# Activity Based Costing for the better Supply Chain Management: An Integrated Approach for the Business Performance

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**Abstract: In the present business environment with the higher level of competition at world glance, supply chain management (SCM) helps the business firms to progressively improve their performance. For this purpose, the integration of cost management with the profitability is very much significant. For the proper SCM in the business, cost data with more accuracy and efficiency related to all the activities is much needed. For the better business performance, activity-based costing or ABC approach has significantly contributed towards SCM. In this context, the present study has been conducted to address the relationship between ABC and SCM from the context of various Indonesian business firms. For this purpose, various improvements which are offered by ABC to SCM for the business performance are examined. By using the questionnaire approach, the current study is conducted regarding the SCM improvement with the organizational performance with the adoption of ABC. It is found that for the increasing performance through SCM, the adoption of ABC is much needed in the business firms.**

***Keywords****: SCM, ABC, firm performance, costing*.

## 1.Introduction

To increase the organizational productivity and efficiency, the impression of supply chain management or (SCM) is assumed as the competitive strategy as explained by [1]**.** As per the above comments, it is also suggested that various techniques have been applied by the business managers and cost accountants like lean production (LP), just in time (JIT) and quality management (QM) and activity-based costing (ABC) to improve the

organizational performance. For the improving performance and SCM, ABC system is widely accepted and under discussion in existing literature [2-8].

The integration of ABC and supply chain management has been widely addressed but the initial work is conducted by [9]**.** They have explained the fact that ABC is not a simple costing system, influencing the business managers for making some strategic decisions in the business. For the everyday business transactions, there is a great need for costing data which have their ultimate impact on the business decisions. Such relationship highlights the significant association between the SCM and ABC in the given situation of the business. Under the present competition at global context, it is also expressed that significant and level of integration between SCM and ABC will be increased over the coming years.

The idea of ABC is providing the key paths like cost reduction, correct estimation of the cost, better performance measurement with the SCM is also addressed in the present literature. For instance, the study of [10-12] has focused on the relationship between the costing techniques in various dimensions and business firms. Meanwhile, it is also argued that besides the significance of ABC for the better SCM, the adoption of such integration is not highly adopted by the business firms around the globe [13-16]**.** Various studies have adopted the idea of ABC and its relationship with the variety of contextual factors but very few have considered ABC as a significant process as well. The theme of ABC covers the title of analyses of the activities in the business, cost pooling and its allocation to various activities, and finally the distribution of the cost regarding product and services offered by the business. However, numerous studies have just focused on the dichromats (Yes/No) idea regarding the ABC; either adopted or not in the business. So, this idea has provided a clear gap to recognize the importance of ABC and its various stages for the SCM in the success of the business firms.

Besides, very few research studies have been conducted which are focusing on the association between the levels of ABC with the business factors. These factors include the size of the business and the industry. However, the findings under these studies have provided a mixed trend and did not provide some clear guidelines for the researchers and key decision makers in the industry.

Based on the contribution of ABC in the organizational performance and success, the present study is exploring the association of ABC with the SCM. In addition, the business size is also considered as the industry size for the ABC and its dispersal. To conduct the research various business firms currently working in Indonesia has been targeted and survey questionnaire approach is applied. The remaining part of the paper is as follows: section two is dealing with the background and research questions. Section 3 is dealing with the research methodology being applied in the study, while section 4 is providing some significant discussion over findings. In the last section (5), the conclusion is drawn.

**Background and Literature of the study**

As discussed earlier, the association between SCM and ABC is very much significant in the existing body of literature. Various improvements have been offered by the ABC to the SCM for the better business performance. In both integrations, business size and industry size are the core of the interest. in various literature work, it is found that ABC can actively contribute towards the better business performance. Notables are [6, 17-21]**.** In the study of it is recommended that ABC can improve the organization performance with the variety of levels. These include providing a detailed guideline to the management to be more effective and efficient, accurate utilization of the business resources, value creation for the customers and finally offering a good costing method to safe and secure the cost for better outcomes [22]**.** In addition, it is also expressed that ABC helps the business organizations to clearly understand the link between the demand for the activities and costs which leads to better performance. ABC can also help to improve the process, cost of the products with the long run profit while controlling the overhead costs as well.

Under the situation of the competitive environment, the accurate costing is very much critical for the decision making. In line with the argument, has explained the fact that ABC is an accurate costing approach as compared to traditional costing method. In line with the significance of SCM, it is also expressed that ABC and related models are considered as the best costing approach under the situation of the complex manufacturing process[23] [38][39]**.** The reason is that SCM and ABC are very much related to each other.

Based on this idea, the integration between SCM and the ABC method has provided enough evidence to study this relationship. As per the literature findings in ABC, it is found that ABC can improve the organizational and business performance, productivity and efficiency [24]. It is also found that ABC and SCM integration can also facilitate the joint product and related decisions and offer more accurate costing output. Various other research studies have also provided some good output and association between SCM and business performance as well [25] [40] [41] [42].

However, although ABC has played a critical role in organizational performance and SCM, the implementation and adoption rate of ABC for the business firms is very low. For instance, have explained that the adoption is still low although its benefits are very much significant. The study of having expressed the fact that in the last decade, the rate of adoption for the ABC method in the business organizations of United Kingdom (UK) is just 15 % which is very much low. The pattern of adoption in other countries like New Zealand is just 17.5% while this rate is very much low in emerging and under developing economies.

Based on the above ideas, the acceptance of the model like ABC for the better performance and SCM, industry and size play an important role. Some studies have recommended that larger size of the business means higher chances for the adoption of ABC model [26, 27]**.** Meanwhile, some studies have not found any significant association between the business size and adoption of the ABC as well. however, some research studies have argued the fact that the adoption of ABC is based on the levels and processes. When to look at the whole process of ABC various points are adopted by the accountants and key decisions makers in the business.

However, the literature context has also discussed the positive and negative association between the size of the business firm and consideration of ABC for SCM. In existing literature, it is also explained that lack of resources is among the key indicators which are preventing the organizations to adopt the ABC [28-30]. To consider the factor of size in any study, literature work has provided the support regarding the sales, assets of the business and finally the total employees as well [31] [36] [37].

With the idea of organizational size, the ABC concept also explains some controversial issues with the organizational industry and its adoption. For instance, it is expressed that for the non-manufacturing firm the rate of adoption of ABC for the better SCM is almost

22% higher than as compared to manufacturing business firms in the UK. However, looking into the key advantages as provided through ABC can give the more clues for the better adoption of ABC for SCM. The key benefit through ABC over the traditional costing method is that it provides the

accurate cost and related information in cost distribution in each unit level and at different hierarchies [32] [36][43] [44].

**Research Methods of the Study**

to address the study, a questionnaire survey has been developed and emailed to various members which are working under the Chartered Institute of Management Accountants or CIMA in Indonesia. It is known as the world largest and advanced body for the professional body of knowledge in the field of accounting. By focusing the core idea of CIMA it is found that almost 150,000 chartered Global Management Accountants or CGMAs are providing their services at world glance with the affiliation of Institute of Certified Public Accountants or AICPA America. In addition, the questionnaire was also sent to those who are working as the key members of the CIMA and working in different organizations either small or big in various regions of Indonesia. In addition, respondents were also guiding to provide their significant opinion regarding the adoption and non-adoption of ABC in overall organizational process. For the adoption of ABC following points have been considered in the final copy of the questionnaire.

1: No discussion for the adoption of ABC in the business organization.

2: Decision has been made for the introduction of ABC in the business organization

3: Some considerations are adopted for the ABC in coming future

04: ABC is adopted in the business just one hit and trail methods

05: ABC is adopted and implemented in full consideration

After the consideration of ABC in the business organization, level of adoption of ABC in the business is based on the analysis of the activity, cost analysis of the activity and allocation of the cost based on the various activities have been adopted.

In addition, the concept of the size of the business organization has been considered with the help of total employees of the business over time. As discussed earlier, there are variety of measures for the size like sales, assets, revenue, net worth of the business and total employees as well. However, total employees are also widely used proxy for the size of the business. The reason to use total employees as the size of the business is that there is no major change in the number of employees as compared to sales, assets and other indicators.

**Results and Discussion**

After sending the email and hard copy of survey questionnaire to various respondents, a final number of 170 has been found to be corrected and finally use for the further analysis. The response rate for the final questionnaire is found to be 60.71% which is a good sign for the final analysis of the study.

Table 1 explains the output for the adoption/non-adoption of ABC in the region of Indonesia by the various business firms having employees range from 20 to 500 and above. It is found that for those business firms having employees, ranging from 20-50 have explained that fact that 48 are saying the argument that no discussion is placed for the adoption of ABC in the business organization, while 16 from the total sample are saying that discussion is made for the adoption of ABC in the business organization. In addition, no member from those firms having a size of 20-50 employees is saying that some discussion is made for the adoption of ABC in coming time. While 25 are saying that ABC is adopted based on hit and trail approach. Finally, 09 are saying that ABC is adopted and implemented in full consideration for the better SCM in the business organization. The same discussion is repeated for the rest of the ranges of the employees as consideration for the size of the business firms working in the region of Indonesia. Graph 1 is also presenting a clear output for the discussion on table 1.

After the detailed discussion in table 1 for the adoption of ABC for better SCM, the next step comes with the evaluation of various stages related to the adoption of ABC in the selected business firms with their sizes. As explained earlier, it is expressed that three-major level of ABC like activity-based analysis, allocation based on the cost to cost pools, and finally the allocation based on the cost pools to products /services as well. Table 2 expresses the findings of the study for such level of adoption. It is found that there is a significant association between the level of adoptions of ABC for the better SCM and business size in the selected firms of Indonesia. It is found that there exists a significant link between the small and large business firms regarding ABC adoption, which implies that from 1$^{st}$ level of ABC adoption (activity-based analysis) to final level (cost pools to products /services) is significantly linked with the business size as well.

As per the findings in both table 1 and 2 it is expressed that the adoption of ABC for the better SCM in larger business organization in the region of Indonesia is more proportionate to the firms having more size (higher number of employees; 100-200 and above) as compared to those having small is size (low number of employees).

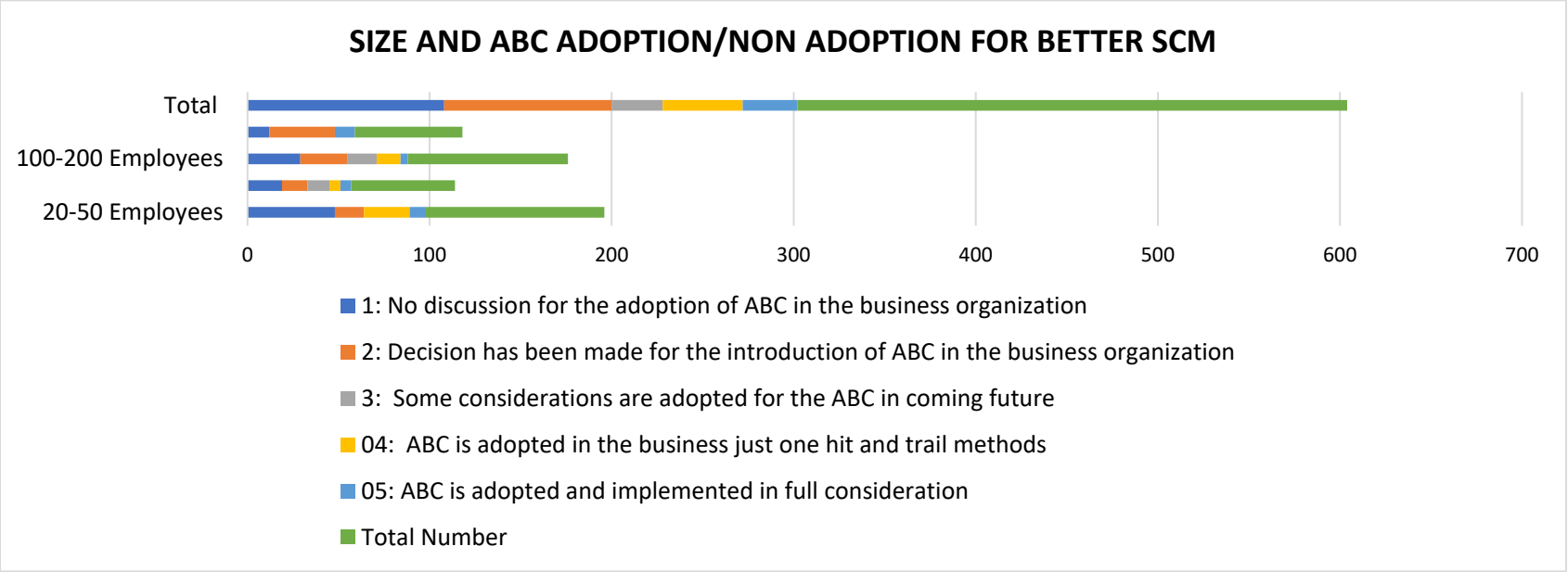
Table 3 represents the outcomes for the adoption of ABC for better SCM and industry level in Indonesia.

It is found that for the stated ranges of industries (manufacturing/nonmanufacturing), the level of adoption has been significantly addressed. Out of the total 170 responses, there are 53, which belongs to manufacturing business, while 117 are related to the non-manufacturing sector in the region of Indonesia. The findings based on table 3 explains that link between the categories of the business either manufacturing or nonmanufacturing and level of adoption is statistically significant at p-value is significant at the 01 % level of significance. In other words, it is also expressed that both industry categories have their significant influence on the adoption of ABC for the better SCM and business performance as well.

**Table 1**

| Business Size | 1: No discussion for the adoption of ABC in the business organization | 2: Decision has been made for the introduction of ABC in the business organization | 3: Some considerations are adopted for the ABC in coming future | 04: ABC is adopted in the business just one hit and trail methods | 05: ABC is adopted and implemented in full consideration | Total Number |
|---|---|---|---|---|---|---|
| 20-50 Employees | 48 | 16 | 0 | 25 | 9 | 98 |
| 51-100 Employees | 19 | 14 | 12 | 6 | 6 | 57 |
| 100-200 Employees | 29 | 26 | 16 | 13 | 4 | 88 |
| More than 200 Employees | 12 | 36 | 0 | 0 | 11 | 59 |
| Total | 108 | 92 | 28 | 44 | 30 | 302 |

Figure 1:



The present study has examined the link between the ABC and level of industry, with the key focus on both manufacturing and non-manufacturing and industries. As per the findings in table 04, it is expressed that the level of adoption for both industries are also having their significant association. the outcomes reveal the fact that manufacturing firms are more linked with the adoption of ABC in the region of Indonesia as compare to nonmanufacturing concerns. The value of chi-square for the difference between both industries have also provided significant evidence.

**Conclusion and Recommendations**

While focusing the idea of ABC for the better SCM, the present study has focused on the region of Manufacturing and non-manufacturing firms of Indonesia. At second, it will help the business organizations to allocate their resources with the exact requirement and how to create the value for the business. At third, the outcomes through levels of adoption for the ABC for better SCM are also very much significant. It will help to support the argument that how the ABC will help to control the cost of better SCM practices in all types of business organizations. At fourth, such findings will also provide a pathway for the cost-profit benefit analysis. Based on the above findings, it is also expressed that the current study has done its good role in covering the gap in the literature for the ABC and better SCM with the business performance models. Meanwhile, the consideration of the size factor through a number of employees is another contribution by the present study which will help the business managers and key decision makers. Such association of ABC, SCM and size of the business is indeed a good addition for the better strategic decisions to improve the performance.

As per the above discussion, the present study has fully supported the argument that business firms are likely to adopt the ABC for the better SCM and performance, specifically the larger firms. However, when the adoption of ABC and related decision is made, both small and large business organizations are highly concerned with such planning. However, in line with the proposition of industry category and adoption of ABC for the better SCM, it is found that there is a significant difference between the manufacturing and nonmanufacturing firms for the adoption of ABC. Meanwhile, it is also found that after the adoption of ABC manufacturing firms are very much concerned, comparatively to the non0manufacuring business units in the region of Indonesia. As per the presented approach in the Indonesia to empirically investigate the association between the both. The objective of the study was to consider the various adoption/non-adoption of ABC with the various level of ABC by the business organizations, currently working in Indonesia. The findings of the study have provided a meaningful outcome that there exists a significant association between the adoption of ABC for the better SCM and level of business size either in manufacturing or non-manufacturing business categories. For the better organizational outcome following benefits can be withdrawn from the findings of the study. At first, it will significantly help to increase the organizational efficiency by integrating the idea of ABC with the SCM in both

study, present findings have added a significant discussion in existing literature while integrating the ABC, SCM and business size with the industry categories. However, followings are the key limitations which are attached to the study

Present study has just focused on the limited number of sample (170 respondents) in the region of Indonesia. It has not considered the in-depth categories of the other sectors in the industry. The findings of the study can also be improved with the implication of some advanced statistical techniques like structural equation modelling for the relationship between the ABC, SCM and industry.

**Table 02:**

| Business Size | levels of adoptions | | |
|---|---|---|---|
| | activity-based analysis | allocation based on the cost to cost pools | allocation based on the cost pools to products /services |
| 20-50 Employees | 4 | 0 | 5 |
| 51-100 Employees | 12 | 6 | 17 |
| 100-200 Employees | 15 | 11 | 29 |
| More than 200 Employees | 26 | 32 | 25 |
| Total | 57 | 49 | 76 |
| chi-square value =12.96*** | | sig=.0000 | |

**Figure 2**

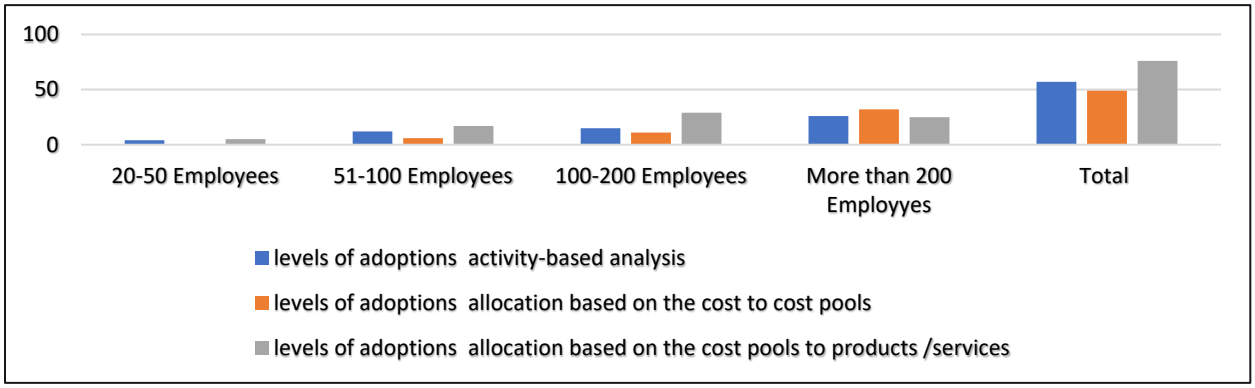



**Table 3**

| Categories of the Industries | 1: No discussion for the adoption of ABC in the business organization | 2: Decision has been made for the introduction of ABC in the business organization | 3: Some considerations are adopted for the ABC in coming future | 04: ABC is adopted in the business just one hit and trial methods | 05: ABC is adopted and implemented in full consideration | Total Number |
|---|---|---|---|---|---|---|
| Manufacturing | 4 | 9 | 6 | 12 | 22 | 53 |
| Non-manufacturing | 53 | 32 | 6 | 15 | 11 | 117 |
| Total | 57 | 41 | 12 | 27 | 33 | 170 |
| chi-square value =22.56*** | | | Sig=.000 | | | |

**Figure 3**

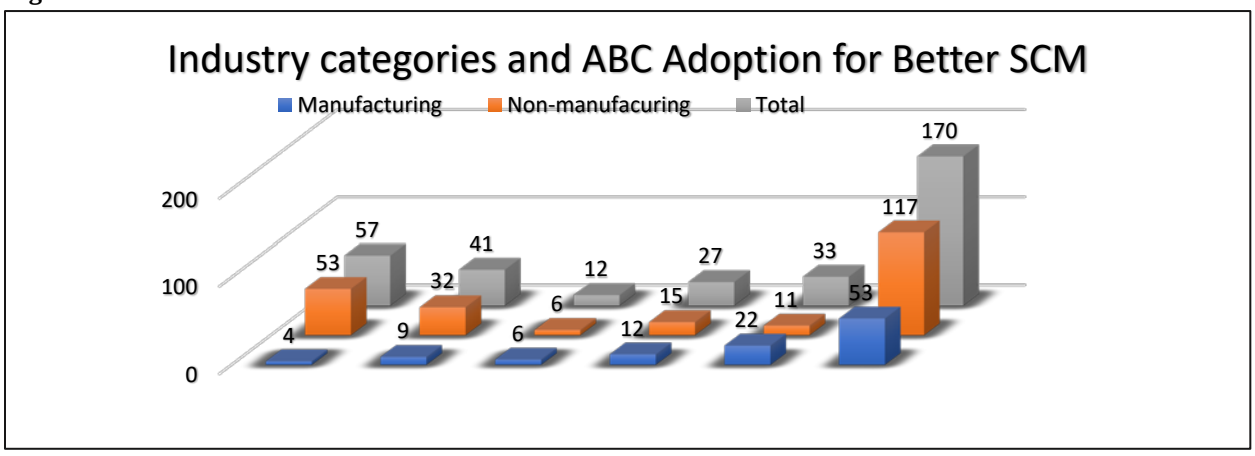
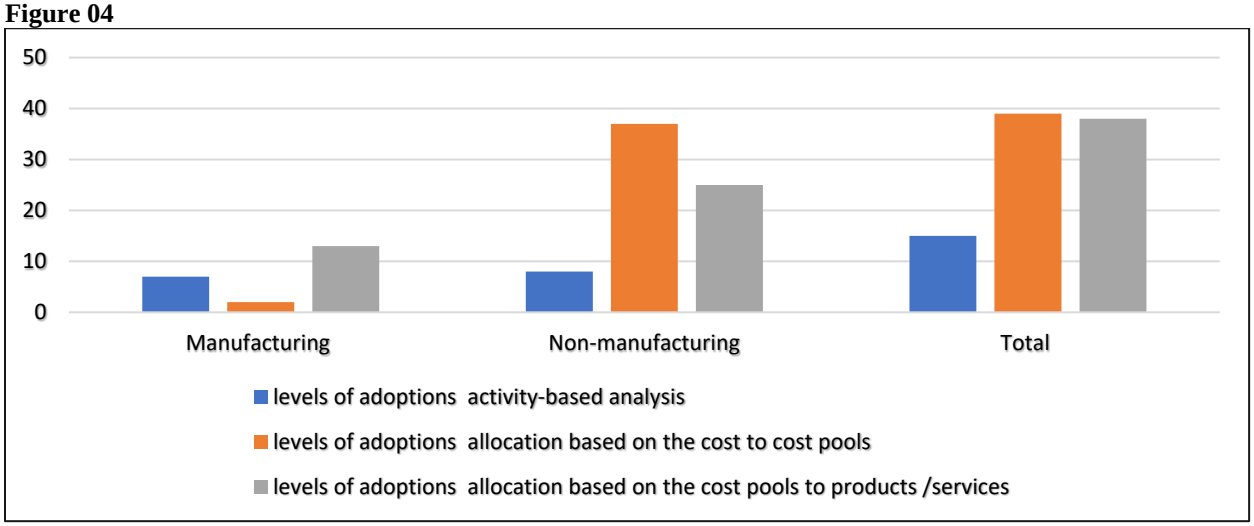


**Table 04**

| Industry Categories | levels of adoptions | | | Total Number |
|---|---|---|---|---|
| | activity-based analysis | allocation based on the cost to cost pools | allocation based on the cost pools to products /services | |
| Manufacturing | 7 | 2 | 13 | 22 |
| Non-manufacturing | 8 | 37 | 25 | 70 |
| Total | 15 | 39 | 38 | 92 |
| chi-square value =12.96 | | sig=.0000 | | |

**Figure 04**

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