# Factors Affecting the Use of Management Accounting Practices in Small and Medium Enterprises: Evidence from Indonesia

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**Abstract**

*This study aims to explore the level of adoption of management accounting practices (MAPs) in small and medium sized enterprises (SMEs) sector in one of the developing countries, Indonesia. Further, this study also examines factors which may affect the extent of use of MAPs in SMEs. Previous studies find SMEs contribute to the development of economy both in developed and developing countries. Nevertheless, the focus of SMEs studies related to management accounting field is still in the developed countries. Studies on the adoption of MAPs in developing countries are still limited. This study uses logistic regression to analyze the data and to test the hypotheses. The study finds that qualification of internal accounting staffs, participation of owner/manager, and size of the firm significantly affect the use of MAPs in SMEs. The result also shows that traditional MAPs are still dominating the use of MAPs by Indonesian SMEs.*

**Keywords**: *contingency theory; Indonesia; management accounting practices; small medium sized enterprises*

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## INRODUCTION

Small and medium enterprises (SMEs) became the backbone of Indonesian economy, namely as the main provider of employment (Tambunan, 2008). According to Marta (2016), in 2015 SMEs were the largest business sector in Indonesia, i.e. 56.5 million businesses or 99.9 percents of the total national businesses. Of these, SMEs could absorb 97.3 percent of the total workforce in Indonesia. Additionally, in the same year, SMEs contributed 60.34 percent of the total national GDP (Mutmainah, 2016). This business sector had proven its ability to survive and improve the performance of the economy when the economic crisis hit Indonesia in the late 1990s. This was because SMEs had the flexibility to adapt and could continue to grow despite having to use their own capital, pay high interest rate, and get little attention from the government (Hamdani and Wirawan, 2012).

SMEs, however, are also vulnerable to failure. In Indonesia, the problems faced by SMEs can be divided into financial and nonfinancial. Financial constraints include limited access to source of capital. SMEs face difficulties to obtain capital loans from banks or other formal financial institutions. This is due to limited guarantees for loans, informal business forms, tedious bureaucratic processes, or lack of owners/managers' information on how to obtain loans.

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Nonfinancial barriers may include traditional technology, inadequate product quality, limitations in product marketing, lack of quality of human resources, and lack of understanding of accounting, finance, and business managerial (Hamdani and Wirawan, 2012).

The most significant reason for the failure of SMEs, however, is the inability of SMEs to take advantage of essential business tools and business practices (Ahmad, 2012; Gaskill et al., 1993; Nandan, 2010). In fact, Perry (2001) states that formal planning will reduce the possibility of SMEs' failure. Hopper et al. (1999) mention that one of the factors causing the high failure rate is lack of use of one of management accounting practices (MAPs), the cost management system, as a form of profit-oriented control. In SMEs, MAPs may act as an information system that processes information efficiently. In addition, financial and nonfinancial information generated by MAPs can improve competitiveness, assist the company to face various environmental uncertainties, and improve performance (Reid and Smith, 2002). The use of MAPs does not necessarily guarantee success, but not using it can reduce a firm's competitive advantage (Folk et al., 2002). The use of MAPs can help SMEs in managing their resources to increase the value provided to customers and owners/managers (Nandan, 2010).

Much of the existing research on the use of MAPs in SMEs are undertaken in developed countries, and limited research are undertaken in developing countries, such as Indonesia (see Armitage et al., 2016; McChlery et al., 2005; Sousa et al., 2006). Furthermore, the successful implementation of MAPs will depend on its contingent factors, such as organizational factors and business environment characteristics (Miles and Snow, 1978; Tillema, 2005).

Given the important role of the SMEs sector for the Indonesian economy and limited research focusing on this sector, this study aims to observe the extent of MAPs implementation in Indonesian SMEs and the contingent factors that affect the adoption of MAPs. Indonesia was chosen because research in management accounting in SMEs in this country is very limited.

This study is expected to provide several contributions. First, this research will show the extent of MAPs implementation by Indonesian SMEs. Second, this research examines contingent factors that affect implementation of MAPs used by SMEs in Indonesia. The results of this study are expected to provide benefits to SMEs and external accountants/auditors, policy makers, and academics on the progress and factors which affect the application of MAPs to the Indonesian SMEs sector. This research is expected to become the stepping stone for subsequent research in the field of management accounting, organizational design, and performance of SMEs, particularly in developing countries like Indonesia.

Based on data from the World Bank in 2014 Indonesia is categorized as small and medium income country or developing country. Indonesia is a member of the Association of Southeast Asian Nations (ASEAN). Indonesia and other ASEAN countries had agreed to create an ASEAN Economic Community (AEC) in 2015 in Southeast Asia. With the existence of the AEC, ASEAN becomes a region where goods, services, investments, labour, and capital are free to trade (ASEAN, 2014). Based on data in 2015, the total population of all ASEAN members reaches approximately 628.9 million people, while the total population of Indonesia reaches more than 255 million people. The total gross domestic product (GDP) of ASEAN reaches approximately USD 2,400 billion and Indonesia's GDP reaches over USD857 billion (ASEAN, 2016). With such market, ASEAN and Indonesia in particular have great business potential in the future.

On the other hand, the impact of AEC to SMEs is the market competition becomes more rigorous. SMEs will increasingly require management accounting that can help to win the market competition. Management accounting can be used as one of the tools that can help the success of a company.

Furthermore, The Indonesian Law No. 20/2008 on Micro, Small, and Medium Enterprises states that small-scale enterprises are stand-alone business entities conducted by individuals or other business entities, that are not subsidiaries or branches of other companies, owned, controlled or part of; either directly or indirectly; medium or large enterprises with net asset of IDR50 million to IDR500 million, excluding land and buildings, or having annual sales of IDR300

million to IDR2.5 billion. Medium enterprises are stand-alone business entities conducted by individuals or other business entities, that are not subsidiaries or branches of other companies, owned, controlled or part of; either directly or indirectly; small or large enterprises with net asset of IDR500 million to IDR10 billion, excluding land and buildings, or having annual sales of IDR2.5 billion to IDR50 billion.

Fisher (1995) mentions that some contingent factors that may affect the application of management accounting systems and controls or management accounting techniques are external environments (simple or complex, static or dynamic), technology (job shop or mass production, production interdependence, automated), competitive strategy and missions (low cost or innovation), business units and industry characteristics (company size, diversification, corporate structure, regulation), and knowledge (knowledge of the transformation process). Chenhall (2003) also mentions some key contextual factors that can influence the accuracy of selection of accounting techniques are external environment, technology (both traditional and contemporary), organizational structure, size, strategy, and national culture.

In this current study, five contingency factors that potentially influence MAPs adoption by SMEs are investigated. These five contingency factors were chosen because most contingency theory research on SMEs use these factors, as seen in table 1 below.

**Table 1.** Previous Research and Contingency Factors Used

| No | Researcher (Year) | Contingency Factors Used | Country |
|---|---|---|---|
| 1 | Ahmad (2012) | Size, market competition, owner participation, qualification of accounting staff, technology | Malaysia |
| 2 | Amat et al. (1994) | Market competition, political environment, tight control | Spain |
| 3 | Armitage et al. (2016) | Perceived environmental uncertainty (PEU), firm's age | Canada and Australia |
| 4 | Collis and Jarvis (2002) | Size, external auditor advice | England |
| 5 | Gul (1991) | PEU | Australia |
| 6 | Hopper et al. (1999) | Culture, part of a group | Japan |
| 7 | Ilias et al. (2010) | Qualification of accounting staff | Malaysia |
| 8 | Marn et al. (2016) | PEU, owner motivation | Malaysia |
| 9 | Sousa et al. (2006) | Owner participation, qualification of accounting staff, cost | England |
| 10 | O'Regan et al. (2007) | PEU | England |
| 11 | Marc et al. (2010) | Size, market competition, qualification of accounting staff, international market | Slovenia |
| 12 | Sousa et al. (2005) | Owner participation, qualification of accounting staff, cost | Portugal |
| 13 | Wouters and Wilderom (2008) | Qualification of accounting staff | Netherland |
| 14 | Askarany et al.(2010) | Size | New Zealand |
| 15 | Alattar et al. (2009) | Size, PEU, qualification of accounting staff | Palestine |
| 16 | Brijlal and Quesada (2009) | Size | South Africa |
| 17 | Davila (2005) | Size, CEO not founder | USA |

| No | Researcher (Year) | Contingency Factors Used | Country |
|----|-------------------|--------------------------|---------|
| 18 | Davila and Foster (2005) | Size | USA |
| 19 | Davila and Foster (2007) | Size, CEO not founder | USA |
| 20 | El-Ebaishi et al. (2007) | Size | Saudi Arabia |
| 21 | Elhamma (2012) | Size | Morocco |
| 22 | Gunawan et al. (2008) | Size | England |
| 23 | King et al. (2010) | Size, organizational structure | Australia |
| 24 | Neubauer et al. (2012) | Size | Austria, Germany |
| 25 | Odar et al. (2012) | Size | Slovenia |
| 26 | Tapinos et al. (2005) | Size | England |
| 27 | Joshi et al. (2003) | Culture | Bahrain |
| 28 | Ritchie and Richardson (2000) | Owner participation | N/A |
| 29 | Sharma and Bhagwat (2007) | Owner participation | India |
| 30 | Benjaoran (2009) | Qualification of accounting staff | Thailand |

Source: Modification of Lopez and Hiebl (2015)

Table 1 shows that the most widely used contingency factors are firm size, qualification of internal accounting staff, PEU, owner participation, and market competition. Each factor has been used in 16, 8, 5, 5 and 3 studies, respectively. Another thing worth to note is out of 30 studies reviewed, there are 22 studies conducted in developed countries, 7 studies conducted in developing countries, and 1 study did not mention the country of study. The relationship between each factor and the use of MAPs will be discussed below.

The uncertainty of external environment will lever managers' need for additional information to cope with complex environmental circumstances. The required information is characterized as external, nonfinancial, and ex-ante produced by more contemporary MAPs (Gordon and Narayanan, 1984). If the uncertainty of the external environment is perceived as low, managers can make decisions based on information produced by the more traditional MAPs (Abdel-Kader and Luther, 2008).

Gul's research (1991) shows that the effect of the management accounting system on SMEs performance depends on environmental uncertainty. At a time of high uncertainty, contemporary accounting management systems will have a positive effect on performance. When uncertainty is low, contemporary accounting management systems will have a negative effect. Gul (1991) argues that rich information from contemporary management accounting systems is not required under low competition conditions and predictable market demand.

On the other hand, Marn et al. (2016) indicate that owners' motivation and environmental uncertainty have a positive and significant impact on the strategic planning use of SMEs in Malaysia. Therefore, the degree of uncertainty of the external environment will affect the use of MAPs.

Based on the above discussion, the relationship between the PEU and the use of MAPs is hypothesized as follows:

**H1. Perceived environmental uncertainty positively affects the use of management accounting practices.**

Several studies have revealed that the intensity of market competition can affect the use of contemporary accounting management and MAPs systems. Khandwalla's study (1972) shows a positive relationship between competition and the use of contemporary management controls. In addition, Al-Omiry and Drury (2007) found that more advanced costing systems were positively associated with competition intensity. Companies facing a relatively intense market competition will tend to have products or services that generate low profit margins because the pressure

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to match or even lower the selling price set by their competitors. In such circumstances, it is necessary to have accurate cost system because if the system produces inaccurate costs it will cause the cost of products/services to be higher or lower than it should be. Lower cost of products/services (under costing) may cause the company to continue to sell products that actually provide a low profit so that the company suffered losses. If the system produces higher product costs (over costing), it will lead to discontinuation of products reported to result in losses, which actually provide high returns.

The relationship between market competition and the use of MAPs is hypothesized as follows:

**H2. Market competition positively affects the use of management accounting practices.**

Several studies have revealed that the characteristics of key staff of SMEs will influence the use of MAPs. The presence of qualified internal accounting staff can significantly influence the adoption of MAPs (Lopez and Hiebl, 2015). However, limited resources will cause SMEs to not have internal accounting staff or if they exist, the accounting staff lacks appropriate qualifications, lacks sufficient training, or is not motivated to innovate, so as to reduces the possibility of adopting MAPs (McChlery et Al., 2005). Often times, accounting staffs are required to have multiple responsibilities and roles simultaneously, not just focusing on one managerial area. This caused the staff not to have enough training to adopt contemporary MAPs (Lopez and Hiebl, 2015).

The relationship between the qualification level of internal accounting staff and the use of MAPs is hypothesized as follows:

**H3. The qualification of internal accounting staff positively affects the use of management accounting practices.**

Research conducted by Ahmad (2012) shows that the participation of owners or managers has a positive relationship with the use of budgets, MAPs related to short-term decision making and planning, and strategy development. This is because in SMEs, the owner or manager acts as the ultimate decision maker and generally determines the future of the company. Therefore, owners or managers who have a high sense of responsibility and commitment to their company will encourage the use of MAPs that provide appropriate information to assist in improving company's performance. If the owner or manager considers management accounting only as a provider of information to external institutions (e.g. banks), management accounting will not be used for decision-making (Lopez and Hiebl, 2015). In addition, the owner or manager has the authority to allocate the resources needed for the adoption of MAPs (Ismail and King, 2007). Therefore, the commitment of owners or managers in the form of participation will have an important role in the implementation of MAPs. Therefore, we hypothesize:

**H4. Participation of owner or manager positively affects the use of management accounting practices.**

Generally, larger companies use more contemporary MAPs and bigger in number compared to small companies. Larger companies have more resources and better internal communication systems that can facilitate the implementation of MAPs (Abdel-Kader and Luther, 2008). Larger companies also have more complex business processes that have more challenges. Therefore, larger firms need more control and information about their activities and require more comprehensive and contemporary MAPs (Chenhall, 2003).

The relationship between company size and MAPs is hypothesized as follows:

**H5. Company size positively affects the use of management accounting practices.**

The next section discusses the research method and data collection techniques. Results and discussion will be presented in the third section. The final section will present conclusions of the study.

**METHOD**

The data used to test the hypotheses was obtained using survey technique by directly

visiting respondents and sending survey links via internet/online surveys. Respondents of this research are the owner or manager of SMEs' accounting/finance department. This is to ensure that respondents have sufficient understanding of the business environment wherein SMEs operate as well as factors, both external and internal, that may affect MAPs adoption.

Each questionnaire consists of three parts. The first part, respondents are asked to provide information about the SME profile. The second part contains questions relating to MAPs adoption. The third section contains questions about the factors that affect the implementation of MAPs. To assist the respondents, definition and terms of MAPs are provided at the end of the questionnaire. The pilot study was conducted by involving SMEs and faculty members.

The population of this study is SMEs located in the city of Yogyakarta. Yogyakarta was chosen as a research place for two reasons. Firstly, time and cost constraints. Secondly, Yogyakarta is located in the middle of Java Island, rich in culture, tradition, and qualified human resources as well as has developed infrastructure facilities. These make Yogyakarta a very good place to start new SMEs (Yogyakarta Cooperation and Investment Agency, 2017).

The list of SMEs is obtained from Micro, Small, and Medium Enterprises website owned by Industry, Trade, and Cooperative Office of Yogyakarta City Government. However, after preliminary check it is known that the data did not reflect the latest conditions. Many of the listed SMEs have changed addresses or have closed their businesses. Therefore, non-probability sampling method is carried out by using incidental and snowballs sampling techniques. The researchers use data from the website to determine location/region of SMEs centre as starting point. The researchers then visit the centre to obtain sample data. Finally, 124 samples are obtained.

Because the survey was conducted in two ways, i.e. coming directly to respondents and via the internet, mean difference test was conducted using independent sample t-test. The results are presented in Table 2.

**Table 2.** Independent Sample T-Test of Respondents Visited Directly and Through the Internet

| Variables | Sig. (2-tailed) | Results |
|---|---|---|
| Number of employees | 0.251 | No difference |
| Sales | 0.519 | No difference |
| PEU | 0.032 | Different |
| Market competition | 0.229 | No difference |
| Qualification of internal accounting staffs | 0.344 | No difference |
| Participation of owner/manager | 0.766 | No difference |

This study uses six variables, one dependent variable (i.e. MAPs) and five independent variables (i.e. PEU, intensity of market competition, qualification of internal accounting staffs, owner/manager participation level, and size). The instrument for each variable is adapted from previous studies . The description of each variable is presented in the following paragraphs.

Management accounting practices is the dependent variable and measured using nominal (binary) and ordinal scales. The questions in this section consist of 46MAPsand adopted from Abdel-Kader and Luther (2006), Chenhal and Langfield-Smith (1998), Hansen and Van der Stede (2004), Joshi (2001), Shields et al. (1991), and Wijewardena and De Zoysa(1999). This section begins with the question of whether the respondents have used MAPs with a yes/no answer. If the respondents have used the MAPs, respondents are asked to answer the next question about usage frequency of the MAPs on Likert scale of 1 to 5, with 1 showing never and 5 means very frequently.

PEU is measured using instrument developed by Gordon and Narayanan (1984) and adapted for SMEs. That is, it only involves questions that are relevant to SMEs. Respondents are asked to answer 6 questions on Likert scale of 1 to 5. These questions include raw material competition, price competition, new products and services, economic stability, competitor market activity,

and customer preferences. There are four unused questions. First is competition for employees. In general, SMEs does not require high level of expertise and skills can be easily learned so that competition for employees does not significantly affect SMEs. Second is technology. The technology used by SMEs in general is not very modern so the technology factor has limited effect on SMEs. Third are legal, political, and economic constraints. In general, SMEs are in a limited operational environment so that the effect of legal and political environment uncertainty on SMEs will be limited and indirect. Fourth are scientific discoveries. Scientific innovations in SMEs are rare, even absent, so this factor has limited influence on SMEs. The scores of these variables are obtained based on the mean scores of all the answers to each question. A low score (high) indicates a low (high) PEU.

The intensity of market competition is measured using instrument developed by Hansen and Van der Stede (2004) and then adjusted for SMEs by Ahmad (2012). Respondents are asked to answer questions about the level of market competition on Likert scale of 1 to 5. Scale 1 means not intense at all and 5 shows very intense.

Qualification of internal accounting staffs is measured by the highest level of education of SMEs' internal accounting staffs.

Owner/manager participation level on MAPs development is measured using Likert scale 1 to 5. Scale 1 shows no participation at all and 5 means very high participation. The instrument used is based on research conducted by Ismail and King (2007) and adapted for SMEs by Ahmad (2012). Size of SMEs is measured by annual sales.

Logistic regression analysis is used to test the simultaneous effect of the relationship between all independent variables and their dependent variable. In this study, five contingency factors are independent variables and the use of MAPs is dependent variable. The following empirical model is used to test the hypotheses.

$$MAPs = b1 + b2ENVUNC + b3MARCOM + b4ACCQUAL + b5OWNPAR + b6SIZE + e$$

Where,

MAPs is the use of MAPs by SMEs, ENVUNC is PEU, MARCOM is market competition, ACCQUAL is the qualification level of internal accounting staffs, OWNPAR is owner/manager participation, SIZE is SMEs size, and e is an error.

**RESULTS AND DISCUSSIONS**

**Table 3.** SMEs' Profile

| SMEs' Profile | Frequency | Percentage |
|---|---|---|
| Age | | |
| 1—4 years | 13 | 10.48% |
| 5—10 years | 27 | 21.77% |
| More than 10 years | 84 | 67.74% |
| Total | 124 | 100% |
| Main Activity | | |
| Manufacturing/processing | 27 | 21.77% |
| Hotels, tourism, and restaurants | 23 | 18.55% |
| Convection | 18 | 14.52% |
| Services | 17 | 13.71% |
| Crafts | 15 | 12.10% |
| Trading | 15 | 12.10% |
| Agriculture and farming | 7 | 5.65% |
| Property | 1 | 0.81% |

| SMEs' Profile | Frequency | Percentage |
|---|---|---|
| IT | 1 | 0.81% |
| Total | 124 | 100% |
| Number of Employees | | |
| 1—4 employees | 14 | 11.29% |
| 5—19 employees | 65 | 52.42% |
| 20—100 employees | 39 | 31.45% |
| More than 100 employees | 6 | 4.84% |
| Total | 124 | 100% |
| Category | | |
| Small enterprises | 87 | 70.16% |
| Medium enterprises | 37 | 29.84% |
| Total | 124 | 100% |
| Position of respondents | | |
| Staff | 8 | 6.45% |
| Manager | 51 | 41.13% |
| Owner | 7 | 5.65% |
| Manager and owner | 58 | 46.77% |
| Total | 124 | 100% |

Based on the above table, most SMEs (67.74%) have been in operation for more than 10 years. SMEs that have been operating for 5 to 10 years are 21.77%and SMEs operating for 1 to 4 years are 10.48%.

Most SMEs are engaged in manufacturing/processing; hotels, tourism and restaurants; and convection industries (21.77%, 18.55%, and 14.52% respectively). Most SMEs (52.42%) employ 5 to 19 people. A total of 31.45% of respondents employ 20 to 100 people. SMEs that employ 1 to 4 people and more than 100 people respectively amounted to 11.29% and 4.84%. Accordingly, total of 70.16% of respondents consist of small enterprises and the rest is medium enterprises (29.84%).

Most SMEs' managers who are owners are 46.77% and 41.13% is acting as manager only. Respondents acting as staffs are 6.45% and 5.65% are acting as owner. Validity test is conducted on six questions about PEU. The following table shows the results of the factor analysis.

**Table 4.** Loading Factors of PEU

| | Factors | |
|---|---|---|
| | 1 | 2 |
| ENVUNC1A | -0.423 | 0.654 |
| ENVUNC1B | 0.332 | 0.729 |
| ENVUNC2 | 0.292 | 0.563 |
| ENVUNC3 | 0.156 | 0.728 |
| ENVUNC4 | 0.874 | -0.205 |
| ENVUNC5 | 0.897 | -0.071 |

Notes: ENVUNC: PEU

From six items analyzed, they formed into two factors with eigen value more than 1 and ability to explain cumulative variance equal to 63.67%. Each member of each factor is indicated by a loading factor value greater than 0.50. The first factor consists of questions about competitors' market activity and customer preferences. Therefore, the first factor related to market environmental uncertainty construct. The second factor consists of questions regarding competition of raw materials, prices and new products, and economic stability. Therefore, the second factor related to industrial and economic environmental uncertainty construct.

Cronbach alpha of all independent variables is 0.752. This value is greater than 0.50 so that the reliability requirements are also met.

The first objective of this study is to answer how far MAPs adoption on SMEs. Table 5 shows highest and lowest adoption of MAPs on SMEs. Table 6 presents most and least frequently used MAPs by SMEs. More complete results are presented in Appendix 1.

**Table 5.**Highest and Lowest Adoption of MAPs by SMEs

| MAPs | Rank | Percentage |
|---|---|---|
| **Highest Adoption** | | |
| Purchasing budget | 1 | 96.77% |
| Monthly budget | 1 | 96.77% |
| Performance evaluation system based on operating income | 1 | 96.77% |
| Standard costing | 2 | 93.55% |
| Annual budget | 3 | 91.94% |
| Variable costing | 4 | 90.32% |
| Job costing | 5 | 88.71% |
| **Lowest Adoption** | | |
| Internal rate of return | 31 | 24.19% |
| Activity-based costing (ABC) | 32 | 22.58% |
| Contract costing | 33 | 16.94% |
| Net present value | 33 | 16.94% |
| Strategic costing | 34 | 14.52% |
| Product lifecycle analysis | 35 | 8.87% |

Overall, not all MAPs are adopted by all SMEs. There are only 22 MAPs used by more than 75% of SMEs. The difference between the mostly used MAPs (purchasing budget) and the least used (product lifecycle analysis) is 87.90% (96.77% - 8.87%).

Most of the widely used MAPs are mostly more traditional and financial MAPs (14 out of 16 MAPs). Those are purchasing budget, monthly budget, performance evaluation system based on operating income (all three are ranked 1), standard costing (ranked 2), annual budget (ranked 3), variable costing (ranked 4), job costing (ranked 5), absorption costing (ranked 6), flexible budget (ranked 7), performance evaluation system based on sales growth and cost-volume-profit analysis (both ranked 8), financial budget (ranked 9), production budget and incremental budgeting (both are ranked 10). These practices are generally traditional budgeting systems, performance evaluation system based on financial measures, traditional costing systems, and traditional planning tools.

**Table 6.** Most and Least Frequently Used MAPs by SMEs

| MAPs | Frequency | | Rank |
| --- | --- | --- | --- |
| | Mean | Standard Deviation | |
| Most Frequently Used | | | |
| Purchasing budget | 4.27 | 0.94 | 1 |
| Performance evaluation system based on operating income | 4.23 | 0.96 | 2 |
| Job costing | 4.12 | 1.31 | 3 |
| Standard costing | 3.86 | 0.98 | 4 |
| Production budget | 3.84 | 1.48 | 5 |
| Least Frequently Used | | | |
| Activity-based costing (ABC) | 1.55 | 1.09 | 37 |
| Internal rate of return | 1.55 | 1.02 | 37 |
| Contract costing | 1.48 | 1.13 | 38 |
| Strategic costing | 1.41 | 1.05 | 39 |
| Net present value | 1.38 | 0.89 | 40 |
| Product lifecycle analysis | 1.21 | 0.75 | 41 |

Overall there are only 3 MAPs that are frequently used by SMEs (have an average of> 4) and only 16 MAPs that are occasionally used by SMEs (have an average of> 3) (see table 6 and appendix 1). The most frequently used MAPs are purchasing budget and the least frequently used MAPs is product life cycle analysis.

Traditional MAPs dominance can also be seen in the frequency of its use. Nine of the twelve most frequently used MAPs are traditional and financial MAPs, namely purchasing budget (ranked 1), performance evaluation system based on operating profit (ranked 2), job costing (ranked 3), standard costing (ranked 4), production budget (ranked 5), absorption costing (ranked 6), variable costing (ranked 7), monthly budget (ranked 8), and process costing (ranked 10).

However, there are two contemporary MAPs that fall into highest adoption category, namely performance evaluation system based on number of customer complaints (ranked 6) and performance evaluation system based on customer satisfaction (ranked 7). Both also fall into most frequently used MAPs by SMEs. This can be attributed to SMEs already aware and consider that customer interest is their top priority. Performance evaluation is no longer about internal cost calculations, but it is about improvement in the services and processes that impact and perceived by customers (Sousa et al., 2005).

On the other hand, on the lowest adoption of MAPs there are several things that are worth to note. First, least adopted MAPs by SMEs are mostly contemporary MAPs (10 out of 17 MAPs). Namely, value-chain analysis (ranked 22), performance evaluation system based on manufacturing lead time/cycle time and customer profitability analysis (both ranked 24), zero-based budgeting (ranked 25), performance evaluation system based on employee turnover (ranked 27), performance evaluation system based on employee absentee rate (ranked 29), target costing (ranked 30), activity-based costing (ranked 32), strategic costing (ranked 34), and product lifecycle analysis (ranked 35). Most of the MAPs are activity-based accounting management techniques, performance evaluation system based on nonfinancial measures, contemporary budget systems, and strategic management accounting. Second, 7 out of 17 MAPs that are least adopted by SMEs are traditional and financial MAPs. Sousa et al. (2005) mention that the main obstacle that can

In addition, Ilias et al. (2010) also mention that the use of MAPs depends on the needs of SMEs. As transactions and business operations become more complicated, more advanced

techniques are needed to create an efficient process.

Overall, it can be concluded that SMEs still use more traditional MAPs than contemporary MAPs. These results are consistent with previous studies, namely Ahmad (2012), Armitage et al. (2016), Ilias et al. (2010), and Sousa et al. (2006). In addition, based on the most widely adopted MAPs by SMEs, it can be concluded that SMEs use MAPs for the purpose of determining, controlling, and reducing costs; planning, budgeting, and pricing of products or services effectively and efficiently (Ilias et al., 2010).

As previously mentioned, logistic regression analysis is used to test the five predefined hypotheses. Logistic regression analysis was conducted to determine the factors that influence the use of MAPs by SMEs. Table 7 below shows the results.

**Table 7.**Results of Logistic Regression Analysis

| Variables/Indicators | Value | B | Wald | Df | Sig. |
|---|---|---|---|---|---|
| Chi-square | 30.998 | | | 5 | 0,000 |
| -2 Log likelihood | 84.932 | | | | |
| Cox & Snell R Square | 0.221 | | | | |
| Nagelkerke R Square | 0.364 | | | | |
| Hosmer & Lemeshow (Chi-square) | 7.563 | | | 8 | 0.477 |
| Accuracy of model | 86.3 | | | | |
| ENVUNC | | 0.975 | 2.398 | 1 | 0.122 |
| MARCOM | | 0.327 | 0.765 | 1 | 0.382 |
| ACCQUAL | | | 5.080 | 1 | **0.024** |
| OWNPAR | | 0.881 | 4.444 | 1 | **0.035** |
| SIZE | | 1.057 | 6.626 | 1 | **0.010** |
| Constant | | | 9.314 | 1 | 0.002 |

The -2 Log likelihood score (84,932) shows that the fitness of the model is good. This is supported by chi-square value of Hosmer and Lemeshow test (7.563) which is less than the chi-square value of the table. Hosmer and Lemeshow test shows that logistic regression model is fit. The values of Cox & Snell R Square and Nagelkerke R Square show the ability of independent variables to explain the dependent variable. In this research, the ability of independent variables to explain the dependent variable ranges from 22.1% to 36.4%. In addition, the accuracy of the model is 86.3%. Based on the results, it can be concluded that the research model used is fit and logistic regression analysis can be done to determine the factors that affect the use of MAPS.

The Wald results show that qualification of internal accounting staffs, participation of owner/manager, and size proxied by annual sales are significant predictors of use of MAPs (p<0.05).

In the validity test, two constructs have been created that form the PEU variable, namely uncertainty of the market environment (ENVUNC1) and the uncertainty of the industrial and economic environment (ENVUNC2). Therefore, the impact of the two constructs on the use of MAPs is investigated further. The summary of logistic regression test results (with two dimensions of PEU) is shown in Table 8.

**Table 8.** Results of Logistic Regression Analysis with Two PEU Dimensions

| Variables/Indicators | Value | B | Wald | df | Sig. |
|---|---|---|---|---|---|
| Chi-square | 37.347 | | | 6 | 0.000 |
| -2 Log likelihood | 78.582 | | | | |
| Cox & Snell R Square | 0.260 | | | | |
| Nagelkerke R Square | 0.428 | | | | |
| Hosmer & Lemeshow (Chi-square) | 2.650 | | | 8 | 0.954 |
| Accuracy of model | 87.9 | | | | |
| MARCOM | | 0.258 | 0.397 | 1 | 0.529 |
| ACCQUAL | | -0.907 | 4.792 | 1 | **0.029** |
| OWNPAR | | 1.184 | 6.148 | 1 | **0.013** |
| SIZE | | 0.965 | 4.011 | 1 | **0.045** |
| ENVUNC1 | | 0.109 | 0.047 | 1 | 0.828 |
| ENVUNC2 | | 1.377 | 7.025 | 1 | **0.008** |
| Constant | | -9.304 | 8.393 | 1 | 0.004 |

In general, the second model (using two constructs of PEU) is better than the first model (one variable construct of PEU). The value of Cox & Snell R Square and Nagelkerke R Square on the second model is better than the first model. The value in the second model ranges from 26% to 42.8%. That means the ability of the independent variables to explain the dependent variable in the second model is better than the first model. In addition, the level of model accuracy of the second model is 87.9%, slightly better than the first model (86.3%).

The Wald results show that qualification of internal accounting staffs, participation of owner/manager, size, and uncertainty of industrial and economic environment significantly affect the use of MAPs ($p<0.05$). However, only participation of owner/manager, size, and uncertainty of industrial and economic environment have significant and positive influence on the adoption of MAPs. This means that the increase of these three variables will lead to an increase in the adoption of MAPs. The qualification of internal accounting staffs has a negative influence on MAPs adoption.

The first contingency factor that significantly affects the use of MAPs is qualification of internal accounting staffs. In contrast to previous studies, in this study the internal accounting staffs' qualification level has a negative effect on MAPs adoption. Management accounting practices are one of the sources of financial information. Based on Collis and Jarvis (2002), highly qualified internal accounting staffs with high level of accounting education and training will be able to assist in the development of management accounting systems as well as analysis of the accounting information generated by the systems. In addition, Collis and Jarvis (2002) also found that contemporary accounting practices and information derived from budgeting systems which are used for financial planning and control, also depend on the availability of expert and professional internal accounting staffs. These findings are also confirmed by Marc et al. (2010). Marc et al. (2010) conclude that internal accounting staffs' knowledge of contemporary management accounting increases the likelihood of a company to use an integrated performance measurement system, such as the Balanced Scorecard (BSC) on SMEs in Slovenia. According to Sousa et al. (2006), lack of staffs' expertise and understanding of the performance measurement process will inhibit the adoption of new, especially nonfinancial, performance measures.

The second contingency factor that significantly affects the use of MAPs is participation of owner/manager. Most SMEs start from entrepreneurship. Therefore, owner or manager has major role in determining SMEs innovation policies, for example implementation of accounting information systems. Committed owner or manager can impose corporate management style

and appropriate MAPs that can provide appropriate managerial information to help achieve the strategic objectives of the company (Thong et al., 1996). This is supported by the findings of Ahmad (2012) which states that the participation of SMEs' owner or manager have significant and positive impact on the use of budget, decision-making system, strategic management accounting, planning and control especially on strategy development. In addition, Marn et al. (2016) found that owners or SMEs' managers who are motivated by financial achievements and personal development show high emphasis on strategic planning processes. This is consistent with the literature that mentions that the owner or manager of a company that is motivated by finance, improved quality, new product ideas, and personal development tend to have a strong desire or drive to advance its business.

The third contingency factor that influences the use of MAPs is the size of the company. This finding is in accordance with research conducted by Ahmad (2012) who states that company size is positively and significantly related to the use of cost system and performance evaluation system on SMEs. Marc et al. (2010) also mention that the bigger the size of a company, the more likely it is for the SME to use an integrated performance evaluation system. Marc et al. (2010) also found when an SME has reached a certain size. An increase in its size will no longer affect the use of performance evaluation system. Abdel-Kader and Luther (2008) finds that differences in the level of management accounting sophistication used by firms can be explained by the size of the firms. Hansen and Van der Stede (2004) also report that firm size have impact on the use of budgets for performance evaluation and communication of company's goals.

The fourth contingency factor that influences the implementation of MAPs by SMEs is the uncertainty of industrial and economic environment. SMEs can anticipate and control external environmental uncertainty through internal mechanisms, one of which is by using contemporary MAPs. This result is in accordance with the research conducted by Marn et al. (2016). Marn et al. state that the degree of environmental uncertainty positively influences the adoption of strategic planning in SMEs. The higher the level of environmental uncertainty, SMEs should further enhance the process of strategic planning. The industrial and economic environment will have an impact on the level of uncertainty faced by SMEs due to limited resources. Therefore, SMEs should implement a proactive planning process in such uncertainty (Marn et al., 2016). Gul (1991) argues that the effect of the management accounting system on the performance of SMEs depends on the degree of environmental uncertainty. If the level of environmental uncertainty is high, the use of contemporary management accounting system will have a positive effect on the performance of SMEs. However, if the level of environmental uncertainty is low, the use of contemporary management accounting systems will only hinder the performance of SMEs.

On the other hand, market competition and market uncertainty do not have significant effect on the use of MAPs. These contradict the results of previous studies (see Ahmad, 2012; Al-Omiri and Drury, 2007; Hansen and Van der Stede, 2004; Khandwalla, 1972).

The difference in the results of the studies may be caused by two things. First, Marc et al. (2010) state that high level of competition forces SMEs to dedicate all their resources (time, money, and people) to overcome the market competition, not to implement innovative management techniques. Marc et al. (2010) indicate that 50% of SMEs do not implement BSC because SMEs do not understand the concept and 18% due to high implementation costs. Second, the research sample in this study comes from the same or narrow base. The company size of the research sample is quite homogenous so that SMEs may experience similar external environment(environmental uncertainty and market competition) so that the data collected is not sufficient to produce statistically significant relationships (Ahmad, 2012).

## CONCLUSIONS

The first objective of this research is to investigate the extent to which the implementation of MAPs in the SMEs sector in Indonesia. This study uses 46 MAPs simultaneously. From the first research objective, it can be concluded that the use of MAPs by SMEs in Indonesia is still

dominated by traditional MAPs. The use of contemporary MAPs is limited only to those that have impact on customer service performance. The results of this study are consistent with the results of studies conducted in various other countries.

The second purpose of this study is to determine the contingency factors that influence the adoption of MAPs by SMEs. Contingency factors used are PEU, market competition, qualification of internal accounting staffs, participation of owner/manager, and size. Logistic regression analysis is used to determine influencing factors. The results suggest that qualification of internal accounting staffs, participation of owner/manager, and size significantly influence the use of MAPs by SMEs. Perceived environmental uncertainty variable partially affects the use of MAPs, which is on the uncertainty of industrial and economic environment construct. These four variables reflect the complexity of SMEs' business environment. Therefore, SMEs should use and analyze more detailed accounting information to overcome such challenges (Ahmad, 2012). Management accounting practices that are generally used by large and successful companies cannot be directly used by SMEs and are guaranteed to be successful. However, the use of MAPs by SMEs should take into account contingent factors (Collis and Jarvis, 2002). On the other hand, market competition and uncertainty of market environment do not have significant effect on the use of MAPs.

This study has several weaknesses that can influence the interpretation of the results. First, many respondents complained that the terms used are too technical. Nevertheless, several steps have been taken to overcome this. Sampling is done by directly visiting respondents and giving glossary/meaning of the term and its examples. The second weakness is that the samples are quite homogenous so that they may experience similar environmental conditions. Third, the research sample is SMEs located in Yogyakarta City so interpretation of the results for SMEs in other areas should be done with caution.

Based on the weaknesses presented, the suggestion for further research is to consider the level of understanding and knowledge of SMEs' owners/managers in preparing the research questionnaires. In addition to the five contingency factors that have been used in this study, there are still many factors that can influence the use of MAPs, such as technology, culture, and strategy. Subsequent research can use more factors in order to obtain more appropriate research model. Further research can use theories other than contingency theory in order to provide better explanation of the organizational context. Wider relationships between contextual factors, MAPs, and firm performance can also be examined. A case study can be fruitful to provide a more complete and in-depth explanation of the use of MAPs by SMEs and the contextual factors that influence it.

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## APPENDIX1
### 1.1 THE USE OF MAPS IN SMES

| MAPs | Rank | Percentage |
|---|---|---|
| **High Adoption** | | |
| Purchasing budget | 1 | 96.77% |
| Monthly budget | 1 | 96.77% |
| Performance evaluation system based on operating income | 1 | 96.77% |
| Standard costing | 2 | 93.55% |
| Annual budget | 3 | 91.94% |
| Variable costing | 4 | 90.32% |
| Job costing | 5 | 88.71% |
| Absorption costing | 6 | 87.90% |
| Performance evaluation system based on number of customer complaints | 6 | 87.90% |
| Flexible budget | 7 | 86.29% |
| Performance evaluation system based on customer satisfaction | 7 | 86.29% |
| Performance evaluation system based on sales growth | 8 | 85.48% |
| Cost-volume-profit analysis | 8 | 85.48% |
| Financial budget | 9 | 82.26% |
| Production budget | 10 | 81.45% |
| Incremental budgeting | 10 | 81.45% |
| **Moderate Adoption** | | |
| Process costing | 11 | 80.65% |
| Break-even analysis | 11 | 80.65% |
| Inventory control model | 11 | 80.65% |
| Performance evaluation system based on on-time delivery | 12 | 79.84% |
| Performance evaluation system based on return on investment | 13 | 77.42% |
| Continuous/rolling budgeting | 14 | 76.61% |
| Payback analysis | 15 | 71.77% |
| Performance evaluation system based on defect rate | 16 | 64.52% |
| Quality cost | 17 | 62.10% |
| Cash flow budget | 18 | 58.06% |
| Batch costing | 19 | 57.26% |
| Performance evaluation system based on number of warranty claims | 19 | 57.26% |
| Product profitability analysis | 20 | 56.45% |
| **Low Adoption** | | |
| Performance evaluation system based on cash flow | 21 | 54.84% |
| Value-chain analysis | 22 | 53.23% |
| Performance analysis system based on variance analysis | 23 | 52.42% |
| Performance analysis system based on manufacturing lead time/cycle time | 24 | 47.58% |
| Customer profitability analysis | 24 | 47.58% |
| Zero-based budgeting | 25 | 46.77% |
| Accounting rate of return analysis | 26 | 44.35% |

| MAPs | Rank | Percentage |
|---|---|---|
| Performance evaluation system based on employee turnover | 27 | 41.13% |
| Sales budget | 28 | 37.90% |
| Performance evaluation system based on employee absentee rates | 29 | 31.45% |
| Target costing | 30 | 28.23% |
| Internal rate of return analysis | 31 | 24.19% |
| Activity-based costing (ABC) | 32 | 22.58% |
| Contract costing | 33 | 16.94% |
| Net present value analysis | 33 | 16.94% |
| Strategic costing | 34 | 14.52% |
| Product lifecycle analysis | 35 | 8.87% |

## 1.2 FREQUENCY OF USE OF MAPS

| MAPs | Frequency | | Rank |
|---|---|---|---|
| | Mean | Standard Deviation | |
| **High Frequency** | | | |
| Purchasing budget | 4.27 | 0.94 | 1 |
| Performance evaluation system based on operating income | 4.23 | 0.96 | 2 |
| Job costing | 4.12 | 1.31 | 3 |
| Standard costing | 3.86 | 0.98 | 4 |
| Production budget | 3.84 | 1.48 | 5 |
| Absorption costing | 3.75 | 1.19 | 6 |
| Variable costing | 3.57 | 1.14 | 7 |
| Monthly budget | 3.52 | 0.81 | 8 |
| Performance evaluation system based on customer satisfaction | 3.52 | 1.24 | 8 |
| Performance evaluation system based on on-time delivery | 3.37 | 1.39 | 9 |
| Performance evaluation system based on number of customer complaints | 3.35 | 1.17 | 10 |
| Process costing | 3.35 | 1.36 | 10 |
| Moderate Frequency | | | |
| Annual budget | 3.30 | 0.95 | 11 |
| Financial budget | 3.23 | 1.24 | 12 |
| Break-even analysis | 3.22 | 1.28 | 13 |
| Cost-volume-profit analysis | 3.13 | 1.01 | 14 |
| Inventory control model | 3.11 | 1.23 | 15 |
| Performance evaluation system based on sales growth | 3.10 | 1.00 | 16 |
| Flexible budget | 3.02 | 0.99 | 17 |
| Incremental budgeting | 2.90 | 1.05 | 18 |
| Continuous/rolling budgeting | 2.90 | 1.18 | 18 |
| Quality cost | 2.87 | 1.62 | 19 |
| Performance evaluation system based on defect rate | 2.73 | 1.44 | 20 |
| Low Frequency | | | |
| Batch costing | 2.66 | 1.56 | 21 |

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| MAPs | Frequency | | Rank |
| --- | --- | --- | --- |
| | Mean | Standard Deviation | |
| Performance evaluation system based on return on investment | 2.59 | 0.91 | 22 |
| Payback analysis | 2.50 | 1.01 | 23 |
| Cash flow budget | 2.45 | 1.40 | 24 |
| Product profitability analysis | 2.41 | 1.34 | 25 |
| Value-chain analysis | 2.35 | 1.35 | 26 |
| Performance evaluation system based on number of warranty claims | 2.35 | 1.34 | 26 |
| Performance evaluation system based on manufacturing lead time/cycle time | 2.31 | 1.45 | 27 |
| Customer profitability analysis | 2.26 | 1.41 | 28 |
| Performance evaluation system based on cash flows | 2.19 | 1.14 | 29 |
| Performance evaluation system based on variance analysis | 2.13 | 1.13 | 30 |
| Zero-based budgeting | 2.12 | 1.27 | 31 |
| Sales budget | 2.06 | 1.47 | 32 |
| Accounting rate of return analysis | 1.95 | 1.12 | 33 |
| Performance evaluation system based on employee turnover | 1.94 | 1.23 | 34 |
| Target costing | 1.82 | 1.38 | 35 |
| Performance evaluation system based on employee absentee rates | 1.79 | 1.24 | 36 |
| Activity-based costing (ABC) | 1.55 | 1.09 | 37 |
| Internal rate of return analysis | 1.55 | 1.02 | 37 |
| Contract costing | 1.48 | 1.13 | 38 |
| Strategic costing | 1.41 | 1.05 | 39 |
| Net present value analysis | 1.38 | 0.89 | 40 |
| Product lifecycle analysis | 1.21 | 0.75 | 41 |