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IABE-2014 Verona - Summer Conference Registration Form
June 27-29, 2014 Verona, Italy

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Email (required): uthen.lig@acc.msu.ac.th Telephone: 886815950990 University: Mahasarakham University,
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City: Khamiang State: Mahasarak Zip Code: 44150 Country: Thailand
Title of Your Paper: Strategic Enterprise Resource Planning Management and Succ
Accepted for: JABE No. of Pages: 14 Track Assigned: (Refer to acceptance letter)
Are you willing to serve: As a Discussant? Yes, No; As a Session Chair? Yes, No.
Please list your co-author(s), if any:

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<td><a href="mailto:witsite@hotmail.com">witsite@hotmail.com</a></td>
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<td><a href="mailto:aj_uthen@hotmail.com">aj_uthen@hotmail.com</a></td>
<td>Maejo University</td>
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# IABE-2014 Verona - Summer Conference Registration Form

**June 27-29, 2014 Verona, Italy**

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**Email (required):** uthen.l@acc.msu.ac.th  
**Telephone:** 886815950980  
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<td>1. Dr. Jeeraporn Pongpanpattana</td>
<td><a href="mailto:aj_uthen@hotmail.com">aj_uthen@hotmail.com</a></td>
<td>Lampang, Rajabhat University</td>
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<tr>
<td>2. Dr.</td>
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อัตราแลกเปลี่ยนเท่าเดิมอย่างน้อยหนึ่งนาทีระหว่างธนาคาร = 32.631 บาท ต่อ 1 ดอลลาร์ สหร.

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หน้า 2/2

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สำนักงานธุรกิจ
Date: MAY, 13, 2014

To: Uthen Laonamtha, Worawit Laohamethanee, Atchaya Paikhamnam

Re: Your Paper:

STRATEGIC ENTERPRISE RESOURCE PLANNING MANAGEMENT AND FIRM SUCCESS OF FOOD BUSINESSES IN THAILAND: AN EMPIRICAL INVESTIGATION OF THE ANTECEDENTS AND CONSEQUENCES

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VERONA Program Chair

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STRATEGIC ENTERPRISE RESOURCE PLANNING MANAGEMENT AND FIRM SUCCESS OF FOOD BUSINESSES IN THAILAND: AN EMPIRICAL INVESTIGATION OF THE ANTECEDENTS AND CONSEQUENCES

Uthen Laonamtha
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Mahasarakham University, Thailand

Worawit Laohamethanee
Faculty of Business Administration and Liberal Arts
Rajamangala University of Technology Lanna, Thailand

Atchaya Paikhamnam
Faculty of Business Administration
Maejo University, Thailand

ABSTRACT

Strategic enterprise resource planning (ERP) management as essential to business accomplishment. The objective of this study is to investigate the effect of strategic ERP management on firm success through business information advantage, and business operational effectiveness. Also, the associated roles of proactive vision, IT infrastructure, and environmental uncertainty influence strategic ERP management and are investigated through organizational learning capability as a moderator. A questionnaire was used to collect the data from 82 food businesses in Thailand. The results show that strategic ERP management significantly and positively relate to business information advantage, business operational effectiveness, and firm success. In addition, proactive vision, IT infrastructure, and environmental uncertainty significantly and positively relate to strategic ERP management. Surprisingly, there are very few studies showing a positive significant effect of organizational learning capability as the moderating effect of relationships between strategic ERP management and its antecedents. Potential discussion with the research results is effectively implemented in the study. Because the sample is only chosen from one industry such as food businesses, the generalizability may need to be confirmed. Theoretical and managerial contributions are explicitly provided. A conclusion, suggestions, and directions for future research are recommended.

Keywords: Strategic ERP management, Business Information Advantage, Business Operational Effectiveness, Proactive Vision, IT infrastructure, Environmental Uncertainty, Organizational Learning Capability

1. INTRODUCTION

In the age of globalization, and its influence on change in the contemporary business environment, firms have to respond to the trends and changes in business with newer and better approaches to managing their businesses (Ucakturk and Villard, 2013). Managers with strategic decisions require information to support strategic management. A central aim of strategic IT management is to help organizations adapt and respond to environmental changes which tend to deal with decisions that affect the long-term future of the organization. Te garden et al. (2005) suggests that a strategy process enables higher commitment and achievement of strategic goals. This is because the quality of information used in decisions and communication of what strategies and goals are important increases with organization-wide participation in the strategy process, subsequently leading to financial firm performance.

Today's enterprise requires more information systems integration and communication in order to reduce costs by improving efficiency through computerization, increasing quality and product variety, and enhancing decision-making by providing business information which should then lead
to improved firm success. In other words, they are obligated to develop "an integrated information system." The strategic role of information systems is used to develop products, services and competencies, providing a competitive business advantage. The way to reach this goal is through the successful management of the information system integration. Enterprise resource planning (ERP) systems are a set of business applications or modules which link core business units of an organization such as finance, manufacturing, human resources and accounting into a tightly integrated single system with a common platform for flow of information across the firm's functions (Galini et al., 2010). In addition, these systems play a significant role in increasing the provision of information advantage for planning, monitoring processes, and realizing the success of a business (Alonso et al., 2013). Therefore, strategic ERP management refers to an ability related to the management strategy which is, in turn, related to overall ERP system activities. These include ERP system infrastructure, coordinating the integration of function ERP systems skills, process, technology, information, ERP project management and planning for IT standards and controls.

Food businesses in Thailand are the population and sample in this study because Thailand has become one of the world's largest and most advanced producers and exporters of processed food products, and has earned the country the sobriquet "Kitchen of the World." In addition, the current economic environment affects this business. To survive, the business has to seek a suitable strategy management for operations such as strategic ERP management to support decision-making efficiency (Roitner-Schöbesberger et al., 2008). Therefore, strategic ERP management is one strategy to improve firm success and the one important way that firms often look closely at the management information system to maximize profitability of the firm and its interaction which creates goal achievement.

This study attempts to investigate the antecedents and consequences of strategic ERP management by utilizing two theories, including, the resource-based view and contingency theories to explain the conceptual model. The resource-based view theory is used to describe the effect of ERP management on business information advantage, business operational effectiveness, and firm success. Meanwhile, the contingency theory is also adopted to explain the influence of three antecedents namely, proactive vision, IT infrastructure, and environmental uncertainty of strategic ERP management.

The main research question of this research is framed as: "How does strategic ERP management affect firm success?" In addition, the specific research questions are (1) How does strategic ERP management affect firm success through business information advantage, and business operational effectiveness? (2) How does business information advantage affect business operational effectiveness? (3) How do the antecedents of strategic ERP management (proactive vision, IT infrastructure, environmental uncertainty) affect the strategic ERP management? (4) How does organizational learning capability moderate the effect of relationship between strategic ERP management and its antecedents?

Thus, the objective of this study is to (1) investigated the effects of strategic ERP management on firm success via business information advantages, and business operational effectiveness, (2) test how business information advantage influence business operational effectiveness, (3) examine the antecedent effects of the strategic ERP management relationship, and (4) determine if organizational learning capability moderates the antecedents of the strategic ERP management relationship.

This study provides evidence for the role of strategic ERP management in influencing firm success through business information advantage and business operational effectiveness. This study helps managers work closely with IT management. Specifically, strategic ERP management can improve information on communication, use information at the operational level, and share information across functions in the operational process in order to gain competitive advantage and subsequently to firm success.
This paper is organized into five parts. The first part is the relevant literature in this research through a brief historical trace of the various approaches to the constructs. The second presents research methods. The results and discussion are presented in the third. Subsequent sections address the contributions and future directions for research. Lastly, the final section offers the conclusions of the study.

2. LITERATURE REVIEWS AND CONCEPTUAL MODEL

Figure 1 below presents the conceptual model constructed to answer how strategic ERP management influences business information advantage, business operational effectiveness, and firm success. Organizational learning capability also assesses the impact of the strategic ERP management act as a moderating relationship between strategic ERP management and its antecedent variable relationship. Antecedents of strategic ERP management include proactive vision, IT infrastructure, and environmental uncertainty which will be examined concerning the possible effect on strategic ERP management. The conceptual model is delineated by the resource-based view (RBV) and contingency theories which are viewed to logically link the variables of the model.

FIGURE 1
CONCEPTUAL MODEL OF THE RELATIONSHIPS BETWEEN
STRATEGIC ENTERPRISE RESOURCE PLANNING MANAGEMENT
AND FIRM SUCCESS OF FOOD BUSINESSES IN THAILAND
: AN EMPIRICAL INVESTIGATION OF THE ANTECEDENTS AND CONSEQUENCES

The Resource-Based View (RBV)
The Resource-Based View (RBV) is described as valuable, rare, inimitable and non-substitutable resources that make for a firm's competitive advantages and enable firms to gain a competitive advantage in the market by possessing efficiency and effectiveness (Barney, 1991). Johannsson and Newman (2010) suggest that the RBV is a strategic management approach that focuses on
resource allocation and emphasizes economic benefit and competitive advancement in the market. This is consistent with Bharadwaj (2000) who supports that a firm's overall organizational capability effectiveness from combining information technology resources will gain competitive advantage and firm success. Moreover, strategic ERP management is often connected to other resource bases embedded in the business process. Hence, the RBV theory is employed to explain the linkage between strategic ERP management and operational performance.

The Contingency Theory
The contingency theory illustrates that organizational effectiveness is achieved by matching organizational characteristics which may be effective in some strategic situations in order to enhance a firm's performance. The well-established contingency theory is concerned with the relationship between internal and external factors, which in turn influence competitive strategy. This study posits that environmental uncertainty is external factors, where internal factors are proactive vision and IT infrastructure. This study applies the contingency theory to explain the relationship among three antecedents and strategic ERP management. It generally results in increased firm success.

These theories illustrate the relationships of strategic ERP management and its antecedents and consequences as shown in Figure 1. The next section elaborates on the literature review and the hypotheses of strategic ERP management which are discussed below.

2.1 Strategic Enterprise Resource Planning Management
Recently, the vast majority of large companies implemented an enterprise resource planning (ERP) system after the use of ERP has been considered to be a major determinant to gain competitive advantage. There are several reasons for the exploring growth of the use of ERP systems such as inventory reduction, reduced information technology costs, improved internal processes, better data analysis, strategic enhancements, etc. (Davenport, 1998; Aladwani, 2001; Griffin and Dempsey, 2010; Johansson and Newman, 2010; Arvidsson et al., 2014). Thus, the importance of having sound strategic ERP management before implementation is therefore something which companies should not underestimate the importance. This study, strategic ERP management refers to an ability related to the management strategy related to overall ERP system activities. These include ERP system infrastructure, coordinating the integration of function ERP systems skills, process, technology, information, ERP project management, and planning for IT standards and controls. Moreover, several references presented the strategic ERP management effect on information advantage (Xu et al., 2002) and business process outcome (Karimi et al., 2007; Huang et al., 2009) which leads to firm success (Kailunki et al., 2011; Laonamth and Ussehawanitchakit, 2012). Besides, the ERP systems can help increase the level of information within the organization. The strategic use of ERP systems is the ability of a firm to use the information provided by ERP systems to achieve strategic business objectives. Hence, strategic ERP management relates to business information advantage, business operational effectiveness, and firm success.

ERP implementations in some firms are successful. However, there are also many circumstances whereby the implementation was no more successful. The review of the literature in the areas illustrated show that organizational factors are quite instrumental in determining the system implementation success (Martin and Huq, 2007; Griffin and Dempsey, 2010; Dezdar and Alin, 2011). This study focuses on proactive vision, IT infrastructure, and environmental uncertainty which are the organizational factors. And also expected that the relationship between organizational learning capabilities will moderate the relationships between three antecedents and strategic ERP management.

2.2 The consequences of the strategic ERP management
2.2.1 Business Information Advantage
At present both small and large firms may adopt an information system toward implementing highly integrated enterprise-oriented systems, and the output of the system is a source of information related the manager's behavior. Besides integration, the purpose is to enhance
decision support from accurate and timely information (Lee et al., 2014). ERP system information quality which is comprised of accuracy, completeness, relevance and timeliness and effects decision-making quality that influences the utilization of information (Laonamha and Ussahawanitchakhit, 2012). Moreover, Ucakturk and Villard (2013) suggest that Information in management is the collection of data used for decision-making, increasing the quality of information from integrated information systems in the organization, processing, and analyzing which makes it is meaning-full for the decision-maker or practitioner. Therefore, strategic ERP management becomes a significant channel for data gathering guidance to business information advantage. Hence, the hypothesis is proposed as follows:

Hypothesis 1: Strategic ERP management is positively related to Business Information Advantage.

2.2.2 Business Operational Effectiveness

When the business processes supported by ERP systems are implemented. An ERP system helps the different parts of the organization share data and knowledge, reduce costs, and improve management of the business process (Aladwani, 2001; Karimi et al., 2007; Huang et al., 2009; Lin, 2009). ERP systems are an integrated set of programs or modules which links core organizational activities such as financial and accounting, manufacturing and logistics, and human resources with sales and marketing, into a tightly-integrated single system with a common platform for the flow of information across the firm’s functions (Johansson and Newman, 2010). The synergy between the integrated information systems and business activities also ensures speedy, effective, and efficient translation of innovative responses that usually requires radical changes to and re-engineering of business processes (Lu and Ramamurthy, 2011). Likewise, Karimi et al. (2007) studies have suggested that the strategic ERP management has a positive effect on business process outcome. Therefore, increasing more business operational effectiveness is often a result of changes in customization of the information integrated systems. Hence, the hypotheses are proposed as follows:

Hypothesis 2: Strategic ERP management is positively related to business operational effectiveness.

Hypothesis 4a: Business information advantage is positively related to business operational effectiveness.

2.2.3 Firm Success

There are many mechanisms that help firms to improve their firm success, such as information systems integration, business information advantage, and business operational effectiveness. Business information advantage represents the qualitative characteristics that are composed of understandability, reliability, relevance and completeness. Much evidence provides the positive relationship between business information advantage from strategic IT management and firm performance. Seddon (2005) reveals that ERP software is the source of information advantage to create competitive advantage, either, though opportunities for strategic positioning, or through gains in operational effectiveness. In addition, Mithas et al. (2011) find that strategic information management capability influences firm performance, namely, customer satisfaction, profit, market position, earnings per share, employees satisfaction and supply-chain flexibility. As mention above, this study posits that business information advantage mediate the links between the strategic ERP management and firm success.

Consistent with theoretical foundations in the capacities and resource-based perspectives, they enable firm success. It provides a resource in the development business process. Benitez-Amado et al. (2010) found that IT management plays a key role in enabling other organizational capabilities to impact on firm performance through higher business operational effectiveness. Likewise, business operational effectiveness has been shown to lead improved profitability, earning valuation, and competitiveness (Karimi et al., 2007). Therefore, the firms that have the
ability to manage ERP strategically through information advantage and business operational effectiveness have more firm success. Hence, the hypotheses are proposed as follows:

**Hypothesis 3: Business operational effectiveness is positively related to firm success.**

**Hypothesis 4b: Business information advantage is positively related to firm success.**

2.3 The antecedents of the strategic ERP management

2.3.1 Proactive Vision

As previous studies, Griffin and Davenport (2010) show, it is claimed that top management support plays a significant role in the strategic ERP management because ERP system is normally large-scale and requires extensive resources. Evidence from a large number of studies indicates that top management, as leadership can influence management strategy in several distinct subfields (Aladwani, 2001; Teigarden et al., 2005; Dezdar and Ainin, 2011; Ucakturk and Villard, 2013), including strategic IT management. In terms of top management involvement, Martin and Huq (2007) have proposed top management’s strategic change as a critical factor in the success of ERP implementation. While, Lee et al. (2014) found that the top management team’s (TMT) support has been identified as one of the most important factors to the success of management control systems innovations. There has been a proactive vision (as well as its connection) to effective organizational outcomes. Moreover, proactive vision emphasizes on monitoring technological change, and it relies on accessing a faster information and distribution together with knowledge through developing an information system. Based on the literature, the influence of proactive vision for long-term operations has the potential for affecting strategic ERP management. Hence, the hypothesis is proposed as follows:

**Hypothesis 5: Proactive vision is positively related to strategic ERP management.**

2.3.2 IT infrastructure

Information technology infrastructure is crucial in developing a sustained competitive advantage. The relationships between IT infrastructures as a key factor of strategic ERP management are a recent and valuable research topic both for scholars and practitioners. Accordingly, Bentice-Amado et al. (2010) show the results of their study that IT infrastructure helps the firm to develop green management capabilities. Byrd and Turner (2000) suggest that flexible IT infrastructure is positively related to an increase in competitive advantage through strategic IT management. While Byrd et al. (2008) confirmed that the IT infrastructure impacts the support of supply-chain activities. Therefore, many firms have to develop IT infrastructure on the top the concerns of their overall IT management. Hence, the hypothesis is proposed as follows:

**Hypothesis 6: IT infrastructure is positively related to strategic ERP management.**

2.3.3 Environmental Uncertainty.

Environmental uncertainty might be considered an external factor in that a firm is able to respond more rapidly to unforeseen changes in order to survive. Desarbo et al. (2005) suggest that environmental uncertainty is positively related to strategic management and SBU performance. While, Gartner and Liao (2012) indicate that environmental uncertainty has a significant effect on venture creation success. These empirical results support that volatile environmental conditions are more important for involving strategic ERP management. Environmental uncertainty concerns the intensity of the competitive environment that is a factor in contributing to the development of strategic ERP management. Hence, the hypothesis is proposed as follows:

**Hypothesis 7: Environmental uncertainty is positively related to strategic ERP management.**

2.4 The moderators

Organizational learning became the descriptive stream and dealt mostly with the learning processes within the organization. In this study, organizational learning capability has a
moderating effect on strategic ERP management and is defined as the firm's ability to process refining actions to complete better knowledge, acceptance, and continuous learning within the organizations dynamic capability. A four-item scale was utilized to assess the organizational learning capability and is adapted from Vijande, Sanchez and Trespalacios (2012). Organizational learning capability is concerned more with how to change the behavior of the organization which is important for organizations operating in a rapidly changing environment. Previous studies have supported that organizational learning enables firms to create capabilities (Whitaker et al., 2011; Peter and John, 2003); and capabilities, in turn, form the basis for competitive strategies. In learning, organizations; continuously learn better ways to deliver a product or service into making for better operation and performance (Bingham and Davis, 2012). Hence, the hypotheses are proposed as follows:

**Hypothesis 8:** The relationship between proactive vision and strategic ERP management will be positively moderated by organizational learning capability.

**Hypothesis 9:** The relationship between IT infrastructure and strategic ERP management will be positively moderated by organizational learning capability.

**Hypothesis 10:** The relationship between environmental uncertainty and strategic ERP management will be positively moderated by organizational learning capability.

3. RESEARCH METHODS

3.1 Sample Selection and Data Collection Procedure

In this study, the food businesses in Thailand were selected as the sample. The food business industry is attractive to research because Thailand has become one of the world's largest and most advanced producers and exporters of processed food products, and has earned the country the sobriquet "Kitchen of the World." The sample was obtained from the database of the Federation of Thai Industries Directory, 2013. A questionnaire-mailed survey was used to collect the data from 82 food businesses in Thailand. A cover letter, a return-addressed envelope and a copy of the questionnaire were sent directly to the managers of food businesses as the key informant who has knowledge about strategic ERP management and firm success. To test the potential of non-response bias and to consider possible problems with non-response errors, a comparison of the first and the second wave data is recommended by Armstrong and Overton (1977). The results showed no significant differences between early and late respondents. As a result, non-response is not a problem with this study.

3.2 Questionnaire Development and Variable Measurement

3.2.1 Questionnaire Development

A questionnaire was developed based on prior research related to strategic ERP management. It consists of seven parts and all constructs were measured by multiple-item scales. Part one asks for personal information about the informant. Part two includes a question of the general information and history of the business such as total assets, number of employees, and firm age. Parts three through six, includes questions asked to measure each of the constructs in a conceptual model. Items are designed by a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Finally, an open-ended question for the informant's suggestion and opinions are included in part seven.

3.2.2 Variables Measurement

In this study, all variables shown in Table 1 are anchored by the five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This topic describes measuring variables in the conceptual model. *Firm Success* (FS) is the dependent variable in this study which refers to the evaluation of business performance on management and it is based on using resources to its full benefit, as well as management performance. It is measured by stability, sustainability, economic growth and long-term business operations (Schwartz, 2009). This construct is developed as new scale from the definition and literature, including a four-item scale.
Strategic ERP management (SERPM) refers to an ability related to management strategy, which is, in turn, related to overall ERP system activities. These including ERP system infrastructure; coordinating the integration of functional ERP systems skills, processes, technology, and the information from ERP project management and planning for IT standards and controls. A four-item scale measure is adapted from Laonamtha and Ussahawanitchakit (2012).

Business Information Advantage (BIA) refers to a more comprehensive set of principles of benefit gained for business information advantage rather than from their competition. A five-item scale measure is adapted from Thaweechan and Ussahawanitchakit (2011).

Business Operational Effectiveness (BOE) refers to an ability of ERP systems to improve working consistent with the process within the firm, under a single database, to respond in a timely manner to customer demands, which enables firms to achieve their business objectives or goals. This construct is developed as new scale from the definition and literature, including a four-item scale.

Proactive Vision (PV) refers to an idealized goal to be achieved in anticipating opportunities to develop and introduce valuable newness and ascertain a future market trend (Lumpkin and Des, 2001). This construct is developed as new scale from the definition and literature, including a three-item scale.

IT Infrastructure (IT) is defined as the shared IT resources of technical and physically based hardware, software, communications technologies, data and core software applications, and a human component of skills, expertise and knowledge that combine within an organization (Byrd and Turner, 2000). This construct is developed as new scale from the definition and literature, including a four-item scale.

Environmental Uncertainty (EU) is measured by the firm’s ability level that has latent, supposed distinctions in market situations. A four-item scale measure is adapted from Desarbo et al. (2005).

Organizational Learning Capability (OLC) is measured by the firm’s ability to process refining actions to complete by better knowledge, acceptance, and continuous learning within an organizations dynamic capability. A four-item scale measure is adapted and utilized to assess the organizational learning capability is adapted from Vijande, Sanchez and Trespalacios (2012).

Firm Age (FA) is a control variable that refers to the number of years a firm has been in operation. It is logic that informs their strategic behavior (Laonamtha and Ussahawanitchakit, 2012). So, firm age may affect strategic ERP management.

Firm Size (FS) is measured by the number of employees currently working and registered with the firm as a proxy (Delmonte and Seis, 2008). Prior research indicated that firm size affects not only the ability of the firm to apply strategic management, but also firm image and firm reputation.

3.3 Reliability and Validity
Some constructs of this paper in the conceptual model were developed as new scales and adopted from prior researches. The face and content validity were verified by academic experts. Confirmatory and exploratory factor analysis were utilized to examine the underlying relationship of a large number of items and to verify whether they can be reduced to a smaller set of factors. The factor analyses were done individually on each set of the items representing a particular scale; this approach is used for the limited observations reason. Factor loading values, if greater than 0.50, are generally considered necessary for practical significance (Hair et al., 2010). All factor loadings are greater than a cutoff 0.50. The measurement reliability was evaluated by Cronbach's alpha coefficients. There is general agreement that the lower limit for Cronbach's alpha is 0.70 (Hair et al., 2010). The scales of all measures are meant to appear in order to generate internal consistency between multiple measurements of a variable. Table 1 shows that
the value of factor loadings indicated construct validity and Cronbach's alpha coefficients indicated acceptable reliability for multiple-item scales.

**TABLE 1**

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor Loadings</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Success (FS)</td>
<td>0.851-0.978</td>
<td>0.977</td>
</tr>
<tr>
<td>Strategic Enterprise Resource Planning Management (SERPM)</td>
<td>0.891-0.928</td>
<td>0.930</td>
</tr>
<tr>
<td>Business Information Advantage (BIA)</td>
<td>0.732-0.942</td>
<td>0.909</td>
</tr>
<tr>
<td>Business Operational Effectiveness (BOE)</td>
<td>0.920-0.954</td>
<td>0.947</td>
</tr>
<tr>
<td>Proactive Vision (PV)</td>
<td>0.883-0.916</td>
<td>0.891</td>
</tr>
<tr>
<td>IT Infrastructure (IT)</td>
<td>0.879-0.904</td>
<td>0.943</td>
</tr>
<tr>
<td>Environmental Uncertainty (EU)</td>
<td>0.901-0.950</td>
<td>0.947</td>
</tr>
<tr>
<td>Organizational Learning Capability (OLC)</td>
<td>0.730-0.886</td>
<td>0.843</td>
</tr>
</tbody>
</table>

3.4 Statistic Techniques
The ordinary least squares regression (OLS) is used to test all postulated hypotheses. OLS is appropriate to examine the relationships between dependent variables and independent variables of which all variables are categorical and interval data (Hair et al., 2010). As a result, all proposed hypotheses in this research are transformed to eleven statistical equations presented as follows:

**Equation 1:**  
\[ \text{BIA} = \alpha_0 + \beta_1 \text{SERPM} + \beta_2 \text{FA} + \beta_3 \text{FS} + \varepsilon_1 \]

**Equation 2:**  
\[ \text{BOE} = \alpha_0 + \beta_4 \text{SERPM} + \beta_4 \text{FA} + \beta_5 \text{FS} + \varepsilon_2 \]

**Equation 3:**  
\[ \text{BOE} = \alpha_0 + \beta_6 \text{BIA} + \beta_7 \text{FA} + \beta_8 \text{FS} + \varepsilon_3 \]

**Equation 4:**  
\[ \text{FS} = \alpha_0 + \beta_{10} \text{BOE} + \beta_{11} \text{FA} + \beta_{12} \text{FS} + \varepsilon_4 \]

**Equation 5:**  
\[ \text{FS} = \alpha_0 + \beta_{13} \text{BIA} + \beta_{14} \text{FA} + \beta_{15} \text{FS} + \varepsilon_5 \]

**Equation 6:**  
\[ \text{SERPM} = \alpha_0 + \beta_{16} \text{PV} + \beta_{17} \text{FA} + \beta_{18} \text{FS} + \varepsilon_6 \]

**Equation 7:**  
\[ \text{SERPM} = \alpha_0 + \beta_{18} \text{PV} + \beta_{19} \text{OLC} + \beta_{20} (\text{PV} \times \text{OLC}) + \beta_{21} \text{FA} + \beta_{22} \text{FS} + \varepsilon_7 \]

**Equation 8:**  
\[ \text{SERPM} = \alpha_0 + \beta_{23} \text{IT} + \beta_{24} \text{FA} + \beta_{25} \text{FS} + \varepsilon_8 \]

**Equation 9:**  
\[ \text{SERPM} = \alpha_0 + \beta_{25} \text{IT} + \beta_{26} \text{OLC} + \beta_{27} (\text{IT} \times \text{OLC}) + \beta_{28} \text{FA} + \beta_{29} \text{FS} + \varepsilon_9 \]

**Equation 10:**  
\[ \text{SERPM} = \alpha_{10} + \beta_{29} \text{EU} + \beta_{30} \text{FA} + \beta_{31} \text{FS} + \varepsilon_{10} \]

**Equation 11:**  
\[ \text{SERPM} = \alpha_{11} + \beta_{32} \text{EU} + \beta_{33} \text{OLC} + \beta_{34} (\text{EU} \times \text{OLC}) + \beta_{35} \text{FA} + \beta_{36} \text{FS} + \varepsilon_{11} \]

Where;  
FS = Firm Success  
SERPM = Strategic Enterprise Resource Planning Management  
BIA = Business Information Advantage  
BOE = Business Operational Effectiveness  
PV = Proactive Vision  
IT = IT Infrastructure  
EU = Environmental Uncertainty  
OLC = Organizational Learning Capability  
FA = Firm Age  
FS = Firm Size  
\( \alpha \) = Coefficient and
4. RESULTS AND DISCUSSION

This study is to investigate the effect of strategic ERP management on firm success through business information advantage, and business operational effectiveness. Also, the associated roles of proactive vision, IT infrastructure, and environmental uncertainty that influence strategic ERP management are investigated through organizational learning capability as a moderator. The results are presented in Tables 2 and 3.

Table 2 shows the descriptive statistics and correlation matrix of all variables. To consider the possible problems of multicollinearity, variance inflation factors (VIFs) were used to verify the correlation of any single independent variable with a set of other independent variables. The VIFs range from 1.014 to 1.446, as recommended by Hair et al., (2010), it is well below the cutoff value of 10, indicating that the independent variables are not correlated with each other. Therefore, there are no significant multicollinearity problems encountered in this study.

<table>
<thead>
<tr>
<th>Variables</th>
<th>FS</th>
<th>SERPM</th>
<th>BIA</th>
<th>BOE</th>
<th>PV</th>
<th>IT</th>
<th>EU</th>
<th>OLC</th>
<th>FA</th>
<th>FS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.3994</td>
<td>3.8201</td>
<td>3.3796</td>
<td>3.6488</td>
<td>4.1423</td>
<td>3.9359</td>
<td>4.0388</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>S.D.</td>
<td>1.1472</td>
<td>0.7414</td>
<td>0.9424</td>
<td>0.9427</td>
<td>0.7639</td>
<td>0.6370</td>
<td>0.9596</td>
<td>0.7141</td>
<td>-</td>
<td></td>
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<tr>
<td>FS</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SERPM</td>
<td>0.330**</td>
<td>1</td>
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<td></td>
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<tr>
<td>BIA</td>
<td>0.688**</td>
<td>0.312**</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BOE</td>
<td>0.834**</td>
<td>0.322**</td>
<td>0.859**</td>
<td>1</td>
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<td></td>
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<tr>
<td>PV</td>
<td>0.453**</td>
<td>0.406**</td>
<td>0.476**</td>
<td>0.457**</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>IT</td>
<td>0.518**</td>
<td>0.458**</td>
<td>0.486**</td>
<td>0.510**</td>
<td>0.893**</td>
<td>1</td>
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<tr>
<td>EU</td>
<td>0.338**</td>
<td>0.359**</td>
<td>0.447**</td>
<td>0.401**</td>
<td>0.825**</td>
<td>0.208</td>
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<td>OLC</td>
<td>0.334**</td>
<td>0.607**</td>
<td>0.324**</td>
<td>0.312**</td>
<td>0.457**</td>
<td>0.455**</td>
<td>0.343**</td>
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<tr>
<td>FA</td>
<td>0.047</td>
<td>0.053</td>
<td>0.115</td>
<td>0.087</td>
<td>0.314</td>
<td>0.273*</td>
<td>0.123</td>
<td>0.173</td>
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<tr>
<td>FS</td>
<td>0.106</td>
<td>-0.007</td>
<td>0.186</td>
<td>0.189</td>
<td>0.181</td>
<td>0.105</td>
<td>0.316**</td>
<td>0.124</td>
<td>0.487**</td>
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</table>

**, Correlation is significant at the 0.01 level (2-tailed)

Table 3 exhibits the results of OLS regression analysis. Here, the first set of hypotheses (Hypotheses 1-4), are the results shown in Equation 1-5. Strategic ERP management has a significant positive influence on business information advantage (H1: β1 = 0.326, p < 0.05) and business operation effectiveness (H2: β2 = 0.340, p < 0.05). Moreover, the business information advantage has a significant positive influence on business operational effectiveness (H4a: β4a = 0.855, p < 0.01). Additionally, the results also show that business information advantage (H4b: β4b = 0.703 , p < 0.01) and business operational effectiveness (H3: β3 = 0.844, p < 0.01) have a positive influence on firm success. Consistent with prior research (Aladwani, 2001; Seddon, 2005; Karimi et al., 2007; Huang et al., 2009; Martin and Huq, 2007; Benitez-Arnado et al., 2010; Dezzard and Ainin, 2011; Mithas et al., 2011; Arvidsson et al., 2014), the firms that have the ability to manage ERP strategically through business information advantage and business operational effectiveness have greater firm success. Thus, hypotheses H1, H2, H3, H4a, and H4b are supported.

The second set tests antecedent variables (Hypotheses 5-7) and are shown in Eq. 6, 8, and 10. Table 3 expresses the effects of proactive vision, IT infrastructure, and environmental uncertainty on strategic ERP management. The results show that proactive vision (H5: β5 = 0.436, p < 0.01), IT infrastructure (H6: β6 = 0.473, p < 0.01), and environmental uncertainty (H7: β7 = 0.428, p < 0.01) have a positive effect on strategic ERP management. That indicates that proactive vision change is a critical factor in strategic ERP management (Aladwani, 2001; Tegarden et al., 2005; Dezzard and Ainin, 2011; Ucaricurk and Villard, 2013), it is supported by work of Byrd et al. (2008) and Gartner and Liao (2012) which indicate that IT infrastructure and environmental uncertainty affect
the capability of the firm to develop ERP management. Thus, hypotheses H5, H6, and H7 are supported.

**TABLE 3**
RESULTS OF REGRESSION ANALYSIS

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>EQ.1</th>
<th>EQ.2</th>
<th>EQ.3</th>
<th>EQ.4</th>
<th>EQ.5</th>
<th>EQ.6</th>
<th>EQ.7</th>
<th>EQ.8</th>
<th>EQ.9</th>
<th>EQ.10</th>
<th>EQ.11</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIA</td>
<td>0.486</td>
<td>-0.348</td>
<td>-0.033</td>
<td>0.119</td>
<td>0.100</td>
<td>0.319</td>
<td>0.667</td>
<td>2.276</td>
<td>0.411</td>
<td>0.181</td>
<td>0.412</td>
</tr>
<tr>
<td>(0.310)</td>
<td>(0.309)</td>
<td>(0.172)</td>
<td>(0.169)</td>
<td>(0.242)</td>
<td>(0.316)</td>
<td>(0.275)</td>
<td>(0.304)</td>
<td>(0.273)</td>
<td>(0.310)</td>
<td>(0.257)</td>
<td></td>
</tr>
<tr>
<td>SERPM</td>
<td>0.325**</td>
<td>0.345**</td>
<td>0.108</td>
<td>0.105</td>
<td>0.855***</td>
<td>0.703***</td>
<td>0.644***</td>
<td>0.603</td>
<td>0.458***</td>
<td>0.242***</td>
<td>0.473***</td>
</tr>
<tr>
<td>(0.105)</td>
<td>(0.105)</td>
<td>0.090</td>
<td>0.062</td>
<td>0.063</td>
<td>(1.10)</td>
<td>(1.04)</td>
<td>(1.04)</td>
<td>(1.04)</td>
<td>0.283**</td>
<td>(0.093)</td>
<td>0.095</td>
</tr>
<tr>
<td>BIA</td>
<td>-0.506***</td>
<td>0.506***</td>
<td>0.100</td>
<td>0.102</td>
<td>0.458***</td>
<td>0.242***</td>
<td>0.473***</td>
<td>0.283**</td>
<td>0.429***</td>
<td>0.293***</td>
<td>0.095</td>
</tr>
<tr>
<td>(0.093)</td>
<td>(0.094)</td>
<td>0.092</td>
<td>0.093</td>
<td>0.092</td>
<td>(1.03)</td>
<td>(1.04)</td>
<td>(1.04)</td>
<td>(1.04)</td>
<td>0.093</td>
<td>0.094</td>
<td>0.093</td>
</tr>
<tr>
<td>OLC*PV</td>
<td>-0.111</td>
<td>-0.111</td>
<td>-0.049</td>
<td>-0.049</td>
<td>-0.109</td>
<td>-0.109</td>
<td>-0.109</td>
<td>-0.109</td>
<td>-0.109</td>
<td>-0.109</td>
<td>-0.109</td>
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<tr>
<td>(0.092)</td>
<td>(0.093)</td>
<td>0.092</td>
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<td>0.092</td>
<td>0.092</td>
<td>0.092</td>
<td>0.092</td>
</tr>
<tr>
<td>OLC*IT</td>
<td>0.107</td>
<td>0.117</td>
<td>0.730</td>
<td>0.685</td>
<td>0.469</td>
<td>0.154</td>
<td>0.395</td>
<td>0.191</td>
<td>0.398</td>
<td>0.146</td>
<td>0.428</td>
</tr>
</tbody>
</table>

**p<.05, ***p<.01. **Beta coefficients with standard errors in parenthesis.

The third set tests the moderating effects, namely organizational learning capability (Hypotheses 8-10) and are shown in Eq. 7, 9, and 10. The results show that organizational learning capability relationship is not appropriate as a moderator between proactive vision and strategic ERP management (H8: β2 = 0.111, p > 0.10). Likewise, the results also show that the relationships of organizational learning capability not appropriate to be a moderator between IT infrastructure and strategic ERP management (H9: β2 = 0.049, p > 0.10). On the other hand, the study shows organizational learning capability has a positive effect on the relationships between environmental uncertainty and strategic ERP management (H10: β2 = -0.180, p < 0.05). Hence, hypotheses H10 is supported, but hypotheses H8 and H9 are not.

5. CONTRIBUTIONS AND DIRECTIONS FOR FUTURE RESEARCH

5.1 Theoretical Contribution and Directions for Future Research
The paper intends to clearly elaborate the relationships of strategic ERP management on firm success through business information advantage, and business operational effectiveness. Also, the associated roles of proactive vision, IT infrastructure, and environmental uncertainty influence strategic ERP management and is investigated through organizational learning capability as a moderator. The theoretical contribution of this study is the providing of knowledge for management information systems about strategic ERP management that impacts on firm success.

5.2 Managerial Contribution
The results of this study provide important implications for firms’ executive as they indicate the positive relationships among strategic ERP management, business information advantage,
business operational effectiveness, and firm success. To utilize the knowledge capability, firms can achieve strategic goals and gain better firm performance when they implement strategic ERP management. Therefore, these results help firms’ executives specify and consider the ERP management strategy for implementation.

6. CONCLUSION

Business circumstance forces firms to create effective operations and retain profitability. Strategic ERP management is an important strategic tool in response to these conditions. This study examines the relationships among strategic ERP management on firm success through business information advantage, and business operational effectiveness. Also, the associated roles of proactive vision, IT infrastructure, and environmental uncertainty influence strategic ERP management are investigated through organizational learning capability as a moderator of food businesses in Thailand. There are 82 firms that are the sample of this study. The results suggest that firms which implement strategic ERP management, enhance business information advantage, business operational effectiveness, and firm success; while organizational learning capability gives rise to a mixed moderating effect. The sample of this study is a single industry in Thailand, which may limits the generalizability. Thus, future research should cover the broader industries in order to increase the reliability. Furthermore, the moderating effect of organizational learning capability is not significant and is with mixed signs, suggesting that future research should include other moderating variables to study.

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Date: MAY, 13, 2014

To: Uthen Laonamtha, Jeeraporn Pongpantumattana

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AN EMPIRICAL RESEARCH OF ITS ANTECEDENTS AND CONSEQUENCES

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THE INTEGRATED INFORMATION SYSTEMS EFFECTIVENESS IN THAI INDUSTRIAL FIRMS: AN EMPIRICAL RESEARCH OF ITS ANTECEDENTS AND CONSEQUENCES

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Faculty of Science Management
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ABSTRACT

This study aims at investigating the effects of integrated information systems effectiveness (IISE) on accounting information quality, decision-making efficiency, perceived systems success and firm performance. External facilitators and top management support are assigned as antecedents of the IISE and enabling control which is determined as the moderator variable relationship. The Resource-Based View theory and contingency theory are fundamental to the study. A questionnaire is used as an instrument for data collection from accounting managers, accounting executives or chief financial officers of each firm who are the key informants of this study. There are 121 Thailand industrial firms of which OLS regression examines in this study. The results indicate that the IISE has a significant positive effect on accounting information quality, decision-making efficiency, perceived systems success and firm performance. Moreover, external facilitators and top management support has a significant positive effect with the IISE as a result. Surprisingly, moderating enabling control does not have an influence on the relationships between the IISE and its consequences. Potential discussion with the research results is effectively implemented in the study. Theoretical and managerial contributions are explicitly provided. A conclusion, suggestions, and directions for future research are recommended.

Keywords: Integrated Information Systems Effectiveness, Decision-making Efficiency, Perceived Systems Success, Enabling Control, External Facilitators, Top Management Support

1. INTRODUCTION

Information systems have grown to a great extent over the last decades and have become comprehensive systems that can be used to manage and coordinate all the resources, information, and functions of a business from shared data stores. Prior research provides a well-agreed definition of information systems, such as Enterprise Resource Planning (ERP) systems which are touted as modern information technology that span all organizational activities and processes (Davenport, 1998; Granlund and Malmi, 2002). These tightly integrate business functions into a common platform and even among business partners with a shared database (Davenport, 1998; Rom and Rohde, 2007; Morton and Hu, 2008; Kallunki, Laitinen, and Silvola, 2011; Laonamtha and Usahawanitchakit, 2012; Maiga, Nilsson, and Jacobs, 2014).

In this study, integrated information systems effectiveness (IISE) refers to the capability to manage a computer-based single system for information processing to be able to communicate and share common data used to make the decisions. The integrated information system consists of data integration, hardware/software integration and information integration. The integrated information systems are programs that aim to share practice and organize data resources in order to enhance decision-making efficiency which lead to improved firm performance. The apparent comprehension of the overall theory proposes the relationships among the IISE, its antecedents, consequences, and moderator. Two theoretical perspectives, resource-based view of the firm (RBV) theory and contingency theory, are chosen for discussion. The RBV has been used to analyze information system effectiveness as a specific resource to determine firm performance. The contingency theory illustrates that any way of organizing is not equally effective. There is no better way to make decisions, so an organization that is effective in some
situations may not be successful in others, depending on the external and internal situation. Thus, the IISE can result from the matching of a contingency factor. This study identifies factors that relate to external facilitators and top management support.

Thai industrial firm is the most valuable to investigate in this research, which is support by the three reasons. Firstly, Thailand is the best of production-based locations and is supported by Thai government policy. Secondly, Thailand businesses need to solve, efficient organization management and innovation development in product processes which require improvement from the World Economic Forum (WEF) competitiveness report (World Economic Forum, 2014). Finally, from the previous research, it is found that more complicated business transactions require more management information systems for support in decision-making (Nicoloaou, 2000; Jacobs and Weston, 2007).

The main research question of this research is framed as: How does the IISE affect firm performance?. In addition, the specific research questions are (1) How does IISE affect accounting information quality, perceived systems success, and firm performance of Thai industrial firms? (2) How does accounting information quality affect decision-making efficiency and perceived systems success? (3) How does decision-making efficiency affect firm performance? (4) How do antecedents namely, external facilitators and top management support affect the IISE? (5) How does enabling control moderate the consequences of IISE relationship?. Thus, the objectives of this study are to (1) investigation the effects of the IISE on decision-making efficiency, and perceived systems success (2) test how the accounting information quality influences perceived systems success and decision-making efficiency (3) test how the decision-making efficiency influences firm performance (4) examine the antecedents effect the IISE relationship and (5) determine whether enabling control moderates the consequences of the IISE relationship.

The first contribution of this study is to attempt to develop a workable framework that integrates existing theory and research in accounting information and information technology. The second contribution is to develop a theory-driven hypothesis and to attempt to bridge this gap between accounting information system and IT by evaluating the possible interaction effect of control systems and IT integration on Thailand industrial firm performance. Based on these contributions, this study provides knowledge that adds to the research which seeks to integrate the information technology and accounting information systems literature. This paper is organized into four parts. The first is the relevant literature for this research through a brief historical trace of the various approaches to the constructs. The second presents research methods. The results and discussion are presented in the third. Subsequent sections address the contributions and future directions for research. The final offers conclusions of the study.

2. LITERATURE REVIEWS AND CONCEPTUAL MODEL

The following Figure 1 below presents the conceptual model constructed to answer how integrated information systems effectiveness (IISE) influences accounting information quality, decision-making efficiency, perceived systems success, and firm performance. It also tests the impact of the moderating enabling control and whether it affects the relationship between the IISE and the consequences variable relationship. Antecedents of the IISE include external facilitators and top management support that will be examined in regards to whether they affect IISE. The conceptual model is delineated by the resource-based view and contingency theory view to logically link variables of the model.

Resource-Based View of the Firm (RBV)
The Resource-Based View (RBV) states that resources which have four characteristics that are valuable, rare, inimitable and non-substitutable, give the firm a competitive advantage (Barney, 1991). Viewed from the theory, it explains how firms utilize resources to create information integrated systems capability that determines a firm's overall organizational capability effectiveness from integrating its resources such as data and hardware/software to create a new
capability for decision making. This study defines the IISE as a part of IS/IT capability, and this study defines the IISE as a firm's ability to mobilize and deploy information in combination or that is co-present with other resources. Therefore, the IISE is often connected to the other resource base embedded in the business process. Hence, the RBV theory is employed to explain the linkage between the IISE and accounting information quality, perceived systems success, decision-making efficiency, and firm performance.

FIGURE 1
CONCEPTUAL MODEL OF THE RELATIONSHIPS BETWEEN THE INTEGRATED INFORMATION SYSTEMS EFFECTIVENESS IN THAI INDUSTRIAL FIRMS: AN EMPIRICAL RESEARCH OF ITS ANTECEDENTS AND CONSEQUENCES

The contingency theory
Contingency theory posits that organizational effectiveness is achieved by matching organizational characteristics to contingencies that moderates the effect of an organizational characteristic on organizational performance. Performance of an organization is depending on the fit between organizational structure and contingencies. A number of potential contingencies have been identified in the literature (e.g. technology, innovation, environmental change, size and diversification) which consists of both a variety of internal and external contextual factors. Applying the contingency theory in the context of IISE is applied to explain the phenomenon of antecedents of the IISE. Rather, it is suggested that the effectiveness of integrated information systems depends on its ability to learn from external facilitators and top management support. Furthermore, contingency theory gives relative consideration in terms of the factors that influence the IISE.

These two theories illustrate the relationships of the IISE and its antecedents and consequences as shown in Figure 1. The next section elaborates on the literature review and the hypotheses of IISE which are discussed below.

2.1 Integrated Information Systems Effectiveness (IISE)
The implementation of information system integration is a major challenge that companies face in terms of cost, complexity and business impact. The IISE is essentially a software package that integrates information flow across business functions and unit boundaries, and even among business partners. The IISE can reduce cycle time, enable faster business transactions, facilitate
better management, and enable e-commerce integration (Morton and Hu, 2008). Different firms also applied it for achieving success in the different states of the IIS implementation and utilization such as in; IT infrastructure, change management, business plan and vision, continuous learning, and service quality of external facilitators (Lin, 2010). This study focuses on external facilitators and top management support. Prior study show that role of top management support includes developing and understanding of the capabilities, and communicating corporate strategy to all employees related to the effectiveness of integrated information systems (Lin, 2010; Griffin and Dempsey, 2010; Ifinedo, 2011; Lee et al., 2014). Different consultants may have experience in specific industries a crucial role that external facilitators play in information systems. Hence, the quality of external consultation about certain modules will work best for a given firm. A close working relationship between the external facilitators is needed throughout the implementation phases (Tsai et al., 2011).

Beretta (2002) supports that the information systems integration relates to the bottom line of profit and loss statements, and the impact could be appreciated at the business process level by measuring the quality, timeliness, and efficiency of information. Consistent with Hunton et al. (2003) it was found that the enterprise resource planning systems related to financial firm performances such as return on asset (ROA), return on investment (ROI), and return on sales (ROS). Specifically, accounting information quality, perceived systems success, decision-making efficiency, and firm performance are proposed as consequences of the IISE in this study. This study posits accounting information quality, decision-making efficiency, perceived systems success and firm performance which act as consequences. External facilitators and top management support are assigned as antecedents of the IISE and enabling control is determined as the moderator variable. The detailed discussion of these constructs is mentioned as below.

2.2 The consequences of the IISE
2.2.1 Accounting Information Quality
Today, as the increase of information quality variety and complexity is becoming more important, the gathering of that information might affect the decision process. Accounting information quality is the highest quality when it supports user decision-making of the highest quality. Besides, the integrated information can help increase the level of information quality within the organization. Several references were presented as the IISE effect on accounting information quality. Xu, Nord, Brown and Nord (2002) examined the implementation of SAP as an example of integrated information system, and found that the important of information quality needs to be widely understood in implementing information integration. Likewise, Grabski, Leech and Schmidt (2011) suggested that data integration via the ERP systems is found to improve information quality on transactional management accounting. Thus, the firm with integrated information systems effectiveness leads to accounting information quality. Hence, the hypothesis is proposed as follows:

Hypothesis 1: Integrated information systems effectiveness is positively related to accounting information quality.

2.2.2 Decision-making Efficiency
The IISE is a computer-based system that processes financial information and uses it to make the decisions that drive an organization’s performance. This is in the context of coordination and control of organizational activities. The trend in information systems is toward implementing highly integrated information systems, and the output of the system is a source of information providing that information for decision-making (Nicolaiou, 2000; O’Donnell and David, 2000; Arvidsson, Holmstrom, and Lyttinen, 2014). Besides integration, the purpose is to enhance decision support from accurate and timely information (Griffin and Dempsey, 2010). Hence, the IISE increasing volumes of information assure the accuracy and reliability of data.

The IISE, one of the critical parts affecting decision-making, is characteristic of an accounting information system that can influence judgment and the decision-making process (O’Donnell and David, 2000). Systems will become much more intelligent. Data mining and intelligence tools
including expert systems will increasingly be used to make business decisions (Jacobs and Weston, 2007). Supported by Leamthan and Ussahawanitchakit (2012) it is suggested that ERP capability affects decision-making success in Thailand manufacturing firms. Therefore, decision-making efficiency is a consequence of accounting information quality by integrating all the information systems within an organization, to determine the extent to which the IISE enhances firms in achieving that. The IISE can influence user decision-making. Hence, the hypotheses are proposed as follows:

**Hypothesis 2a:** Integrated information systems effectiveness is positively related to decision-making efficiency.

**Hypothesis 2b:** Accounting information quality is positively related to decision-making efficiency.

2.2.3 Firm Performance
The managers can make decision processes to succeed in the accounting information quality provided by the IISE. A recent study by Hunton et al. (2003) investigated the impact of information system integrating on firm performance, and they report that the benefits of integrate information systems include improving efficiency and profitability. The high information quality provided by computer-based process system is available for effective decision-making and firm performance outcome (Rom and Rohde, 2007; O’Donell and David, 2000; Arvidsson, Holmstrom, and Lyttinen, 2014). In addition, evidence found by Ditkaew and Ussahawanitchakit (2010) reveals that the executives and managers can make effective decisions to deal with formulating budgeting, implementing capital plans, and product development leading to better firm performance outcomes such as return on investment (ROI), growth, or market share. Hence, the hypothesis is proposed as follows:

**Hypothesis 3:** Decision-making efficiency is positively related to firm performance.

2.2.4 Perceived Systems Success
Technology adoption has been implemented in many organization worldwide. If the company decides to adopt, there are various obstacles that must be overcome in the process of the successful implementation by an organization. In fact, the integrated information systems implementation is a difficult and risky task. Recent studies still address the key success factor of the integrated information system success. This point is also considered by Jacob and Weston (2007) who state that information system implementation requires software vendors support, user technical understanding, human resources and financial resources. Consistently with Amoako-Gyampah (2007) also support that managerial efforts aimed at increasing the user’s perceptions of the usefulness of the integrated information systems will contribute to implementation success. Likewise, Grabski, Leech and Schmidt (2011) suggested that not only data integration via the integrated information systems is found to improve information quality but also enable management control leading to perceived systems success and business unit performance. Hence, the hypotheses are proposed as follows:

**Hypothesis 4a:** Accounting information quality is positively related to perceived systems success.

**Hypothesis 4b:** Integrated information systems effectiveness is positively related to perceived systems success.

2.3 The antecedents of the integrated information systems effectiveness
2.3.1 External Facilitators
The external facilitators for integrated information systems will enable subsequent assists in developing information systems to facilitate communication and mutual understanding that lead to system success. Tsai et al. (2011) found that system providers and implementation consultants to the project management affect ERP success. A close working relationship between software
consultants is also vital for information-sharing and the successful implementation of system integration (Griffin and Dempsey, 2010). While the top management has been identified as one of the most important internal critical factors to the IS success, the software vendor or external consultant goes further steps by focusing on how the organization will increase service quality and system performance, and finally supports external facilitators to meet integrated information systems effectiveness. Hence, the hypothesis is proposed as follows:

**Hypothesis 5:** External facilitator is positively related to integrated information systems effectiveness.

2.3.2 Top Management Support

Integrated information systems required top management to provide adequate resources to enhance mutual fit between the IIS and business process (Davenport, 1998). Researchers (e.g. Bradford and Florin, 2003; Lin, 2010; Lee, Elbashir, Mahama and Sutton, 2014; Maiga et al., 2014) have emphasized the importance of top management support, such as senior management commitment and top management perception of the IIS benefits realization which is crucial for the effectiveness. For example, Lin (2010) contended the support of perceived usefulness and ERP system usage, while Lee Elbashir, Mahama, and Sutton (2014) confirmed the importance of top management support for integrated management control system innovation. Bradford and Florin (2003) also found that top management support and training are positively related to user satisfaction. Hence, the hypothesis is proposed as follows:

**Hypothesis 6:** Top management support is positively related to the integrated information systems effectiveness.

2.4 The moderating

In this research, enabling control which has a moderating effect on IISE is defined as articulated through four design principles including repair, internal transparency, global transparency, and flexibility (Adler and Borys, 1996). This is a concept of workflow formalization that is used to reconcile the contrasting assessment of bureaucracy as alienating to employees or as enabling them to perform their tasks better. Chapman and Kinn (2009) applied four design characteristics of enabling control system as mediating effects that lead to enhanced outcomes in terms of perceived systems success. Results of this study reveal that the level of information system integration fosters the four design characteristics that make up an enabling approach to management control. Hence, the hypotheses are proposed as follows:

**Hypothesis 7a:** The relationship between integrated information systems effectiveness and accounting information quality will be positively moderated by enabling control.

**Hypothesis 7b:** The relationship between accounting information quality and perceived systems success will be positively moderated by enabling control.

3. RESEARCH METHODS

3.1 Sample Selection and Data Collection Procedure

The purpose of this study is to investigate the IISE, of which the population and sample were a total of 835 firms drawn from the Industrial Estate Authority of Thailand (IEAT) database. These Thai industrial firms that are the most valuable to investigate in this research because they are supported by the integrated information systems which is directly applied within modern manufacturing techniques. A mail survey procedure via the questionnaire was used for data collection. The key informant is the accounting manager, or the chief financial officer of each company, as they are expected to have the best knowledge of the integrated information systems of their organization. The initial mailing, including questionnaire, cover letter, and envelope is directly sent by post to the chief financial officers of these Thailand industrial firms. Multiple follow-up is used to improve the response rate for the first follow-up, and after that, a second mailing comprises the second follow-up. In this study a postcard reminder is sent to the
recipients who do not respond to the initial questionnaire three weeks after the original mailing and a second mailing (including duplicate questionnaire and cover letter) are sent two weeks later. Of the surveys completed and returned, 121 were usable for data analysis.

Further, for non-response bias and to consider possible problems with non-response errors, a comparison of the first and the second-wave data recommended by Armstrong and Overton (1977) was tested. The results showed no significant differences between early and late respondents. As a result, non-response is not a problem with this study.

3.2 Questionnaire Development and Variable Measurement

3.2.1 Questionnaire Development
This study employed a questionnaire as the instrument in collecting data. The questionnaire was developed based on prior research and theory. All constructs are measured by a multiple-items scale, ranging from 5 (strongly agree) to 1 (strongly disagree). It includes 8 parts. Part one asks for general information of key informants such as gender, age, status, education level, work experience, average income and position. Part two and three questions about industry questions of the general information and history of the business such as total assets, number of employees, firm age, time period for use of systems, and general information about the integrated information systems. Part four questions about the measurement of integrated information systems effectiveness. Part five questions about the measurements of the antecedents of the IIIE. Parts six and seven question about the measurements of the consequences of the IIE and moderator, and testes are detailed. Finally, an open-ended question asking for the informant's suggestion and useful opinions is in part eight.

3.2.2 Variables Measurement
In this study, all variables shown in Table 1 are anchored by the five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This topic describes measuring variables in the conceptual model.

Firm Performance (FP) is the dependent variable in this study and it is defined as the continual operational outcome that shows both the financial and non-financial performance of the firm over the long term. A five-item scale was utilized to assess the firm performance modified from Ditkaew and Ussahawanitchakit (2010).

Perceived System Success (PSS) is defined as the financial reports both financial and non-financial from integrated information systems to related actual performance. A two-item scale was utilized to assess the integrated information systems effectiveness modified from Chapman and Kihn (2009).

Integrated Information Systems Effectiveness (IISE) refers to the capability to manage a computer-based single system for information processing to be able to communicate and share common data used to make decisions. A six-item scale was utilized to assess the firm performance modified from Chapman and Kihn (2009), and Rom and Rohde (2007).

Accounting Information Quality (AIQ) refers to four principal of characteristics of useful financial statements should possess fundamental decision-specific qualities such as reliability, timeliness, understanding and relevance. A five-item scale was utilized to assess the accounting information quality modified from Laonamthana and Usasahawanitchakit (2012).

Decision-making Efficiency (DME) is defined as a decision process involving strategic choices which are clearly evaluated to be various alternatives. A four-item scale was utilized to assess the decision-making efficiency modified from Ditkaew and Ussahawanitchakit (2010).

External Facilitators (EF) refers to a close working relationship between vendors, and consultants who possess experience in system implementation. It is also vital for information sharing and the
successful implementation of an integrated system. An eight-item scale was utilized to assess the external facilitators modified from Tsai et al. (2011).

Top Management Support (TMS) is defined as a group of the most influential senior executives, such as the chief executive officer (CEO), chief operating officer (COO), and chief financial officer (CFO), with the overall responsibility for the organization. A four-item scale was utilized to assess the top management support modified from Lee et al. (2014).

Enabling Control (EC) is articulated through four principle design including repair, internal transparency, global transparency, and flexibility. A four-item scale was utilized to assess the enabling control modified from Adler and Borys (1996).

Firm Age (FA) is a control variable that refers to the number of years a firm has been in operation. It is logic that informs their strategic behavior (Laonamtha and Ussahawanitchakit, 2012). So, firm age may affect the integrated system implementation.

Firm Size (FS) is measured by the number of employees currently working and registered in the firm as a proxy (Delmonte and Sels, 2008). Prior research indicated that firm size affects not only the ability of a firm to apply IT strategy but also firm image and firm reputation.

Firm Capital (FC) refers to a firm’s wealth, especially a large amount of money used for producing more wealth or for starting a new business. Firm capital may impact the capability of a firm to implement the ISE. It was measured by the amount of capital invested.

Time to Use (TU) is important in a transition economy, since the older firms are more experienced than young firms. This was measured by the number of years that firm has been using the integrated information system adapted from Saini and Johnson (2005).

3.3 Reliability and Validity
Some constructs of this paper in the conceptual model were developed as new scales and adopted from prior researches. The content validity tests were verified by accounting academic experts. Construct validity, exploratory and confirmatory factor analysis were used. A factor loading of 0.5 is minimally acceptable (Hair et al., 2010). All factor loadings are greater than the cut-off of 0.50. The reliability of all constructs in this study is tested by Cronbach’s alpha in which values of equal or higher than 0.7 is adequate for acceptance (Hair et al., 2010). The scales of all variables appear to generate internal consistency between multiple measurements of a variable. Table 1 shows that the value of factor loadings indicated construct validity and Cronbach’s alpha coefficients indicated acceptable reliability for multiple-item scales.

3.4 Statistic Techniques
The ordinary least squares regression (OLS) is used to test all postulated hypotheses. OLS is appropriate to examine the relationships between dependent variables and independent variables of which all variables are categorical and interval data (Hair et al., 2010). As a result, all proposed hypotheses in this research are transformed to into ten statistical equations presented as follows:

\[ \text{Equation 1: } AIQ = \alpha_0 + \beta_1 AISE + \beta_2 FS + \beta_3 FA + \beta_4 FC + \beta_5 TU + \epsilon \]

\[ \text{Equation 2: } DME = \alpha_0 + \beta_1 AISE + \beta_2 FS + \beta_3 FA + \beta_4 FC + \beta_5 TU + \epsilon \]

\[ \text{Equation 3: } DME = \alpha_0 + \beta_1 AIQ + \beta_2 FS + \beta_3 FA + \beta_4 FC + \beta_5 TU + \epsilon \]

\[ \text{Equation 4: } FP = \alpha_0 + \beta_1 DME + \beta_2 FS + \beta_3 FA + \beta_4 FC + \beta_5 TU + \epsilon \]

\[ \text{Equation 5: } PSS = \alpha_0 + \beta_1 AIQ + \beta_2 FS + \beta_3 FA + \beta_4 FC + \beta_5 TU + \epsilon \]

\[ \text{Equation 6: } PSS = \alpha_0 + \beta_2 AIQ + \beta_3 FS + \beta_4 FA + \beta_5 FC + \beta_6 TU + \epsilon \]
Equation 7: \[ IISE = \alpha_{01} + \beta_{3}\text{EF} + \beta_{32}\text{FS} + \beta_{33}\text{FA} + \beta_{34}\text{FC} + \beta_{35}\text{TU} + \varepsilon \]

Equation 8: \[ IISE = \alpha_{02} + \beta_{36}\text{TMS} + \beta_{37}\text{FS} + \beta_{38}\text{FA} + \beta_{39}\text{FC} + \beta_{40}\text{TU} + \varepsilon \]

Equation 9: \[ AIQ = \alpha_{03} + \beta_{41}\text{IIE} + \beta_{42}\text{EC} + \beta_{43}(\text{IISE} \times \text{EC}) + \beta_{44}\text{FS} + \beta_{45}\text{FA} + \beta_{46}\text{FC} + \beta_{47}\text{TU} + \varepsilon \]

Equation 10: \[ PSS = \alpha_{10} + \beta_{48}\text{AIQ} + \beta_{49}\text{EC} + \beta_{50}(\text{AIQ} \times \text{EC}) + \beta_{51}\text{FS} + \beta_{52}\text{FA} + \beta_{53}\text{FC} + \beta_{54}\text{TU} + \varepsilon \]

4. RESULTS AND DISCUSSION

Descriptive statistics and the correlation matrix for all variables are presented in Table 2. With respect to potential problems relating to multicollinearity, Variance Inflation Factors (VIFs) are used to provide information on the extent to which non-orthogonality among independent variables inflates standard errors. The VIFs range from 1.009 to 1.904, well below the cut-off value of 10, recommended by Hair et al. (2010), meaning that the independent variables are not correlated with each other. Therefore, there are no significant multicollinearity problems encountered in this study.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>FACTOR LOADINGS AND ALPHA COEFFICIENT OF CONSTRUCTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
<td>Factor Loadings</td>
</tr>
<tr>
<td>Firm Performance (FP)</td>
<td>0.745-0.829</td>
</tr>
<tr>
<td>Integrated Information Systems Effectiveness (IIE)</td>
<td>0.861-0.861</td>
</tr>
<tr>
<td>Accounting Information Quality (AIQ)</td>
<td>0.740-0.911</td>
</tr>
<tr>
<td>Decision-making Efficiency (DME)</td>
<td>0.813-0.885</td>
</tr>
<tr>
<td>Perceived Systems Success (PSS)</td>
<td>0.941-0.941</td>
</tr>
<tr>
<td>External Facilitators (EF)</td>
<td>0.684-0.907</td>
</tr>
<tr>
<td>Top Management Support (TMS)</td>
<td>0.872-0.942</td>
</tr>
<tr>
<td>Enabling Control (EC)</td>
<td>0.804-0.926</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>DESCRIPTIVE STATISTICS AND CORRELATION MATRIX</th>
</tr>
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<tbody>
<tr>
<td>Variables</td>
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<tr>
<td>Mean</td>
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</tr>
<tr>
<td>S.D</td>
<td>0.8335</td>
</tr>
<tr>
<td>FP</td>
<td>1</td>
</tr>
<tr>
<td>IIE</td>
<td>0.435**</td>
</tr>
<tr>
<td>AIQ</td>
<td>0.649**</td>
</tr>
<tr>
<td>DME</td>
<td>0.635**</td>
</tr>
<tr>
<td>PSS</td>
<td>0.652**</td>
</tr>
<tr>
<td>EF</td>
<td>0.502**</td>
</tr>
<tr>
<td>TMS</td>
<td>0.498**</td>
</tr>
<tr>
<td>EC</td>
<td>0.559**</td>
</tr>
<tr>
<td>FS</td>
<td>-0.023</td>
</tr>
<tr>
<td>TA</td>
<td>0.159</td>
</tr>
<tr>
<td>FC</td>
<td>0.068</td>
</tr>
<tr>
<td>TU</td>
<td>0.076</td>
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</table>

** Correlation is significant at the 0.01 level (2-tailed)

Table 3 represents the results of OLS regression of the relationships among IISE, accounting information quality, decision-making efficiency, perceived systems success, and firm performance. Here, the first set of hypotheses (Hypotheses 1-4), are the results shown in Eq.1-6. The IISE has a significant positive influence on accounting information quality (H1: $\beta_1=0.502$, p<0.01), decision-making efficiency (H2a: $\beta_2=0.501$, p<0.01), and perceived systems success (H4b: $\beta_4=0.357$, p<0.01). Moreover, the accounting information quality has a significant positive
influence on decision-making efficiency (H2b: $\beta_{1}=0.780$, $p<0.01$), and perceived systems success (H4a: $\beta_{2}=0.737$, $p<0.01$). Additionally, the results also show that decision-making efficiency has a positive influence on firm performance (H3: $\beta_{1}=0.628$, $p<0.01$). Consistently with prior research (Bradford and Florin, 2003; Chapman and Kihn, 2009; Laonamtha and Ussahawanitchakit, 2012; Kallunki et al., 2011; Lee et al., 2014), researches demonstrated that the IISE helps improve decision-making efficiency via accounting information quality, and the systems perceived success leads to firm performance. Thus, **hypotheses H1, H2a, H2b, H3, H4a, H4b are supported.**

The second set tests antecedent variables (Hypotheses 5 and 6) and are shown in Eq.7-8. Table 3 expresses the effects of external facilitators and top management support change on IISE. The results show that both external facilitators (H5: $\beta_{1}=0.650$, $p<0.01$) and top management support (H6: $\beta_{2}=0.672$, $p<0.01$) has a positive effect on the IISE. Our findings also support Bradford and Florin (2003) who state the results that top management support for integrated information systems exists if they are convinced about the perceived usefulness and personal relevance of the technology and that it will contribute to implementation success. In addition, a close fit between the external facilitators and the user organization is positively associated with the information systems successful implementation. This is consistent with Tsai et al. (2011) who describes integrated information systems that depend on the client's operations, and maintenance. There must be a comprehensive enough knowledge base to implement a complex IIS, which can be learned, acquired and transferred from the external consultant. Thus, **hypotheses H5 and H6 are supported.**

**Table 3**

**RESULTS OF REGRESSION ANALYSIS**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<tbody>
<tr>
<td></td>
<td>AIQ</td>
<td>DME</td>
<td>FP</td>
<td>PSS</td>
<td>IISE</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.013</td>
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<td>-0.281</td>
<td>-0.257</td>
<td>-0.460</td>
<td>-0.161</td>
<td>-0.147</td>
<td>-0.014</td>
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<tr>
<td>(0.446)</td>
<td>(0.358)</td>
<td>(0.450)</td>
<td>(0.328)</td>
<td>(0.365)</td>
<td>(0.345)</td>
<td>(0.479)</td>
<td>(0.344)</td>
<td>(0.358)</td>
</tr>
<tr>
<td>IISE</td>
<td>0.502***</td>
<td>0.309***</td>
<td>0.501***</td>
<td>0.357***</td>
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<td>(0.002)</td>
<td>(0.022)</td>
<td>(0.052)</td>
<td>(0.096)</td>
<td>(0.080)</td>
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</tr>
<tr>
<td>AIQ</td>
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<td>0.737***</td>
<td>0.598***</td>
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<tr>
<td>(0.059)</td>
<td>(0.063)</td>
<td>(0.084)</td>
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<tr>
<td>DME</td>
<td>0.628***</td>
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<tr>
<td>EF</td>
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<tr>
<td>TMS</td>
<td>0.672***</td>
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<tr>
<td>(0.068)</td>
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</tr>
<tr>
<td>EC</td>
<td>0.555***</td>
<td></td>
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<td>(0.071)</td>
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<td></td>
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<tr>
<td>IISE*EC</td>
<td>-0.072</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>AIQ*EC</td>
<td>0.036</td>
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<td></td>
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<tr>
<td>(0.050)</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>FS</td>
<td>-0.080</td>
<td>-0.057</td>
<td>-0.027</td>
<td>0.021</td>
<td>-0.075</td>
<td>-0.076</td>
<td>-0.137</td>
<td>-0.083</td>
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<tr>
<td>(0.113)</td>
<td>(0.089)</td>
<td>(0.115)</td>
<td>(0.082)</td>
<td>(0.090)</td>
<td>(0.087)</td>
<td>(0.121)</td>
<td>(0.086)</td>
<td>(0.058)</td>
</tr>
<tr>
<td>FA</td>
<td>0.023</td>
<td>0.086</td>
<td>0.113</td>
<td>0.083</td>
<td>0.095</td>
<td>0.094</td>
<td>0.110</td>
<td>0.050</td>
</tr>
<tr>
<td>(0.114)</td>
<td>(0.092)</td>
<td>(0.116)</td>
<td>(0.083)</td>
<td>(0.101)</td>
<td>(0.088)</td>
<td>(0.122)</td>
<td>(0.095)</td>
<td>(0.096)</td>
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<tr>
<td>FC</td>
<td>0.074</td>
<td>0.037</td>
<td>0.060</td>
<td>0.093</td>
<td>0.089</td>
<td>0.093</td>
<td>0.093</td>
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<tr>
<td>(0.101)</td>
<td>(0.080)</td>
<td>(0.101)</td>
<td>(0.074)</td>
<td>(0.089)</td>
<td>(0.076)</td>
<td>(0.107)</td>
<td>(0.087)</td>
<td>(0.084)</td>
</tr>
<tr>
<td>TU</td>
<td>-0.033</td>
<td>0.044</td>
<td>-0.132</td>
<td>-0.085</td>
<td>0.041</td>
<td>-0.019</td>
<td>-0.041</td>
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<tr>
<td>(0.085)</td>
<td>(0.068)</td>
<td>(0.066)</td>
<td>(0.062)</td>
<td>(0.075)</td>
<td>(0.065)</td>
<td>(0.052)</td>
<td>(0.064)</td>
<td>(0.073)</td>
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<tr>
<td>Adjust $R^2$</td>
<td>0.230</td>
<td>0.519</td>
<td>0.218</td>
<td>0.586</td>
<td>0.396</td>
<td>0.599</td>
<td>0.111</td>
<td>0.567</td>
</tr>
</tbody>
</table>

**p<.05, ***p<.01. Beta coefficients with standard errors in parenthesis.**

The third test tests the moderating effects, namely enabling control (Hypotheses 7) and are shown in Eq.9-10. The results show that the IISE has no significantly positive effect on accounting information quality, moderated by enabling control (H7a: $\beta_{1}=-0.072$, $p>0.10$). Additionally, the
results also show that accounting information quality has no significantly positive effect on perceived systems success, moderated by enabling control ($H7a: \beta_{01}=0.036, p>0.10$). Hence, hypotheses $H7a$ and $H7b$ are not supported.

5. CONTRIBUTIONS AND DIRECTIONS FOR FUTURE RESEARCH

5.1 Theoretical Contribution and Directions for Future Research

This paper went beyond the boundaries of the Thai industrial firm to the IISE in order to provide information quality for making decisions and improving firm performance. It proposes to empirically test and extend the research literature and contributes to the knowledge of the IISE in organizations for both management practice and academic research.

From a theoretical perspective, a clear understanding of the IISE is explained by the resource-based view and contingency theory. The resources are tangible. This study is intended to provide a clearer understanding of the IISE, which is explained by the resource-based view and contingency theory. These focus on the influences of the integrated information system and other resources necessary for competitive advantage, and they are limited in the Thailand context. The resources are the tangible assets, capabilities, processes, information, and knowledge that firms can control. In this study, the IISE is complicated with other firms and is difficult to duplicate. They are rare and non-substitutable resources leading to competitive advantage. Hence, this study tries to examine the IISE on the quality of decision-making and firm performance. Inclusively, it provides a unique theoretical contribution expanding on previous knowledge and literature of the IISE and its consequences. The overall results show that the IISE has a significant positive effect on its antecedents and consequences. Meanwhile, the moderating enabling control has not influence on the relationships between IISE and its consequences. According to the results of this study, the need for further research is apparent. Future research is needed to collect data from more firms, different groups of samples, and/or a comparative population in order to verify the generalizability of the study and increase reliability.

5.2 Managerial Contribution

From a practical perspective, this study provides important implications for managers of Thai industrial firms recognizing and addressing issues of the IISE that have a greater positive effect on decision-making efficiency and firm performance. Our findings also suggest that organizations implementing the IISE must consider external facilitators and top management support. Then, this research can be used as a guideline to develop the information system integration of the firm.

6. CONCLUSION

Information has been recognized as an important source of decision-making under a changing competitive environment. There have been efforts to develop "an integrated information system" in order to cut operational costs, to increase quality and variety of products. In this study, how IISE affects firm performance is the main research question. This study attempts to conceptually link the IISE to accounting information quality, decision-making efficiency, perceived systems success, and firm performance. In addition, the moderating effect of enabling control and whether it affects the relationship between the IISE and the consequences variable relationship was tested. The questionnaire is used as an instrument and the chief financial officers of Thai industrial firms were selected as key informants. The results of OLS regression analysis provides that the IISE has a positive impact on its antecedents including external facilitators, top management support and a positive impact on its consequences; namely, accounting information quality, perceived systems success, decision-making efficiency and firm performance. Meanwhile, moderating enabling control has no influence on the relationships between the IISE and its consequences.
7. REFERENCES


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