

Enablers to Knowledge Management Implementation in Indonesian Medium-sized Manufacturing Enterprises: A Preliminary Study

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ABSTRACT

The most important challenge for today's and for the next decades organizations is to anticipate the change from an industrial era to a knowledge economy era. In the knowledge economy era, knowledge is considered as the key source of competitive advantage for firms. Managing knowledge is considered essential to the sustainability of any enterprises.

This study aims to explore factors that play as enablers to knowledge management implementation amongst the Indonesian Medium-sized Manufacturing Enterprises. Medium-sized Manufacturing Enterprises are chosen as the subject of study because of several important reasons. First, MEs were the most affected by the crisis than Small Enterprises (SEs) and Large Enterprises (LEs). Second, though MEs contribution to the creation of Indonesian employment is lesser than SEs and LEs, MEs contributed relatively better in GDP growth. Third, MEs' GDP contribution was still dominated by manufacturing industry.

As the subjects of study, two Indonesian Medium-sized Manufacturing Enterprises are selected using purposive sampling, representing the top manufacturing sector contributor (e.g. Food, Garment). Using survey's questionnaire, 30 members of each enterprise are participated, consisted of leaders, managers, and senior staffs.

The study reveals that human capital traits (i.e. information processing ability, previous employee experience, education types, individual cultural background, attitude about life and business), organizational factors (i.e. management leadership and support, organization structure, rewards and incentives, information technology support), and environmental factors (i.e. commitment, climate, learning culture) play an enabling role in knowledge management implementation within the selected Indonesian Medium-sized Manufacturing Enterprises.

Keywords: *enablers, knowledge management, manufacturing*

Introduction

The presence of Indonesian Small and Medium Enterprises (SMEs) are important for several reasons, such as their contributions to the national production, the total units of enterprises, and the creation of employment. The Indonesian Ministry of Cooperation, Micro, Small, and Medium Enterprises (Menekop) clasifies SMEs into nine sectors: Agriculture, Mining, Manufacturing, Electricity-Gas-Clean Air Supply, Construction, Trade-Hotel-Restaurant, Transport & Communication, Finance-Rent-Service, and Other Services. Most of Small Enterprises (SEs) are found in agriculture, including fishery, livestock and estate; whereas, Medium Enterprises (MEs) concentrated in trade, hotel and restaurant, and manufacturing industry.

Tambunan (2006, 2009) reveals that during the crisis period (1997-1998), the growth rate of total SEs' output was minus 19.3%, and after the crisis (1998-2000), their performance was better, though the average growth rate per year was still negative of about 2.5%. On the contrary, total output of MEs as

a percentage of GDP was about 16.3% in 2000, fell from 19.3% in 1997. During the crisis period (1997-1998), their output rose in negative way from nearly Rp 1,300 trillion (1997) to Rp 566 trillion (2000). In other words, MEs were the most affected by the crisis than SEs. Moreover, in today's economy, the highest SEs' GDP contribution comes from the agriculture sector, while MEs' GDP contribution is still dominated by manufacturing industry by 85% (BPS, 2013).

In term of government support to Indonesian SMEs, Tambunan (2009) describes that many government supporting programs for Indonesian SMEs have been put into practices. The programs include: Small Enterprise Development, generally known as the KIK/KMKP subsidized credit program for SMEs; the Small Enterprise Credit (KUK) scheme; the credit program for village units (KUPEDES); the development of small rural development banks (BKD); training programs in human resource development, such as in production techniques, general management, quality management systems (ISO-9000), quality control methods, entrepreneurship, and extension services. The largest amount of fund has been allocated to human resource development training programs (22.9%). However, studies from 2003-2012 have indicated that the quality of human capital still becomes the main problem to Indonesian SMEs (Rudjito & Nazirwan, 2003; Djamhari, 2006; Kuncoro, 2009; Firdianity, 2009; Hartanto, 2012).

Human Capital and Knowledge Management

In the knowledge economy era, knowledge is considered as the key source of competitive advantage for firms, as the main enabler to achieve business performance (Nonaka & Takeuchi, 1995; Schultze & Stabell's, 2004; Bogner & Bansal, 2007; Hislop, 2009). Bogner & Bansal (2007) argue that business performance is determined by organization's level of knowledge-creation, and organization's ability to recycle new knowledge and use it to improve future knowledge-creation activities.

Moreover, in the knowledge economy era, the most difficult challenge is how to integrate knowledge in everyday's organisational tasks and activities, which will become the objective and role of every organization. Therefore connecting knowledge and human capital development programs is considered a key feature of productivity improvement in organisations (Radwan & Pellegrini, 2010). In this context, Acs & Virgill (2010) believe that productivity improvements within a firm is the main effect of knowledge management activities. Hausmann and Rodrick (2003) suggest that knowledge management is important in the product and production innovation process, especially in manufacturing companies. Therefore, managing knowledge in manufacturing organizations is mandatory. However, managing knowledge in any organizations cannot be separated from organizations' human capital, as the actors of any knowledge management implementations (Baron & Armstrong, 2007; Hartanto, 2012).

Purpose of the Study

The application of knowledge management in SME has been relatively low, and SMEs are currently not convinced of the advantages of adopting a KM strategy for business growth, which caused disadvantages to SME when compared to large firms (McAdam & Reid, 2001; Wong & Aspinwall, 2005; Metaxiotis, 2009; Jochem et al, 2011). Therefore, understanding the factors that enabling the knowledge management implementation would be very helpful to the enterprises.

The purpose of this study is to identify which crucial factors play significant roles to knowledge management implementation within two selected Indonesian Medium-sized Manufacturing Enterprises. Thus, the study tries to answer the following question: What human capital traits play as enablers to knowledge management implementation? What organizational factors play as enablers to knowledge management implementation? What environmental factors play as enablers to knowledge management implementation?

Conceptual Framework

Studies of human capital traits in relation to business success have been conducted with many outcomes. However, no comprehensive studies provide sufficient explanation to the relation between human capital traits and knowledge management implementation. There are many individual factors identified as crucial human capital traits to the success of organizational program implementation, such as: the information processing ability (Schultz, 1961, Becker, 1993); previous employee experience (Becker, 1993; Bontis et al, 2000; Yamamura et al., 2005; Kim et al., 2006; Fairlie & Robb, 2007), education types (Becker, 1993; Brooking, 1996; Bontis et al, 2000), individual cultural background (Edvinsson, 1997), and attitude about life and business (Bontis et al, 2000).

In organizational context, several researchers have identified the crucial factor that foster the implementation of knowledge management, such as management leadership and support (Holsapple & Joshi, 2000; Wong & Aspinwall, 2005; Yeh et al, 2006; Migdadi, 2009; Tan, 2011), organization structure (Tan, 2011), rewards and incentives (Davenport et al., 2003; DeTienne et al., 2004), information technology support (Wood, 2005; Wong & Aspinwall, 2005; Yeh et al, 2006; Migdadi, 2009; Tan, 2011).

Moreover, environmental factors should not be taken for granted in the success of knowledge management implementation, such as commitment of people (Makhijani et al, 2009; Cardoso et al, 2012), and climate for performance (Makhijani et al, 2009). Learning culture is also very important to promote effective knowledge management implementation within an organization (Wood, 2005; Wong & Aspinwall, 2005; Yeh et al, 2006; Migdadi, 2009; Tan, 2011; Cardoso et al, 2012).

The conceptual framework for this study is shown in Figure 1. In this framework, 12 independent variables (i.e. information processing ability, previous employee experience, education types, individual cultural background, attitude about life and business, management leadership and support, organization structure, rewards and incentives, information technology support, commitment, climate, learning culture) and one (1) dependent variable (i.e. knowledge management implementation).

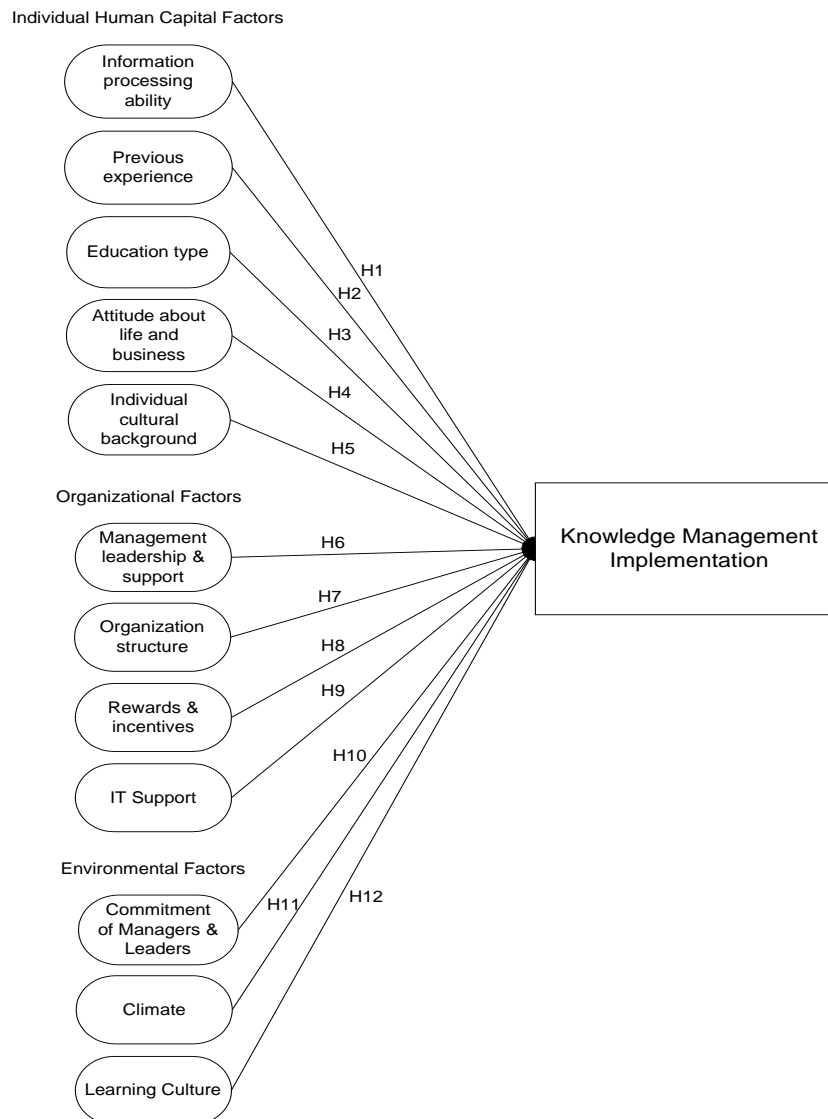


Figure 1. Proposed Conceptual Framework

Research Methodology

This preliminary study comprises of two steps. In the first step, conceptual model is developed based on the literatures. In the second step, a survey to two Indonesian Medium-sized Manufacturing enterprises is conducted.

Population and Samples

Data are collected from 60 samples of two Indonesian Medium-sized Manufacturing Enterprises. The first enterprise is a leader in food manufacturing, located in Cikarang industrial estate, employing 65 full-time employees. The second enterprise is a prominent garment manufacturer, located in Bandung, employing 76 full-time employees. Both are chosen using purposive sampling based on several considerations: First, based on the owners' point of views, both enterprises have been implementing knowledge management for at least five years. Second, both enterprises have been contributing to the Indonesian economics for more than 15 years, and have been acknowledged to be the best in their industries by awards. Third, both enterprises are willing to participate in the study. Thirty samples from each enterprise are selected based on their level of education (high school minimum) and length of employment (three years minimum).

Data Collection

Preliminary data were gathered using first version questionnaire contained of 59 questions to measure 12 factors. Likert scale of 5 was adopted (1=strongly disagree to 5=strongly agree). A pilot test was conducted to measure the validity of survey instrument by involving 15 master's students who have work experience in manufacturing sector for at least five years. To ensure that the items of the instrument are reliable, Cronbach's alpha reliability test were carried out. The Cronbach's alpha value for all items are above the minimum standard of 0.60. Summary of reliability test is in table 1.

Table 1. Reliability of Instrument

| Factors | Number of items | Cronbach's alpha |
|--|-----------------|------------------|
| <i>information processing ability</i> | 4 | 0.735 |
| <i>previous employee experience</i> | 4 | 0.760 |
| <i>education types</i> | 4 | 0.726 |
| <i>individual cultural background</i> | 4 | 0.760 |
| <i>attitude about life and business</i> | 4 | 0.801 |
| <i>management leadership and support</i> | 7 | 0.711 |
| <i>organization structure</i> | 5 | 0.760 |
| <i>rewards and incentives</i> | 4 | 0.860 |
| <i>information technology support</i> | 5 | 0.760 |
| <i>commitment</i> | 5 | 0.700 |
| <i>climate</i> | 6 | 0.785 |
| <i>learning culture</i> | 7 | 0.710 |

Face validity was also conducted by involving six managers currently working in the two enterprises where the study is conducted. Inputs and suggestions are considered to revise the instrument. The revised questionnaire helps to increase the Cronbach's alpha values (Wong & Aspinwall, 2005) and reducing the items into 54.

Table 2. Reliability of Instrument (revised)

| Factors | Number of items (revised) | Final Cronbach's alpha |
|--|---------------------------|------------------------|
| <i>information processing ability</i> | 4 | 0.735 |
| <i>previous employee experience</i> | 4 | 0.760 |
| <i>education types</i> | 4 | 0.726 |
| <i>individual cultural background</i> | 4 | 0.760 |
| <i>attitude about life and business</i> | 4 | 0.801 |
| <i>management leadership and support</i> | 5 | 0.826 |
| <i>organization structure</i> | 5 | 0.760 |
| <i>rewards and incentives</i> | 4 | 0.860 |
| <i>information technology support</i> | 5 | 0.760 |
| <i>commitment</i> | 5 | 0.700 |
| <i>climate</i> | 5 | 0.816 |
| <i>learning culture</i> | 5 | 0.910 |

The revised instrument consists of two (2) sections. Section 1 consists of questions related to samples and organisational demographic characteristics. The composition of samples and demography of samples are shown in table 3 and 4. Section 2 measures the enablers that influence knowledge management implementation within the enterprises.

Table 3. Composition of Samples

| Position | Food Manufacturer | Garment Manufacturer |
|----------------------|-------------------|----------------------|
| Owner(s) | 1 | 2 |
| Managers | 3 | 3 |
| Assistant Managers | 7 | 6 |
| Senior Staffs | 19 | 19 |
| Total Samples | 30 | 30 |

Table 4. Demography of Samples

| | Food Manufacturer | Garment Manufacturer |
|--------------------------|-------------------|----------------------|
| Age | | |
| < 20 | - | - |
| 20 to 30 | 11 | 7 |
| 31 to 40 | 9 | 12 |
| 40 to 50 | 10 | 11 |
| > 50 | - | - |
| Education | | |
| High school | 6 | 8 |
| Diploma | 18 | 14 |
| Bachelor's | 5 | 8 |
| Master's | 1 | - |
| Employment period | | |
| < 3 years | - | - |
| 3 to 5 years | 7 | 5 |
| 5 to 8 years | 15 | 13 |
| > 8 years | 8 | 12 |
| Gender | | |
| Male | 21 | 14 |
| Female | 9 | 16 |

Data Analysis

Normality test on the factors were conducted to understand the nature of data distribution. Kolmogorov-Smirnoff and Shapiro-Wilk can be used to determine the normality of data distribution (Tan, 2011). Table 5 represents the normality test on the crucial factors. The test results that the significant p-values are < 0.05. It shows that the data is not normally distributed.

Table 5. Normality Test

| Factors | Kolmogorov-Smirnoff | | | Shapiro-Wilk | | |
|--|---------------------|----|------|--------------|----|------|
| | Statistic | DF | Sig. | Statistic | DF | Sig. |
| <i>information processing ability</i> | 0.210 | 60 | 0.00 | 0.961 | 60 | 0.01 |
| <i>previous employee experience</i> | 0.195 | 60 | 0.00 | 0.914 | 60 | 0.00 |
| <i>education types</i> | 0.099 | 60 | 0.01 | 0.981 | 60 | 0.02 |
| <i>individual cultural background</i> | 0.216 | 60 | 0.00 | 0.961 | 60 | 0.01 |
| <i>attitude about life and business</i> | 0.186 | 60 | 0.00 | 0.910 | 60 | 0.00 |
| <i>management leadership and support</i> | 0.196 | 60 | 0.00 | 0.918 | 60 | 0.00 |
| <i>organization structure</i> | 0.092 | 60 | 0.01 | 0.973 | 60 | 0.02 |
| <i>rewards and incentives</i> | 0.116 | 60 | 0.00 | 0.960 | 60 | 0.01 |
| <i>information technology support</i> | 0.155 | 60 | 0.00 | 0.921 | 60 | 0.00 |
| <i>commitment</i> | 0.200 | 60 | 0.00 | 0.910 | 60 | 0.00 |
| <i>climate</i> | 0.090 | 60 | 0.01 | 0.968 | 60 | 0.01 |
| <i>learning culture</i> | 0.220 | 60 | 0.00 | 0.900 | 60 | 0.00 |

Since the nature of data distribution is not normal, instead of Pearson correlation, Spearman's Rho correlation is utilized to measure the relationship between the factors (Tan, 2011). The Spearman's Rho test result is shown in table 6.

Table 6. Spearman's Rho correlation test

| Hypotheses | Independent variables | | Values |
|------------|--|------------------------|--------|
| H1 | <i>information processing ability</i> | Spearman's correlation | .546 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H2 | <i>previous employee experience</i> | Spearman's correlation | .460 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H3 | <i>education types</i> | Spearman's correlation | .266 |
| | | Significant (2-tailed) | .002 |
| | | N | 60 |
| H4 | <i>individual cultural background</i> | Spearman's correlation | .216 |
| | | Significant (2-tailed) | .005 |
| | | N | 60 |
| H5 | <i>attitude about life and business</i> | Spearman's correlation | .509 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H6 | <i>management leadership and support</i> | Spearman's correlation | .581 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H7 | <i>organization structure</i> | Spearman's correlation | .404 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H8 | <i>rewards and incentives</i> | Spearman's correlation | .305 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H9 | <i>information technology support</i> | Spearman's correlation | .468 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H10 | <i>commitment</i> | Spearman's correlation | .568 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H11 | <i>climate</i> | Spearman's correlation | .368 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |
| H12 | <i>learning culture</i> | Spearman's correlation | .586 |
| | | Significant (2-tailed) | .000 |
| | | N | 60 |

The above Spearman's test indicated that information processing ability, previous employee experience, education types, individual cultural background, attitude about life and business, management leadership and support, organization structure, rewards and incentives, information technology support, commitment, climate, and learning culture are significant at 0.01. In other words, there is a significant correlation between individual human capital traits (i.e. information processing ability, previous employee experience, education types, individual cultural background, attitude about life and business), organizational factors (i.e. management leadership and support, organization structure, rewards and incentives, information technology support), environmental factors (i.e. commitment, climate, and learning culture) and knowledge management implementation.

Conclusion and Recommendation

This preliminary study aims to identify enabling factors to knowledge management implementation in medium enterprise context. This study has also revealed that knowledge management is no longer the exclusive domain of large enterprises. Smaller scale organizations have placed a significant consideration to the promising value of implementing knowledge management program. However, in smaller scale organizations, leaders and managers should first understand the enabling factors that play a significant role to the success of any knowledge management implementation.

However, implementing knowledge management within any organizations requires certain maturity level the human capital who play as the main actors of knowledge management process (Tjakratmadja & Lantu, 2006). In this case, maturity level of Indonesian medium-sized manufacturing enterprises is

somewhat unknown. It is recommended that maturity assessment should be placed before any knowledge management program is implemented. Therefore, further possible enabling factors can be explored and identified to enrich the literatures.

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