The Role of Knowledge Management in Organization:
A Survey of Banking and Insurance Companies in Central Java

E. Kusumadmo
E-Mail: kusumadmo@fe.uajy.ac.id
Department of Management, Economic Faculty,
Atma Jaya Yogyakarta University-Indonesia

ABSTRACT

The knowledge management is a major strategic imperative that supports financial organizations in a competitive environment. The importance of knowledge management is reflected in the fact that most of the managers saw their organizations as knowledge-based organizations that recognized the importance of knowledge, knowledge acquisition, knowledge dissemination and responsiveness to knowledge. Although various processes have been linked to knowledge management, it is clear that financial organizations realize that these processes must be supported by organizational culture and ICT usage.

The first objective is to examine the causal relationship between internal organizational variables and knowledge management in the banking and insurance companies. The second objective is to determine the causal relationship between knowledge management and competitive intensity in central Javanese banking and insurance industry. The third objective of this study is to examine the conceptual models of knowledge management by testing the goodness of fit of the models.

This study surveyed the financial industrial environment by choosing the banking and insurance companies in three major cities in Central Java and Jogjakarta Special Province as the research population (total sample, N=201). The research subjects were the branch managers of the banking and insurance companies who were considered to have a sound understanding of knowledge management in their respective companies. Result found that knowledge management process shaped and shared by the organization and derived from behaviors determining practices within the organization.

Keywords

Knowledge Management, Organization Culture, ICT Usage, Business performance

BACKGROUND

In the knowledge-based industries, organizations consider knowledge as their most valuable and the most strategic resource. They believe that by managing their resources and intellectual capacities, they would become and remain competitive (Civi, 2000;

Bollinger et al., 2001). Knowledge-based industries such as information technology, financial services and insurance, biotechnology, and consultancy are getting more and more important in terms of their share in the gross national product; and knowledge management had its roots in these industries (Agrawal, 2001).

Knowledge is the new basis of competition (Drucker, 1993) and only knowledge resources have unlimited potential for growth (Nonaka & Takeuchi 1995; Davenport & Prusak 2000). Organizations that are able to acquire, generate, disseminate and use knowledge better than competitors are likely to gain substantial advantages. Without constant knowledge management, the business performance would be degraded (Choi & Lee, 2002).

RESEARCH QUESTIONS
There are three research questions as follows
1. How do organizational culture and ICT usage exert influence on knowledge management in banking and insurance companies ?
2. How does knowledge management exert influence on business performance in the banking and insurance companies ?
3. Is the model of knowledge management developed and tested empirically supported by appropriate and adequate data ?

RESEARCH OBJECTIVES
Overall, this study was meant to test the hypotheses that knowledge management are influenced by organizational culture and ICT usage, and that knowledge management as a strategic imperative variable exerts influence on business performance in the banking and insurance companies in Central Java. In other words, the knowledge management factor was expected to play some kind of mediating role between organization culture, ICT usage and business performance.

REVIEW OF THE LITERATURE
1. Organizational culture and knowledge management
Managing knowledge is meaningful to the organization (Probst et al., 2000). The key variables are organizational culture and internal technical climate (Moffet et al., 2002). Organizational culture is the most important factor for successful knowledge management (Davenport et al.,1998; Martin, 2000; Von Krogh et al.,2000; De Long & Fahey, 2000; Salleh et al., 2004). Specifically, organizational culture is the major barrier to creating and leveraging knowledge assets (De Long & Fahey, 2000; Skyrme & Amidon's, 1997; Chase's, 1998; McDermott, 1999). Consistent to the objective of this study, Von Krogh (1998) has suggested that indicators in organizational culture promote employees' active knowledge management behaviors (Argyris, 1977; Davenport & Prusak, 1998; Levett & Guenov, 2000).

2. ICT and knowledge management

ICT can be viewed as both a key contributor and an enabler to the field of knowledge management. ICT alone will not result in the creation of a knowledge management (Davenport & Prusak, 1998; Kim & Lee, 2004; Soliman & Spooner, 2000). ICT is necessary but not sufficient for successful knowledge management (Balthazard & Cooke, 2004) and plays a major role in supporting knowledge accumulation and sharing (Jedin et al., 2001).

3. Knowledge Management and Business performance

More specifically, knowledge dissemination and responsiveness to knowledge have been mooted as the two components that would have the most impact on the creation of a sustainable competitive advantage (Day, 1994; Fahey & Prusak, 1998; Grant, 1996; Teece, 1998; Teece, 2001). Knowledge management is closely related to business or organizational performance. Organizational performance as a result of knowledge management is a general construct for assessing the impact of an organizational strategy (Bharadwaj et al., 1993). Not only did KM practices have a direct relationship with intermediate measures of organizational performance but organizational performance also exhibited a significant and direct relationship to financial performance (McKeen, J.D et al., 2006).

RESEARCH FRAMEWORK

Knowledge management has been defined as a process of creating or locating knowledge and its dissemination and usage within and between organizations. The definition shows that knowledge management includes three parts: knowledge acquisition, knowledge dissemination, and knowledge use within and between organizations (Darroch, 2003; Kinney, 1998). Based on literature analysis and explorative studies and some conceptual frameworks developed by previous researchers, some interrelated factors of knowledge management have been identified (Moffet et al., 2002; Gupta and Govindarajan, 2000; Salleh et al., 2004).

1. The Dependent Variable - Business performance

High level of competitive force within an industry may threaten the relevant companies because it may reduce their profit gain. In contrast, a weak force may be viewed as an opportunity because it may allow the company to earn greater profits. In the short run, strong forces act as constrains on a company's activities. In the long run, however, a company, through its choice of strategy, may be able to change the strength of one or more of the forces to the company's advantage (Wheelen & Hunger, 2004). Thus the company may use knowledge management process to produce various advantages to improve its business performance. Although this business performance is essential to success, it isn't sufficient by itself to achieve that success (Mahoney & Pandian, 1992).

Organizational performance is central to the study of business strategy or policies (Bourgeoise & Astley, 1979; Cheng & McKinley, 1983; White & Hamermesh, 1981).

Researchers frequently take the performance of organizations into account when investigating such organizational phenomena as structure, strategy, and planning; however, in the literature, researchers disagree on what creates effective performance of a firm and how to measure performance. Firm performance can be measured according to many different methods. According to Welch (1993), the three most important things to measure in business are customer satisfaction, employee satisfaction, and cash flow. Bart and Baetz (1998) indicated that the relationship of firms' mission statements to performance can be assessed with five measures, four of them financial and one behavioral. Many researchers agree that "hard" measures, such as economic measures, are more reasonable for use in measuring a firm's performance than subjective measures. The advantages of hard measures, such as economic or financial measures of performance, are their usefulness for practitioners (Cheng & McKinley, 1983).

Pearce (1998) stated that overall measures of both financial performance (return on common equity) and marketing performance (image positioning in the competitive marketplace) are used at the firm level, whereas units' asset-use performance measures, such as dollar contribution per square meter of selling space, are used at various operational levels (banks, divisions, regions, departments). In the recent study, business performance was measured with a modified version of an instrument developed by Gupta and Govindarajan (1984) and Wulff, G.W & Suomi, R. (2002). The respondents were asked to indicate on a five-point Likert-type scale, ranging from highly dissatisfied to highly satisfied, the extent to which they were currently satisfied with their own firms' performance on each of the following financial performance criteria: return on investment (ROI), efficiency (cost/income), earnings growth, sales growth, market share, return on assets (ROA), return on equity (ROE), capital adequacy ratio (CAR), loan deposit ratio (LDR) and cash flow, solvency, expense ratio, net investment income, difference between current and book values on, investment activities.

2. The Independent Variable - Organizational Culture
Kotter and Heskett(1992) stated that almost all of books on organizational culture concluded or implied some connection between organizational. In the discussion of organizational culture, Barney (1991) noted that a competitive advantage in the businesses is developed by organizational culture since organizational culture is the most element for achieving business performance (Indriantoro, 2000; Tjandradiredja, 2002; Moeljono, 2003). Levett and Guenov (2000) conclude that organizational culture plays a primary role in the likelihood that employees will be willing to work together and share their knowledge.

3. The Independent Variable – ICT Usage
ICT usage is an essential element of an effective knowledge management process. But ICT alone will never be sufficient for an effective knowledge management process. Because, many of the technology related challenges are not technically oriented, but instead they are related to the non-technical components mostly in the area of

organizational culture. ICT experience and ICT literacy will support knowledge acquisition, knowledge dissemination and responsiveness to knowledge within the organization. Advanced information technologies can be used to systematize, enhance, and expedite large-scale intra- and inter-firm knowledge management (Alavi & Leidner, 2001).

ICT usage has been related to model of competitive advantage (Burn, 1990) and it was proven as positively related to organizational performance (Sohal & Lionel, 1988). The influence of ICT usage on organizational or business performance may be in effect when it has significant role in determining the position of relative costs or relative differentiations (Porter, 1985). It may be made possible since ICT usage contributes to the formation of knowledge management process, in which knowledge management directly affect the improvement of business performance through low-cost or differentiation policy.

4. The Mediating Variable – Knowledge Management

The knowledge management has crucial linkage with human activities as main components in the organizational culture (Grant, 1996; Lang, 2001). Liao et al (2004) concludes that the success of knowledge sharing in organizations, depends not only on technological means, but is also related to behavioral factors. In terms of practical and social knowledge, information technology can only, if at all, assist implicitly in providing information to support the processes and circumstances that enable knowledge management (Kautz & Thaysen, 2001).

Knowledge management is a function of top management in which the organization should concentrate their learning efforts, clarifying business strategy and establishing challenging goals (Nonaka & Takeuchi, 1995; Senge, 1990). Using knowledge management as strategic imperative, which is difficult to imitate and socially complex, the company may produce long-term sustainable competitive advantage (Alavi & Leidner, 2001).

Knowledge management that involves processes of acquiring, disseminating and using knowledge needs the help of organizational culture and ICT usage support where possible in financial services. These processes require the aid of information and communication technology usage and organizational culture because knowledge management involves the identification and analysis of available and required knowledge process, and the subsequent planning and control of actions to develop process to fulfill business performance. Through a combination of supportive organizational culture and ICT usage, a banking or insurance company can bring its knowledge management process to create firm performance to the business.

HYPOTHESES

1. Causality Hypotheses

From the above literature review, the study comes up with a conceptual basis for the connections between organizational culture, ICT usage, knowledge management and business performance. From the interconnections between these constructs, the following

hypotheses of causal relationships within financial industrial environment – particularly banking and insurance – are proposed for this study:

Hypothesis-1: *Organizational culture and ICT usage exert an influence on knowledge management in banking industry.*

Hypothesis-2: *Knowledge management exerts an influence on business performance in banking industry.*

Hypothesis-3: *Organizational culture and ICT usage exert an influence on knowledge management in insurance industry.*

Hypothesis-4: *Knowledge management exerts an influence on business performance in insurance industry.*

Hypothesis-5: *Organizational culture and ICT usage exert an influence on knowledge in banking and insurance industry.*

Hypotheses-6: *Knowledge management exerts an influence on business performance in banking companies and insurance industry.*

6.2. Model Hypotheses

Null Hypothesis : *There is not any significant difference between the covariance matrix of the sample data and the covariance matrix of the estimated population.*

Alternative Hypothesis: *There is a significant difference between the covariance matrix of the sample data and the covariance matrix of the estimated population.*

RESEARCH METHODOLOGY

1. Empirical Research Model

The model applied in this study is developed based on model construction stages and structural equation analysis. Structural equation is based on causal relationship between variables, in which any change occurs in one variable is assumed to result in change in the other. The strength of the causal relationships between variables assumed in this study is determined by theoretical justification supporting the analysis. The relationships between variables in this model are deduced from the theory developed.

The empirical research model is developed on theoretical basis by including constructs of organizational culture, ICT usage, knowledge management behavior and practices, and business performance. The research model is developed to meet the principles of concise theoretical model with strategic perspective and the principle of parsimony. The model describes the linkage between the four constructs: internal organization variables, a major strategic imperative that supports companies in a competitive environment (Kumar et al.1998; Maier & Remus, 2001, Frank, 2000, Squier & Snyman, 2004, Wheelen & Hunger,

2004). The empirical research model was developed based on an assumption that linear causal relationships are there. This study had used Structural Equation Models (SEMs). SEMs describe relationships between variables. They are similar to combining multiple regression and factor analysis. Bacon (1997), introduced SEMs as well as Amos, a software tool distributed by SPSS Inc. Amos stands for "Analysis of Moment Structures." Amos has a unique graphical interface, and was specifically designed to make fitting SEMs easier.

2. Model Dimensionalization

In covariance-based SEM, latent variable is measured through reflexive indicators (dimensions). Such reflexive model assumes that construct or latent variables influence indicators or, in other words, the direction of the causal relationship is from construct to indicators, or manifest. In fact, latent variables may be formed by formative indicators assuming that indicators influence construct (Ghozali, 2006). According to Bollen (1989), construct selection based on reflexive model or formative model depends on the priority of the causal relationship between the indicators and the latent variables. Fornell and Bookstein (1982) further suggest that constructs such as "personality" or "attitude" are usually seen as factors eliciting something observable that the indicator is considered reflexive. On the other hand, if the construct is some combination of explaining indicators (such as population change or marketing mixture) defined by combination of variables, the indicators must be formative. In this study, since the selected constructs and latent variables are related to attitudes or behaviors, the indicators are reflexive ones (Tabel-1).

Construct	Indicators: Reflective Indicator
Organizational culture	This construct is built on two indicators characterizing organizational culture who is humane relationship-oriented and to task- or output-oriented. 1. Sociability is consistent with a high people orientation, high team orientation, and focus on processes rather than outcomes. 2. Solidarity is consistent with high attention to detail and high aggressiveness.
ICT Usage	This construct is built on two indicators characterizing ICT usage which are experience-oriented and grade of literacy-oriented: 1. ICT experience of managers, include the respondents' experience with various packages and systems related tasks. 2. ICT literacy factors, such as in-house computer training, outside computer training and self- taught computer skill of the managers.
Knowledge Management	This construct is built on three indicators characterizing knowledge management: 1. The knowledge acquisition includes of attitudes & opinions, financial developing, changes in market, human capital profile, partnership with int'l and market surveys 2. The knowledge dissemination includes market information, disseminated on-the-job, use of specific techniques, organization uses technology and prefers written communication. 3. Responsiveness to knowledge includes response to customers, well-developed marketing function, response to technology, response to competitors and organization is flexible & opportunistic.
Business performance	This construct is built on nine indicators characterizing organizational business performance which includes rate the degree of satisfaction with firm's performance in each of the following areas compared to the firm's key competitors : Return on investment (ROI); Efficiency; Earnings growth; Sales growth; Market share; Return on assets (ROA); Return on equity (ROE); Capital adequacy ratio (CAR); Loan deposit ratio; Earnings growth.

Table-1 : Construct and Dimensions

3. Data Collection Procedure

This study was done by distributing questionnaire directly to the managers who have thorough understanding about their internal organization and organizational strategies. The survey instrument used was a questionnaire. It contains four sections, for the section of organizational culture we use the scale developed by Goffee and Jones (1998). In order to assess the level of ICT usage we decide to use the survey instrument developed by Seyal et al. (2000). For the knowledge management section, we decide to use the survey questionnaire developed by Jenny Darroch (Darroch, 2003). For the business performance section, the scale of Gupta and Govindarajan (1984) was used. Data collection was done between October 2005 to end of March 2006. Total number of questionnaires distributed in three cities - Semarang, Surakarta, and Yogyakarta - was 345. The questionnaires were distributed according to the company list provided in the Standard Trade and Industry Directory of Indonesia (STDI) XX1 Edition (2004).

4. Measurement of the variables

At the beginning of the study, the validity of the instruments had needed to be tested. Validity refers to the degree of accurateness of a measurement in carrying out its measuring function. The validity tested were convergent validity and discriminant validity. Convergent validity was indicated by scores of questionnaire items measuring the same concept that have correlation index greater than 0.4 (Hair, et al., 1998). Reliability testing was done to measure the reliability or consistency of research instrument. Reliability testing was measured by *the Cronbach's alpha* coefficient. An instrument is considered reliable when the *alpha* is greater than 0.7 (Sekaran, 2003).

RESEARCH ANALYSIS AND RESULT

1. Measurement Model

Weighted factor score that resulted from AMOS' confirmatory factor analysis, therefore it produces indicator composite measure of latent construct. Composite reliability of each latent construct (a) is meant to measure internal consistency of latent construct that indicates common latent (unobserved) construct. High reliability measure has impact on the level of confidence on an individual indicator consistency in measuring the same measure. Since the outcome of the above calculation of construct reliability of organizational culture was 0.94 (greater than 0.70), the data analyses used in this study came up with results that might be interpreted quite reliable. The same result was gained for the construct reliability of ICT usage (0.77), knowledge management (0.96), and business performance (0.82); they may all be interpreted reliable.

2. Results of Structural Analysis

The analyzed model was a recursive one, which meant that there was no reciprocal regression between latent variables or constructs (Ghozali, 2004). Confirmatory factor analysis was carried out to test the measurement model developed for each latent variables, both exogenous and endogenous, from which some revisions were done in order to have more appropriate model. Thus, not all of the observed variables passed the confirmatory testing and only those passing the confirmatory testing that were used in the full structural model analysis. The followings were the results of data analyses of samples' (banking and insurance) structural model testing for standardized estimates in the form of path diagram (see Figure-1).
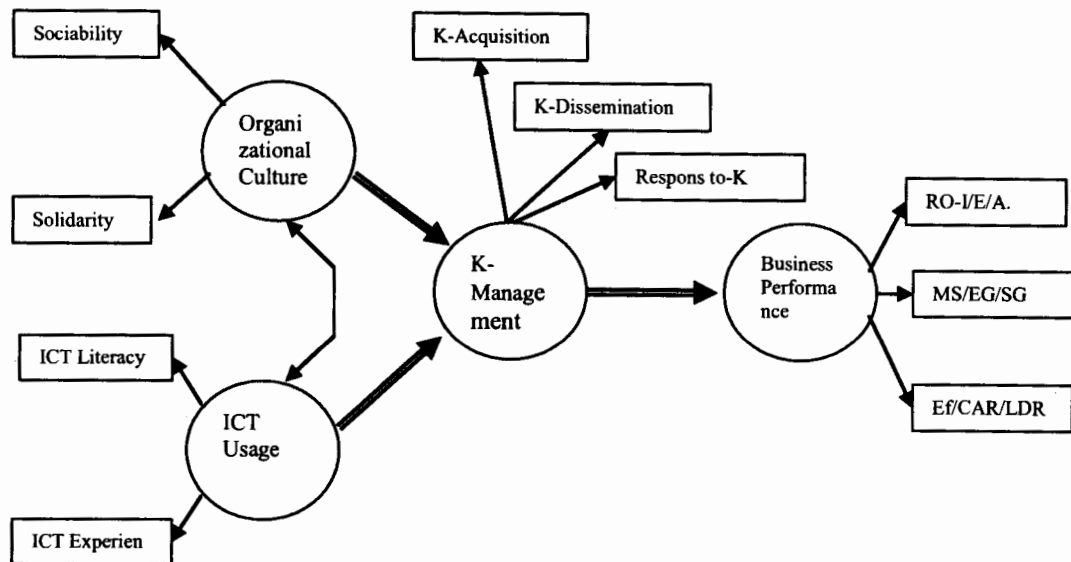
Regression (Banking & Insurance)

Chi-squares=48.542

Df=31

Prob=0.023

GFI=0.955

AGFI=0.921

TLI=0.972

CFI=0.981

RMSEA=0.053

Figure-1. Structural Model Testing for Banking and Insurance - Standardized Estimates

Testing results of the three samples suggested that the models fit the data used in the testing, as shown in the various indices resulting from research model fit (see Table-2).

Indices	Recommended Value (Hair et al. 1998)	Research Model Banking& Insurance	Research Model Banking	Research Model Insurance
CMIN/DF	< 5.0	1.566	1.425	1.232
Probabilit	≥ 0.05	0.023*	0.059	0.175
GFI	≥ 0.90	0.955	0.932	0.923
AGFI	≥ 0.90	0.921	0.879*	0.863*
TLI	≥ 0.90	0.972	0.964	0.974
CFI	≥ 0.90	0.981	0.975	0.982
RMSEA	≤ 0.08	0.053	0.060	0.054

Table-2. Research Model Fit

Results obtained from the structural equation modeling analysis suggested that the research model exhibited a quite satisfactory overall fit. Goodness of fit index (GFI) and comparative fit index (CFI) values were exceeding recommended level 0.9, and so were the values of adjusted goodness of fit index (AGFI), the Tucker and Lewis Index (TLI), root mean square residual (RMSEA), normed chi-square (CMIN/df) are recommended.

Causality Hypotheses Testing Results

Using t-test significance testing results - referred as critical ratios in the SEM-AMOS analysis - that is the estimated values of regression coefficients compared to the standard error of estimate, mostly the causal relationships tested showed appropriate critical ratios (greater than 1.96), meaning that the hypotheses tested were confirmed. The analysis yielded results that strongly supported all of the six hypotheses as illustrated in the causality Maximum Likelihood (see Table 3, 4 and 5).

Hypothesis-1

Hypothesis 1 stated that "Organizational culture and ICT usage exert an influence on knowledge management in banking companies"; the higher the organizational culture and ICT usage, the higher the knowledge management in banking companies. Table-3, through examination on critical ratio (C.R) value, which is identical to t-test in the analysis of regression, shows that all coefficients of regression (0.470; 0.288) were significantly unequal to zero. Furthermore, C.R. of 3.562 and 3.134, both were greater than 1.96, were found. Thus, the null hypothesis stating that the regression weight would be equal to zero was rejected to accept the alternative hypothesis stating that organizational culture

and ICT usage would be causally related to knowledge management in banking companies.

Relation	Estimate	Standardized Estimates	S.E	C.R	Label
KM ← Org Culture	0.352	0.470	0.099	3.562	Par-5
KM ← ICT Usage	0.150	0.288	0.048	3.134	Par-6
BF ← KM	0.454	0.550	0.147	3.693	Par-10

Table-3. Maximum Likelihood Estimates (Banking)

Hypothesis-2

Hypothesis 2 stated that "Knowledge management exerts an influence on business performance in banking companies"; the higher the knowledge management the higher the business performance in banking companies. Table-3, through examination of critical ratio (C.R) value, shows that the coefficient of regression (0.550) was significantly unequal to zero. Besides, a C.R. of 3.693, which was greater than 1.96, was found. Thus, the null hypothesis stating that the regression weight would be equal to zero was be rejected to accept the alternative hypothesis saying that knowledge management process would be causally related to business performance in banking companies.

Hypothesis-3

Hypothesis 3 stated that "Organizational culture and ICT usage exert an influence on knowledge management in insurance companies"; the higher the organizational culture and ICT usage, the higher the higher the knowledge management in insurance companies.

Relation	Estimate	Standardized Estimates	S.E	C.R	Label
KM ← Org Culture	0,199	0,279	0,131	1,513	Par-5
KM ← ICT Usage	0,200	0,408	0,060	3,359	Par-6
BF ← KM	0,409	0,572	0,190	3,209	Par-10

Table-4. Maximum Likelihood Estimates (Insurance)

Table-4, through examination of critical ratio (C.R) value, shows that all coefficients of regression (0.279; 0.408) were unequal to zero. However, a C.R. of 1.513, which was smaller than 1.96, was found for the relationship between organizational culture and knowledge management. A C.R. of 3.359, which was greater than 1.96, was found for the relationship between ICT usage and knowledge management. Thus, it might be concluded that the causal relationship between organizational culture and knowledge management was not significant, but ICT usage and knowledge management were significantly reacted to each other causally.

Hypothesis-4

Hypothesis 4 stated that "Knowledge management exerts an influence on business performance in insurance companies"; the higher the knowledge management process the higher the business performance in insurance companies.

Table-4, through examination of critical ratio (C.R) value, shows that the coefficient of regression (0.572) was significantly unequal to zero. Besides, a C.R. of 3.209, which was greater than 1.96, was found. Thus, the null hypothesis stating that the regression weight would be equal to zero was rejected to accept the alternative hypothesis stating that there would be causal relationship between knowledge management process and business performance in insurance companies.

Hypothesis-5

Hypothesis 5 stated that "Organizational culture and ICT usage exert an influence on knowledge management in banking and insurance companies"; the higher the organizational culture and ICT usage, the higher the knowledge management in banking and insurance companies.

Relation	Estimate	Standardized Estimates	S.E	C.R	Label
KM ← Org Culture	0,279	0,381	0,131	3,593	Par-5
KM ← ICT Usage	0,168	0,335	0,037	4,473	Par-6
BF ← KM	0,495	0,593	0,118	5,032	Par-10

Table-5. Maximum Likelihood Estimates (Banking and Insurance)

Table-5, through examination on critical ratio (C.R) value, which is identical to t-test in the analysis of regression, shows that all coefficients of regression (0.381; 0.335) were significantly unequal to zero. Besides, C.R. of 3.593 and 4.473, both were greater than 1.96, were found. Thus, the null hypothesis stating that the regression weight would be equal to zero was rejected to accept the alternative hypothesis stating that there would be causal relationship between organizational culture and ICT usage with knowledge management in banking and companies.

Hypothesis-6

Hypothesis 5 stated that "Knowledge management process exerts an influence on business performance in banking and insurance companies"; the higher the knowledge management process, the higher the business performance in banking and insurance companies. Table-5, through examination on critical ratio (C.R), shows that the coefficient of regression (0.593) was significantly unequal to zero. Besides, a C.R. of 5.032, which was greater than 1.96, was found. Thus, the null hypothesis stating that the regression weight would be equal to zero may be rejected to accept the alternative hypothesis

stating that the knowledge management process would be causally related to business performance in banking and insurance companies.

FINDINGS

General Findings

If knowledge management was seen as a systematic approach (Bergeron, 2003) and a management function (Darroch & McNaughton, 2000), this study demonstrated that knowledge management activities was part of a system that had some linkage with other variables and functions as strengthener for the achievement of competitiveness through business performance and therefore provide long term benefits to the organization. The first proposed hypothesis of model testing stated that the between-variables relationships were structured according to a system-approach framework. This study also suggested that knowledge management was influenced by internal strategic variables: organizational culture and ICT usage that in turn exerted influence on the increase of business performance within banking and insurance companies. The model analyzed was a recursive one (with no reciprocal regressions between latent variables) with sample size of 201. The low correlation between organizational culture and ICT usage (0.13) indicated that both of them were independent to each other and therefore each of them was an independent factor built on their own dimensions.

The chi-square score was 48.542 with df = 31 and probability=0.023. This result indicated that the null hypothesis (model hypothesis) stating that there is no significant difference between the model and the acceptable empirical data was confirmed. This means the model was fit. Furthermore, the null hypothesis stating that there is no significant difference between sample covariance matrices and population covariance matrices could not be rejected. Confirming the null hypotheses, it was concluded that there was no significant difference between sample covariance matrices and estimated population covariance matrices and therefore the model was confirmed.

All seven hypotheses in the basic hypothesized model (Figure-1) were strongly supported. Moreover, the hypotheses testing also found that organizational culture exerted slightly higher influence (0.381) on knowledge management than ICT usage (0.335) in all companies studied. This suggested that this study was consistent with other studies in which organizational culture had been identified as the most important factor for successful knowledge management (Davenport et al.,1998; Martin 2000; Von Krogh et al.,2000; De Long & Fahey, 2000; Salleh et al., 2004) and IT application or utilization was also a significant variable affecting knowledge management (Kim & Lee, 2004).

Specific Findings

Although in general internal strategic variables exerted influence on knowledge management, it turned out that the regression coefficients of the influence in banking companies alone, in insurance companies alone, and in both banking and insurance companies (total sample) were different. The influence of organizational culture on knowledge management in banking companies was the highest (0.47) compared to what applied to insurance companies (0.28) or total sample (0.38). While the influence of ICT usage on knowledge management in insurance companies was the highest (0.41) compared to what applies to banking companies (0.29) and total sample (0.33).

Probably, the difference of influence of organizational culture and ICT usage on knowledge management in banking and insurance company might be linked to Wulff and Suomi's (2002) suggestion, that banks mostly operate on standard transactions that can be computerized. In insurance companies, human assessment of risks and losses has a key function. The results of this study could be contradictory to this suggestion.

The influence of knowledge management on business performance in banking companies, insurance companies, and total sample showed relatively the same regression coefficients (0.59; 0.55; 0.57). Thus, it might be concluded that the influence of knowledge management on business performance in each sample was relatively the same. Referring to Squier and Snyman's (2004) opinion suggesting that knowledge management is a major strategic imperative that supports financial organizations in a competitive environment, this study found it to be in line findings.

CONCLUSION AND IMPLICATIONS

This finding was in accordance with what have been found by Burnstein et al., 2002; Ali et al., 2004; Goffee and Jones, 1996; Sackmann, 1991; Deal & Kennedy, 1982; Hofstede, 1991; Kotter & Heskett, 1992; Morgan, 1986; Schein, 1985; Trice & Beyer, 1993; and De Long, 2000. It may be concluded then that knowledge management process revealed in this study was an output shaped and shared by the organization and derived from behaviors determining practices within the organization.

This study's results can be used for strategic analysis purposes according to resource-based view (Grant, 1991). Organization culture and ICT usage may be identified and grouped as firm's resources by considering the strengths and weaknesses. The rent-generating (profit) potential of these resources should be appraised, the strategy should be selected, and resource gaps should be identified and invested in upgrading weaknesses (Wheelen & Hunger, 2004).

Knowledge is value-added behavior and activity (Pfeffer & Sutton, 2000; Skyrme, 2000; Skyrme, 2001) comprising tacit/implicit knowledge (within the individual's head) and

explicit knowledge (which is encoded and expressed as information in database, documents, etc.). Therefore, knowledge management process is dynamic and improvable in order to yield added-values to deal with competitions. To enhance business performance, banking and insurance companies may undertake various efforts such as strengthening organizational culture and using ICT to make knowledge management process effective, which, in turn, enable them to be distinct compared to other companies. Banking and insurance companies may use this study's findings in formulating their business strategy.

LIMITATIONS OF THE STUDY

This study was always the possibility that the validity demonstrated will hold true only for this particular population due to unknown factors (Campbell & Stanley, 1966). The findings of the study were also limited to the reliability and validity of the survey and the accuracy of respondents' self perceptions, biases and memory (Kerlinger, 1986). This study was dependent upon the instruments which could measure the characteristics that were directly related to personality and the work place. Specifically, the results assume that the questionnaires was an adequate measure of internal strategic variables, knowledge management and business performance within the organization. It was further assumed that the participants understood the directions and content of the various survey forms and responded honestly.

APPLICATION OF THE RESULTS AND FURTHER RESEARCH

A large number of companies are currently experiencing difficulties to maintain their general picture of data, information, and internal knowledge (Gupta et al., 2004). This lack of transparency results in inefficiencies, uninformed decisions, and duplications. Therefore, an effective knowledge management must be supported by some transparency in order to help the individual employees in deciding what they need.

The tested model can be used for strategic analysis of financial service companies, particularly banking and insurance companies. The tested model may be replicated with additional constructs and more samples from other industrial sectors. Research model modification may be developed by completing it with additional constructs and indicators based on resource-based view of strategic theory or other theories with an emphasis on knowledge management.

This study may be deepened by a follow-up study on *the process of knowledge creation to organizations* based on resource-based review theory and socio-cultural theory. Such study may be extended to competitive context among national companies in order to improve knowledge management for the sake of sustainable competitive advantages and enhancement of Indonesian companies.

REFERENCES

Alavi, M. & Leidner, D. (2001). Knowledge management and knowledge management systems: conceptual foundations and research issues. *MIS Quarterly*, 25 (1), 17-36

Ali, J., Guan, T. H., & Idris, F. (2004). *A Study Knowledge Conversion Practices in Selected Firms*, 8th International Conference on Global Business and Economic Development, Guadalajara, Mexico. 10th July.

Argyris, C. (1977). Double Loop Learning in organizations, *Harvard Business Review*, 55, 115-25.

Bacon, L.D. (1997). *Using Amos for Structural Equation Modeling in Market Research*, Newbury Park, CA: Sage Lynd Bacon & Associates, Ltd.

Balthazard, P A & Cooke, R A. (2004). *Organizational Culture and Knowledge Management Success: Assessing The Behavior-Performance Continuum*, Proceedings of the 37th Hawai International Conference on System Sciences.

Barney, J. B. (1991). Firm Resources and Sustained Competitive Advantage,. *Journal of Management*(17), 99-120.

Bart, C., & Baetz, M. (1998). The relationship between mission statements and firm performance: An exploratory study. *Journal of Management Studies*, 35, 836-853.

Bergeron, Bryan (2003). *Essentials of knowledge management*, New Jersey: John Willey & Sons,Inc.

Bharadwaj, S.G., Varadarajan,P.R., & Fahy, J. (1993). "Sustainable Competitive Advantage in Service Industries: A Conceptual Model and Research Propositions", *Journal of Marketing*, 57 (October), 83 – 100.

Bollen, K. A. (1989). *Structural equations with latent variables*. New York: John Wiley and Sons.

Bollinger, S.A. & Smith, R.D. (2001). Managing Organizational Knowledge as A Strategic Assets. *Journal of Knowledge Management-Kempston*. 5 (1), 1-2.

Bourgeois, L., & Astley, W. (1979). A strategic model of organizational conduct and performance. *International Studies of Management and Organization*, 9(3), 40-66.

Burn, J. M., (1990) "The Strategic Use of IT in Hong Kong Organizations: An Analysis of Applications in Small to Medium Sized Organizations", *Proceedings of International Conference on IT*.

Burstein, F. Zyngier, S., & Rateb, Z. (2002). *Knowledge Management in the Financial Services Sector: Understandings and Trends in Australia*, Proceedings of the 3rd European Conference on Knowledge Management (ECKM2002), 24-25 September 2002, Trinity College Dublin, Ireland, MCIL, 113-125.

Chase, R.L. (1998) *Knowledge Navigators. Information Outlook*, 2(9). 34-39.

Cheng, J., & McKinley, W. (1983). Toward an integration of organization research and practice: A contingency study of bureaucratic control and performance in scientific settings. *Administrative Science Quarterly*, 28, 85-100.

Choi, B & H. Lee (2002). "Knowledge Management Strategy and Its Link to Knowledge Creation Process." *Experts Systems With Applications*, 23(3):173-187.

Civi, E. (2000). "Knowledge Management As a Competitive Asset: A Review." Marketing Intelligence & Planning 18(4): 166-174.

Darroch, J. (2001). "Developing an innovation measure that includes both incremental and radical innovations", Department of Marketing, University of Otago, Dunedin.

Darroch, J. & McNaughton, R. (2000). *Knowledge and knowledge management practices.* Dunedin: Marketing Performance Centre, University of Otago. Press.

Darroch, J (2003). *Developing a measure of knowledge management behaviors and practices,* Journal of Knowledge Management, 7 (5), 41-54.

Davenport, T., & Klahr, P. (1998). Managing Customer Support Knowledge. California Management Review 40(3): 195-208.

Davenport, T., D. Delong, & Beers, M. (1998). Successful Knowledge Management Projects. *Sloan Management Review* 39(Winter): 43-57.

Davenport, T.H. & Prusak, L (2000). *Working Knowledge: How Organizations Manage What They Know.* Boston : Massachusetts: Harvard Business School Press

Day, G. (1994). The capabilities of market driven organisations, *Journal of Marketing,* (58), 37-52.

De Long, D, W. & Fahey, L (2000). *Diagnosing Cultural Barriers to Knowledge Management.* Academy of Management Executive, 14 (4), 113-127.

Drucker, P. (1993). *Post-capitalist Societ y .* Butterworth-Heinemann , New York, NY. Drucker, P. F. (2000). "Management Challenges for the 21st Century". *International Journal of Contemporary Hospitality Management.* 12 (6): 238-247.

Fahey, L. & Prusak, L. (1998), "The eleven deadliest sins of knowledge management", California Management Review, 40 (3), 265-76.

Faulkner, David & Bowman, Cliff (1995). *The Essence of Competitive Strategy.* Prentice Hall International (UK) Ltd.

Fornell, C. & Bookstein, F. (1982). Two Structural Equation Models: LISREL and PLS Aplied to Consumer Exit-Voice Theory. *Journal of Marketing Research.* 19. 440-452

Frank, U (2000). Multi-Perspective Enterprise Models as a Conceptual Foundation for Knowledge Management, Proceedings of the 33rd Hawaii International Conference on System Sciences, IEEE.

Ghozali, I (2006). *Structural Equation Modeling-Metode Alternatif dengan Partial Least Square (PLS),* Semarang : Badan Penerbit Universitas Diponegoro. 7-8.

Ghozali, I. (2004). *Model Persamaan Struktural, Konsep dan Aplikasi dengan Program AMOS Ver.5.0.* Semarang: Badan Penerbit Universitas Diponegoro.

Goffee, R., & Jones, G. (1996). What holds the modern company together? *Harvard Business Review,* 74(6), 133-149.

Goffee, R & Jones, G. (1998). *The Character of a Corporation: How Your Company's Culture Can Make or Break Your Business.* New York: Harper Business.

Grant, R.M. (1991). *Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation.* California Management Review. 33 (3).

Grant, R. (1996). Toward A Knowledge Based Theory of The Firm. *Strategic Management Journal* 17 (Winter): 109-122.

Gupta, A., & Govindarajan, V. (1984). Business unit strategy, managerial characteristics, and business unit effectiveness at strategy implementation. *Academy of Management Journal, 27,* 25-41.

Gupta, A.K. & Govindarajan, V. (2000). Knowledge Management's Social Dimension: Lessons From Nucor Steel. *Sloan Management Review,* 42(1), 71-81.

Hair, J.F., Anderson, R. E., Tatham, R.L & Black, W.C. (1998). *Multivariate Data Analysis* 5 ed. New Jersey: Prentice-Hall.

Indriantoro, N (2000). Hubungan Size dan Fungsi dengan Kultur Organisasional Perusahaan Manufaktur di Indonesia, *Journal of Indonesian Economy and Business,* 15 (4) 447-448.

Jeddin, M.H, Razalli, M.R, & Abdullah, N.A.C. (2001) *Accumulation and Sharing of Knowledge: Challenges to Organizations.* KMICE Universiti Utara Malaysia.

Kautz, K & Thaysen, K. (2001). Knowledge, learning and IT support in a small software company. *Journal Of Knowledge Management Kempston.* 5 (4), 4.

Kerlinger, F. N. (1986). *Foundations of Behavioral Research,* 3rd ed, New York: Holt, Rinehart and Winston.

Kim, S. & Lee, H. (2004) Organizational Factors Affecting Knowledge Sharing Capabilities in E-Government: Empirical Study, *Public Performance And Management Review,* 26(4).

Kinney, T. (1998). Knowledge management, intellectual capital and adult learning. *Adult Learning,* 10 (2), 2-5.

Kotter, J. P., & Heskett, J. L. (1992). *Corporate culture and performance.* New York: The Free Press.

Kumar, K., Subramanian R. & Yauger, C. (1998). Examining the Market-Orientation- Performance relationship: A context – specific study, *Journal of Management,* 24 (2), 201-233.

Lang, J. C. (2001). "Managerial concerns in knowledge management", *Journal of Knowledge Management,* 5 (1), 43-57.

Levett, G.P & Guenov, M.D. (2000). A Methodology for Knowledge Management Implementation. *Journal of Knowledge Management,* 4 (3) 262.

Liao, S., Chang, J., Cheng, S., & Kuo, C. (2004). Employee relationship and knowledge sharing : a case study of a Taiwanese finance and securities firm. *Knowledge Management Research & Practice,* 2, 24–34.

Lusch, R.F. & Laczniak, G.R. (1987). The Evolving Marketing Concept, Business performance and Organizational Performance, *JAMS,* 15 (Fall), 1-11.

Mahoney, J.T. & Pandian, J.R. (1992). "The Resource-Base View Within The Conversation of Strategic Management," *Strategic Management Journal,* 363-380.

Maier, R. & Remus, U. (2001). *Towards a Framework for Knowledge Management Strategies: Process Orientation as Strategic Starting Point* Proceedings of the 34th Hawaii International Conference on System Sciences – IEEE.

Martin, B. (2000). Knowledge Management within the Context on Management: An Evolving Relationship. *Singapore Management Review,* 22(2), 17-37.

McDermott, R. A. (1999). Why Information Technology Inspired But Cannot Deliver Knowledge Management. *California Management Review* 41(4): 108.

McKeen, J.D., Zack, M.H., & Singh, Satyendra. (2006) *Knowledge Management and Organizational Performance: An Exploratory Survey,* Proceedings of the 39th Hawaii International Conference on System Sciences - 2006

Moeljono, D (2003). *Budaya Korporat dan Keunggulan Korporasi.* PT Elex Media Komputindo. 130.

Moffett, S., McAdam, R., & Parkinson, S. (2002). Developing a Model for Technology and Cultural Factors in Knowledge Management: Factor Analysis. *Knowledge and Process Management.* 9 (4). Published online in Wiley InterScience.

Nonaka, I. & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese Companies Create The Dynamics of Innovation*, New York: Oxford University Press.

Pearce, M. (1998). The retail performance dynamic. *Ivey Business Quarterly, 62*(4), 62-64.

Pfeffer J., & Sutton R. I. (2000). *The Knowledge-Doing Gap: How Smart Companies Turn Knowledge into Action*, Boston : Harvard Business School Press.

Polanyi, M. (1966/1997). The Tacit Dimension, *in* Prusak, L. (Ed.) '*Knowledge in Organizations*', Newton, MA: Butterworth-Heinemann, 135-146.

Porter, M. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance,* New York: Dryden Press.

Probst, G., Raub, S. & Romhart, K. (2000). *Managing Knowledge : Building Blocks or Success,* Chichester: John Wiley & Sons, Ltd.

Salleh, K., Penafort, F., & Loh, A, M, (2004). *Organizational Stucture and Culture as the Critical Factor in Implementing Knowledge Management Practices in Public Listed Companies: A Malaysian Perspective.* International Conference on Knowledge Management, Universiti Utara Malaysia.

Sekaran, U (2003). *Research Methods fo Business: A Skill-Building Approach.* 4th.ed. Singapore: John Wiley and Sons (Asia) Pte.Ltd.

Senge, P,M. (1990). *The Fifth Discipline: The Art and Practice of The Learning Organization,* Sydney: Random House.

Seyal, A.H., Rahim, M.M., & Rahman, N.A.M. (2000). *An Empirical Investigation of Use of Information Technology among Small and Medium Business Organizations: A Bruneian Scenario,* EJISDC, 2(7), 1-17

Skyrme, D. & Amidon, D. (1997), *Creating the Knowledge-Based Business,* London : Business Intelligence.

Sohal, A.S & Lionel, N.G., (1988). "The Role and Impact of Information Technology in Australian Business", *Journal of Information Technology* 13, 201-211.

Soliman, F. & Spooner, K. (2000). Strategies for Implementing Knowledge Management: Role of Human Resources Management. *Journal Of Knowledge Management Kempston.* 4 (4), 340.

Squier, M.M & Snyman, R. (2004). *Knowledge management in three financial organisations: a case study.* Aslib Proceedings: New Information Perspectives 56 (4), 234-242.

Teece, D. (1998). Capturing Value From Knowledge Assets: The New Economy, Markets For Knowhow And Intangible Assets. *California Management Review,* 40(3): 55-79.

Teece, DJ (2001). *Strategies for Managing Knowledge Assets: The Role of Firm Structure and Industrial Context,* in Managing Industrial Knowledge – Creation, Transfer and Utilization, London: Sage Publication.

Von Krogh, G. (1998). Care In Knowledge Creation. *California Management Review* 40(3): 133-153.

Von Krogh, G., Ichijo, K., & Nonaka, I. (2000). *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation,* New York, NY: Oxford University Press.

Welch, J. (1993). Jack Welch's lessons for success. *Fortune, 127,* 86-94.

Wheelen, T. L. & Hunger, J.D. (2004). *Strategic Management and Business Policy,* Upper Saddle River : Pearson Education, Inc

White, R., & Hamermesh, R. (1981). Toward a model of business unit performance: An integrative approach. *Academy of Management Review, 6,* 213-223.

E. Kusumadmo

Wulff, G.W & Suomi, R. (2002*). Building a Knowledge Sharing Company - Evidence From the Finnish Insurance Industry*, Proceedings of the 36th Hawaii International Conference on System Sciences (HICSS'03),IEEE.