

Guidelines for Accounting Information System Development to Measure the SMEs Performance

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This research aim was to study the feasibility of AIS for measuring the performance of Small and Medium-sized Enterprises (SMEs) in Phayao Province, Thailand. A random sample of 321 SMEs was grouped by business types. 267 completed questionnaires were analysed. The results showed the three aspects which the sample used as a guideline for new AIS development. The first aspect was the appropriateness of the business model, the registered capital and the nature of business operations and the cost of new AIS development. System worthiness can be estimated by comparing the system performance and the investment. The second aspect was the suitability of the objective for accounting information usage with the effectiveness of the new developing AIS system, as well as the appropriateness with the readiness, the technical resources required for the AIS development, purchasing and installation of the new AIS system. The third aspect was the appropriateness of the new AIS used for decision making, compared with the effective use of the developing system, as well as the suitability of technical resources required for the development, purchasing, installation and use of the new accounting information system. Additional data collection found that the sample group considered the issues and difficulties in the use of existing accounting data, which can be fixed by developing a new AIS. The period used for the system development was to be completed within the specific time frame. This study was able to develop a plan to improve the management system, and to function as a guide in determining the application of the accounting information system to be tailored to the organisation. This allows the business to adapt to change, and the process of operating a business is likely to grow further in the future and to gain competitive advantage.

Key words: *Guidelines, Accounting Information System (AIS), Measure SMEs performance.*

Significance of SMEs in Thailand

Small and Medium Enterprises (SMEs) are the important foundation of the domestic economy (Chienwattanasook & Jermstittiparsert, 2019a, 2019b). The number of SM enterprises at the end of 2017 was 3,046,793 enterprises, with a growth rate at 1.30 percent, compared to 2016 at the proportion for 99.73 percent of the total number of total enterprises nationwide. The number of total enterprises had been divided into small enterprises (SE), which totalled 3,028,495 enterprises or 99.18 percent of total small and medium-sized enterprises nationwide. The number of medium-sized enterprises was 18,298 enterprises or 0.60 percent of total small and medium-sized enterprises nationwide (Office of Small and Medium Enterprises Promotion, 2018).

In 2017, considering the number of SMEs in Thailand which made up SME establishment type: the total number of startup SMEs was 675,633 enterprises or 22.18 percent of the total number of SMEs nationwide. The total numbers of personal SMEs was 2,285,731 enterprises or 75.02 percent of the total number of SMEs nationwide. The total number of Community enterprise SMEs was 85,429 enterprises or 2.80 percent of the total number of SMEs nationwide (Office of Small and Medium Enterprises Promotion, 2018).

In Phayao province, there were small and medium-sized businesses that were registered as legal entities. The types of businesses consisted of manufacturing, service, and trade sectors, both wholesale and retail trade. The number of registered businesses as legal entities has increased since 2015 by 922 enterprises, the year 2016 by 1,052 enterprises, the year 2017 by 1,274 enterprises (Office of Business Development, Phayao Province, 2017), compared to years 2015, 2016 and 2017, there has been an increase at 130 and 222 enterprises respectively.

In Mueang Phayao District, Phayao Province, the number of registered enterprises in the years 2015, 2016 and 2017 were 401, 453 and 544 enterprises respectively, the expansion of business operators compared with years 2015, 2016 and 2017 were 52 and 91 enterprises respectively (Office of Business Development, Phayao Province, 2017). The information mentioned above shows that the number of small and medium-sized enterprises registered as juristic persons in Mueang Phayao District, Phayao Province has been increasing each year. And the number of registered business operations in Mueang Phayao District, Phayao Province is likely to increase compared to the total number of entrepreneurs in Phayao Province.

Important Factors Which Support the Effectiveness of Organisational Management

Saengchai, S., Mitprasat, M., & Jernsittiparsert, K. (2019), accentuated that as SME's are important for the Thai economy, they can improve organisational performance by adopting sustainable technology. The government of Thailand has started to provide special training and incentives which will boost nonstop contribution with innovation. Ulewicz, R.; Blašková, M. (2018), indicated that the success of any businesses depends on having some advantages compared to their competitors. Therefore, the key objective of strategy is to attain a competitive advantage as well as performance. At present, most of the enterprises successfully operating their businesses are relying on good business information systems. Effective administration combines planning, control and decision making, therefore management requires good information to support decision making in various matters. Accounting information is meaningful to management in term of planning, control and decision making. Management accounting information includes performance, financial status, profitability, debt ability, flexibility in term of debt repayment, earnings per share, product cost per unit, profitability of the department or product etc. These information sets are the accounting data proposed to insiders such as management to meet business objectives. In addition, accounting data is also useful to stakeholders and third parties such as shareholders, investors, debtor government agencies, industry associations, competitors and the general public. They can utilise such information to support their business objectives. Therefore, accounting information is a source of useful data to enterprise used for the planning of future operations, controlling various factors and deciding on business practices to achieve goals. SME entrepreneurs have always been faced with funding issues for business expansion, apart from the problem of writing clear business plans. Moreover, at the startup period, they often do not prepare or focus on the management of the business's accounting system in accordance with the certified accounting standards. In general, they let their accounts become complicated and are unable to determine the source of their income (Wisetasing, A., 2013).

According to Kaliappen, N., et al, (2019), studies to deal with the current external opportunities and menaces, new knowledge and skills for improving their existing and future performances must be provided for organisations. This study will be helpful for policymakers and researchers in examining the link between organisational innovativeness, learning orientation, financial, production and marketing performances of SMEs in Thailand. Under the extreme competitive circumstances of today's business world and the introduction of technology as an organisational management tool, companies have been able to use technology for management purposes.

All organisations need to accelerate adjustments for service that is most satisfying to customers. Subsequently, with rapid developments in technology, manual accounting

approaches preferred by the skeptics were superseded. This is because manual accounting is no longer sustainable for decision-making in the modern technological era (Smith, J. and S.B. Puasa, 2016).

The key factor to critical support in terms of enterprise management is Accounting Information Systems (AIS), which need to be fast and reliable. AIS includes a balance sheet, profit and loss sheet, sales report and etc (Nakonpin, N.,2008). AIS can help Business with short-term management. It also helps to operate businesses in dynamic circumstances with high competition, as well as to be able to integrate business operations into long-term strategy (Ismail and King, 2010). For these reasons, most executives demand greater numbers of AIS management staff to promote useful information for effective business management and competition .

Research Questions

From information on various situations in terms of business operations to survive and be sustainable as organisations among the current business environment, this research needed to answer the following two research questions.

RQ1. How they faced the problem of using accounting information for performance measurement?

RQ2. Will it be feasible for AIS development to measure operations of SMEs business sector entities in Phayao Thailand?

The results from the research can answer both of the above research questions and can be useful information for the improvement and planning of AIS development to suit the various organisations. Also, it allows businesses to adjust their operational processes to increase business security in the future efficiently and sustainably.

Research Objectives

The objectives of this research are: 1) To study the problems occurring from using accounting information from SMEs sector entities, Phayao Province, Thailand and 2) To study the feasibility of the AIS development to measure operations of SMEs sector entities, Phayao Province, Thailand.

In the next part of the paper, the literature has been reviewed and hypotheses have been developed. After that, the research method has been presented. Results and discussion are summarised in the next section, followed by the research conclusion.

Literature Reviews

Accounting Information System

An information system is a formal process for collecting data, processing the data into information, and distributing that information to users. The purpose of an accounting information system (AIS) is to collect, store, and process financial and accounting data and produce informational reports that managers or other interested parties can use to make business decisions. Although an AIS can be a manual system, today most accounting information systems are computer-based (Romney, B. et al., 2018).

According to Pierre, A.K., G. Khalil, K. Marwan, G. Nivine and A. Tarek, (2013), the AIS is an assemblage of computer-based electronic systems used to collect, store and process financial and accounting data, with a view to providing support for organisational decision making processes.

The competitive advantage of any organisation is hinged on its quality of information, which is essential to successfully operate the systems (Alomari, I.A., A.M. Amir, K.A. Aziz and S.M. Auzair, 2018).

Business organisations use AIS to support management decisions. Such support usually involves financial analysis from the accountants who obtain information from the company's AIS. With the use of business technology, AIS systems can process huge amounts of data electronically for owners and managers (Ahmed, M.N., 2015). AISs are important formal information sources in organisations of the industrial sector. They can provide management at various levels with acceptable, reliable and timely information, which is sufficient for decision making and organisational performance (Birasnav, M., 2014).

Accounting information systems are part of the infrastructure in the support activities of the value chain and an important activity in providing information to other major activities. Processing information in accounting information systems will provide accurate and reliable information. Currently, the computer has gained significant advances regarding accounting information, which will allow the processing and data collation to be carried out faster than hand processing, which allows executives to receive information quickly for decision-making. SMEs need to operate with competitive advantages for business sustainability and growth (Abdullah, I. and Z. Hassan, 2015). However, SMEs must utilise AIS solutions to withstand competition with other SMEs in the same line of business (Yeboah-Boateng, E.O. and K.A. Essandoh, 2014). Most small businesses do not use accounting information systems, which results in low profits. This study suggests small businesses should use these systems to manage businesses (Md. Faykuzzaman Mia, 2018).

According to research by Akanbi T. A., Fashina H. T., Aruwaji M. A. (2017) on owner perceptions of accounting information system use, small and medium-sized enterprises in Nigeria have found that accounting information systems have a positive relationship with long-term strategic goals. The study concluded that the importance of accepting AIS was that it could be highlighted in business settings and the educational advice was that accounting information systems can be used by SMEs to improve non-financial institutional performance factors, such as long-term strategic goals, market expansion and competitive strength.

Grande, E.U., Estébanez, R.P., Colomina, C.M. (2011) studied the impact of the accounting information system on performance measurement. Evidence from Spanish SME businesses surveyed in the SMEs group found the development and installation of accounting information systems occurred in these organisations. It also found a positive correlation between SMEs using AIS for financial management and banks and improved performance measures.

The decision to outsource accounting functions involves strategic decisions as well as practical and cost related ones (J. Chin, W. Barney, and H. O'Sullivan, 1995), but also relates to strategic accounting functions (P. Collier and A. Gregory. (1995). AIS are classified into two categories: first, effective decision-making of information, that is largely for control of the organisation, second, to facilitate information, that is mainly used for coordination of organization in decision making process (L. Kren, 1992). AIS development and financial performance enhancement will lead to successful troubleshooting cost accounting systems. AIS have a comparative advantage in choosing the best alternative instead of consultants and projects.

Therefore, in order to study if the development of information systems is sufficient to do and can do so or not. Entrepreneurs should consider the possibility in four main areas, Operational Feasibility, Technical Feasibility, Economic Feasibility, and Schedule Feasibility (Romney, B. and Steinbart J., 2006).

Based on the review of the relevant research documents above, this enables the development of a research framework on three variable sets; 1) general information: business model variables, duration, registered capital, assembly characteristics, employee numbers 2) business accounting information usage, and, 3) issues and barriers to the use of business accounting information. There were three hypotheses of research developed as follows:

H1: Business model and the duration of operation are associated with the feasibility of economic value.

H2: The use of accounting information in Accounting Information Systems is associated with operational feasibility, time feasibility, and economic feasibility.

H3: Problems and obstacles in using accounting information systems are associated with operational feasibility and time feasibility.

Research Methodology

Data Used in the Research

Questionnaires were used as the research tool for data collection from SME entrepreneurs who have registered as legal entities with the Phayao Province Business Development Office in Phayao Province, and are still running businesses in 2017 for a total of 543 entities. Later, the researchers calculated the sample size used by grouping by business types which had been registered as legal entities for a total of 321 entities. The sample was selected by the Simple Random sampling method. A questionnaire was used to collect data on the following points: 1) General information about the business operations of the respondents of a closed-ended questionnaire. The questions were in checklist format and included business type, duration of business operation, registered capital, and number of employees. 2) The use of accounting information for decision making by using closed-ended questionnaires to collect quantitative data. The research tools were a rating scale of five levels in accordance with the Likert Scale to evaluate the answers. 3) Problems and obstacles in accounting and the use of accounting information by using a closed-ended questionnaire to collect quantitative data, and, 4) Feasibility of AIS development by using a closed-ended questionnaire to collect quantitative data. The question measures the level of feasibility for AIS development in four sections as follows: technical feasibility of business, economic feasibility, operational feasibility and feasibility of the operational period. The research tools used a rating scale of five levels in accordance with the Likert Scale to evaluate the answers.

Data Analysis

The research data was collected by mailed questionnaire created by researchers from respondents who were SME entrepreneurs, numbering 321 persons. The completed responses from returned questionnaires were 267 and were analysed. The statistics used in the data analysis contained descriptive statistics with the following details: 1) The frequency and percentage used for analysis of demographical data of samples, such as duration of business, registered capital, business type, and number of employees, 2) Mean and standard deviation of the questionnaire to analyse the use of accounting information in decision-making, and to analyse problems and difficulties in the preparation and use of accounting information, and 3) the correlation between variables with Canonical Correlation Analysis by consideration of three variables in accordance with objective number two and the research concept as follows.

Variables set one, to find the correlation between general information of the sample, including business model, business operational period, registered capital, nature of operation

and number of employees with feasibility in all four aspects, such as technique, operation, time and economic value.

Variables set two, to find the correlation between the use of accounting information system information with feasibility in all four aspects, such as technique, operation, time and economic value.

Variables set three, to find the correlation between issues and difficulties in using accounting information system information with feasibility in all four aspects, such as technique, operation, time and economic value.

Research Results

H1: Business model and the duration of operation are associated with the feasibility of economic value.

The formulating of Canonic Correlation between respondents' general variable sets with the feasibility variable set of guidelines for AIS development found that there are four canonic functions, all functions have statistical significance at the level of 0.01. Considering the Canonical Correlation value used to describe the correlation between the general data variable of the respondents and the feasibility variable found that function one, the general variable of the respondents (Canonical Correlation = 0.424) with the variable set is more feasible than the other functions, therefore function one has been chosen.

Table 1: Canonical Coefficient, Standard Canonical Coefficient and the Canonical Correlation of Function One Between the General Data Set of the Respondents with the Feasibility Variable Set of Guidelines for the AIS Development

	Structure coefficients	Standardised Canonical Coefficients	Canonical loading	Canonical R ² (%)
Independent Variables				
Business model	1.426	0.691	0.303	9.181
Duration of operation	-0.138	-0.119	0.145	2.103
Registered capital	1.261	0.779	0.391	15.288
Nature of business	1.088	0.790	0.626	39.188
Number of employees	0.178	0.173	0.054	0.292
(Dependent variables) A set of feasible variables for AIS development				
Technical feasibility	-0.078	-0.062	-0.158	2.496
Economic possibilities	1.412	1.043	0.933	87.049
Operational feasibility	0.058	0.023	0.192	3.686
The possibility of processing time	-0.441	-0.329	-0.038	0.144

Note: The absolute value of Structure Coefficient > 0.30 means the initial variable is a sub-variable causing the absolute value of Standardised Canonical Coefficient > 0.30 , which means the sub-variable of the initial variable is appropriated to predict the correlation with the initial variable of following variable.

From Table 1, it is found that the business model, registered capital and nature of business is a sub-variable of the questionnaire data that is appropriated to predict the correlation with the variable of economic feasibility and the possibility of processing time.

H2: The use of accounting information in Accounting Information Systems is associated with operational feasibility, time feasibility, and economic feasibility.

The formulating of Canonical Coefficient between the variable of accounting information use for decisions (the objective of data use), with a variable set of the feasibility of the AIS development showed that there are four Canonical functions which have three functions with statistical significance at the 0.01 level. As considered, the Correlation between the variable of objective of data usage and the feasibility variable found that function one of the general variable from the respondents is more related to the feasibility variable than other functions. The correlation between the variable sets is moderate (Canonical Correlation = 0.715), therefore function one has been chosen.

Table 2: Canonical Coefficient, Standard Canonical Coefficient and the Canonical Correlation of Function One Between Variables of Using Accounting Information for Business Decisions (Purpose of Data Usage) with Variable of the Feasibility of the AIS Development

	Structure coefficients	Standardised Canonical Coefficients	Canonical loading	Canonical R ² (%)
Independent Variables				
Objectives of using accounting information				
1. Summary of operations and financial status of the business	0.358	0.238	0.167	2.789
2. Use for planning, control and operational decisions	0.717	0.400	0.158	2.496
3. Used for tax payment for government agencies	-0.684	-0.342	-0.384	14.746
4. Assists in making decisions regarding future investment changes	-1.542	-0.742	-0.661	43.692
5. To assess the ability of	-1.134	-0.545	-0.496	24.602

compensation and employment opportunities				
6. To measure the liquidity	0.178	0.077	0.062	0.384
(Dependent variables) A set of feasible variables for AIS development				
Technical feasibility	-0.682	-0.540	-0.769	59.136
Economic possibilities	-0.166	-0.123	-0.402	16.160
Operational feasibility	-1.358	-0.535	-0.616	37.946
The possibility of processing time	-0.345	-0.257	-0.803	64.481

Note: The absolute value of Structure Coefficient > 0.30 means the initial variable is a sub-variable, causing the absolute value of the Standardised Canonical Coefficient > 0.30 , which means the sub-variable of the initial variable is appropriated to predict the correlation with the initial variable of following variable.

From Table 2, it was found that function one, the variable of information usage in objectives one-five is a sub-variable that is suitable to predict the correlation with the variable of technical feasibility (-0.540) and operational aspects (-0.535).

The formulating of the Canonical Coefficient between the variable of information usage (Accounting Information used by businesses in decision-making) and variable sets of feasibility for AIS development showed that there are four Canonical functions, which have three functions with statistical significance at the 0.01 level. As considered, the Correlation between the variable of accounting data usage for decision making and the feasibility variable found that function one of the general variable from the respondents is more related to the feasibility variable than other functions. The correlation between the variable sets is moderate (Canonical Correlation = 0.567), therefore function one has been chosen.

Table 3: Canonical Coefficient, Standard Canonical Coefficient and the Canonical Correlation of Function One Between Variables of Using Accounting Information for Business Decisions (Accounting Data that Businesses Use for Decision Making) with Variable of the Feasibility of the AIS Development

	Structure coefficients	Standardised Canonical Coefficients	Canonical loading	Canonical R ² (%)
Independent Variables				
Accounting information that businesses use to make decisions				
1. Financial Statement sheet (i.e. assets, liabilities and equity)	1.087	0.606	0.309	9.548
2. Income statement (ie income and expenses)	-2.049	-0.857	-0.641	41.088
3. Cash flow statements (acquisition and use of cash are investing activities, operating activities)	0.401	0.295	0.214	4.580
4. Production costs	0.022	0.011	0.080	0.640
5. Receivables and payables	-0.734	-0.400	-0.379	14.364
6. Financial ratio analysis	-0.355	-0.246	-0.192	3.686
(Dependent variables) A set of feasible variables for AIS development				
Technical feasibility	0.721	0.571	0.836	69.890
Economic possibilities	0.334	0.247	0.319	10.176
Operational feasibility	-1.336	-0.526	-0.409	16.728
The possibility of processing time	0.415	0.309	0.742	55.056

Note: The absolute value of Structure Coefficient > 0.30 means the initial variable is a sub-variable, causing the absolute value of Standardised Canonical Coefficient > 0.30 means the sub-variable of the initial variable is appropriated to predict the correlation with the initial variable of the following variable.

From Table 3, it is shown that the statement of financial statement sheet (0.606) income-loss statements (-0.857), accounts receivable - payable (-0.400) are sub-variables of accounting data for the decision making variable, which is appropriated for predicting correlation with technical feasibility variables (0.571), operation (-0.526) and operation time (0.309).

H3: Problems and obstacles in using accounting information systems are associated with operational feasibility and time feasibility.

The formulating of the Canonical Coefficient between variables of issues and difficulties in accounting and accounting data use with the feasibility of guidelines for the AIS development showed that there are four Canonical functions with statistical significance at the 0.01 level. As considered, the Canonical Correlation, which is used to describe the correlation between variables of issues and difficulties in accounting and data usage as well as the feasibility variable, found that function one, the general variable of the respondents has more of a correlation (Canonical Correlation = 0.674) with the feasibility variable than the other functions. Therefore, function one has been chosen.

Table 4: Canonical Coefficient, Standard Canonical Coefficient and the Canonical Correlation of Function One Between Variables of Issues and Difficulties in Accounting and Data Usage with Feasibility Variable of the Feasibility of the AIS Development

	Structure coefficients	Standardised Canonical Coefficients	Canonical loading	Canonical R ² (%)
Independent Variables				
Accounting information that businesses use to make decisions				
1. Accounting data that is useful for direct issues that require decision making	-0.058	-0.037	-0.110	1.210
2. Accounting data was not in time for decision making	-0.439	-0.247	-0.418	17.472
3. Information distorts from fact	0.777	0.768	0.639	40.832
4. Accounting data is not reliable	-0.481	-0.446	-0.348	12.110
5. Comparison of accounting information	0.606	0.431	0.591	34.928
6. Economical saving of accounting cost which is worth its benefit	-0.057	-0.032	0.228	5.198
(Dependent variables) A set of feasible variables for AIS development				
Technical feasibility	-0.759	-0.601	-0.954	91.012
Economic possibilities	0.098	0.072	-0.183	3.349
Operational feasibility	-0.160	-0.063	-0.138	1.904
The possibility of processing time	-0.629	-0.468	-0.921	84.824

Note: The absolute value of Structure Coefficient > 0.30 means the initial variable is a sub-variable, causing the absolute value of Standardised Canonical Coefficient > 0.30, which means the sub-variable of the initial variable is appropriated to predict the correlation with the initial variable of the following variable.

Table 4 showed that issues and difficulties in accounting and accounting information usage in terms of data distortion from fact (0.768) indicated that the accounting data is not reliable (-0.446), and the comparability of accounting data (0.431) is a sub-variable of the questionnaire variable that is suitable to predict the correlation with the variable of technical feasibility and the feasibility of the processing time.

Discussion and Conclusion

Results Summary

The Feasibility of Guidelines for AIS Development

The results of the Canonical Correlation Analysis to answer objective number two of this study to investigate the feasibility of guiding the AIS development to measure SMEs business operations, sector entities in Muang District, Phayao province can be summarised as follows;

1. Business model, registered capital and nature of business is a sub-variable from the data variable of the questionnaire, which is suitable to predict the correlation with the economic feasibility variable and the feasibility of processing time of the AIS development among the research sample.
2. The use of objective information in five aspects included to summarise the operation and financial status of the business, to use in planning, control and operational decisions in various tax payments to government agencies, to support decision making about future investment changes and to assess the ability of compensation payments and employment opportunities. It is a suitable sub-variable to predict the correlation with the technical feasibility variable and operation of the AIS development of the research sample.
3. Problems and difficulties in accounting and use of accounting data regarding data distortions from fact, accounting data is not reliable and comparative comparisons of accounting data are sub-variables of questionnaire data variables, which are suitable to predict correlations with variables in term of technical feasibility, operation and the processing time of the AIS development of the research sample.

Discussion

The discussion of the research results as per the title “ The Guidelines for the AIS Development for Measuring the Performances of the Small and Medium-sized Enterprise (SMEs), entities sector in Mueang District, Phayao Province, are presented according to the research objectives as follows:



The feasibility of the development of accounting information systems to measure operations of the businesses, SMEs sector entities in Muang, Phayao found that the business model, registered capital, and nature of business operations have affected the economic feasibility of considering AIS development among the research sample. The consideration of the cost of system development and the worthiness of the system was assessed by comparing the outcome obtained from the system with the investment cost. The research of Md. Faykuzzaman Mia (2017), supports the result that small businesses should adopt a AIS in business management. The worth of the system implementation has a positive correlation between the account information obtained from the systems and the profit levels of small businesses.

In addition, this study found the usefulness of accounting information regarding objectives consisting of five aspects: to summarise the operational performance and financial status of the business, to plan, control and make decision in tax payments for government agencies, to support decision making in terms of future investment changes and to assess the ability of compensation payments and employment opportunities which affect the technical and operational feasibility of AIS development among the research sample. The studies of Akanbi TA, Fashina HT, Aruwaji MA (2017) have crossed the gap in the analysis of the importance of AIS with SMEs through the perceptions of entrepreneurs according to long-term strategy goals and market expansion. The results also showed that AIS can be used by SMES to improve their efficiency, including long-term strategic goals and market expansion, as well as competitive strength.

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