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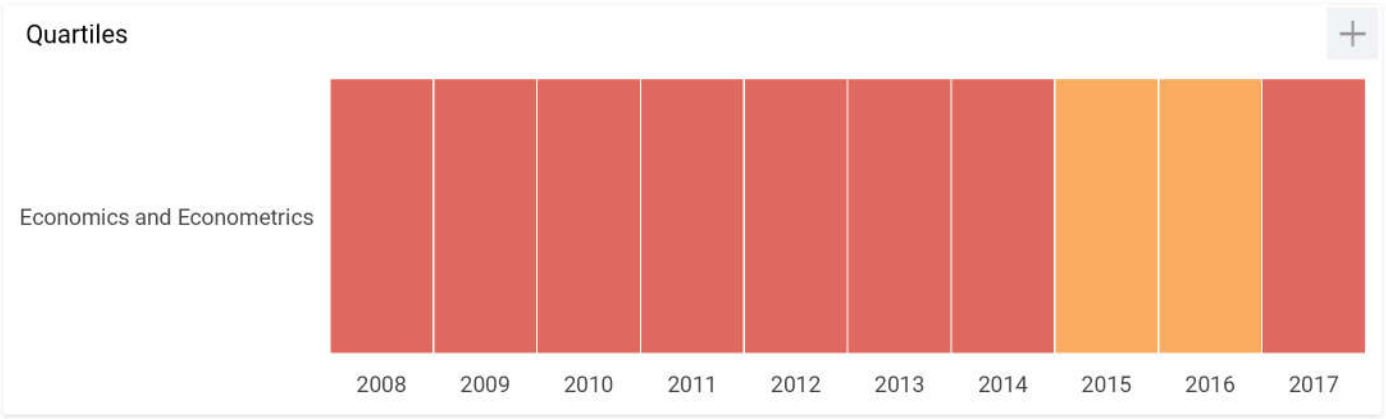

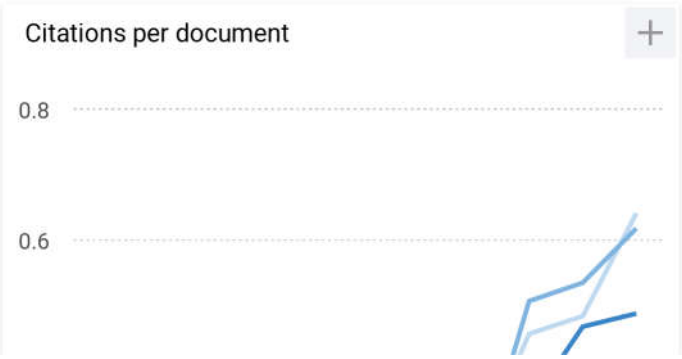

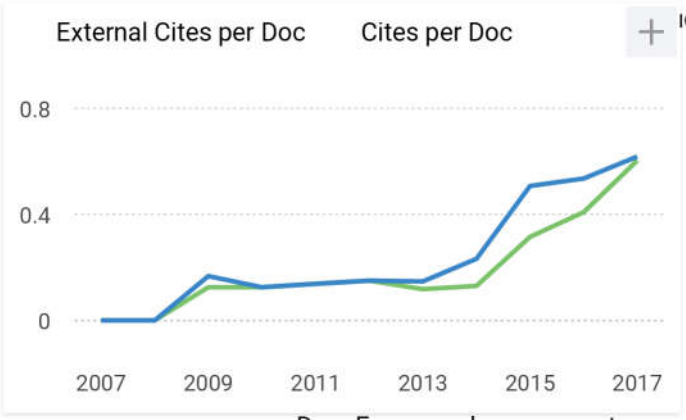

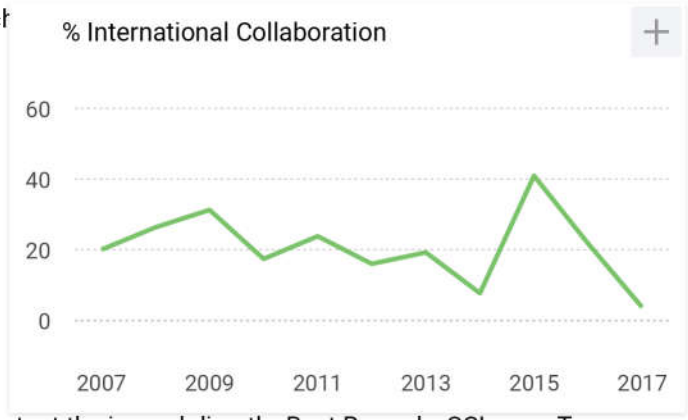

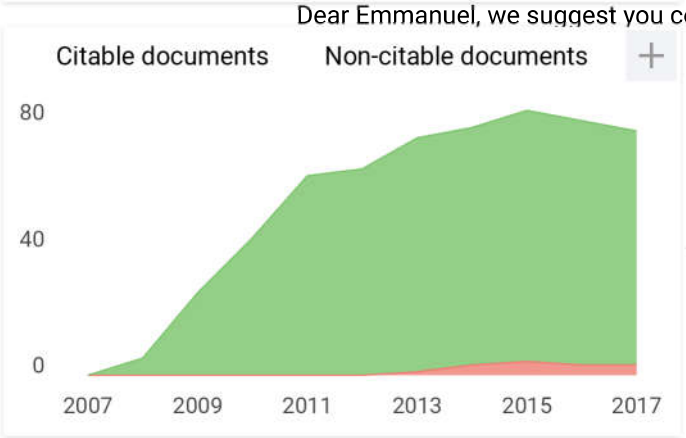

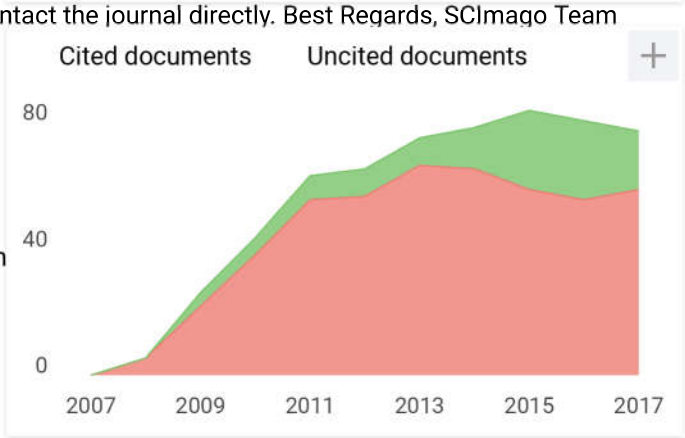

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***Guest Editors*: Dr. Michael K. Fung and Professor Bruno S. Sergi**


Editorial

Additional Paper

Product costing practices: evidence from SME's throughout Jogyakarta Province, Indonesia

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Abstract: This paper addresses the product costing practices, by examining the product costing method use by 46 small and medium manufacturing companies. Product costs information is very important to managers in helping them doing their functions. Because overhead cost is the only indirect product cost, this research focuses on the method use to assign factory overhead cost to each product. There are three methods of factory overhead cost allocation: plant-wide or single rate, departmental rate and activity rate. The research reveals that 66.67% of obserbed companies use single rate in assigning the overhead costs. Although in the past several years, activity-based costing is getting its popularity but plantwide and departemental rate that are considered as traditional approach in allocating overhead costs still dominated the costing practices. The result is in line to Krumwiede and Suessmair (2007). Additional finding is that in general, there is no divergence the product costing practices across the different type of manufacturing companies in obserbed companies. This research finding is alike to Brierly et al. (2007).

Keywords: product costing; indirect cost; plantwide rate; departemental rate; activity rate.

Reference to this paper should be made as follows: Sunarni, C.W. (2012) 'Product costing practices: evidence from SME's throughout Jogyakarta Province, Indonesia', *Int. J. Economic Policy in Emerging Economies*, Vol. 5, No. 4, pp.308–317.

Biographical notes: Christina Wiwik Sunarni is a Senior Lecturer at the Accounting Department, Faculty of Economics, Atma Jaya Yogyakarta University, Indonesia. Her major interest is managerial accounting. She has done several researches in management accounting especially in cost management related topics.

This paper is a revised and expanded version of a paper entitled 'Product costing practices in small and medium manufacturing companies' presented at the 2012 SIBR-Thammasat Conference on Interdisciplinary Business and Economic Research, Ambassador Hotel, Bangkok, Thailand, 7–9 June 2012.

1 Introduction

The business environment is changing rapidly in the last decade and it is characterised by turbulent environment and *quality-conscious* customers (Lee, 2004). Wahyudi Prakarsa (1994) in Made Narsa (2000) also stated that the business environment changing took place since the late 1980s have a great significant influence of managers' role in an organisation. Market became more competitive. To survive in a very high competitive market, managers have to manage their organisation well. Generally, the main functions of managers in an organisation are planning, controlling and desicion making. Managers need information to support them in doing their function. Management accounting information system, as part of the corporate accounting system has to satisfied the management needs.

Hanson and Mowen (2007) obviously stated that management accounting information system has three broad objectives: provide information for product costing, provide information for planning, controlling, and evaluation and continous improvement and provide information for decison making. There are several type of accounting information that can be generated by the management accounting information system, however, cost information is consider the most powerfull and usefull information for managers (Mulyadi, 2003). Gupta and Gunasekaran (2005) wrote that managerial accounting has always been charged with the responsibility to provide more accurate and relevant costs and other information to the managers. Hanson and Mowen (2007) also mentioned that understanding management accounting means understanding the meaning of costs and the associated costs terminology.

For a manufacturing company, production costs information is the focus of management accounting information system. Product costs information is the output of corporate product costing practices. Carter and Usry (2002) and Zimmerman (2009) defined production costs as costs during the process of making a product by accumulating all costs needed to convert direct materials into finshed goods. Blocher et al. (2005) defined *product costing* is the process of accumulating, classifying and determining the costs needed to produce goods or services. There are three components of production costs: direct material costs, direct labour costs and manufacring or factory overhead costs. Accumulating and calculating direct material costs and direct labour costs can be done easily because the direct material and direct labour consumed can be traced directly and accurately to each product. However, calculate the manufacturing overhead costs consumed by each product will be uneasy because manufacturing overhead costs are consider as indirect costs. Zimmerman (2009) wrote that the major problem in product costing is whether and how indirect cost, which is factory overhead cost, allocates to products accurately.

Blocher et al. (2005), Hanson and Mowen (2007) also Carter and Usry (2002) wrote that direct costs are costs that can be traced easily and accurately to a cost object, while indirect costs are costs that cannot be easily and accurately traced to a cos tobject. 'Easily traced' means that costs can be assigned in economically feasible way, whereas 'accurately traced' indicate that costs can be allocate using 'cause effect' relationship. The allocation method used to alocate indirect costs will influence the accuration of product costs. Different allocation method produces different sum of product costs. Assinging and accumulatig costs accurately to a cost object is very crucial. Because the

allocation method will influence the product costs information, so the product costing researches emphasising on how indirect costs are allocated to each product.

Carter and Usry (2002) explained that in general *product cost* information is very important to managers in helping them doing their function such as preparing budgets, controlling avtivities, setting the product price, reducing costs and increasing quality, evaluating performance and determining profit. Bright et al. (1992) in Brierley et al. (2001b) mentioned that several companies in UK used *product cost* information to justify their investment, to introduce a new product, and to establish marketing strategies. Yoshikawa et al. (1989) in Brierley et al. (2001b) also stated that product *cost* information at least is used to set the price (*pricing*), preparing the budgets (*budgeting*) and satisfied several financial reporting needs. The enourmous role of product cost information to support managers in performing their functions put the manager's policy in choosing the allocation method is very crucial. The quality of allocation method choosed will determine the accuracy of product cost calculation and finaly will influence the quality of managers performance. Hanson and Mowen (2007) also stated that the accuracy of cost assignments produces higher-quality information, which can be used to make better decision.

In the last decade, there is a significant growth in management accounting researches especially related topics in product costing. The global competitive business enviroment boosted managers' awareness on how product costs are calculated, in particular for indirect costs. According to Brierley et al. (2001b) there are three main factors why *product costing* researchs are getting greater attention lately. Firstly, there was lack of information on product costing practices prior 1990s. Secondly, there has been curiosity how costing practices changing as business environment become more competitive and complex. Thirdly, there has been a lot of criticism on how product costing done in practices, especilly from informal contacts between academics and practitioners. Brierley et al. (2001b) also stated that the lack of empirical data on product costing practices either to support or to refute the criticism leads the greater need for research in product costing practices.

2 Research propositions

The rapid changing of business environment recently into global, competitive and *turbulence* business environment give significant impact to any type of corporation, either manufacturing or non-manufacturing company, either big, medium or small company and either profit oriented or non-profit company (Mulyadi, 2003). The enourmous role of product cost information to support managers in performing their functions places the manager's policy in choosing the allocation method is very crucial. The quality of allocation method choosed will determine the accuracy of product cost calculation and finaly will influence the quality of managers performance. The accuracy of cost assignments produces higher-quality information, which can be used to make better decision. Those situation leads to the reaserach propositions below:

1 How is the proportion of factory overhead cost to product costs (in %)?

2 What are the method used to assign or allocate factory overhead costs to each product?

3 How managers used product costs information in helping them doing their fuctions?

3 Literature reviews

There were several result of prior research on product costing practices. The review will examine the result of prior research in several areas which are

1 the method used to assign or allocate factory overhead costs

2 the basis used to assign factory overhead cost to each product.

There are three method in allocating and assigning factory overhead, which are plant-wide rate, departmental rate and activity rate. The plant-wide and departmental rate are consider unaccurate methods, because those method will produce costs distortion. The costs distortion is due to the use of unit-volume costs driver as the basis rate. Activity rate or populer as activity-based costing (ABC) is consider the contemporary method in assigning factory overhead costs. Xiong et al. (2008) wrote that ABC method allocates resourse costs to activities consumed and to product according to the numbers usage of costs driver will achieve more accurate product costs.

4 Product costing practices: the allocation method

By using 109 convergent manufacturing processed companies and 129 continues production process campanies in UK, Brierley et al. (2006) tried to compare the product costing practices between two type of manufacturing process. The reserach revealed that the most common method in assignning and allocating overhead costs to product is production department rate or departmental rate. Krumwiede and Suessmair (2007) focused on comparing product-costing practices between Germany-owned and USA-owned companies. Their investigation based on 148 Germany-owned companies and 130 USA-owned companies. Although the German companies focused more on advanced costing practices, but the traditional method (plant-wide and departmental overhead rates) dominated their product costing practices. Krumwiede and Suessmair (2007) research revealed that 55% Germany-owned manufacturing companies and 78% USA-owned choose to use traditional method, and 53% for Germany-owed non-manufacturing companies and 66% in USA-owned also continued to adopt this method.

The next finding was done by Brierley et al. (2007). They tried to revealed the differences of product costing practices between industries in Great Britain. By investigating 129 management accountants working in four manufacturing industries, this research concluded that there are no significant differences in product costing practices between industries in Great Britain. The four industries were chemical product, industrial machinary, electrical equiptment and food and beverage manufacturing. Lawson (2009) tried to investigate product-costing practices in China. By examining 129 manufacturing companies, this research found that all examined companies employed traditional costing method. There was no indication at all of use of contemporary costing methods, such as ABC. This research also revealed that there was a significant difference between the product costing practices in western companies and Chinese companies in China. In this

research, Lawson (2009) contributed an interesting finding that Chinese did not use predetermined rates for the allocation of overhead but the allocation of factory overhead to products was based on actual costs. This practice was uncommon in most western companies.

5 Product costing practices: the allocation bases rate

Beside the methods used to allocate factory overhead costs, another important decision in product costing is choosing the basis rate to assign factory ovehead costs to product. The allocation basis can be classified into two types, volume-based and non-volume-based. Traditional allocation methods mainly use the volume-based rate such as direct labour hours, machine hours and unit produced. However, contemporary allocation method, ABC, not only use volume-based but also used non-volume-based rate to allocate factory overhead costs. The non-volume allocation-based are machine setup, enginering hours, production run, numbers of order etc. Brierley et al. (2001b) obtained that a large proportion of campanies uses a direct labour-based overhead rate to assign factory overhead costs to product in Eurpean compaies. Drury and Tales (1994) in Brierley et al. (2007) noted that many firms were likely to incur factory overhead costs driven by direct labour hours.

Lawson (2009) mentioned that the use of direct labour and direct labour hours as allocation basis for allocation overhead costs was a prevalent product costing practice in China. His research indicated that 37% sample companies used direct labour cost and 24% used direct labour hours as allocation bases to assign factory overhead. The similar conclusion was found by Brierley et al. (2006) who tried to compare the product costing practices between discrete-part and assembly manufacturing and continues production process manufacturing. According to their conclusion, the direct labour hour was the most populer bases in discrete-part and assembly manufacturing and the machine hour in continues production process manufacturing. Their research also revealed that direct labour hour, machine hour and material cost-based rate were used in both discrete-part and assembly manufacturing and continues production process manufacturing. However, the direct labour hour use more extensively in discrete-part and assembly manufacturing while units produced use more extensively in continues production process manufacturing.

6 Research method

A questionnaire survey was used to collect the data. Questionnaire respondent were managers of manufacturing companies which selected by using convenience sampling. Convenience sampling is a non-probability sampling technique where subjects selected based on their convenient accessibility and proximity to the researcher. Convenience Sampling involves collecting information from members of the population who are conveniently available to provide this information (Sekaran, 2003; Yogiyanto, 2007). The subjects selected just because they are easiest to asses and they are willing to participate in this research. This sampling technique is fast, inexpensive, easy and the subjects are readily available. A total of 46 small and medium manufacturing companies located in Yogyakarta were participated in this reaserach. Because Yogyakarta Province is not an

industrial city so there is a small number of big company in this region. Jogyakarta Province, with 3.5 million population and 3,186 km^2 is considerd the best place to develop Small and medium corpporation rather than big industry (kompas, 18 October 2005). The detailed participated campanies are presented in Table 1. The 48 selected samples were classified into four industries: handycraft, furniture, clothes, food and beverage, printing and machibe spareparts. Although the 48-selected samples were SME's but 31 of them were sold their product to other countries.

Because the survey was confined to a local area, the data were collected by using personally administered questionnaires. The main advantage of this method is that the researcher or research assistances can collect all the completed responses within a short period. Another advantage is that personally administered questionnaire also avoid any confusion at the spot. Any doubts that the respondents might have on any question can be clarified directly at that time. The researcher afforded the opportunity to introduce the research topic and motivate the respondents to answer the questions correctly. The questionnaire consisted of two parts, the first part covered the background information and the second part asked the product costing practice in each company. There 8 questions on part one and 5 questions on part two.

According to Indonesian Central Bureau of Statistic, a company can be classified as micro company if it has less than 3 employees, and as a small company if it has 3–19 employees, as a medium company if it has 20–99 employees and as a big company if it has more than 100 employees. This research use this classification because it is very easy to get the information on the number of employees rather information on sales revenue or profit per year. All participated companies could identified the number of their emplyoees easily and accurately. Besides th eeasiness of collecting information on th enumber of employees, and the companies also willing to share the information on it. Table 1 showed the detailed information on 46 slected SME's.

Table 1 Company profile

		N	*%*
Product type			
1	Handicraft	19	41.30%
2	Furniture	5	10.87%
3	Machine spareparts	2	4.35%
4	Clothes	11	23.91%
5	Food and beverage	7	15.22%
6	Printing and publication	2	4.35%
Numbers of employees			
1	3–19 employees	17	36.95%
2	20–99 employees	29	63.05%
Annual sales volume			
1	<Rp 500 million ($55,000)	35	76.09%
2	Rp 500 million–Rp 1 billion	7	15.22%
3	Rp 1 billion–Rp 2.5 billion	4	8.70%

7 Research findings

Table 2 shows that all survey companies have a high percentage of factory overhead (more than 10%), none of the have less than 10% factory overhead costs. For a company with a large proportion of factory overhead, choosing an appropriate and accurate allocation method was really a critical desicion making. This finding was totally different compare to China, that only have 7.5% (Lawson, 2009).

Table 2 Proportion factory overhead costs to product costs

		N (48)	*%*
1	Less 10%	0	0%
2	10–15%	14	30.43%
3	16–20%	11	23.91%
4	21–25%	10	21.74%
5	26–30%	7	15.22%
6	31–35%	3	6.52%
7	36–40%	1	2.17%

Table 3 describes the methods used to allocate and assign factory overhead costs to product. The traditional method, plant-wide and departmental rate, were dominated the praduct costing practices in SME's. Tirthty one samples (67.39 %) used the plant-wide or single rate. Plant-wide rate means that one rate is used to assign all factory overhead costs for the whole production process. Fourteen companies (30.34%) determined separated factory overhead rate for each department in production process. Only one responden (2.17%) choosed Activity rate in assigning factory overhead rate. From the interview with the respondents, the main reason of using the plant-wide and departemental rate were the simplicity of the concept and the easiness in implementation. This research finding was in line to Krumwiede and Suessmair (2007) research that revealed 55% Germany-owned manufacturing companies and 78% USA-owned choosed to use traditional method, and 53% for Germany non-manufacturing companies and 66% USA non-manufacturing companies also continued to adopt this method.

Table 3(a) Method used to allocate factory overhead costs

		N (46)	*%*
1	Plant-wide rate/single rate	31	67,39
2	Department rate	14	30,34
3	Activity rate (activity-based costing)	1	2,17

Table 3(b) Method used to allocate factory overhead costs (details)

Type of products	*Plant-wide*	*Departemental*	*Activity*
Handycraft (n = 19)	13	5	1
Clothes(n = 11)	9	2	0
Food and beverage (n = 7)	5	2	0
Furniture (n = 5)	1	4	0
Printing (n = 2)	1	1	0
Sparepart (n = 2)	2	0	0

This finding was also consistent to Lawson (2009). On his research, Lawson (2009) concluded that all of participating companies (129 companaies) in China used traditional approach in allocating factory overhead costs. Lawson research also observed small and medium companies in China. The result also indicate that there was no divergence in choosing overhead allocation method across the different type of company.

Table 4 shows that the most popular allocation basis is unit produced. Twenty five respondents (42,37%) used unit produced as the allocation basis. Other populer rate were direct labour (direct labour hour and direct labour costs) and machine hour. It is possible for a company to use more than one allocation basis rate if they use departemental rate. In departemental rate, a company can use different allocation basis rate for different production department. From the interview with the respondents, the main reason of using the unit produced was that the number of unit produced can be idintified easily and accuratelly. This research finding was not consistent to Brierley et al. (2001a), Drury and Tales (1994) in Brierley et al. (2007) and Lawson (2009) that revealed direct labour hours as the most populer allocation basis rate.

Table 4 The bases rate to allocate factory overhead costs

		N (62)	*%*
1	% of direct material costs	9	15.25
2	% of direct labour costs	6	10.17
3	Direct labour hours (DLH)	8	13.56
4	Machine hour (MH)	11	18.64
5	Unit produced	25	42.37

The output of product costing practice is product costs information. The appropriate product costing method determines the quality of product costs information and finally, infuences the quality of decisison making. Besides asking about their product costing pratices, this reserach also tried to investigate the scope of product costs information benefits in supporting managerial decisison making. By using 5 Likert-scales, Table 5 shows that product costs information mainly is ued to set the selling price (4.8) and cost control (3.1). It seemed that managers of the selected companies did not use the product costs information extensively.

Table 5 The use of product costs information in helping managers

		Value
1	Product selling price	4.8
2	Machine or equiptment replacement	2.1
3	Spareparts and material purchase	1.8
4	Determine new product	2.2
5	Determine units to be produced	2.7
6	Costs control	3.1
7	Changing in production process	1.8

The use of plant-wide and departmental rate and unit produced as the basis rate leads to costs distortion. In a company with several type of products, some product will be under-

costed and some others will be over-costed. Brierley et al. (2001b) stated that the use of plant-wide rate in a company with several type of products will provide inaccurate product costs information for managerial decision making. The plant-wide rate was appropriate only if a product consumes the same proportion of factory overhead costs in every single production process. The similar impact was generated from using unit produced as the allocation basis.The use of unit produced means that every unit product, without considering the product's specification, was consider consume the same amount of factory overhead costs. This condition leads to a costs distortion also. The unit produced basis does not consider the product defersivication in making each product.

8 Conclusions

This research revealed the product costing practices in small and medium entreprices throughout Jogyakarta Province, Indonesia. The product costing practices covered two areas: the method to assign and allocate factory overhead costs and the basis rate to assign the factory overhead costs to products.

By using personnal administered questionnaires, the research revealed that the method used to assign and allocate factory overhead costs are plant-wide rate. Plant-wide rate method uses one rate to assign all factory overhead costs in the whole production process, from the beginning until the end of the process. The use of one rate in assigning overhead costs for the whole production process leads to costs distortion, a condition where calculated product costs do not represent the value of economic resoures consumed by each product accurately. A cost distortion situation will create an undercosted product costs and an overcosted product costs information. If the product costs information is used to make a managerial decission, the quality of the decision is quesionable. This issue is more critical when factory overhead costs are significant proportion of total product costs. The impact of cost distortion in managerial decision making is worse.

Unit produced was used extensively as the basis rate in assigning and allocating factory overhead costs. The use of unit produced means that every unit product, without cosidering the product's deversification, was consider consume the same amount of factory overhead costs. Unit produced basis rate do not take into account the size, the shape, the feature of each product. The use of unit produced will create the same cost distortion as generated by the use of plant-wide rate.

Although, the observed companies were small and medium entreprices but most of the were sold their product to other countries so they have to compete with neither big companies nor SME's from foreign companies that produce the same products. The quality of product costs information will determine the quality in managing the organisation through planning, controlling, and decision making. If the surveyed companies want to be the leader in a global competitive market, they have to pay attention in their product costing practices. The academicians and the goverment have to contribute in increasing the awareness of the importance of having good product costing practices to enhance their competitiveness in the market. The accuracy of product cost information will lead to the accurate product price and others decision making. Besides the quality of product, the accuracy of decision making based on product cost will be very important points for SME's to compete in a global market.

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