

# Adoption of New Information Economics to Achieve Information System Success in IS Outsourcing Implementation

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**Abstract**—This research in progress paper aims to study the level of business-IT disconnection between IS outsourcing client and vendor. System Development Life Cycle (SDLC) as a general model for Information System Development and Design is just a formal sequential development guideline for Information System development. However, due to SDLC's inherent deficiency, it does not ensure efficient coordination of interlinked business and software design activities between business management client and information system specialist vendor. In this study, a research model proposed to reveal the relationship between adoption of NIE and system success in IS outsourcing firms. The main objective of this study is to resolve business-IT disconnection between IS outsourcing client and vendor. The results will assist the IS development for IS outsourcing client and vendors.

**Index Terms**—system development life cycle (SDLC), new information economics (NIE), information system outsourcing (IS Outsourcing), IS outsourcing client and IS outsourcing vendor.

## I. INTRODUCTION

In fast changing industries, firm's core capabilities and core competencies is critical to successful firm performance and increase in its strategic competitiveness. There is extensive literature in strategic management encouraging firms to "outsource", delegating certain organization activities to specialized third party organizations to increase efficiency and reduce costs. Majority of the times, outsourcing is adopted so firms can invest in building of distinctive organization core competencies in order to sustain competitive advantage. In the current age, firms have shown an increase in tendency in outsourcing its information system development [1], [2]. Hitt et al (2010) also supports this theory by stating that when firms perceive that they cannot afford to develop or perform a supporting activity internally, outsourcing is a better option [3], [4]. As information system design and development is a

specialized organization activity that requires high expertise, and it is critical to the success of firm performance and increase in firm competitiveness; it is rational for firms to implement IS outsourcing. Regardless of the wide recognition that information system success is critical to successful firm performance in the current globalization and digital age, past research has rarely focused on management of IS development outsourcing projects. Although information system design and development outsource is vital to the efficient and successful performance of organizations, many organizations are disgruntled with the quality of service provided by IS outsourcing vendors who have failed to meet the service and cost reduction standard required by the client. There is tremendous literature on the failure of information system development projects, as Goulielmos (2003) found that about 50% of all IS and IT projects fails to meet their goal, 40% are abandoned, and also 80% of all IT projects are over-due and over-budget [5]. Overall, clients that outsource Information System and design to system development vendors are dissatisfied because information system projects are often excessively over budget, months or years behind schedule, have poor quality and fail to satisfy business goals [4] - [6]. Therefore, organizations that expect worthwhile investment in their IS outsourcing but it rarely happens.

A major factor that impacts information system development is business and IT disconnection between the client and the vendor [7]. It has been argued that achieving successful Information system design and development is not only the Information technology specialist's responsibility to build, maintain and develop systems but it is an organization-wide activity thereby requiring consistent management and strong business management and IT relationship amongst client and vendor [8]. Keen (1991) inferred that the success of IT generally reflects an effective relationship between Business managers and IS managers [9]. Organizations that outsource their information system success rarely understand the nature of the IS outsourcing project, and its linkage with other organizational activities [7].

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Consequentially, it leads to a disconnection between the vendor and the client in their IS design and development. Majority of the disconnection between vendor and client on outsourcing is due to in differences in goals and structures because vague outsourcing goals set in the planning stage. The mistake that many Business managers often make is that they ignore to implement information system because they lack knowledge on IT . Most Business managers have different perspective from “IT managers regarding the role that IT plays in the business, the value that IT can bring, and management practices that are needed to effectively bring IT to bear on business strategies” [10].

Even though the project management engages a formal System Development Life Cycle (SDLC) to guide their Information System Design and development adoption of SDLC solely for IS design and development cannot guarantee the successful coordination between business clients and IS outsourcing vendor. As SDLC is a generalized model, its major inherent deficiency is it does not ensure clarity in project scope and project goals.

The past study clearly illustrates that system development needs experience and practice to bridge the gap between Business and IT by adopting a New Information Economics as a tool. This research will be carried out to establish a relationship between Information System Success and the implementation of New Information Economics (NIE) in conducted by information system outsource vendors.

II. SCOPE OF THE STUDY

The conceptual framework is originated in Fig. 1 to answer research questions in Table I. A set of likert scale items is developed to measure business client and IS vendor linkage which is hypothesis 1.

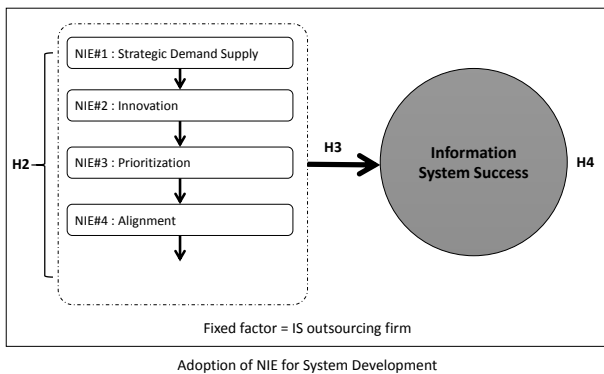


Figure 1. Conceptual framework

The left box represents the first variable, New Information Economics, which is a tool used jointly with SDLC for system development. The six dimensions of NIE include strategic demand/supply, innovation, prioritization, and alignment and performance measurement. The second hypothesis measures the level of NIE implemented in system development in IS outsourcing in Thailand. For the third hypothesis, the construct on the right measures information system success in IS outsourcing in Thailand. Sequentially after

testing three hypotheses, hypothesis 4 will test the relationship between NIE and Information System Success for IS Outsourcing firms. Therefore, this research seeks to contribute a tool for Information System Outsourcing Organizations to adopt jointly with System Development Life Cycle Model in order to achieve information system development and design success.

TABLE I. RESEARCH OBJECTIVES, QUESTIONS AND HYPOTHESES

Research Objectives
To study the level of Business-IS connection between IS outsourcing vendor and client in Thailand
To evaluate the level of NIE implementation between IS outsourcing vendor and client in Thailand
To evaluate the level of information system success of IS Outsourcing implementation in Thailand
To study the relationship between NIE and Information System Success IS Outsourcing Implementation in Thailand
Research Questions
What is the level of Business and IT functions linkage between IS outsourcing vendor and client in Thailand
What is the level of NIE implementation of between IS outsourcing vendor and client in Thailand?
What is the level of information system success of IS Outsourcing implementation in Thailand?
Is NIE and Information System Success of IS outsourcing related?
Research Hypotheses
H1 :The level of Business and IS functions disconnection is low.
H2 :The level of NIE implementation of the business companies is low.
H3 :The level of information system success of the business companies is low.
H4 :There is a positive relationship between Information System Success and NIE

III. LITERATURE REVIEW

A. IS Outsourcing

Extreme business environment volatility in this digital age is forcing firms to cut out all irrelevant and insignificant business activities so it can focus on its core business [11]. A distinctive, rare and costly to imitate capability is crucial to a firm’s success because it is a source of competitive advantage. It is extremely vital for firms to invest time, financial resources and non financial resources to build such capability to be its core competency so as to achieve strategic competitiveness [12]. Organizations are faced with the critical decision to specialize in key areas in order to achieve higher efficiency and cost reduction [6]. The search for higher efficiency, specialized service, and cost reduction from economies of scale has driven organizations to outsource. Outsourcing is the purchase of service from third party organizations to perform internal organizational activities [13]. About 87% of companies interviewed by KPMG have planned to maintain or increase their current outsourcing [4]. Despite an array of risks that could lead to failure in outsourcing, there is extensive literature in strategic management encouraging firms to outsource particularly in fast changing digital age. Information technology and information system development is a specialized organization activity that requires high expertise thereby, IS outsourcing has become so

pervasive and has experienced exponential growth this past decade.

IS outsourcing can be defined as “subcontracting of previously in-house IS services or activities to an external organization” [4], [14], [15]. In other words, it is the “significant contribution by external vendors in the physical or human resources associated with the entire or specific component of the IS infrastructure in the user organization” [15]. Its popularity is partly due to rapidly occurring advancements in software that firms are unable to follow resulting in technological obsolescence. Technological obsolescence is not being able to follow or catch up to current or updated technology. As external vendors that offer specialized outsourcing services in certain key areas are more updated in current and up and coming technology, therefore firms can mitigate risks of technological obsolescence by outsourcing to purchase specialized services that require high expertise and cost saving from economies of scale afforded by outsourcing vendors. Overall, firms sought IS outsourcing because of vendors’ access to emerging technologies, its ability to mitigate technological risk and uncertainty, results in increase in efficiency in managing IS department efficiently thereby linking business and IT strategy, and most significantly to change the organizations boundaries or restructure IS which is initially narrowed by the organization’s culture and existing processes. Some of the risks of outsourcing include 1) failure of organizations to manage the third party IS vendor [14], 2) thereby resulting in excessive costs and poor service quality [14], [16] The root cause of occurrence of these risks that leads to failure of outsourcing is perhaps vague outsourcing structure and goals laid in the planning stage. The disconnection between vendor and client outsourcing arises from the lack of a structured approach to IS outsourcing [6]. Furthermore, most business managers lack knowledge on IS design and development whereas IS outsourcing vendors have to be educated on the organization strategy and goals in order to achieve coherent Information system development and design that complies with the client’s organization strategy [10]. Moreover, clients and vendors fail to understand that both share the responsibilities for managing the outsourcing project, where the client’s role in the IS outsourcing does not end, simply because it delegated the organizational activities to the vendor [7]. Overall, there is tremendous amount of facts and data to support that IS or IT outsourcing is growing increasingly, but there is limited research into the complexity behind managing IS outsourcing to ensure coherence in business client and IS outsource vendor goals to eliminate business-IT disconnection in IS outsourcing [7]. This research seeks to propose that the adoption of System Development Life Cycle (SDLC) and New Information Economics (NIE) tool jointly to ensure structured IS outsourcing approach, clarity in IS outsourcing goals and coherent outsourcing goals between business clients and IS outsourcing vendor. Hence, eliminating business and IT disconnection for IS outsourcing conducted by organizations thus resulting in information system success.

#### *B. System Development Life Cycle (SDLC)*

System development life cycle is a generalized conceptual model adopted by organizations to guide its information system design from planning stages to implementation and also through maintenance stage [17], [18]. Majority of organizations adopt the formal step by step System Development Life Cycle (SDLC) approach, yet system projects fail. This is because the sequential system development life cycle model does not ensure coherence between business strategies and IS goals especially if the traditional and outdated system development approach is adopted. The IS vendor is an expert in IS process while the business management is an expert in organizational strategy. The system development life cycle model is inherently deficient because it does not ensure efficient coordination of interlinked business and software design activities between business management client and information system specialist vendor.

As a result, New Information Economics should be adopted jointly with SDLC hence integration of business and IS design and development can be achieved in all processes and stages from planning up to implementation stage. Stages of NIE and how it could be used to achieve the organizational goals is defined and explained in the next stage.

#### *C. New Information Economics*

The business value of Information systems designed and developed by IS outsourcing vendor can only be realized if the information system complies and helps achieve the organization goals and strategy. A comprehensive study on business and Information system development disconnection requires theoretical perspectives from both information technology and business literature in order to coordinate and integrate Information system design processes with business processes to fit together to achieve organizational goals. After extensive review of the literature, it is recognized that previous studies have rarely employed theory of the coordination and integration for Information system design and development to accomplish coherence between client business and Information System goals. The absence of study in this area suggests a need to evaluate business and IT connection at the process level so that we may develop an understanding of their interaction and how organization and IT disconnection is caused at a process level. Majority of firms have a loose collection of disconnection organizational activities around IT. This is because companies invest IT or IS that do not clearly support its business strategies. Several studies about more than a decade ago have defined the contribution of IT to business performance [19]. However, the inescapable growing need for information system design and development outsourcing, has called for the need to research on integration and coordination mechanism for IS outsourcing which are rarely been conducted. All research conducted mainly provided insight on a firm level but there are insufficient number of studies that provide insight into IT and business connection on a process level. Sabherwal (2002) has

concluded the coordination mechanism on a process level required for success for IS outsourcing to achieve organizational goals [7], however, this study seeks to provide a sequential model to simplify the integration of IS and business goals through IS outsourcing. As a result, this research uses a set of practice called New Information Economics (NIE) which will help study the bottom-line impact of IT, how to handle IT management process and it will also help business organizations meet its IT goals. New information economics is an example of a multi criteria approach that is designed for IT investment decisions. It is better than other approaches as it considers financial, non-financial and risk [20]. NIE can be defined as an integrated approach to control IT budgets and an approach to help get the highest profit for the IT investment.

Benson *et. al* (2004) has originated the New Information Economics model as a tool. It is a set of coordinated practices based on integrating activities that connect business and IT management processes, hence connecting the business strategies to IT initiatives [10]. It is a complete view of the required coordination between the business units and the IT, adopted to ensure IT or IS will support the organization strategy and help achieve a successful bottom-line impact. This model consists of a consistent sequential set of practices which are Planning, Innovating, Prioritizing, Aligning and allocating resources, and performance measurement across the entity.

• *NIE practice 1: Strategic Demand/Supply Planning*

Majority of organizations find it complicated to connect business and IS in the planning phase. The strategic demand/supply planning starts with the idea that high level business strategies and action plans should drive Information system design and development in order to address the business goals. This involves translating of company's strategic intentions into actionable Information system design and development strategies, hence creating a set of practical actions and producing required Information System in order to fulfill business goals. In this stage firms are required to create clear statements on how the company intends to use the information system to solve what kind of organizational issues or what organizational strategy should be achieved. [10]

The strategic agenda provides the connection between the corporate strategic plan and IT department overall strategic plan. However, this can be applied to corporate overall strategic plan and Information system design and development overall outsourcing plan. First input expresses the "demand" and provides strategic directions that are tied to what business client and IS outsourcing vendor should do in order to translate strategic intentions into a successful information system design. The output is where the strategic IT plan buildings on the strategic agenda. It expresses the "supply" for IS, what actions and initiatives the IS outsourcing vendor should undertake to fulfill objectives of the strategic agenda. Like all forms of planning, this should be regarded as a template. Since every organization is different in its own way, all

organizational structure is different. In the planning process, it should be concluded resources that can create value for the organization and fulfill the organization goals should be allocated to meet the company's strategic needs.

• *NIE practice 2: Innovation*

Anything new whether incremental or radical to any organization in terms of process, product, service is innovation. Khalil (2000) indicated that innovation is the creation of a product, service or process that is new to an organization [21]. According to Benson *et al* (2004:189) creativity is the key to innovation as it involves the generation of new ideas [21]. System innovations involve the development of different components that are integrated into a system. In the past, information system was just a support rather than a significant business activity that was integrated into the business goals which is contrary to the modern day. Today Information System is expected to add value to the organization not only by being a solution for business activities but also as a way to fulfill business opportunities through innovation. First component in NIE involves monitoring of business and technology for current change and future opportunities that could affect the organization. Second component is the generation of several alternative solutions to respond to technological and business environment changes. Third component involves the decision to which solution is most suitable. In essence, third stage involves what should be done. Final component is the implementation stage which involves action plan for innovation. This engages the business and technology managers to define the business and technology scenario based on new technology or business conditions. "If innovation ideally matches business strategic intentions with IT capabilities then strategic IT agenda can be pursued"[22].

• *NIE practice 3: Prioritization*

Organizations have limited resources to allocate to initiatives hence; it is rational to allocate resources to achieve goals that will achieve the greatest return for the organization. Business-based prioritization is a tool for assessing the bottom-line impact of IS outsourcing. The question is which of the proposed information system outsourcing activities should be implemented that will produce the highest outcome for the company. Benson *et al* (2004:143) explained five sequential steps towards achieving prioritization. First it engages the business client in defining the strategic intention for the company and scale to which information system. Second Information System designing outsource project should be described in business terms in short, single source description for all of the IS outsourcing actions to be implemented. Third, client must assess the predicted impact of all information system outsourcing projects, how they relate across all parts of the business and their impact on the strategic intentions of the organization. Therefore, the required resources are then identified. Fourth step involves an open discussion between the IS vendor and the client. Finally, IS is developed under the project plan based on strategic intention and resource constraints. [10]

Prioritization is a crucial step in translating strategic intentions and required resources into actionable plans to move the organization forward. It is done through a structured assessment by providing a common language of business on strategic intention and discussion and assessment of IS development project is assessed. In short, it involves financial resources allocation to the required Information system from outsourcing vendor.

- *NIE practice 4 :Alignment*

While the Prioritization practice allows management to allocate resource based on bottom-line impact and connection to strategic intentions, the Alignment practice does the same but for existing in-house IT applications and infrastructure [10]. The alignment practice looks at the existing IT and IS activities conducted by the organization in-house. IT and Business managers must answer the question :Do the existing IT activities promote company's strategic intentions? Alignment assessment allows managers to look at infrastructure, application, and services portfolios, and then decide which in-house activities coordinate with the outsourced IS design and development project are supporting the business or where they are weakest, and at same time develop plans for covering gaps in Alignment. Companies can use this practice to be sure that all of the IT resource in the company, both existing and new applications, are contributing to the business .Both Business and IT managers will decide which existing IT activities should receive resources or shouldn't be eliminated. "This aligns an assessment of activities in portfolios with the strategic IT plan, the strategic IT requirements, and light-on budgets parts, and it identifies resources for these activities" [22].

Business and IT managers together conduct the assessment of alignment and arrive at a conclusion .This is a critical part of the process. Alignment and business performance are also responsibilities of Business managers and those who are major users of IT. Business managers should participate in IT investment decision, understand the business problems, and properly chose the IT application when align the existing IT.

- *NIE practice 5 :Performance Measurement*

The question is what to measure and how to measure if Information System Development project conducted by IS outsourcing vendor is successful [10]. To accomplish this, IS vendor needs a measurement capability to focus on activities and behaviors that best support IT contribution. Is vendor must be able to answer the question "Are we doing things right?" This question is primarily an inquiry about Alignment. IS outsourcing vendor need to have a tool that allows them to continually reassign and reallocate resources to ensure an accurate Information System Develop Design. Moreover, reliable and consistent information about the system's impact on the business should be acknowledged by both business manages and IS managers to ensure rational allocation decisions is achieved. This is significant for both IS vendor and the business client. Improving Information System Development is a complex task and Performance Measurement does not come from an individual but from

their integration between client and vendor .It provides IS vendor and Business client with a tool necessary to improve the information system based on strategic intention and organization goals.The key point is that IS vendor's measurement framework needs to be consistent with the role of IS to accomplish the client's goals.

By applying the NIE practices into system development processes and management process it will produce desirable business outcomes because NIE connects the IS and business from planning to implementation hence, it should allow the company to derive good business decisions and create a sound information system .Therefore, client and IS outsourcing vendor are able to outsourcing expensive by being able to prioritize and ensuring that it fits the organizational goals thereby improving the client's information system.[10]

#### *D. Information System Success*

"The measurement of information system success or effectiveness is critical to the understanding of the value and efficacy of IS management actions and IS investments" [23]. It is also crucial to measure information system success to answer whether the IS outsourcing vendor implemented the information system successfully. DeLone&McLean (1992) originated majority of the dimensions of information systems development success.

- *System Quality*

In evaluating the contribution of the information systems one measure the researcher has studied is the System Quality. This dimension is about the quality of information system that is used by users. "System quality is a measure of the information processing system itself" [24].It is a measure of actual system and describes the various issues that relate to its quality, stability, and efficiency. DeLone & McLean (1992) defined many system quality issues in their paper. The issues that concerned with the context of MIS success measures in system quality are convenience of access, ease of use, system flexibility, system reliability, integration of systems, and response time. "Convenience of access is the ease or difficulty with which the user may act to utilize the capability of the computer system" [25].Hamilton & Chervany (1990:60) proposed ease of use system interface as performance measure in improving IS presentation form. System flexibility is the capability of the information system to change or to adjust in response to changing business requirements. "System reliability involves the system's consistency of performance and dependability, focusing on whether the system is right, useful, and dependable"[24]. Integration of systems is the ability of systems to communicate data between systems that are servicing in different work areas or functional departments [25]. Response time is amount of time taken from requesting for a service/action and the system satisfying that service/action [25].

- *Information Quality*

The quality of the system performance, other IS researchers have preferred to focus on the quality of the information system output, named the Information

Quality. "Information quality is a function of the value of the output produced by a system as perceived by the user"[24]. It deals with the actual output of the system. The quality issues are different in researches depend on the goal of the study. Accuracy, Reliability, Timeliness, Relevance, Completeness, and Precision issues are used in this research. Accuracy is the correctness of the output information. Reliability is the consistency and dependability of the output information. Timeliness is the availability of the output information at a time suitable for its use. Relevance is the degree of congruence between what the user wants or requires and what the information products and services provide. Completeness is the comprehensiveness of the output information content. "Precision is the variability of the output information from that which it purports to measure"[24].

- *Information Use*

Several researchers have proposed information use as MIS success measure [26], [27], information use is the user consumption of output from information system. The use of information system is a key measure of the success of an information system. The system will fail if the goals are not met by the users, even though system quality is at high standard. System use is measured as Frequency of access, Frequency of report requests, and Duration of use. Srinivasan (1985: 248) used frequency of use and time per session in his study. He defined the Frequency of use as the frequency of use of the system or number of access. Time per session refers to average connect time per access. Raymond (1985) added the frequency of use in his research. The direct use of database measure was also used in Culnan's research (1983: 57-58). Srinivasan (1985: 248) also used frequency of use and time per session as behavioral measures separately from perceived measures of system effectiveness.

- *User Satisfaction*

User satisfaction is user response to consumption of the output of an information system [27]. The concept of user satisfaction is an information system which meets the needs of its user hence, leads to satisfaction [28]. If the system does not provide the required service, the user will become dissatisfied and find an alternative. The user satisfaction issues in this research include overall satisfaction, Software satisfaction, Information satisfaction, Enjoyment, and Difference between information needed and received by DeLone & McLean (1992).

- *Net Benefits—Individual impact and Organizational impact*

The ultimate goal of any information system investment is the organization impact. In the research of DeLoan & McLean (1992: 87), they have the individual impact and organizational impact dimensions refer to the effect of information on the recipient behavior and organization performance. There are many variables that can be used to measure individual impact which are Problem identification, Correctness of decision, Time to make decision, Improved individual productivity, Quality

of planning, and Learning [29]. DeLone & McLean (1992:74) defined the "organizational impact as the effect of information on organizational performance"[27]. Researchers chose some issues in organizational impact measure, to assess IS success: Operating cost reduction, Time savings, Expanded markets, Increased sales, Increased profits, Product/service quality, and Contribution to achieve goal [27].

Most of the organizations utilize IS outsourcing services in order to sought specialized services that cannot be implemented in-house or within the organization. This is conducted to improve the performance of the business. However, many IS outsourcing clients do not benefit from IS outsourcing in system development. Failure of IS vendors to implement system development often arise from vague goals expressed by organizational clients and IS miscomprehending what is required by the clients. In order to avoid miscommunication, NIE should be adopted as a tool that integrates all loosely connected business activities with the IS system design originated by the IS vendor. The main goal behind this proposal is to study the coordination and disconnection between organization clients and IS outsourcing vendor and their adoption of NIE. Moreover, we would also like to establish the relationship between Information system success and adoption of NIE in IS outsourcing cases in Thailand.

#### IV. METHODOLOGY

##### A. *Research Design*

This research is a descriptive research and method used for data collection is questionnaire survey research. Survey research is a quantitative method that requires standardized information in order to describe the variables and to study the relationships between the variables. Quantitative method is preferred when researchers want to study a large sample and generalize the results on the whole population. This structured approach is conclusive and appropriate to establish cause and effect between variables. It involves collecting, analyzing, and interpreting numerical data usually with statistical software. Hypothesis of this research is generated qualitative analysis in the form of secondary data. The purpose of survey research is to collect primary data. Primary data are data gathered and assembled specifically for the project at hand. The researchers will gather data from a mail survey as primary data. Survey is a research tool by which raw data is gathered from a sample using questionnaire. In this study the researchers will mail the questionnaire survey to the respondents. Mail survey is an inexpensive method of data collection for academic research and it is a self-administered questionnaire sent to respondents through the mail.

##### B. *Population and Sampling*

The target population for this research is organizations that the client and their respective IS outsourcing vendor. It is targeted for medium to large sized organizations (number of employee more than 250) in Thailand.

Stratified sampling is adopted in this research as this is a case study on IS outsourcing vendors and clients in Thailand.

This study will use quota sampling of middle managers. The researcher plans that the business department which be most impacted from utilizing the information system will be chosen. The proportion IS outsourcing vendors and organization as clients will be 0.5:0.5.

The formula for population proportion sample size is used [30]. To determine sample size by the proportion, three items need are determined by the researcher. They are the level of confidence, acceptable error in population proportion, and the population proportion. The formula to determine the sample size of a proportion is:

$$n = p(1 - p) \left(\frac{z}{E}\right)^2$$

where: n = the size of the sample  
 p = the population proportion  
 z = the standard normal value corresponding to the desired level of confidence.  
 E = the maximum allowable error

The researcher cannot determine the proportion of IS outsourcing firms and business clients in Thailand and will use a 50 percent for both types of respondents (p=0.5), which gives the required sample for this formula. The researcher estimates with 95 percent confidence, which corresponds to a Z value of 1.96 and wants no more than 5 percent error. Substituting these values into the formula above, the sampling number will be

$$n = 0.5(1 - 0.5) \left(\frac{1.96}{0.05}\right)^2 = 384.16$$

Therefore, 50 percent of IS outsourcing vendors and IS outsourcing clients, which concludes to 385 but we require an even number therefore, 386 is the sample size. As a result, we will distribute 193 questionnaire surveys to business clients that conduct IS outsourcing and ask each of them to distribute to there IS outsourcing vendor. So, we expect to survey 193 organizations that outsource their IS and 193 IS outsourcing vendors.

C. Research Variables

Independent variable is a variable that is expected to influence the dependent variable. Contrarily, dependent variable is to be predicted or explained. The left box in Fig. 1, system development method or NIE is the independent variable. The right box represents system development success which is the dependent variable. Since it is a case on IS outsourcing clients and vendors, IS outsourcing represents the control variable.

D. Data Analysis

Data analysis was conducted using SPSS. It is suitable because SPSS quantitative analysis helps explain the relationship between constructs. Regression analysis and correlation will help predict whether there is a positive or negative significant relationship between constructs.

V. CHAPTER IV RESULTS

This research aims to prove that there is a relationship between New Information Economics and System Success in Thailand. There is a gap in the research as this research has not been conducted to explore the relationship between using NIE to achieve system success in IS outsourcing firms in Thailand. The research question is as follows:

1. The extent of business – IT disconnection in Thailand
2. The extent to which NIE is utilized in Thailand
3. The extent of information system success in Thailand
4. The relationship between NIE and Information System Success in Thailand

The hypotheses tested and statistical tests adopted are shown in Table II.

TABLE II. HYPOTHESIS TESTING

Hypothesis	Variables	Statistics
H1 :The level of IT and business disconnection is low	Business-IT connection Interval	One sample t-test
H2 :The level of NIE implementation in the companies is low.	5 NIE variables Interval	One sample t-test
H3 :The level of information system success is low	System development success Interval	One sample t-test
H4 .There is a significant positive relationship between NIE and Information system success	NIE is X and Information system success is Y	Simple Linear Regression

*H1: The level of IT-Business connection (Linkage) is low in Thailand*

A one-sample t-test is used to evaluate whether all factors mean is significantly lower or different from 3.41 in order to indicate whether the mean of Linkage is low in Thailand. Therefore, this will conclude whether the level of business-IT connection (linkage) is low in Thailand. The sample mean of 4.511 of Linkage has a mean difference at 1.0567 which is significant at p value of 0.000. This confirms that the null hypothesis is accepted and the H1 is rejected. Therefore, IT-Business Connection (Linkage) is not low but rather higher than 3.41 in Thailand, which signifies that there is a high level of IT-Business Connection in Thailand.

*H2: The level of NIE is low in Thailand*

A one-sample t-test is used to evaluate whether NIE factors mean is significantly different from 3.41. The mean difference for NIE 1 with 1.109, NIE 2 with 1.03, NIE 3 with 1.05, NIE 4 with 1.01 and NIE 5 with 0.882 are at p-value of 0.000 indicating all NIEs are all significantly higher than 3.41 mean. Therefore, there is a significantly high level of implementation of all NIEs in Thailand. Hence, H2 is rejected.

*H3: The level of information system success is low in Thailand*

The total overall ISS construct has a mean difference of 0.971 at p-value 0.000, hence indicating that there is a

high level of Information System success in Thailand. As a result, H3 is rejected.

*H4: There is a positive relationship between all 5 NIE and ISS*

Anova measures the overall goodness of fit of the model. The value of the f-test is  $F(5, 286) = 3.096$ . Table III indicates that this is significant at ( $p < .005$ ) with p value of 0.10 confirming goodness of fit of the model. Although the F value is small, we can conclude at least one independent variable, New Information Economics (NIE) has a significant relationship with dependent variable, Information System Success.

TABLE III. ANOVA<sup>b</sup>

Model		Sum of Square	df	Mean Square	F	Sig
1	Regression	.657	5	.131	3.096	.010 <sup>3</sup>
	Residual	12.139	286	.042		
	Total	12.796	291			

As shown in table IV, the rule of thumb is Durbin-Watson value of 1.876 in this model which is close to 2 indicates no serial correlation within the regression model. R measures the proportion of variation in dependent variable that can be explained by the variation in independent variables. Shown in table R Square is 0.35 which indicates 35% of the variation in ISS is explained by the five NIE independent variables).

TABLE IV. ANOVA<sup>b</sup>

Model	R	R Square	R Square of the	Watson
1	.227 <sup>a</sup>	.051	.035	.20602

In this research a multiple linear regression analysis is adopted to explain the linear relationship between one dependent and five independent variables. A 95% confidence interval will be used.

TABLE V. STATISTICS

Model	Coefficients		ed	t	Sig	Collinearity Statistics	
	B	Std. Error				Beta	Tolerance
1 (Constant)	3.705	.211		17.580	.000		
NIE#1	.111	.042	.174		.009	.754	1.326
NIE#2	.041	.040	.068	2.629	.311	.743	1.345
NIE#3	-.018	.032	-.040	1.015	.566	.687	1.456
NIE#4	.035	.028	-.083	-.574	.207	.777	1.287
NIE#5	.052	.039	.090	-1.265	.174	.762	1.313

The coefficients for NIE 1 (0.111) is insignificant from 0 at p value 0.009 which is lower than 0.05 at 95% confidence level. The coefficient for NIE 2 (0.301) is insignificant from 0 with p value 0.000 at 95% confidence interval. The coefficient for NIE 3 (0.64) is insignificant from 0 with p value 0.047 at 95% confidence level. The coefficient of NIE 4 (0.35) is significant at p value 0.207 at 95% confidence level. The coefficient of NIE 5 is significant at p value 0.174 at 95% confidence level. Moreover, the intercept at 3.705 is not significantly different from 0 with p value 0.000 indicating there may be multicollinearity problem. However, shown in Table V, VIF values of all NIEs are

below 5 and tolerance values are higher than 0. In Table V, Tolerance and VIF are measures are provided and both these measures together indicate the presence or absence of multicollinearity. The higher the VIF and the lower the tolerance, there will be higher variance for coefficients value for each independent variable thereby, increasing the chances of the coefficient being insignificant. A tolerance value lesser than 0.20 or VIF value of more than 5 indicate multicollinearity problem.

The regression equation is:  $ISS = 3.705 + 0.035 NIE 4 + 0.052 NIE 5$ . The regression analysis indicates that the slope parameter is significantly different from zero, thereby concluding there is a significant relationship between ISS and NIE 4 and NIE 5. An increase in 0.035 in NIE 4 results in 1 increase in ISS and an increase in 0.052 results in 1 increase in ISS. As result we can conclude that NIE 4 and NIE 5 have a significant positive impact on Information system success.

## VI. DISCUSSION

The research seeks to prove that SDLC is a generalized conceptual model to guide organizations on their system design from planning through to implementation. NIE as a tool should be utilized jointly with SDLC model to achieve successful and coherent information system development and design which satisfies the client's business goals in IS outsourcing. The research results suggest that the level of IT-business connection in Thailand is higher than average, indicating there is high level of IT-business integration in IS outsourcing firms and clients in Thailand. Although NIE model is not widely known, the IS/IT activities critical in the NIE model are widely practiced in Thailand as there is high level of implementation indicated by the results from this research. This research also suggests that there is high level of information system success of IS outsourcing firms in Thailand as analyzed in the results. As for the relationship between NIE implementation and Information System Success, the results indicated that NIE practice 1: Strategic Demand/Supply Planning, NIE 2: Innovation and NIE 3: Prioritization does not have a significant positive relationship with Information System Success implementation of IS outsourcing vendors for clients in Thailand. On the other hand, NIE 4: Alignment and NIE 5: Performance Measurement has a significant positive relationship with Information System Success of IS outsourcing in Thailand. The results of each NIE with Information System Success are explained.

### A. NIE practice 1: Strategic Demand/Supply Planning

In this stage firms are required to create clear statements on how the company intends to use the information system to solve what kind of organizational issues or what organizational strategy should be achieved.[10]. One major cause for outsourcing failure is the inability of the external organization to customize the IS services to the needs of the organization [13]. The root cause of occurrence of these risks that leads to failure of outsourcing is perhaps vague outsourcing structure and goals laid in the planning stage. However, though



planning is not seen to have a relationship with information system success, perhaps, if planned goals are not translated into proper actions in the implementation stage, it does not lead to information system success. While NIE 4 and NIE 5 have a significant relationship with Information system success, we still conclude that Strategic Demand/Supply Planning stage is critical for information success because NIE 4 and NIE 5 cannot be pursued without NIE 1.

#### B. NIE practice 2: Innovation

System innovations involve the development of different components that are integrated into a system. In the past, information system was just a support rather than a significant rather than being integrated into the business goals. Today Information System is expected to add value to the organization not only by being a solution for business activities but also as a way to fulfill business opportunities through innovation. The results conclude that there is no relationship between NIE Innovation and Information System Success. It can be argued that the results reveal that innovation from IS on system design is irrelevant to information system success, unless it provides a basis for the NIE 4 Alignment Stage, showing that IS outsourcing activities contributes directly to the business. Moreover, it should translate into good performance measurement in NIE 5. Hence, there is no relationship between NIE 2: Innovation and Information System Success.

#### C. NIE practice 3: Prioritization

Organizations have limited resources to allocate to initiatives. Business-based prioritization is a tool for assessing the bottom-line impact of IS outsourcing. Which of the proposed information system outsourcing activities should be implemented that will produce the highest outcome for the company. However, there is no relationship between NIE 3: Prioritization and Information System Success. It can be argued that prioritizing IS outsourcing activities according to how much it contributes to the business alone is no longer sufficient for a good performance. The prioritized IS activity must integrate or align with other IT activities; hence, it will indicate information system success and translate into a successful performance. As a result, only NIE 4: Alignment and NIE 5: Performance Measurement has a significant positive relationship with ISS.

#### D. NIE practice 4: Alignment

Companies can use this practice to be sure that all of the IT resource in the company, both existing and new applications, are contributing to the business. This practice aligns an assessment of activities in portfolios with the strategic IT plan, the strategic IT requirements, and light-on budgets parts, and it identifies resources for these activities. There is a significant positive relationship between NIE 4: Alignment and Information System Success (ISS). This stage involves providing resources to IS outsourcing activities that result in business contribution or perhaps, activities that IS activities that integrate with business activities that contributes to the business. The results also indicates that alignment stage is

one of the most crucial stages, if NIE1-3 Stages are implemented correctly but if IS outsourcing vendor fails to comprehend how the activities should be aligned and why, NIE Alignment Stage is not implemented successfully, information system success will not be reached.

#### E. NIE practice 5: Performance Measurement

Improving Information System Development is a complex task and Performance Measurement does not come from an individual but from their integration between client and vendor .It provides IS vendor and Business client with a tool necessary to improve the information system based on strategic intention and organization goals. The key point is that IS vendor's measurement framework needs to be consistent with the role of IS to accomplish the client's goals.

By applying the NIE practices into system development processes and management process it will produce desirable business outcomes because NIE connects the IS and business from planning to implementation hence, it should allow the company to derive good business decisions and create a sound information system .Therefore, the positive relationship between performance measurement and information system success, concludes that to reach this stage, it is crucial to ensure all NIE stages are implemented correctly since this stage is dependent on all other stages. However, although NIE 1: Planning Stage, NIE 2: Innovation Stage, and NIE 3: Prioritization Stage are implemented correctly IS outsourcing firms does not comprehend how their performance is measured, and what is deemed as a successful outcome. They will not be able to implement the system design successfully; hence, information system success is not achieved. Therefore, IS vendors must comprehend how performance is measured, what is deemed as successful, and how can they implement to reach system design that the client needs. This stage is the most crucial stage and if not implemented correctly, it is unlikely to result in information system success of IS outsourcing relationship.

## VII. CONCLUSION

This paper recommends a framework and methodology to study the level of business-IT disconnection and to propose the adoption of New Information Economics to regulate and resolve this disconnection between client and vendor of IS outsourcing. This research has proved that there is a positive relationship between NIE adoption and Information System Success in system design by IS outsourcing for the client in Thailand. This research also illuminates the researcher indicating that all NIE stages are integrated but the most crucial stages are the alignment stage and implementation that translates into successful performance measurement outcome. Therefore, if all stages are implemented correctly and goals are clarified by the client through NIE stage 1, 2, and 3, but if NIE 4 and NIE 5 are not implemented correctly, Information System Success will not be accomplished.

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