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**Factors influencing activity-based costing adoption: do they vary among types of organisation?**

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## Factors influencing activity-based costing adoption: do they vary among types of organisation?

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**Abstract:** Activity-based costing (ABC) serves organisations by making component costs explainable, but its adoption was not considered easy in organisations. The crucial thing is that the factors relevant to adoption process could vary in degrees of importance from one type of organisation to another. This study aimed at developing a comprehensive list of factors of ABC adoption process and checking whether the variation exists. In-depth interviews were conducted to check the factors found in literatures and find missing factors. A questionnaire was developed from the comprehensive factor list and distributed among the accountants of organisations to score factors' relative importance. Statistical analysis was carried out to find the importance of the factors and check the variation. The study found the variation of factors' relative importance in trading organisation for the adoption decision and the implementation of ABC. However, it did not find any variation in benefits among different types of organisations.

**Keywords:** activity-based costing; ABC; time-driven activity-based costing; TDABC; diffusion; adoption; decision; implementation; benefit; variation.

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## **1 Introduction**

COVID-19 and war situations in the world have made resources scarcer. To manage resources, the management needs information, such as the costs of activities. Activity-based costing (ABC) provides detailed information to serve decision making, like where to spend money in order to generate desired revenue.

The concept of ABC has been in discussions since before 1988. However, its importance under the present world economic circumstances is paramount. It gives more explainable cost information and; therefore, benefits other management practices, such as customer relationship management (CRM), that distinguishes customers based on profit expected through their lives. ABC runs behind collecting cost, and profit data separated by customer or product by capturing resources consumed more accurately, compared to traditional costing (Lea, 2007).

Researches subsequently added ABC benefits, like applying ABC with setting competitive price strategy (Lu, 2017), or with supply chain management (SCM) (Hofmann and Bosshard, 2017). Despite the benefits of ABC, adoption has not been as expected by researchers, like ABC implementation rates in Jordanian companies that never passed 40% (Hasan, 2017).

ABC adoption process can be divided into three stages:

- 1 making decision to adopt
- 2 implementation into working processes (Gosselin, 1997)
- 3 benefit realisation.

Researchers over the years identified the factors influencing the process of ABC adoption, such as Gunasekaran (1999), Rundora et al. (2013) and Zarei et al. (2015). However, business environment is constantly changing. Either new dimensions of influencing factors are surfacing, or the existing ones are becoming redundant. Therefore, comes the research question, “Are the available factors influencing ABC adoption stages comprehensive or requiring some addition or deletion?”.

The crucial thing is that the factors relevant to each stage could vary in degrees of importance from one type of organisation to another. The organisations knowing the factors relevant to them could manage each stage properly, leading to successful adoption. Studies about variation among organisation types has been very rare. Hence, the research asked another question, “Is there any variation of factors’ degrees of importance in ABC adoption stages among different types of organisations?”

This study aims at developing a comprehensive list of factors of ABC adoption process with their relative importance and checking if there is variation of factors’ relative importance among organisation types. The specific objectives are:

- 1 To identify the factors influencing ABC adoption decision in organisation and their relative importance.
- 2 To identify the success factors of ABC implementation in organisation and their relative importance.
- 3 To identify the benefits of ABC for organisation and their relative importance.
- 4 To check if there is variation of factors' relative importance in ABC adoption decision, implementation, and benefits among different types of organisations.

In-dept interviews were conducted to check the factors found in literatures and find missing factors. A questionnaire survey was conducted among the accountants of organisations to score factors' relative importance. Statistical analysis was carried out to find the variations of the factors' importance among types of organisations. Next sections present literature review, followed by methodology, findings and discussions, and conclusion.

## 2 Literature review

Since Cooper and Kaplan brought ABC to public in 1988, ABC caught attention of researchers and industries. What organisations could get from ABC was studied by Cooper and Kaplan (1988), Pohlen (1993), Mak and Roush (1994), Kaplan (1994), Hicks et al. (2009), Stratton et al. (2009), Askarany et al. (2010), Ibrahim and Saheem (2013), Nassar et al. (2013), Cardos and Cardos (2014), Gregorio et al. (2016), Cockins and Paul (2016), Hofmann and Bosshard (2017), Miller (2017), Kocakulah and Austill (2017), Lu et al. (2017), Yang and Chang (2018), and Al-Dhubaibi (2021). Benefits of ABC identified include those affects outside the organisations, such as supporting proper product pricing, as emphasised by Lu et al. (2017) or supporting information to other management methods, like supply chain management, as emphasised by Hofmann and Bosshard (2017). Also, the reasons for the organisations to adopt the ABC or how to check or notice that ABC was required by the organisations were studied by Gunasekaran (1999), Maelah and Ibrahim (2007), Ahamadzadeh et al. (2011), Charaf and Bescos (2013), Nassar et al. (2013), Rundora et al. (2013), Zarei et al. (2015), Hoang et al. (2020), Tam and Tuan (2020). At the same time, how to successfully implement the ABC or how to make the ABC success in organisations' working systems came into discussion of Cooper and Kaplan (1988), Shields (1995), Udpa (1996), Gunasekaran (1999), Maelah and Ibrahim (2007), Charaf and Bescos (2013), Nassar et al. (2013), Rundora et al. (2013), Zarei et al. (2015), and Hoang et al. (2020). The knowledge about ABC had been developed continuously while situations keep changing.

Some people use ABC by sharing all the costs to all cost objects, like sharing all an officer's salary to all sales order while actually the officer has nothing to do in some hours. Consequently, time-driven activity-based costing (TDABC) was developed by Kaplan and Anderson (2004). TDABC uses time as cost driver making it easier and cheaper to implement.

TDABC was reported many times about its use in servicing businesses by Dalci et al. (2010), Yilmaz et al. (2013), Kaplan et al. (2014), Alves et al. (2018), Amiri and Khmidi (2019), Da Silva Etges et al. (2019), Niñerola et al. (2021), sometimes in manufacturing businesses, like by Al-Hibari and Al-Matari (2019), Lueg (2020), Zamrud and Abu

(2020), Teklay et al. (2021), and sometimes in overall businesses, like by Fourie et al. (2018), Meric and Gersil (2018), Park and Jahmani (2019). Though TDABC is believed cheaper and simpler than ABC, the increase in the adoption of all versions of ABC is still limited.

Studies of factors were done mainly in overall organisations, like of Brown et al. (2004), or as cases of specific organisation types, mainly manufacturing or servicing, like of Hicks et al. (2009) and Hoang et al. (2020). Study of factors by comparison among manufacturing, trading, and servicing organisations is still very rare.

From the review of literatures, ABC factors were collected and classified by stages of ABC adoption into Tables 1, 2 and 3.

**Table 1** Factors influencing ABC adoption decision from previous literatures

<i>Factors</i>	<i>References</i>
1 High proportion of indirect costs	Gunasekaran (1999), Ahamadzadeh et al. (2011), Nassar et al. (2013), Zarei et al. (2015), Hoang et al. (2020)
2 Diversity of products or customers	Gunasekaran (1999), Nassar et al. (2013), Ahamadzadeh et al. (2011), Zarei et al. (2015)
3 Pressure to reduce costs	Gunasekaran (1999), Nassar et al. (2013), Zarei et al. (2015), Hoang et al. (2020), Tam and Tuan (2020)
4 Worthiness of ABC benefits over resources consumed	Gunasekaran (1999), Maelah and Ibrahim (2007), Ahamadzadeh et al. (2011), Rundora et al. (2013), Charaf and Bescos (2013), Zarei et al. (2015)

**Table 2** Success factors of ABC implementation from previous literatures

<i>Factors</i>	<i>References</i>
1 Knowledge about ABC concept and implementation	Cooper and Kaplan (1988), Shields (1995), Udpa (1996), Gunasekaran (1999), Nassar, et al. (2013), Rundora, et al. (2013), Zarei et al. (2015),; Hoang et al. (2020)
2 Understanding transactional characteristics	Udpa (1996), Gunasekaran (1999), Rundora et al. (2013), Zarei et al. (2015)
3 Users' consistent involvement	Rundora, et al. (2013), Zarei et al. (2015)
4 Technical skills and support	Shields (1995), Nassar et al. (2013), Rundora et al. (2013), Zarei et al. (2015)
5 Cooperative behaviour in organisation	Shields (1995), Gunasekaran (1999), Maelah and Ibrahim (2007), Charaf and Bescos (2013), Nassar et al. (2013), Rundora et al. (2013), Zarei et al. (2015)
6 Management support	Shields (1995), Gunasekaran (1999), Udpa (1996), Nassar et al. (2013), Rundora et al. (2013), Hoang et al. (2020)
7 Utilising ABC information in decisions	Gunasekaran (1999), Charaf and Bescos (2013), Rundora et al. (2013), Zarei et al. (2015)
8 Linking ABC information to performance measurement and compensation	Shields (1995), Rundora, et al. (2013)

**Table 3** Benefits of ABC from previous literatures

<i>Benefits</i>		<i>References</i>
1	Clarifying indirect costs	Cooper and Kaplan (1988), Pohlen (1993), Stratton et al. (2009), Kaplan (1994), Askarany et al. (2010), Charaf and Bescos (2013), Ibrahim and Saheem (2013), Nassar et al. (2013), Rundora, et al. (2013), Gregorio et al. (2016), Cockins and Paul (2016), Kocakulah and Austill (2017), Lu et al. (2017), Miller (2017), Yang and Chang (2018), Al-Dhubaibi (2021)
2	Clarifying profitability	Cooper and Kaplan (1988), Pohlen (1993), Gunasekaran (1999), Hicks et al. (2009), Stratton et al. (2009), Askarany et al. (2010), Nassar et al. (2013), Rundora, et al. (2013), Cardos and Cardos (2014), Cockins and Paul (2016), Gregorio et al. (2016), Hofmann and Bosshard (2017), Lu et al. (2017), Kocakulah and Austill (2017), Miller (2017), Yang and Chang (2018), Al-Dhubaibi (2021)
3	Clarifying performance	Mak and Roush (1994), Gunasekaran (1999), Nassar et al. (2013), Rundora, et al. (2013), Cardos and Cardos (2014), Kocakulah and Austill (2017), Yang and Chang (2018), Al-Dhubaibi (2021)
4	Supporting proper product pricing	Cooper and Kaplan (1988), Kaplan (1994), Gunasekaran (1999), Askarany et al. (2010), Gregorio et al. (2016), Kocakulah and Austill (2017), Lu et al. (2017), Al-Dhubaibi (2021)
5	Supporting process efficiency improvement	Cooper and Kaplan (1988), Pohlen (1993), Hicks et al. (2009), Askarany et al. (2010), Gregorio et al. (2016), Hofmann and Bosshard (2017), Kocakulah and Austill (2017), Lu et al. (2017), Miller (2017), Yang and Chang (2018), Al-Dhubaibi (2021)
6	Supporting proper resource allocation	Pohlen (1993), Stratton et al. (2009), Askarany et al. (2010), Kocakulah and Austill (2017), Al-Dhubaibi (2021)
7	Supporting planning and budget control	Mak and Roush (1994), Kaplan (1994), Gunasekaran (1999), Stratton et al. (2009), Askarany et al. (2010), Rundora, et al. (2013), Nassar et al. (2013), Kocakulah and Austill (2017), Al-Dhubaibi (2021)
8	Supporting cost reduction	Cooper and Kaplan (1988), Pohlen (1993), Gunasekaran (1999), Askarany et al. (2010), Ibrahim and Saheem (2013), Rundora et al. (2013), Hofmann and Bosshard (2017), Kocakulah and Austill (2017), Yang and Chang (2018), Al-Dhubaibi (2021)
9	Supporting specific decisions	Cooper and Kaplan (1988), Gunasekaran (1999), Hicks et al. (2009), Stratton et al. (2009), Askarany et al. (2010), Charaf and Bescos (2013), Ibrahim and Saheem (2013), Nassar et al. (2013), Rundora, et al. (2013), Zarei et al. (2015), Hofmann and Bosshard (2017), Al-Dhubaibi (2021)
10	Supporting other management methods	Pohlen (1993), Askarany et al. (2010), Cardos and Cardos (2014), Hofmann and Bosshard (2017), Al-Dhubaibi (2021)
11	Improving communication	Pohlen (1993), Ibrahim and Saheem (2013), Cardos and Cardos (2013)

### 3 Research methodology

The study was designed to use both qualitative and quantitative approaches, as shown in Figure 1 and Figure 2. Qualitative approach was for investigating existing factors and finding new factors to make it comprehensive as well as for gaining the in-depth knowledge of the adoption process from the organisations adopted the ABC. Quantitative approach was for investigating the relative importance of factors and checking whether variation exists among organisation types.

Figure 1 Research design

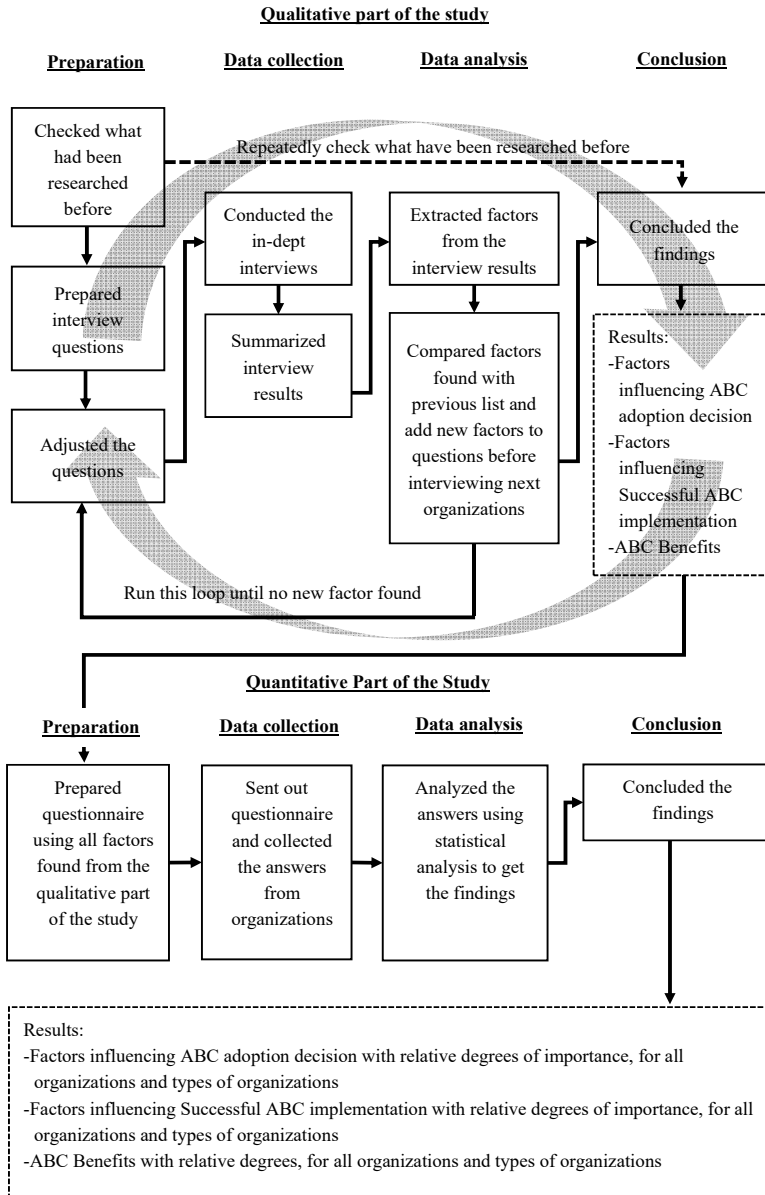
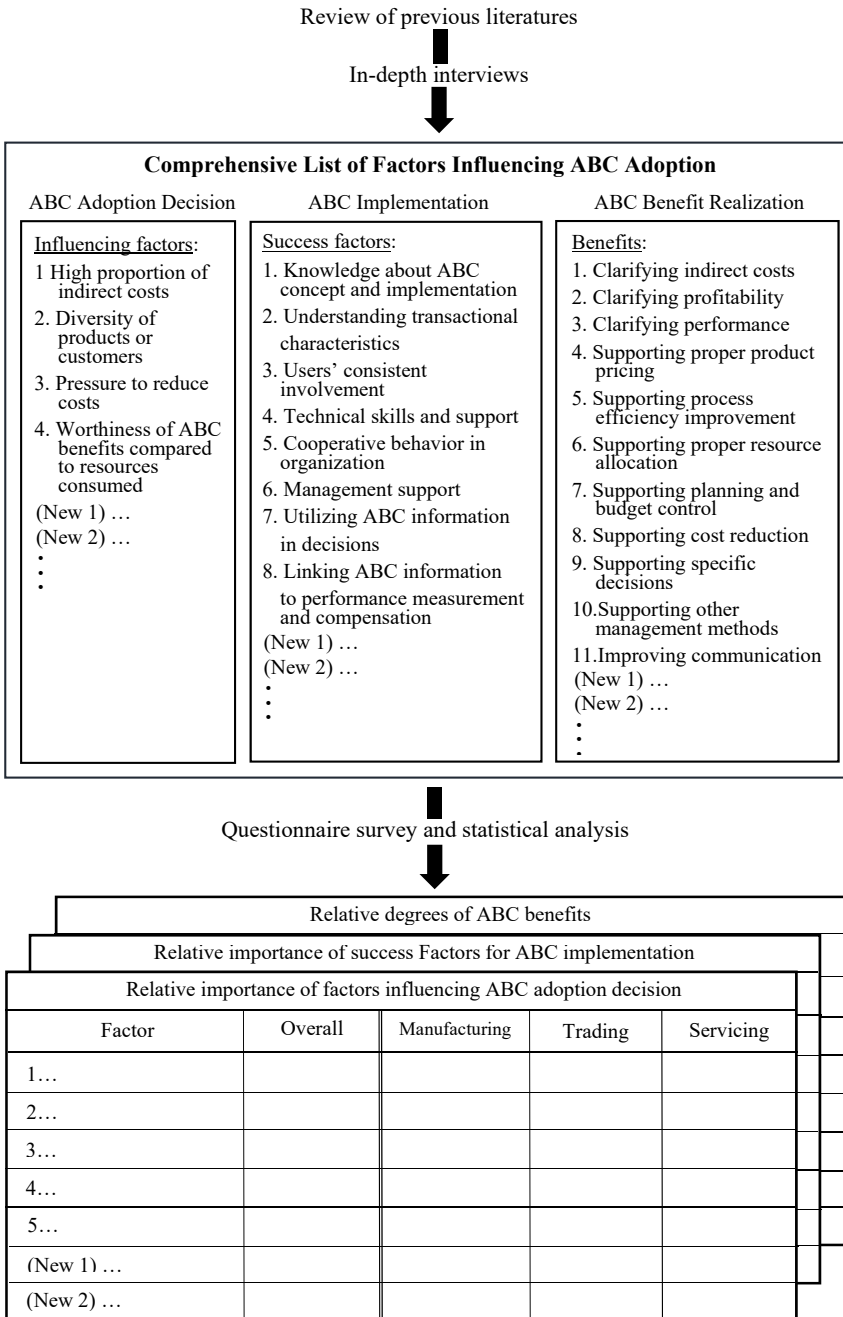


Figure 2 Conceptual framework







**Table 5** Brief qualifications of the interviewees

<i>Characteristics</i>		<i>Org.1</i>	<i>Org.2</i>	<i>Org.3</i>	<i>Org.4</i>	<i>Org.5</i>	<i>Org.6</i>	<i>Org.7</i>
1	Job position	Head of Accounting, Finance and HR	Head of Accounting Information System	Deputy Head of Accounting Information System	Deputy Head of the Unit of Org. (with Educational Background in Accounting)	Head of the org. (with Educational Background in Accounting)	Head of factory Accounting	Accounting Head
2	Age (years)	50-60	50-60	40-50	50-60	50-60	40-50	50-60
3	Number of years the interviewee had worked there	12	18	3	22	11	5	15

In the qualitative part of the research, the in-depth interview questions were firstly prepared by using the factor collected from reviewing previous literatures. The factors collected were classified into 3 groups for all 3 stages of ABC adoption, adoption decision, implementation and benefit realisation. Organisations to interview were selected from those running with ABC implemented and operating in Thailand which were accessible for the researcher. The interviewees were the financial controllers or similar in the organisations. Each of them was asked at the beginning of the interview about the organisational background and the interviewee's background in order to make sure that the organisation was in the target group and that the interviewee was a qualified answerer. The number of organisations to interview were not specified at the beginning. Organisations interviewed were added one by one until no new factor found any more. The new answers were also used for going back to ask the previous organisations to check whether they were missing in previous interviews. This loop was done until no new factor was found.

In the above process, seven organisations in Thailand were interviewed in the study. Some organisations were interviewed for three times. The duration of the interview for each time with the organisation was approximately between 30 minutes to 90 minutes. The brief profiles of the organisations interviewed are shown in Table 4. The interviewees are listed and their qualifications are summarised in Table 5.

For the quantitative part of the study, the comprehensive list of factors was used in developing a questionnaire for conducting a survey of the organisations in Thailand to get their opinions on the importance of each of the factors as well as to check if there is any variation among different types of organisation. The respondents were asked to score each factor using 5-score Likert scale (5 = very important, 1 = not important), their organisations' types: manufacturing, trading, or servicing, organisation's age, as well as service period of the respondent. There are 537,236 organisations, according to the Thai Government, (Department of Business Development, 2022). The questionnaire was sent out to accountants working in those organisations via Facebook groups of accounting professionals working in Thailand.

For the questionnaire survey, 558 sets of answers were received. Out of them, 270 made decisions to adopt ABC and 288 not yet decided. The responses indicating 'not yet decided to adopt ABC' were discarded. Out of 270 indicated 'decisions made', 209 answered 'implemented the ABC' and 174 answered 'getting benefits from ABC'. All the numbers were above 100, therefore, 90% confidence achieved, according to Taro Yamane. The results were analysed by using Pearson's Chi-Square test of homogeneity to find the variation of factors' relative importance among organisation types and by using Mean to display the average importance scores of factors in all ABC adoption stages.

## **4 Findings and discussions**

### *4.1 Comprehensive factors influencing ABC adoption process*

The qualitative part of the study yielded the comprehensive list of factors influencing ABC adoption process, as shown in Table 6. The list consists of seven new factors and factors from previous literatures reconfirmed, together from the interviews.

**Table 6** Comprehensive list of factors influencing ABC adoption

<i>Influencing factors for ABC adoption decision</i>	<i>Success factors for ABC implementation</i>	<i>Benefits from ABC</i>
1. High proportion of indirect costs	1. Knowledge about ABC concept and implementation	1. Clarifying indirect costs 2. Clarifying profitability 3. Clarifying performance
2. Diversity of products or customers	2. Understanding transactional characteristics	4. Supporting proper product pricing
3. Pressure to reduce costs	3. Users' consistent involvement	5. Supporting process efficiency improvement
4. Worthiness of ABC benefits compared to resources consumed	4. Technical skills and support 5. Cooperative behaviour in organisation	6. Supporting proper resource allocation 7. Supporting planning and budget control
5. Readiness to implement ABC*	6. Management support 7. Utilising ABC information in decisions 8. Linking ABC information to performance measurement and compensation 9. Management repetitive expression of demand on ABC* 10. Bringing out ABC benefits along the implementation* 11. Integrating ABC into organisation's accounting information system*	8. Supporting cost reduction 9. Supporting specific decisions 10. Supporting other management methods 11. Improving communication 12. Supporting revenue enhancement* 13. Improving the transparency of spending* 14. Improving the quality of financial accounting reports*

Note: \*New factor.

#### *4.1.1 Factors influencing ABC adoption decision*

There are five factors influencing the adoption of ABC in organisations as shown in Table 6. Among these factors, a new factor, 'readiness to implement ABC', has been found. Readiness to implement ABC means the availability of people, money, time, knowledge and anything required to implement the ABC. Organisation 1 and 4 supported that the management could make decision to go for ABC easier when they believed their human resources were capable to implement.

#### *4.1.2 Factors influencing successful implementation of ABC*

There are eleven success factors of ABC implementation in organisations as shown in Table 6. Among them, three new factors have been found:

- 1 'integrating ABC into organisation's accounting information system',
- 2 'management repetitive expression of demand on ABC'
- 3 'bringing out ABC benefits along the implementation'.

Integrating ABC into organisation's accounting information system means making the ABC a part of the accounting information system, not a separated system. This reduces duplicate jobs and data discrepancy, avoiding many of unnecessary drawbacks, such as separate maintenance, additional manpower's effort and time consuming, etc. Organisation 1, 2 and 6 supported that integrating ABC with accounting information system made ABC clear in working procedures and reduce big load of reconciliation.

Management's repetitive expression of demand on ABC means the top management express their demand on ABC to people in the organisation repeatedly. Only policy by the top management might not be enough for people to understand what is high in priority. Repetitive enforcement of management on ABC implementation is much more active than management support, which is more passive. Repetitive enforcement by management brings about the cooperation of users in the firms. It also pushes managers and workers to think and realise that ABC implementation is very important and should not be delayed at all by any excuses, like day-to-day operations, or anything. Organisation 2 gave example of repetitive expression by having management speaking at every meeting that they required ABC.

Bringing out ABC benefits along the implementation means making ABC beneficial at any steps of ABC implementation, not waiting until the completion. Waiting until everything completed could be too long and that makes people lose focus on ABC. Showing them success at any steps could make people cooperate more. Organisation 4 and 6 supported that bringing out ABC benefits during the implementation would make people see the importance of ABC, better than waiting until the end of the implementation.

#### 4.1.3 Benefits of ABC realised

There are fourteen benefits that organisations realised from ABC implementation as shown in Table 6. Among these benefits, three new benefits have also been found from the research, which are:

- 1 'supporting revenue enhancement',
- 2 'improving the transparency of spending'
- 3 'improving the quality of financial accounting reports'.

Supporting revenue enhancement is one benefit given by ABC. ABC not only clarifies profitability generated by products or customers or supports proper product pricing but also reveal the costs from spending. It provides information and at the same time urges people to take responsibility to seek ways to do to make the revenue to cover the costs they could not cut. Organisation 3 (trading) mentioned that ABC clarified how much firms could earn from products or customers and that indirectly guided the firms where they should seek more revenue. Organisation 4 supported that once the organisation knew the costs of products or customers, people would seek more revenue to cover them.

Improving the transparency of spending means making the spending of money seen by related persons and the spenders or approvers aware of it. Organisation 5 explained that ABC revealed benefit compared to spending.

Improving the quality of financial accounting reports means removing personal justification in allocating costs, making the distinguishing between the costs of goods sold in the period and the costs of stock left at the end of the period reasonably separated. Organisation 6 said ABC explained where the costs of products sold and in inventories came from. However, Organisation 1 mentioned that companies having low inventories get lower of such benefit.

#### *4.2 Factors influencing ABC adoption and their relative importance*

Quantitative part of the study brought the results shown in this section and Section 4.3. The list of all factors from the qualitative part (in Table 6) was used in the survey for getting the relative importance of factors from the respondents. As indicated in the research methodology, the respondents scored each factor using 5-score Likert scale (5 = very important, 1 = not important). Mean (average) of the scores given by the respondents for each factor is the score to illustrate the relative importance of the factor for both overall organisations as well as organisation-types. The figures shown in Tables 7, 8 and 9 are derived accordingly.

##### *4.2.1 Factors Influencing ABC adoption decision and their relative importance*

From 270 organisations that made decisions to adopt ABC, the degrees of importance of factors influencing ABC adoption decision have been summarised in Table 7.

**Table 7** Factors influencing ABC adoption decision and their relative importance

<i>Factors influencing ABC adoption decision</i>	<i>Relative importance score (Scale: 1 to 5)</i>			
	<i>Overall (All Orgs.)</i>	<i>Manufacturing Orgs.</i>	<i>Trading Orgs.</i>	<i>Servicing Orgs.</i>
1 Worthiness of ABC benefits compared to resources consumed	4.18	4.18	4.12	4.20
2 Readiness to implement ABC	4.04	4.08	4.05	4.03
3 Diversity of products or customers	4.01	3.85	4.16	4.03
4 Pressure to reduce costs	3.90	3.75	3.88	3.97
5 High proportion of indirect costs	3.88	3.73	3.91	3.92

Column 'Overall' (all organisations) in Table 7 shows all values above 3.00 (out of 5.00), indicating that all 5 factors are importantly influencing ABC adoption decision. Among them, 'worthiness of ABC benefits compared to resources consumed' is most importance (4.18), followed by 'readiness to implement ABC' (4.04), 'diversity of products or customers' (4.01), and others.

However, when looking further into types of organisations, the importance of factors varies. The ranks of factors by importance in manufacturing organisations are the same as in all organisations. It changes slightly in servicing organisation, as ‘diversity of products or customers’ is in the same rank of ‘readiness to implement ABC’ (4.03). However, trading organisations differ significantly, as ‘diversity of products or customers’ becomes the highest important factor (4.16).

#### 4.2.2 Factors influencing successful implementation of ABC and their relative importance

From 209 organisations implemented ABC, the degrees of importance of factors influencing the success of ABC implementation have been summarised in Table 8.

The ‘overall’ column of Table 8 shows all values over 3.00 (out of 5.00), meaning that all 11 factors are important to the success of ABC implementation. ‘Management support’ is the most important factor (4.36), followed by ‘cooperative behaviour in organisation’ (4.26), and ‘management repetitive expression of demand on ABC’ (4.22). Other factors are not much different, except for ‘users’ consistent involvement’ and ‘linking ABC information to performance measurement and compensation’.

**Table 8** Success factors of ABC implementation and their relative importance

Success factors of ABC implementation	Relative importance score (Scale: 1 to 5)			
	Overall (all orgs.)	Manufacturing orgs.	Trading orgs.	Servicing orgs.
1 Management support	4.36	4.53	4.17	4.38
2 Cooperative behaviour in organisation	4.26	4.37	4.06	4.30
3 Management repetitive expression of demand on ABC	4.22	4.21	4.04	4.29
4 Bringing out ABC benefits along the implementation	4.20	4.21	4.08	4.25
5 Knowledge about ABC concept and implementation	4.19	4.16	4.13	4.23
6 Understanding transactional characteristics	4.19	4.16	4.17	4.21
7 Technical skills and support	4.18	4.21	4.17	4.18
8 Utilising ABC information in decisions	4.18	4.26	4.08	4.19
9 Integrating ABC into organisation’s accounting information system	4.18	4.28	4.06	4.19
10 Linking ABC information to performance measurement and compensation	4.16	4.21	3.98	4.22
11 Users’ consistent involvement	4.13	4.16	4.02	4.17

When looking into organisation types, servicing organisations and manufacturing organisations have the same importance of factors as overall organisations. However, the ranking changes most in trading organisation as ‘management support’ is not outstanding.

It has the same importance as ‘understanding transactional characteristics’ and ‘technical skill and support’ (4.17). Further another factor, ‘cooperative behaviour in organisation’, has comparatively low score (4.06).

#### 4.2.3 *Benefits of ABC development and their relative importance*

From 174 organisations that were getting benefits from ABC, the degrees of benefits have been summarised in Table 9.

**Table 9** Benefits of ABC implemented and their relative importance

<i>ABC benefits</i>	<i>Relative importance score (scale: 1 to 5)</i>			
	<i>Overall (all orgs.)</i>	<i>Manufacturing orgs.</i>	<i>Trading orgs.</i>	<i>Servicing orgs.</i>
1 Supporting planning and budget control	4.48	4.54	4.48	4.45
2 Supporting proper resource allocation	4.26	4.24	4.18	4.29
3 Improving the quality of financial accounting reports	4.25	4.24	4.15	4.29
4 Supporting proper product pricing	4.23	4.17	4.18	4.27
5 Supporting other management methods	4.23	4.27	4.09	4.26
6 Clarifying indirect costs	4.22	4.22	4.21	4.22
7 Improving the transparency of spending	4.22	4.17	4.21	4.24
8 Clarifying performance	4.21	4.20	4.15	4.24
9 Supporting process efficiency improvement	4.21	4.12	4.15	4.26
10 Supporting revenue enhancement	4.21	4.22	4.06	4.25
11 Supporting specific decisions	4.20	4.12	4.12	4.26
12 Supporting cost reduction	4.18	4.27	3.94	4.23
13 Clarifying profitability	4.17	4.02	4.09	4.25
14 Improving communication	4.16	4.07	4.15	4.20

Column ‘overall’ in Table 9 shows all values of over 3.00 (out of 5.00), indicating that organisations get these 14 benefits from adopting the ABC. It found obviously that ABC supports planning and budget control most (4.48). Other benefits are not much different, consisting of clarifying indirect costs, profitability (of products or customers), performance (of the company, organisational units, and people), supporting product pricing, revenue enhancement, process efficiency, resource allocation, cost reduction, specific decisions (that require ABC information), other management projects (like CRM, SCM), improving improve communication in organisation, and the quality of financial accounting reports (by calculating costs of goods sold of periods and the costs reside in ending stock properly).



When looking into organisation types, no variation is found so that all types of organisations get the same levels of benefits from ABC.

#### 4.3 Variation of factors influencing ABC adoption among types of organisations

Tables 7, 8, and 9 in Section 4.2 have shown the factors' average degrees of importance for both overall (all organisations) and by type of organisation. In those tables, we have seen some variations of the factors' degree of importance when looking into organisation types (manufacturing, servicing and trading), as the degrees of importance in one organisation type differ from those of the others. To confirm that those different numbers really indicate the variation, this section used Pearson's Chi-square test of homogeneity to check if the variation in degree of importance of factors relates to types of organisation (manufacturing, trading, or servicing). The results are shown in Tables 10, 11 and 12. P-value of any factor equal to or less than 0.05 indicates that type of organisation affects the factor's degree of importance, or variation exists.

**Table 10** Pearson's chi-square test of homogeneity among organisation types: factors influencing ABC adoption decision

<i>Factors influencing ABC adoption decision</i>	<i>Pearson's chi-square value</i>	<i>df</i>	<i>p-value</i>	<i>Cells having expected count less than 5</i>
1 Worthiness of ABC benefits compared to resources consumed	1.448	4	0.836	0.0%
2 Readiness to implement ABC	5.337	6	0.501	16.7%
3 Diversity of products or customers	17.443	6	0.008*	16.7%
4 Pressure to reduce costs	6.789	6	0.341	16.7%
5 High proportion of indirect costs	6.889	6	0.331	16.7%

Note: \*p-value  $\leq$  0.05.

**Table 11** Pearson's Chi-square test of homogeneity among organisation types: success factors of ABC implementation

<i>Success factors of ABC implementation</i>	<i>Pearson's chi-square value</i>	<i>df</i>	<i>p-value</i>	<i>Cells having expected count less than 5</i>
1 Management support	15.667	4	0.004*	11.1%
2 Cooperative behaviour in organisation	9.557	4	0.049*	11.1%
3 Management repetitive expression of demand on ABC	5.898	4	0.207	0.0%
4 Bringing out ABC benefits along the implementation	3.896	4	0.420	0.0%
5 Knowledge about ABC concept and implementation	1.046	4	0.903	0.0%
6 Understanding transactional characteristics	3.579	4	0.466	0.0%
7 Technical skills and support	0.758	4	0.944	0.0%

Note: \*p-value  $\leq$  0.05.

**Table 11** Pearson's Chi-square test of homogeneity among organisation types: success factors of ABC implementation (continued)

<i>Success factors of ABC implementation</i>	<i>Pearson's chi-square value</i>	<i>df</i>	<i>p-value</i>	<i>Cells having expected count less than 5</i>
8 Utilising ABC information in decisions	1.917	4	0.751	0.0%
9 Integrating ABC into organisation's accounting information system	3.194	4	0.526	0.0%
10 Linking ABC information to performance measurement and compensation	6.012	4	0.198	0.0%
11 Users' consistent involvement	2.496	4	0.645	0.0%

Note: \*p-value  $\leq$  0.05.

P-value of factor 'diversity of products or customers' in Table 10 is 0.008, less than 0.05. It indicates that type of organisation affects the degree of importance of factor 'diversity of products or customer', or in other words, this factor has different degree of importance (or influence) in different organisation types. This confirms what we observed in Table 7.

P-values of two factors in Table 11, 'management support' and 'cooperative behaviour in organisation' in Table 11 are 0.004 and 0.049, less than 0.05. They indicate that these two factors have different degrees of importance in different types of organisation. This confirms what we noticed in Table 8.

**Table 12** Pearson's Chi-square test of homogeneity among organisation types: ABC benefits

<i>ABC benefits</i>	<i>Pearson's Chi-square value</i>	<i>df</i>	<i>p-value</i>	<i>Cells having expected count less than 5</i>
1 Supporting planning and budget control	0.884	2	0.643	0.0%
2 Supporting proper resource allocation	1.283	4	0.864	11.1%
3 Improving the quality of financial accounting reports	1.343	4	0.854	11.1%
4 Supporting proper product pricing	3.500	4	0.478	11.1%
5 Supporting other management methods	2.324	4	0.676	11.1%
6 Clarifying indirect costs	3.052	4	0.549	11.1%
7 Improving the transparency of spending	1.050	4	0.902	11.1%
8 Clarifying performance	1.120	4	0.891	11.1%
9 Supporting process efficiency improvement	1.753	4	0.781	11.1%
10 Supporting revenue enhancement	3.397	4	0.494	11.1%
11 Supporting specific decisions	3.909	4	0.418	11.1%
12 Supporting cost reduction	6.169	4	0.187	11.1%
13 Clarifying profitability	5.884	4	0.208	0.0%
14 Improving communication	2.847	4	0.584	11.1%

P-values of all the factors in Table 12 are greater than 0.05, indicating that none of these factors has significantly different degree of importance in different types of organisations.

In summary, we find

- 1 ABC adoption decision, the factor 'diversity of products and customers' has different degree of importance in trading organisation than those of manufacturing and servicing organisations. In other words, there is variation of factors' relative importance in trading organisation for the adoption decision of ABC
- 2 in ABC implementation, factors 'management support' and 'cooperative behaviour in organisation' have different degrees of importance in trading organisation than those of manufacturing and servicing organisations. In other words, there is variation of factors' relative importance in trading organisation for the implementation of ABC
- 3 in ABC benefits, there is no variation of benefits' degree of importance among different types of organisation.

## **5 Conclusions**

The research developed a comprehensive list of factors for all ABC development stages for organisation, adoption decision, implementation, and benefit realisation (all in Table 6). It includes new factors found in addition to factors from previous literatures. The research supports management to make informed decision. Factors influencing ABC adoption decision could be used for checking whether they fit the organisations. Benefits could be used for checking if they are what organisations want from ABC. Success factors of ABC implementation could be used for checking whether the organisations are ready to implement it. If they have enough reasons supporting the adoption decision and the success factors for the implementation will be in place, the organisation could go for it.

However, the factors relevant to ABC adoption process could vary in degrees of importance from one type of organisation to another. Knowing if the variation exists should increase right decisions and the chance to success of the adoption because the management should pay attention not only to factors in overall organisations but also to its organisation type.

The study found the variation of influencing factors in adoption decision and the implementation of ABC, but not in benefits. In trading organisation, 'diversity of products or customers' becomes the highest important factor for adoption decision, unlike manufacturing and servicing organisations, that 'worthiness of ABC benefits compared to resources consumed' is highest important. In implementation, trading organisation does not see only 'management support' as the highest important factor, but also 'technical skills and support' and 'understanding transactional characteristics', while 'cooperative behaviour in organisation' becomes similarly important like other factors.

Therefore, while all organisations consider the worthiness of benefits compared to resources perceived as the main reason for ABC adoption decision, trading organisation also has diversity of products or customers as the most influencing factor. For implementation, when all organisations treat management support and cooperative behaviour as highly important factors, trading organisation also pays high attention on

understanding transactional characteristics and technical skills and supports. Benefits are the same in ranking that all organisations see supporting planning and control as the strongest ABC benefit.

### *5.1 Implications for ABC adoption in manufacturing organisation*

Manufacturing organisation should pay attention on the worthiness of ABC benefits compared to resources consumed, followed by other factors influencing ABC adoption. Management support, cooperative behaviour, integrating ABC into organisation's accounting information system, utilising ABC information in decisions, and other success factors of implementation should be considered. By having them and ABC benefits are required, they can decide and manage to adopt the ABC.

### *5.2 Implications for ABC adoption in trading organisation*

Trading organisation should pay attention on diversity of products or customers and worthiness of ABC benefits compared to resources consumed, followed by other factors influencing ABC adoption. Management support, cooperative behaviour (as suggested for overall organisations), understanding transactional characteristics, technical skills and supports, and other success factors of implementation should be considered. By having them and ABC benefits are required, they can go for it.

### *5.3 Implications for ABC adoption in servicing organisation*

Servicing organisation should pay attention on worthiness of ABC benefits compared to resources consumed, followed by other factors influencing ABC adoption. Management support, cooperative behaviour, management repetitive expression of demand on ABC, and other success factors of implementation should be considered. By having them and ABC benefits are required, they can make ABC adoption decision, implement it and get its benefits.

## **6 Limitations of the study**

Limitation of this study relates to the source of data. The research was done only with organisations in one country, Thailand. Other countries might be different. Also, some respondents had to recall their memories back to long time ago. Their ability to remember what had happened could affect the study results. Therefore, they should be used carefully. New studies in the area of ABC should be done further to enhance and update the understanding about it.

## **References**

- Ahmadzadeh, T., Etemadi, H. and Pifeh, A. (2011) 'Exploration of factors influencing on choice the activity-based costing system in Iranian organizations', *International Journal of Business Administration*, Vol. 2, No. 1, pp.61–70.
- Al-Dhubaibi, A. (2021) 'Optimizing the value of activity-based costing system: the role of successful implementation', *Management Science Letters*, Vol. 11, No. 1, pp.179–186.

- Al-Hibari, A.A. and Al-Matari, E.M. (2019) 'Role of time-driven resource-consumption accounting in strategic cost reduction and support of supply chain management', *International Journal of Supply Chain Management*, Vol. 8, No. 2, p.771.
- Alves, R.J.V., da Silva Etges, A.P.B., Neto, G.B. and Polanczyk, C.A. (2018) 'Activity-based costing and time-driven activity-based costing for assessing the costs of cancer prevention, diagnosis, and treatment: a systematic review of the literature', *Value in Health Regional Issues*, Vol. 17, No. C, pp.142–147.
- Amiri, N. and Khmidi, S. (2019) 'Implementing time-driven activity-based costing (TDABC) in out-patient nursing department: a case from UAE', *Management Science Letters*, Vol. 9, No. 3, pp.365–380.
- Askarany, D., Yazdifar, H. and Askary, S. (2010) 'Supply chain management, activity-based costing and organisational factors', *International Journal of Production Economics*, Vol. 127, No. 2, pp.238–248.
- Brown, D.A., Booth, P. and Giacobbe, F. (2004) 'Technological and organizational influences on the adoption of activity-based costing in Australia', *Accounting and Finance*, Vol. 44, No. 3, pp.329–356.
- Cardos, I.R. and Cardos, V.D. (2014) 'Measuring customer profitability with activity-based costing and balanced scorecard', *Annales Universitatis Apulensis: Series Oeconomica*, Vol. 16, No. 1, pp.52–60.
- Charaf, K. and Bescos, P.L. (2013) 'The role of organizational and cultural factors in the adoption of activity-based costing: the case of Moroccan firms', *Accounting and Management Information Systems*, Vol. 12, No. 1, pp.4–26.
- Cokins, G. and Paul, D.D. (2016) 'Time-driven or driver rate-based ABC: how do you choose', *Strategic Finance*, Vol. 97, No. 8, pp.20–29.
- Cooper, R. and Kaplan, R.S. (1988) 'Measure costs right: make the right decisions', *Harvard Business Review*, Vol. 66, No. 5, pp.96–103.
- Da Silva Etges, A.P.B., Cruz, L.N., Notti, R.K., Neyeloff, J.L., Schlatter, R.P., Astigarraga, C.C., Falavigna, M. and Polanczyk, C.A. (2019) 'An 8-step framework for implementing time-driven activity-based costing in healthcare studies', *The European Journal of Health Economics*, Vol. 20, No. 8, pp.1133–1145.
- Dalci, I., Tanis, V. and Kosan, L. (2010) 'Customer profitability analysis with time-driven activity-based costing: a case study in a hotel', *International Journal of Contemporary Hospitality Management*, Vol. 22, No. 5, pp.609–637.
- Department of Business Development [online] [https://www.dbd.go.th/more\\_news.php?cid=1459](https://www.dbd.go.th/more_news.php?cid=1459) (Accessed 31 March 2022).
- Fourie, H., Reynolds, A., and Erasmus, L. (2018) 'A framework for time-driven activity-based costing implementation at small and medium enterprises', *The Southern African Journal of Entrepreneurship and Small Business Management*, Vol. 10, No. 1, pp.1–11.
- Gosselin, M. (1997) 'The effect of strategy and organizational structure on the adoption and implementation of activity-based costing', *Accounting, Organizations and Society*, Vol. 22, No. 2, pp.105–122.
- Gregório, J., Russo, G. and Lapão, L.V. (2016) 'Pharmaceutical services cost analysis using time-driven activity-based costing: a contribution to improve community pharmacies' management', *Research in Social and Administrative Pharmacy*, Vol. 12, No. 3, pp.475–485.
- Gunasekaran, A. (1999) 'A framework for the design and audit of an activity-based costing system', *Managerial Auditing Journal*, Vol. 14, No. 3, pp.118–127.
- Hasan, A. (2017) 'Implementation problems of activity-based costing: a study of companies in Jordan', *Journal of Economics, Management and Trade*, Vol. 18, No. 1, pp.1–9.
- Hicks, D.T., Olejniczak, E.J. and Curell, B.A. (2009) 'Measuring customer and product profitability at community and regional banks', *Journal of Performance Management*, Vol. 22, No. 1, pp.3–18.

- Hoang, T.B.N., Pham, D.H., Nguyen, T.M.G. and Nguyen, T.T.P. (2020) 'Factors affecting activity-based costing adoption in autonomous public universities in Vietnam', *The Journal of Asian Finance, Economics, and Business*, Vol. 7, No. 12, pp.877–884.
- Hofmann, E. and Bosshard, J. (2017) 'Supply chain management and activity-based costing', *International Journal of Physical Distribution and Logistics Management*, Vol. 47, No. 8, pp.712–735.
- Ibrahim, M.E. and Saheem, W.H. (2013) 'Managers motivational antecedents to support activity-based costing systems', *Journal of Applied Business Research (JABR)*, Vol. 29, No. 3, pp.935–944.
- Kaplan, R.S. (1994) 'Flexible budgeting in an activity-based costing framework', *Accounting Horizons*, Vol. 8, No. 2, pp.104–109.
- Kaplan, R.S. and Anderson, S.R. (2004) 'Time-driven activity-based costing', *Harvard Business Review*, Vol. 82, No. 11, pp.131–138.
- Kaplan, R.S., Witkowski, M., Abbott, M., Guzman, A.B., Higgins, L.D., Meara, J.G., ... and Feeley, T.W. (2014) 'Using time-driven activity-based costing to identify value improvement opportunities in healthcare', *Journal of Healthcare Management*, Vol. 59, No. 6, pp.399–412.
- Kocakulah, M.C. and Austill, A.D. (2017) 'Measuring commercial loan profitability using activity-based costing at a regional bank', *Cost Management*, Vol. 31, No. 5, pp.19–31.
- Lea, B. (2007) 'Management accounting in ERP integrated MRP and TOC environments', *Industrial Management and Data Systems*, Vol. 107, No. 8, pp.1188–1211.
- Lu, T.Y., Wang, S.L., Wu, M.F. and Cheng, F.T. (2017) 'Competitive price strategy with activity-based costing—Case study of bicycle part company', *Procedia CIRP*, Vol. 6, No. 6, pp.14–20.
- Lueg, R. (2020) 'Activity-based costing as a basis for transfer prices and target setting', *International Journal of Economics and Business Administration*, Vol. 8, No. 3, pp.489–499.
- Maelah, R. and Ibrahim, D. N. (2007). Factors influencing activity-based costing (ABC) adoption in manufacturing industry. *Investment Management and Financial Innovations*, 4(2), pp.113–124.
- Mak, Y. T. and Roush, M.L. (1994) 'Flexible budgeting and variance analysis in an activity-based costing environment', *Accounting Horizons*, Vol. 8, No. 2, p.93.
- Meric, E. and Gersil, M. (2018) 'Usability of time driven activity-based costing methods in the budgeting process of SMEs', *Business and Economics Research Journal*, Vol. 9, No. 4, pp.961–978.
- Miller, T. (2017) 'The ABCs of activity-based costing for logistics', *Material Handling and Logistics*, No. 4, pp.22–25.
- Nassar, M., Al-Khadash, H.A., Sangster, A. and Mah'd, O. (2013) 'Factors that catalyse, facilitate and motivate the decision to implement activity-based costing in Jordanian industrial companies', *Journal of Applied Accounting Research*, Vol. 14, No. 1, pp.18–36.
- Niñerola, A., Hernández-Lara, A.B. and Sánchez-Rebull, M.V. (2021) 'Is time-driven activity-based costing coming out on top? A comparison with activity-based costing in the health field', in *Healthcare*, Vol. 9, No. 9, p.1113, Multidisciplinary Digital Publishing Institute.
- Park, Y., Jung, S. and Jahmani, Y. (2019) 'Time-driven activity-based costing systems for marketing decisions', *Studies in Business and Economics*, Vol. 14, No. 1, pp.191–207.
- Pohlen, T.L. (1993) *The Effect of Activity-Based Costing on Logistics Management*, Doctoral dissertation, The Ohio State University.
- Rundora, R., Ziemerink, T. and Oberholzer, M. (2013) 'Activity-based costing in small manufacturing firms: South African study', *Journal of Applied Business Research (JABR)*, Vol. 29, No. 2, pp.485–498.
- Shields, M.D. (1995) 'An empirical analysis of firms' implementation experiences with activity-based costing', *Journal of Management Accounting Research*, Vol. 7, No. 1, pp.148–165.

- Stratton, W.O., Desroches, D., Lawson, R.A. and Hatch, T. (2009) 'Activity-based costing: is it still relevant', *Management Accounting Quarterly*, Vol. 10, No. 3, pp.31–40.
- Tam, N. and Tuan, L. (2020) 'Factors influencing adoption of activity-based costing in developing country', *Management Science Letters*, Vol. 10, No. 14, pp.3331–3338.
- Teklay, G., Kitaw, D. and Jilcha, K. (2021) 'Activity-based costing applied to automotive manufacturing: a case of Mesfin Industrial Engineering', *International Resourch Journal of Modernization in Engineering Technology and Science*, Vol. 3, No. 8, pp.340–354.
- Udpa, S. (1996) 'Activity-based costing for hospitals', *Health Care Management Review*, Vol. 21, No. 3, pp.83–96.
- Yang, K.M. and Chang, S.H. (2018) 'Application of activity-based costing to green industry for profitability and performance enhancement-recycling of blast furnace slag as an example', *Advances in Management and Applied Economics*, Vol. 8, No. 3, pp.27–59.
- Yılmaz, M., Coşkun, A. and Yılmaz, Ş. (2013) 'A comparison and an implementation of time driven activity based costing and activity based costing methods in private schools', in *International Conference on Economic and Social Studies*, 10–11 May, Sarajevo, Bosnia and Herzegovina.
- Zamrud, N.F. and Abu, M.Y. (2020) 'Comparative study: activity-based costing and time driven activity-based costing in electronic industry', *Journal of Modern Manufacturing Systems and Technology*, Vol. 4, No. 1, pp.68–81.
- Zarei, B., Rad, R.S., Ghapanchi, F. and Ghapanchi, A.H. (2015) 'A heuristic approach to the adoption and implementation of activity-based costing information systems', *Electronic Journal of Information Systems Evaluation*, Vol. 18, No. 1, pp.59–76.