerox improved its financial position and stabilised its market share world wide, but it has increased customer satisfaction by 40 per cent in the past four years.

Camp (1989) has identified various success factors for benchmarking such as active commitment from management, knowing one's process well, willingness to change, willingness to share with benchmark partners, institutionalisation of benchmarking.

Management involvement is essential when it comes to ensuring that requirements are understood for benchmarking outputs.

Cook (1995) cited several key success criteria identified by the benchmarking practitioners such as linking benchmarks to the organisation's mission, measurable goals, senior management commitment, powerful team, willingness to change, focus on the right issues and focus on the right partners.

To enhance the chance of success in benchmarking, Bemowski (1991) stressed that there must be a right environment for benchmarking in which people must be comfortable with learning about others who are better than them. He also indicated that seventy percent of the benchmarking project's success depends on how well it was planned. Weimer (1992), Camp (1989) also shared the same opinion that planning is the necessary first step of any benchmarking programme.

Spendolini (1993) mentioned that one of the primary factors that contributed to the success of benchmarking efforts in organisations such as Xerox Corp., Motorola Inc., AT & T and Milliken. is the careful selection, training and help given to employees who perform benchmarking activities.

Moay (1995), Biesada (1991), Thompson (1992) and Bemowski (1991) elaborated that the benchmark team must be knowledgeable about its own processes. In addition, Moay (1995) stressed that the willingness to spend time with benchmark partners, be curious and no assumption attitude are the keys to the success of benchmarking.

Langowitz and Rao (1995) and Vaziri (1992) said that the benchmarking process could be improved significantly by allowing full participation from every employee in data collection process and communicating the findings throughout the organisation to guide and focus improvement activities at every level and in every function. Weimer (1992), Camp (1989) and Bemowski (1991) mentioned that communicating the findings of the benchmarking study, gaining acceptance for these findings and establishing functional goals for implementing the findings are some of the important steps in benchmarking.

Companies can increase benchmarking efficiency by using written surveys, conducting telephone surveys, distributing reports about best-in-class companies, and holding question-and-answer sessions with best-in-class companies (Micklewright, 1993).

Lincoln and Price (1996) discussed that all of those who have a stake in the benchmarking study - the managers, funders, process users, and customers - have to be appropriately informed before, not after the benchmarking study and if possible, be involved in it. By doing so, the stakeholders will likely accept the recommendations and help implement the necessary changes.

Ohinata (1994) outlined several key factors such as formal approach, choosing similar organisation in term of size, top management involvement, no competition in the areas of information shared, information exchanges must be bilateral, a stakeholder relationship and minimum workload for target organisation are essential for the success in benchmarking.

To sum up, the review of the literature suggests that benchmarking success depends on employee involvement, management focus, internal and external communication, benchmark partner and employee training program.

Chapter 3

METHODOLOGY

3.1 Theoretical Framework

The primary interest of this study is the dependent variable, that is the success of the benchmarking process. The independent variables are top management commitment, communication, benchmark partner, employee involvement and training.

The structural frame of this research lies between the disciplines of organisational change and development. Benchmarking can be effectively used as organisational-wide change technique in helping organisation improve its efficiency in production, gain management commitment to quality and to achieve other business improvements. Therefore, the success of benchmarking can be seen tangibly as the improvement of cost, cycle time and quality over time.

Employee Training

The success of benchmarking is dependent upon training. The role of training in benchmarking process implementation is crucial to any change effort. Good internal training program teaches teams how to conduct a benchmarking study. Education changes thinking and training changes behaviour. Both are needed to ensure the success of the benchmarking process. The behaviour change allows us to recognise the opportunities that exists in other companies without becoming self critical of our own capability. In this way, benchmarkers are trained to think strategically and consider how each benchmarking initiative links to the bottom-line business objectives of their corporation. It follows that the benchmarking team could better organise and

identify the goals of benchmarking. By selecting the appropriate target organisation and data collection methodology, benchmarkers could devise an action plan based on the information obtained. Training provides the platform for successful benchmarking. (Spendolini, 1993). On top of that, management plays an important role in ensuring adequate training is given to the employees.

Top Management Commitment

Management provides direction and support to the benchmark teams and employees in one way or another. Because so much energy and resources are needed to introduce, establish and sustain benchmarking process, top management support is essential. Top managers must have a vision of what quality can mean to organisation and that vision must be incorporated into the long-term strategic plan. Once top management is involved, a clear message will be sent to all members of the organisation. While participation is important, it is just as important for managers to be visibly committed to these goals. Employees must see that management is committed through its actions, not just the words that are being spoken. (Ohinata, 1994) Thus, top management commitment is the key factor for the success of benchmarking in an organisation.

Communication

It is very critical that both managers and employees understand the basic concept of benchmarking. The benchmarking is a long term continuous improvement process and will not produce quick fixes. At the same time, the management needs to communicate effectively on benchmarking initiatives and findings for implementation to every employee. (Camp,1989; Bemowski, 1991) This is especially critical when preparing recommendations for improvements, the project team needs to consider how its

findings will be communicated and understood by everyone throughout the organisation. Once the employees are involved at the start of the process, there will be less resistance to change and hence increase the probability of success of benchmarking process. Thus, communication plays an important role in ensuring the success of benchmarking in an organisation.

Employee Involvement

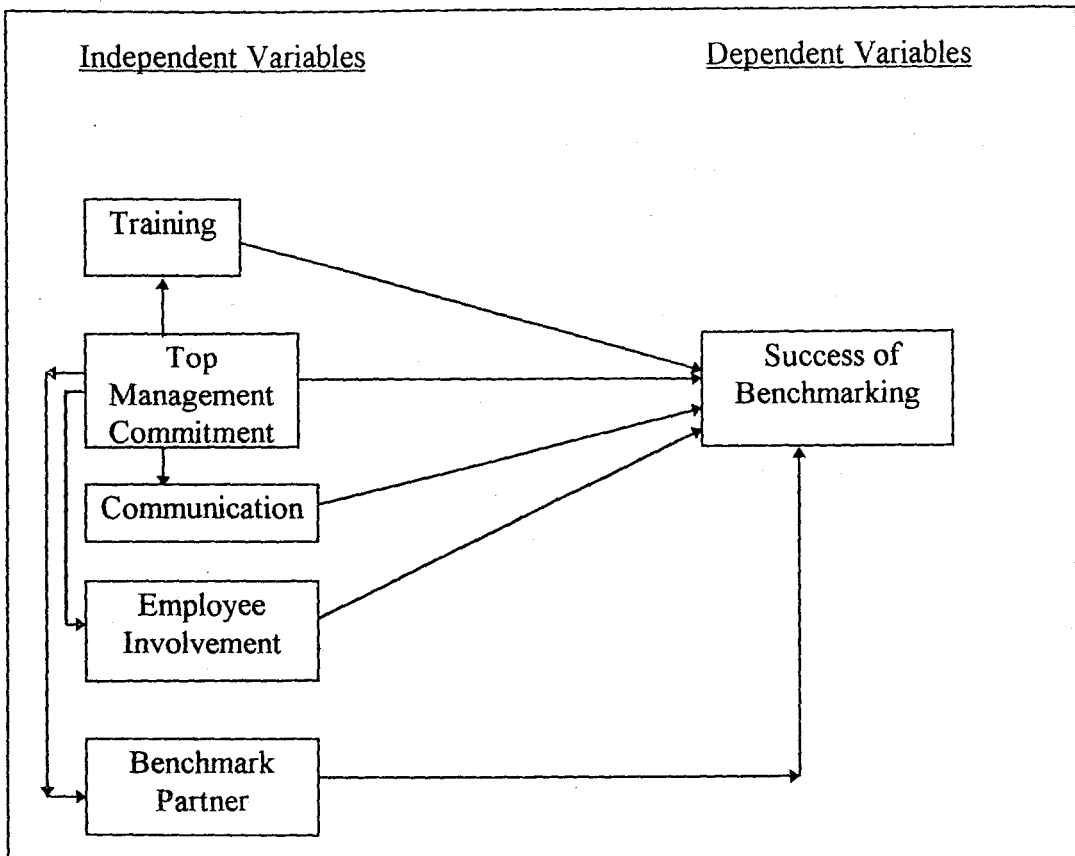
Top management needs to involve the employees at early stage of the benchmarking process. (Lincoln and Price, 1996) This is to allow employees to contribute their ideas or opinions by giving suggestions. In this way, the employees are able to show greater commitment to productivity and quality improvement processes. As a result, a significant growth in employees' responsibilities and capabilities in their undertakings. Thus, employee involvement will increase the success of the benchmarking process in an organisation.

Relationship with Benchmark Partner

The ability to identify the right benchmarking partner is one of the important steps in benchmarking process. Benchmarking can be conducted against internal operations, external direct product competitors, industry functional leaders, and generic processes. For successful benchmarking, top management engagement at the early stage to define the objective of the process from both sides are equally important and their relationship should not be a teacher-student relationship. Willingness to share benchmark results with benchmark partner will definitely enhance the success rate of the benchmarking process. (Camp, 1989) Thus, good relationship with benchmark partner is very important to the success of benchmarking.

The theoretical framework for this study is depicted in Figure 1 below:

Figure 1: Schematic Diagram of the Theoretical Framework



3.2 Hypotheses

Based on the theoretical framework discussed above, seven hypotheses in alternate form were generated:

H1: If the employees are given the adequate training on benchmarking process steps, then it will significantly increase the benchmarking success.

H2: If the top management are committed to the practice of benchmarking, benchmarking success will be greatly enhanced.

- 3: Better Communication between management and employees will lead to greater chance of benchmarking success.
- H4: The greater the employee involvement in the process, the higher the success rate of the benchmarking.
- H5: The better the relationship with the benchmark partner, the greater chance of success of the benchmarking process.
- H6: The greater the commitment of top management to the benchmarking process, the better the communication between management and employee.
- H7: The greater the commitment of top management to the benchmarking process, the higher the level of employee involvement.
- H8: The greater the commitment of top management to the benchmarking process, the better the employee training program.
- H9: The greater the commitment of top management to the benchmarking process, the greater the cooperation from the benchmark partner.

Overall Hypothesis:

Benchmarking success is influenced positively by top management commitment, employee training, employee involvement, communication. and relationship with benchmark partner

3.3 Operational Definition

The measures of the dependent variable and independent variables were obtained from Camp (1989), Ohinata (1994), Spendolini (1993), Hiltrop et. al (1994), Cook (1995), Moay (1995), Biesada (1991), Thompson (1992) and Bemowski (1991), Vaziri (1992) and Lincoln and Price (1996).

3.3.1 Dependent Variable : Success of Benchmarking

A successful benchmarking for an organisation would have the following characteristics:

1. The organisation would experience a change in work procedure, i.e. there would be a more simplified process step.
2. The organisation would experience a change in cycle time and be cost competitive, i.e. there would be a reduction of overall cycle time and unit cost of a product.
3. The quality performance index of the organisation would have improved over time.
4. The organisation would be able to stay competitive in the market, i.e. increase or maintain market share and profit margin.
5. The management team would be more interested in the continuous improvement in the operation, i.e. management reviews over the benchmark results and performance.

3.3.2 Independent Variables:

Top Management Commitment

Top management commitment is measured by whether: management provides direction and support to the benchmarking team to achieve their goals, management has a vision for the organisation, management shows leadership by example to the

employees, management is committed to continuous quality enhancement as a primary goal and management takes action toward executing the quality improvement policies.

Employee Training

Employee training in benchmarking is measured by whether : employees are trained in benchmarking techniques and methodology, employees are trained on an understanding of its own processes, employees are trained to develop teamwork, employees are trained to identify competitive gaps, employees are trained to think strategically, employees are trained on data analysis technique and devise an action plan for implementation.

Employee Involvement

Employee Involvement is measured by whether: employees are committed to the quality improvement, employees are involved at the early stage of benchmarking, , there are systems for employees to suggest improvements

Communication

Communication is measured by whether: there is a good understanding of the basic concept of benchmarking among the managers and the employees, there is a good communication among the team members, there is a good communication between the benchmark partner and the benchmark team, there is less resistance to change among the employees, information is readily shared among departments, information is readily shared among the team members, information is readily shared with the benchmark partner. Benchmark partner in this study can come from the same company or from its own competitor or from other industry.

Relationship with Benchmark Partner

The relationship with benchmark partner is measured by whether there is an equal relationship between the benchmarker and benchmark partner, ability to identify the right benchmark partner, willingness of benchmarker to share benchmark result information with benchmark partner and the management's commitment to establish the linkage with the benchmark partner.

3.3.3 Questionnaire Design

For this study, a mail questionnaire survey was used to collect the data. The questionnaire was developed to measure the **success of benchmarking** and its success factors such as **top management commitment, employee training, employee involvement, communication and the relationship with benchmark partner.**

The questionnaire was modified or derived from Camp (1989), Ohinata (1994), Spendolini (1993), Hiltrop et. al (1994), Cook (1995), Moay (1995), Biesada (1991), Thompson (1992) and Bemowski (1991), Vaziri (1992), Lincoln and Price (1996) and Society of Management Accountants of Canada (1994). The questionnaire is per appendix A.

The 5 points Likert scale was used to measure the success of benchmarking in term of unit cost reduction, simplified process, reduce cycle time and improve product/service quality. Top management commitment was measured in terms of providing the vision, direction, support and action in carrying quality improvement programs. Employee training was measured by the degree of understanding of its own process, working as a team, benchmarking techniques and data analysis techniques. The scale also measured

communication in term of understanding of basic concept of benchmarking between the manager and employees, resistance to change, information sharing and two-way communication . Employee involvement was measured in term of commitment and early involvement to quality improvement program, participating in suggestion system, growth in employees' capabilities and responsibilities. Benchmark partner was measured in term of willingness to share information, right candidate for benchmarking,, rank high in his expertise and having equal relationship. The questionnaires covered the demographic and organisational information in section A, awareness of benchmarking and benchmarking project information in section B, success of benchmarking in section C, Top Management Commitment in section D, Employee Training in section E, Employee Involvement in section F, Communication in Section G and Benchmark Partner in Section H.

3.4 Type of Study

The purpose of this research project is to establish the relationship between the dependent variable (i.e. success of benchmarking) and the independent variables (i.e. top management commitment, employees training, communication, employee involvement and benchmark partner). It is a study of the correlational rather than causal relationship.

3.5 Nature of Study

This research is analytical in nature and attempts to analyse the relationships between the dependent and independent variables.

3.6 Unit of Analysis

An organisation was used as the unit of analysis. A total of 140 electrical and electronics firms in Penang from various bases were selected for the study.

3.7 Population and Sample

The population of the study consists of the electrical and electronics manufacturing companies in Free Industrial Zone, Penang. Data to be collected from QA and Production managers. QA and Production Managers have the overall influence and knowledge in the benchmarking process. Due to the fact that the total population is around 140 organisations in Penang and in anticipation of low response rate using questionnaires, therefore it was decided to sample all due to limited population size.

3.8 Data Collection Method

The data was collected through the use of mail questionnaires that were administered through personal contacts for all the companies selected. The researcher explained to the contacts the purpose of the research, the requirement of administering the questionnaires, how the questionnaires are to be completed, and the way the results would be presented. The contacts were business associates from various departments.

Through the contacts, the questionnaires were then distributed to the respondents. The researcher provided the contacts with his phone number, and was ready to answer any queries that may arise. The completed questionnaires were then collected. Out of 140 questionnaires, a total of 91 questionnaires were returned, giving a response rate

of 65%. Out of the 91 responses, the number of companies practising benchmarking was only 48.

3.9 Data Analysis Method

3.9.1 *Getting Data Ready For Analysis*

The data would be coded, categorized and keyed into the computer for SPSS analysis.

3.9.2 *Reliability of Measures*

Cronbach's alpha was used to check for interitem consistency and reliability on all the measures of the variables.

3.9.3 *Data Analysis*

The frequency distributions were obtained for demographic, awareness, practices, and perceptions of benchmarking using SPSS. Pearson Correlation was used to test the hypotheses of bivariate relationships, to compare how each of the variables vary with the other. Multiple regression was used to explain the variance in the dependence variable. Multiple regression was also performed to develop a mathematical model that would validate the theoretical framework.

Success of Benchmarking was regressed against Employee Training, Top Management Commitment, Communication, Benchmark Partner and Employee Involvement.

The regression equations obtained were checked for significance of the independent variables. Model adequacy was checked by plotting the residuals against the predicted values of the dependent variable per appendix C.

Chapter 4

RESULTS

Before proceeding with the subsequent analyses, the organization profile of the sample are checked for any abnormalities that may affect the results of this study. The second part of the analysis looked into the level of awareness of Benchmarking, perceptions of Benchmarking and reliability analysis of the measures for dependent and independent variables. Thirdly, Kruskal-Wallis One-Way ANOVA analysis was employed to test the difference in perceptions of benchmarking by demographic variables. Correlation coefficient for bivariate analysis was performed for the dependent and independent variables. In addition, multiple regression analysis was performed to develop a model that would validate the theoretical framework. Finally, the overall analysis was wrapped up with a summary of the results for discussion and conclusion.

4.1 Profile of The Sample

Frequency distribution by demographic variables was tabulated in table 4.1

The majority of the responses came from electrical companies as compared to the electronics companies. Western and Eastern Multinationals make up of 72% of the total responses and 71% of the firms have more than 250 employees.

4.2 Awareness of Benchmarking and Benchmarking Practices

4.2.1. *Change of Domestic / Foreign Competition in Past Five Years*

While many factors account for the use of benchmarking, one likely factor is competitive pressure, both domestic and foreign. Table 4.2 indicates the rate of change of domestic and foreign competition in the past five years.

Table 4.1 Frequency Distribution of the Demographic Variables

Demographic	Frequency	Percentage
Primary Business		
a) Electrical	54	59.3
b) Electronics	35	38.5
c) Others	2	2.2
Status of Firm		
a) Western MNC	41	45.1
b) Eastern MNC	25	27.5
c) Local Companies	25	27.5
No. Of Employees		
a) Less than 100	16	17.6
b) 100-250	10	11
c) 251-1000	32	35.2
d) more than 1000	33	36.3

Table 4.2 Change of Domestic and Foreign Competition

	Domestic	Foreign
Increased Significantly	33.7 %	41.1 %
Increase somewhat	29.1 %	31.1 %
Stayed the same	36.1 %	24.4 %
Decreased some	1.2 %	3.3 %
Decreased Significantly	0 %	0 %

The table illustrates that the majority of companies reported that both domestic and foreign competition has increased in the past five years. The results also indicate that general business competition has been increasing, and this pattern is most likely to continue into the future. Interestingly, about one third of the participants indicated no significant change in the competitive environment.

4.2.2 Productivity Improvement Rate

The survey has asked the participants to rate their productivity improvement rate over the last two years. The result is summarised in Table 4.3. Although participants reported an increase in the competitive environment over the past five years (Table 4.2), these companies also felt that they had more than average improvement (68%) in their overall productivity.

Table 4.3 Productivity Improvement Rate In the Past Two Years

PIR		Productivity Improvement Rate				
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent	
1: wellabove average	1.00	11	12.1	12.1	12.1	
2: above average	2.00	51	56.0	56.0	68.1	
3: average	3.00	27	29.7	29.7	97.8	
4: below average	4.00	2	2.2	2.2	100.0	
	Total	91	100.0	100.0		

4.2.3 Level of Understanding of Benchmarking and Benchmarking Activity

Table 4.4 shows that about 71% of the Penang based companies have heard of benchmarking. Participants were also asked to indicate the level of understanding of the benchmarking process. More than 90% of the participants indicated that they have

some understanding of the benchmarking process (Table 4.5). From the results, it can be seen that most companies are aware of benchmarking.

Table 4.4 Heard of Benchmarking

BHM		Heard of Benchmarking				
Value	Label	Value	Frequency	Percent	Valid Percent	Cum Percent
1:	yes	1.00	71	78.0	78.0	78.0
2:	no	2.00	20	22.0	22.0	100.0
			-----	-----	-----	
		Total	91	100.0	100.0	

Table 4.5 Level of Understanding of Benchmarking

UBHM		Understanding of Benchmarking				
Value	Label	Value	Frequency	Percent	Valid Percent	Cum Percent
1.00	good understanding	1.00	21	23.1	29.6	29.6
2.00	moderate understand	2.00	44	48.4	62.0	91.5
3.00	do not understand	3.00	6	6.6	8.5	100.0
			-----	-----	-----	
		Total	91	100.0	100.0	

4.2.4 Process and Competitive Benchmarking

The survey instrument asked participants if they had ever conducted either process or competitive benchmarking. Process benchmarking is benchmarking discrete processes against organisations with performance leadership in those processes. Competitive benchmarking is benchmarking organizational performance against the performance of competing organizations. Table 4.6 indicated that about 68% of participants had conducted either process or competitive benchmarking. Among companies that have

never carried out any form of benchmarking, about 50% of this group indicated they would consider using it (Table 4.7) in the future.

Table 4.6 Conducted Process or Competitive Benchmarking

B8A Conducted Process or Competitive Benchmarking					
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Yes	1.00	48	52.7	67.6	67.6
No	2.00	23	25.3	32.4	100.0
.	.	20	22.0	Missing	
		-----	-----	-----	
	Total	91	100.0	100.0	

Table 4.7 Considered Process or Competitive Benchmarking

B8B Considered Conducting Competitive or Process Benchmarking					
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Yes	1.00	11	12.1	47.8	47.8
No	2.00	12	13.2	52.2	100.0
.	.	68	74.7	Missing	
		-----	-----	-----	
	Total	91	100.0	100.0	

Table 4.8 Years Conducting Benchmarking Studies

B9 Years Conducting Benchmarking Studies					
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
less than one year	1.00	11	12.1	22.9	22.9
one to two years	2.00	14	15.4	29.2	52.1
three to five years	3.00	12	13.2	25.0	77.1
More than five years	4.00	11	12.1	22.9	100.0
		-----	-----	-----	
	Total	91	100.0	100.0	

4.2.5 Years Conducting Benchmarking Studies

Of the respondents that had conducted benchmarking studies, 52% had been doing so for less than two years as shown in table 4.8. It is clear that benchmarking is a new process for companies in Penang.

4.2.6 User Experience Level in Benchmarking

Table 4.9 summarised the level of experience of participants with benchmarking process. About 55.3 % of the firms consider themselves to be a beginner or novice in competitive benchmarking and 50 % of the firms considered themselves to be of similar category for process benchmarking. It clearly shows that benchmarking process is still at its infant stage in the industry in Penang and the companies still need to gain more knowledge and experience in this field.

Table 4.9 User Experience in Competitive and Process Benchmarking

User	Competitive Benchmarking		Process Benchmarking	
	Frequency	Percent	Frequency	Percent
Beginner	16	34	9	18.8
Novice	10	21.3	15	31.3
Intermediate	19	40.4	22	45.8
Advanced	2	4.3	2	4.2

4.2.7 Perceptions of Benchmarking

A series of questions were asked to determine how electrical and electronics companies perceive benchmarking. The perceptions are summarised in Table 4.10. More than 60% of the companies believe that they will have to benchmark to survive and that top management support is needed. Participants also believe that