

STRATEGIC ALIGNMENT IMPACTS ON ORGANIZATIONAL PERFORMANCE IN INDONESIAN BANKING INDUSTRY*

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Strategic alignment has attracted the attention of researchers and practitioners for the last 15 years. This paper reports findings from a survey on the impacts of strategic alignment on organizational performance in the Indonesian banking industry. The survey was conducted through internet-based and postal questionnaires sent to selected companies.

Structural Equation Modeling (SEM) is utilized to apprehend the strategic alignment concept as an emergent variable derived from the co-variation of level of business strategy and level of IS/IT strategy. Hence, we explore the role of this emergent concept as a determinant of organizational performance. Analysis of the data reveals a generally positive impact towards the organizational performance.

Keywords: banking industry; organizational performance; strategic alignment

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Introduction

Overview

Banking is an institution that has been taking on the role of financial intermediary. Rybczynski (1997) argued that financial systems evolve through time, passing through three phases. *The first stage* is the *bank-oriented phase*, in which most external funding is acquired through loans funded by the deposits of customers. *The second stage* is the *market-oriented phase*, in which institutional or household investors begin to purchase bonds and nonbank monetary institutions start offering services similar to those that are offered by the banks. Subsequently, in *the third stage*, the traditional functions of banking are extended to trading, underwriting, advisory, and asset management services. In this phase, corporate bonds, commercial papers, mortgages, and other forms of credit start replacing loans.

Mullineux and Murinde (2003) add that in this new millennium, banking is directly influenced by the development of and changes in the banking sector *per-se*—including the Second EC Banking Directive in 1987, the Basel Concordat in 1988, the Japanese Big Bang in 1998, and the Glass-Steagall Act in the United States in 1999—in addition to the global regulations harmonization, liberalization of the capital and monetary sectors, and by the revolution in information and communications technology. This contributes to the further reduction of the

banking role in the economy, considering that the role of the bank as an intermediary and liquidity function holder is gradually being replaced by the emergence of new monetary instruments and better technologies.

The ongoing changes in banking are highlighted by Vives (2001). He argues that banking is currently transforming because of competition and regulations, both of which force it to adapt to a new environment. Paradoxically, the threats to very severe competition are inevitable, but on the other side, potential market powers are also foreseen.

Based on the facts, banking must change to remain competitive and to retain customers. To acquire competitive advantage, banking must empower the information and communications technology (ICT) holistically. Much research has proven that information system-based applications are capable of providing competitive advantage based on generic strategies such as cost leadership, product differentiation, and market focus (Porter 1980; Sethi and King 1994). On the retail level, for instance, the effect of ICT can be seen in electronic banking (e-banking) and in the implementation and increasing performance of information processing (Vives 2001).

The influence of information technology has also been affirmed by what Bill Gates wrote in the *New York Times* (1997), “*These changes [the internet] won’t come at the expense of the banking industry... the future is bright... for institutions that evolve. Technology*

will let banks get closer to customers, deliver a wider range of services at lower costs, and streamline internal systems, so that all customer data is integrated and can be used to spot trends that can lead to new products. The Web will offer banks great opportunities—It will be interesting to see which banks step up to this opportunity.”¹

Rationales

With respect to a company’s strategic policies, ICT has played an important role in the organization’s existence. Previous research has found that the information system strategy is now considered equal with business strategy (Hirschheim and Sabherwal 2001). In other discussions, information systems are appreciated for making significant contributions to a company’s strategic alignment (Camponovo and Pigneur 2004). Furthermore, an excellent strategic alignment of business strategy and information systems strategy will lead the information system to a crucial point, which eventually boosts business performance (Hirschheim and Sabherwal 2001).

Strategic alignment of business strategy and information technology/system strategy will respond to the challenge to the company faced with stiffer competition. Teo and King (1999) assert that the importance and integration use of business planning-

information system's planning (BP-ISP) has been empirically proven to increase the information systems contribution to company performance. Unfortunately, the investment value of the information systems cannot be fully realized owing to the lack of strategic alignment between business strategy and information systems strategy in the company (Henderson and Venkatraman 1993). Hence, an increase in performance and competitive advantage will be difficult to accomplish.

This research assumes that the use of information systems is a fundamental issue in every business, especially in the banking sector. Strategic alignment—which is one of the hot topics in information systems—is also new and compelling, especially in terms of its implementation in Indonesia.

For that purpose, empirical evidence is required to assess the correlation of information technology/systems alignment to business strategy and organizational performance (Sabherwal and Chan 2001). Similarly, Camponovo and Pigneur (2004) mention that analogous research on different environments and at different times is still needed to find the dynamic changes and to evaluate the general patterns that might emerge.

This research is expected to make theoretical and practical contributions. Theoretically, this study tests the pre-

¹ Bill Gates. 1997. “No one is really living a Web Lifestyle—Yet,” *New York Times*, July 29, 1997; available on www.htimes.com/today/access/columns/0729bill.html.

ceding theories on the effect of strategic alignment on organizational performance to acquire competitive advantage. Meanwhile, this research is expected to assess the significant of strategic alignment in improving organizational performance through the utilization of information system-based resources.

Theoretical Framework

Strategic Alignment Definition

The strategic alignment of information technology/systems strategy and business strategy has been discussed since the 1980s (Brancheau et al. 1996). This issue later became the main concern of every organization in the 1990s (Plowman 1998). At the *11th Annual Critical Issues of Information Systems Management Study*, hosted by the *Computer Sciences Corporation* in 1998, 72 percent of 594 information technology/systems executives announced that aligning ICT and corporate goals was their focus.²

The concept of strategic alignment has been developed from *covariations* in particular time, such as:

- ◆ business strategy importance level attributes, which is the choice between partnership and/or strategic alliance,
- ◆ information technology/systems strategy's importance level attributes, consisting of information

technology/systems strategic roles, information technology systematic competence, and information technology/systems process choices.

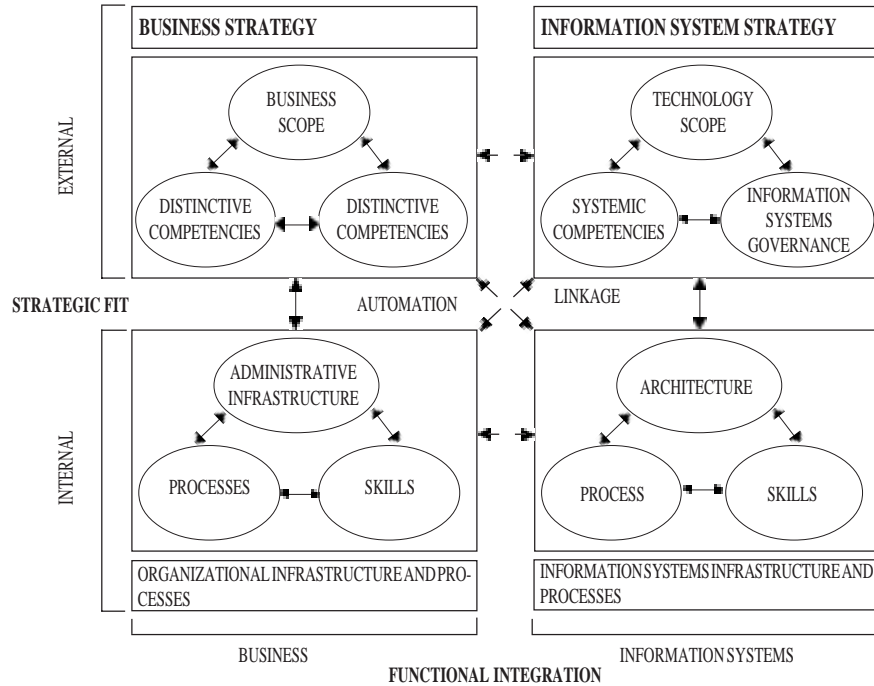
This approach is consistent with the basic model of Henderson and Venkatraman's (1993) which describes the strategic alignment terminology as "*the emergent concept*" (refer to Figure 1). The approach is also adopted from other empirical research (Croteau et al. 2001). Sabherwal and Chan (2001) summarize the concept as "*the degree of congruence between business and information strategy strategic orientation*" (p. 2).

To help the company decide which perspective to adopt in a particular situation and condition, Luftman et al. (1993) propose a model to identify the strengths and weaknesses of the strategic alignment model: (1) the main power domain (*anchor*), (2) the weak spot domain (*pivot*), (3) the influenced domain, which is the change caused by anchor to find the solution for pivot. Meanwhile, Kefi and Kalika (2005) categorize the strategic alignment perspective into: (1) *business execution*, (2) *competitive potential*, (3) *IT potential*, and (4) *service level*.

Contingency theory provides a good lens to view both the relationship between the variables defining strategic alignment and the implications of this strategic alignment on performance (Venkatraman 1989; Kefi and Kalika 2005). Based on this approach, we

² Plowman, B. (1998). Companies struggle to align business strategies. *IT Priorities* (June 20, 1999), available on http://www.csc.com/about/news_stories/19981118_b.html.

Figure 1. Strategic Alignment Model



Source: Henderson, J. C., and N. Venkatraman (1993). Strategic Alignment: Leveraging Information Technology for Transforming Organizations. *IBM Systems Journal*, 32 (1): 4-16.

examine the strategic alignment concept and demonstrate that a positive linkage exists between alignment and performance.

The term “*strategic alignment*” consists of the words “*alignment*” and “*strategy*.” Alignment is coordination achieved when the company information technology/systems strategy is derived from the organization strategy (Lederer and Mandelov 1989), comprising:

- ◆ *content linkage*, referring to the consistency of business plan and information technology/systems plan,
- ◆ *timing linkage*, referring to whether the information technology/systems

plan is developed after, along with, or before the business plan is made,

- ◆ *personnel linkage*, referring to different participants’ involvement degree in the planning of business and information technology/systems area.

In the meantime, strategy can also represent “*objectives*” (Reich and Benbasat 1996), “*plan*” or “*planning*” (Teo and King 1997). In this discussion, the strategy consists of:

- ◆ *information technology/systems strategy*, which is the main choice emphasizing the implementations and uses of technology-based information systems in a company

(McFarlan et al. 1983; Knight and Silk 1990),

- ◆ *business strategy*, which determines the company positioning in a business area (Porter 1980).

Other literature defines strategic alignment as:

- ◆ Relationship, in which the specific IS objectives need customization according to the organization objectives (Zviran 1990),
- ◆ Partnership, which is used to describe a working relationship reflecting a long-term commitment, a sense of mutual cooperation, shared risk and benefits, and other qualities consistent with concept and theories of participatory decision making (Henderson 1990),
- ◆ The degree to which the resources being directed to each of the seven dimensions of IS strategy are consistent with the strengths of the organization's emphasis on each of the corresponding seven dimension of business strategy: aggressiveness, analysis, defensiveness, futurity, innovativeness, proactiveness, and riskiness (Chan et al. 1997),
- ◆ The extent to which the IS/IT strategy supports, and is supported, by the business strategy (Luftman et al. 1993),
- ◆ The internal fit and functional integration between business strategy and IS/IT strategy and how this integration is important to gain competitive advantage (Henderson and Venkatraman 1993),
- ◆ The degree to which the IT mission, objectives, and plans support and

are supported by business mission, objectives, and plans (Reich and Benbasat 1996).

The Importance of Strategic Alignment

Literature has underlined the significance of strategic alignment. Boar (1994), for instance, claims that organizations need to build, align, and develop competitive advantage through the empowerment of information technology/systems in response to the challenges of global competition. Khandelwal (2001) adds, "*It is clear that for enterprises to achieve their corporate objectives the information systems supporting the business process have to give right management information, at the right time. To do this, IT in an enterprise must align with the organizational objectives*" (p. 23).

According to Premkumar and King (1992), strategic alignment is the linkage of information systems planning with business planning. Ideally, business plan and information systems plan—either product or corporate planning function—should be linked through the direct mapping of information systems strategy to one or more business strategies (Calhoun and Lederer 1990).

Through the alignment of information systems plan and business plan, information resources will support the business goals, and reap the advantage of information systems strategic utilization (Premkumar and King 1991). Therefore, an increase in performance can be achieved and competitive ad-

vantage will be attained, leading the banking sector to survive and thrive despite fierce competition.

The Effect of Strategic Alignment on Organizational Performance

Much literature has also emphasized the effect of strategic alignment on organizational performance. Chan et al. (1997) states that “*Companies that appear to perform best are companies in which there is alignment between realized business strategy and realized information systems strategy*” (p. 142). Luftman and Brier (1999) similarly declares, “*Companies that have achieved alignment can build a strategic competitive advantage that will provide them with increased visibility, efficiency, and profitability to compete in today’s changing markets*” (p. 121).

Unfortunately, a positive correlation between strategic alignment and organizational performance tends to be diverse. Sabherwal and Chan (2001) point out, “*Empirical research on the performance implications of this alignment has been sparse and fragmented*” (p. 21). Likewise, Brynjolfsson and Hitt (1998) claim, “*While the average returns to IT investment are solidly positive, there are huge variations across organizations, some have spent vast sums on IT with little benefit, while others have spent similar amounts with tremendous success*” (p. 50).

Therefore, evaluations on the effect of strategic alignment on organizational performance are still needed. Bruce (1998) asks, “*If alignment is needed to facilitate optimum business benefit, how do we know when we have it? It is important to look at the impact IT is having on business results*” (P. 17). Delone and McLean (1992) add that an evaluation on information technology/systems performance in organization is still one of the pivotal topics in the field of information systems.

Research Model and Hypotheses Development

The concept of strategic alignment is acquired from co-variation between a business strategy’s importance level attributes and information technology/systems strategy’s importance level attributes at a particular time.

Business strategy, according to Porter (1980), influences the company’s positioning in its business area. Henderson and Venkatraman (1993) suggest that business strategy importance level is influenced by the company’s strategic policies on “*make-or-buy*” decisions, partnership [BS1] and alliance [BS2]. Partnership refers to how much a company’s business development depends on its strategic partners is. Alliance is the extent of business development’s dependence on outsourcing activities.

In McFarlan et al. (1983); Knight and Silk (1990); and Das et al. (2001),

the importance of an information technology/systems strategy can be seen from the company's main choices in connection with its implementation process and information system-based technology utilization. The strategic construct of information technology/systems is based on the model developed by Henderson and Venkatraman (1993):

- ◆ Information technology/systems' strategic role perceptions, measured by the top management's commitment level on implementation and information technology/systems' resource utilization [IS1],
- ◆ Information technology/systems' systematic competence in building unique comparative advantage of the company [IS2],
- ◆ Information technology/systems' architecture choice which will determine cooperative relationships with strategic partners through a linkage built by information technology/systems' tools and networks architecture [IS3],
- ◆ Information technology/systems' work process choices in facilitating intracompany and inter-companies work processes (Kalika et al. 2003) [IS4].

Organizational performance is another important dependent variable, assessing multidimensionality using perspectives with the following criteria (Kalika et al. 2003):

- ◆ Productivity, based on information technology/systems' influence to-

wards the company members' productivity [OP1],

- ◆ Cost reduction, which is the saving attained based on information technology/systems usage [OP2],
- ◆ Value-added innovation ability through the use of information technology/systems [OP3],
- ◆ Company's ability to respond to and use existing business opportunities [OP4],
- ◆ Response to customer needs, whether information technology/systems can guarantee better understanding and fulfillment of customer expectations [OP5],
- ◆ Collaborations with business partners through the progression of the company's relationships with strategic partners from rivalry to cooperation [OP6].

These relationships can be summarized by the following hypotheses (H):

H_{1A} : *the level of business strategy has a direct influence on strategic alignment.*

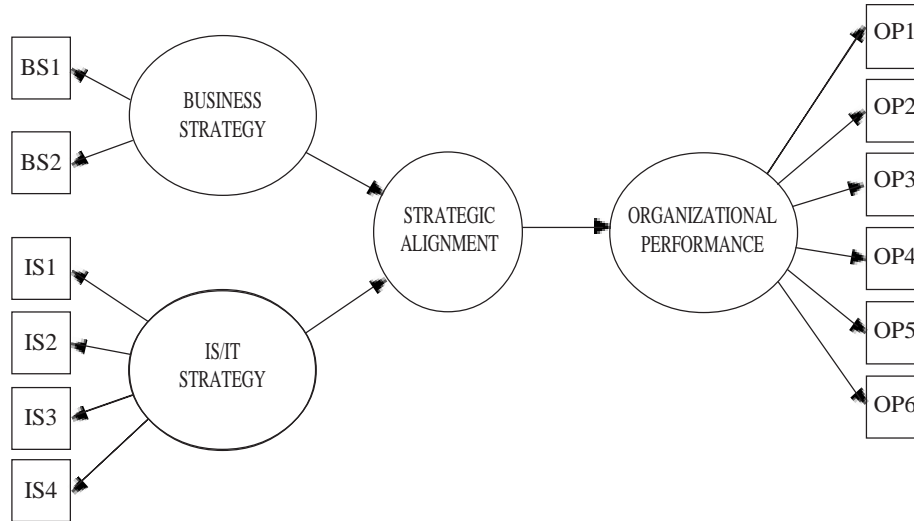
H_{1B} : *the level of information systems/technology strategy has a direct influence on strategic alignment.*

H_2 : *strategic alignment has a direct influence on organizational performance.*

Research Methodology

The scope of study in this research is limited to banks in Indonesia. Data were gathered from a set of question-

Figure 2. Hypothetical Model



naires developed and tested by Kefi and Kalika (2005). The questionnaires were based on literature and previous research. *Convenience sampling* and *snowball sampling* methods were applied in this study.

Two rounds of pretests (initial and pilot tests) were conducted before using the survey instrument for data collection. All the variables (dependent and interdependent variables) were measured using a five-point Likert scale.

Reliability assessment was carried out using Cronbach's alpha in order to ensure that the variables comprising each proposed research construct were internally consistent. The coefficient alpha determines reliability based on internal consistency ranging from 0 to 1; a value between 0.60 and 0.70 is the lowest acceptance limit for reliability (Hair et al. 1998). Table 2 below shows that the reliability esti-

mates are well above the acceptable threshold.

Results and Analysis

Data were collected using two methods *mail-* and *internet-based*. One hundred and twenty questionnaires were delivered via postal mail to top management to be filled out and faxed back. E-mail invitations to participate in the survey were also sent to 320 bankers throughout Indonesia. They could complete and return them by e-mail attachments, or, they could fill it out through a web-based interface.

Five blank questionnaires were returned, with explanations pertaining to company policy or to confidentiality. Forty-four usable questionnaires were returned, yielding a response rate of 10 percent.

This is considered adequate, keeping in mind that practitioners of infor-

Table 1. Items Identification

Construct	Measurement Criteria	Questionnaire Items
business strategy	partnership strategy choice	the business development of your firm strongly relies on partnerships
	alliance strategy choice	the business development of your firm strongly relies on activities outsourcing
IS/IT strategy	strategic role perceptions	Top management is committed to the strategic use of IS/IT
	systematic competencies	IS/IT contributes to building distinctive advantage of your firm
	architecture choice	the cooperations with your strategic partners are supported by electronic linkages built upon IS/IT tools and architectural networks
	work process choice	the work processes intra and inter-firms group projects are facilitated due to IS/IT
organizational performance	productivity	IS/IT usage has increased the productivity of the members of your firm
	cost reduction	IS/IT usage has led to cost reduction in your firm
	value-added innovation	IS/IT usage has increased the innovation capabilities of your firm
	reactive ability	IS/IT usage has increased the reactivity of your firm to environmental stimuli
	responsiveness to customer needs	due to IS/IT usage, the expectations of the customers are more understood and satisfied
	collaborations with business partners	due to IS/IT usage, the relationships of your firm with partners (suppliers) have significantly shifted from rivalry to cooperation

Table 2. **Variable Characteristics**

Variable	Reliability*
partnership strategy choice	.7970
alliance strategy choice	.8276
strategic role perceptions	.8241
systematic competencies	.8322
architecture choice	.8162
work process choice	.8160
productivity	.8277
cost reduction	.8236
value-added innovation	.7985
reactive ability	.8348
responsiveness to customer needs	.8243
collaborations with business partners	.8419

* Reliability measure is Cronbach's Alpha

mation technology/systems, especially CIOs, tend not to respond to questionnaires (Hind 2001). Chetty (1996) who conducted similar quantitative research on small- and medium-scale enterprises in New Zealand finds similar resistance.

Descriptive Statistics

The majority of respondents (85.71 percent of the total) are men. The remaining 14.29 percent are women. Most respondents (62.86 percent) hold an undergraduate degree. The second largest percentage (31.43 percent) hold master's degrees, fol-

lowed by the diploma holders (5.71 percent).

The largest percentage of the respondents (71.43%), come from national banks, while 8.57 percent are from international banks. Regional banks, retail banks, and Bank Perkreditan Rakyat (BPR) comprise 2.86 percent of all respondents. The remaining, 11.43 percent are from other categories.³ The survey inquired into respondents' spending in IT investment, their perception of strategic alignment, and the dominant aspects of strategic alignment (refer to Table 3).

³ These categorizations are based on banking classification formed by Bank Indonesia (2005)

Table 3. **Descriptive Data**

<i>Portion of IT expenditures to company's total income:</i>	
less than 5%	8.57%
5%-10%	25.71%
10%-15%	22.86%
15%-20%	17.14%
more than 20%	25.71%
<i>Respondents' perception on strategic alignment:</i>	
company obligation to fulfill customer needs	44.90%
activity and strategy to sustain the company	16.33%
a way to improve the company image	12.24%
a mean to attain competitive advantage	20.41%
others	6.12%
<i>Dominant business aspects in strategic alignment:</i>	
standards and procedures	31.71%
information management	21.95%
IT services management	19.51%
stakeholder management	14.63%
sourcing methodology	4.88%
program management	2.44%
others	4.88%
<i>Dominant information technology/systems' aspects in strategic alignment:</i>	
IT infrastructures management	14.93%
internet utilization	1.49%
intranet utilization	8.96%
integrated information systems	23.88%
data warehousing	13.43%
information modeling	2.99%
analysis and reports instruments	2.99%
e-mail utilization	7.46%
standard service definitions	8.96%
service level agreements (SLAs)	13.43%
Others	1.49%

Structural Equation Model Evaluation

This research model has been examined by structural equation modeling, using AMOS 6.0. The constructs of business strategy, IS/IT strategy, and organizational performance are considered non-observed or latent variables, measured by specific observed variables.

The model proposed in the structural equation is estimated to acquire the goodness-of-fit value. An estimation on the model is summarized in Table 4.

Table 5 shows that all fit criteria have marginal estimation results. A criterion relatively close to the cutoff value is GFI, which is 0.88. The AGFI's

estimation result is 0.81 and that of TLI is 0.74, while the recommended value is more than or equal to 0.90. In the meantime, the RMSEA criterion is 0.10, whereas the recommended value is equal to or less than 0.08.

The constructs' causal relationship tests are shown by regression weight value in the critical ratio (*c.r.*) column, which are identical with testing results, t-count, using statistical tools. The conclusion is summated by comparing *c.r.* value with its critical value (± 1.96) on five-percent significance rate.

H_{1A} states that the level of business strategy has a direct influence on strategic alignment. H_{1B} affirms that the level of information systems/technology strategy also has a direct influ-

Table 4. Structural Equation Model Evaluation

Criterion	Cut-off Value	Estimation Result	Evaluation
Chi-square (χ^2)	-120.535	-	
Significant probability	≥ 0.05	.000	Marginal
RMSEA	≤ 0.08	.105	Marginal
GFI	≥ 0.090	.879	Marginal
AGFI	≥ 0.90	.809	Marginal
TLI	≥ 0.90	.744	Marginal

Table 5. Regression Weight Calculation Results

		Estimate	S.E.	c.r.	P
H _{1A}	SA < BS	0.105	2.142	2.140	0.009
H _{1B}	SA < IS	0.745	2.055	2.015	0.014
H ₂	OP < SA	0.232	1.647	1.985	0.007

ence on strategic alignment. Meanwhile, H_2 pronounces that strategic alignment has a direct influence on organizational performance. Table 3 shows that the *c.r.* values of all hypotheses are above their critical values with a significance level of 0.05. The *c.r.* values are significant, hence all proposed hypotheses are accepted.

Discussion

We find that the majority of respondents perceive strategic alignment as a company's obligation to meet customer needs. Referring to the stages mentioned by Chan and Huff (1993), this research points out that strategic alignment in the banking sector in Indonesia is still in the awareness stage, in which ICT professionals become aware of the need for a more focused information technology/systems, one which is closely related to customer satisfaction.

The statistics also indicate that on the one hand, the business aspect dominating strategic alignment is standards and procedures. On the other hand, technology/systems which dominate strategic alignment are integrated information systems. Using the contingency approach (Venkatraman 1989), strategic alignment in Indonesian banking industry seems to be as fit as gestalts, meaning that "*fit*" exists between internal congruent from a num-

ber of contingencies and performance criteria.⁴

Weill and Broadbent (1998) reveal that information technology/systems have acquired the largest portion in capital expenditures to achieve the company's business goals. Statistics show that information technology/systems expenditures of most of the respondents (25.71 percent) have reached more than 20 percent of the total income. The evident role of strategic alignment in organizational performance points out that large investment in information technology/systems in the banking sector is neither useless nor insignificant.

This study also finds that banks will attain a higher level of performance if top management is committed to the strategic use of information systems/technology, and recognizes it as a support for building distinctive advantage. Banks are also likely to achieve a higher level of performance when the cooperative relationships with their strategic partners are supported by electronic linkages built upon either information systems/technology tools or architecture networks, and when the work processes intra- and inter-firms group projects are substantiated by information systems/technology.

Strategic alignment also proves to be an interesting issue that deserves further exploration, considering its

⁴ For more detailed discussion on contingency approach, refer to Venkatraman (1989).

broad range and potential advantages. In the banking sector, strategic alignment is apparently feasible in the financial services industry,⁵ manufacturing process (combined with balanced scorecard),⁶ procurement domain,⁷ and higher education.⁸ Grant (2003), for instance, conducted research on the implementation of strategic alignment and enterprise systems. Bleistein et al. (2006) also studied strategic alignment through goal modeling and the problem diagram approach.

However, like every other piece of research, this research has several limitations which can affect the findings.

First and foremost, more reliable measures of the strategic alignment's impacts on organizational performance need to be improved since the subjectivity and indirect measurement do not provide the same strength as the direct objective measure does. More efforts are required to advance the theoretical development and enhance it through empirical validation.

Subsequent research should develop a larger sample such that the

reliability and model-fit value can be strengthened. A site visit is also suggested as it will enable future researchers to obtain more comprehensive information. Site visit to the observed object using qualitative approach is highly recommended (Kefi and Kalika 2005). Future researches can also include contingency factors (such as management style, IT functionality, environment, etc.) and use a qualitative approach (e.g., case study). By means of theory expansion and development, a greater number of and more convenient theoretical and practical contributions are possible.

Conclusions

This research examines the relationship among strategic alignment factors and its influence on organizational performance in the banking sector. The research is based on Henderson and Venkatraman's (1993) strategic alignment model, on Van de Ven and Drazin's (1985), and on Venkatraman's (1989) *co-variation perspective model*.

This study elaborates on previous research on strategic alignment and

⁵ Teubner, R. A. & Mocker, M. 2005. *Strategic Information Planning – Insight from an Action Research Project in the Financial Services Industry*. Working paper No. 3, European Research Center for Information Systems, Eds. Becker, J. et al., April 2005.

⁶ Decoene, V. & Bruggeman, W. 2003. *Strategic Alignment of Manufacturing Processes in a Balanced Scorecard-based Compensation Plan: A Theory Illustration Case*. Working paper at Facultiet Economie en Bedrijfskunde, Gent, Belgium, October 2003.

⁷ Versendaal, J., Beukers, M. & Batenburg, R. 2005. *Business Alignment in the Procurement Domain*. Paper submitted to and discussed in Workshop Inkoop Onderzoek Nederland (WION), Lunteren, Netherlands, January 18-19, 2005.

⁸ Pirani, J. A. & Salaway, G. 2004. *Information Technology Alignment in Higher Education*. Educause Center for Applied Research (ECAR) Key Findings, June 2004.

organizational performance. This research also substantiates the assertion of Kefi and Kalika's (2005) positive correlation between the two subjects. This research is also a response to Sabherwal and Chan's (2001) challenge, revealing that studies on different objects and time are still much needed.

On the basis of this research, we can deduce that information technology/systems decisions should be responded to carefully and wisely, and with consideration of its unique characteristics (Strassman 1990), such as:

- ◆ intangibly natural benefit,
- ◆ long-term realization of the benefits,
- ◆ strategic and competitive advantage is difficult to quantify,
- ◆ the benefits acquired are indirect, cannot be detached from other co-founding factors,
- ◆ available techniques and theories are not always parallel with the understanding and comprehension of the information technology/systems values.

There are several ways approaches to comprehend information technology/systems investments: *TVO* (total value of ownerships),⁹ *BPS* (business process simulation), *ISSUE* (initiation, simulation, substantiation, utilization, estimation),¹⁰ or the use of applica-

tions infrastructure scorecard, and other supporting tools. The tools can prevent problems with information technology/systems innovation. In addition, the scorecard can help managers to foresee the trade-off between efficiency and innovation, thus rendering the information technology/systems portfolio more flexible (Pralhad and Krishnan 2002).

Decisions on information technology/systems should be seen through *hard-look* and *soft-look* perspectives.¹⁰ Although ICT is the *core* of numerous businesses, it is more than just a cost center. Finely managed information technology/systems will be rewarded in the form of competitive advantage; conversely, poorly managed one will cause liability through cost escalation. Accordingly, information technology/systems investments should not be seen as cost focused since the company will lose many of opportunities. Instead, it had better be based on value/*TVO* (Tallon et al. 2001).

On the other side, executives must also be committed to information technology/systems. When the executives have the focus and the commitment, they are likely to acquire bigger pay-offs throughout the existing value chain. As a consequence, strategic alignment will increase the business value of information technology/systems.

⁹ Dempsey, J., Dvorak, R. E., Holen, E., Mark, D. & Meehan, W. F. 1998. A Hard and Soft Look at IT Investments. *The McKinsey Quarterly*, 1, 127-137.

¹⁰ Giaglis, G. M., Mylonopoulos, N. & Doukidis, G. I. 1999. The ISSUE Methodology for Quantifying Benefits from Information Systems. *Logistics Information Management*, 12(1/2), 50-62.

The final, and the most important, point is that executives in the information technology/systems realm should share responsibility with senior execu-

tives in other fields, because strategic alignment has been proven to improve the organizational performance.

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