Information Management and Business Review
Vol. 6, No. 3, pp. 128-134, Jun 2014 (ISSN 2220-3796)

Analysis of Quality of Knowledge Transformation Path to Learning Organization at Copper Carving Cluster in Central Java

[*]Widiartanto[1], Wiwiek Harwiki[2]
[1]Diponegoro University Semarang, Indonesia
[2]Dr. Soetomo University Surabaya, Indonesia
[*]fafanabil@gmail.com

Abstract: The purpose of this study was to determine the effect among variables of disciplinary learning organization (personal mastery, mental models, shared vision, thinking systemic, and team learning). The benefit of this research is to develop a model of knowledge transformation path quality as one of the strategies to manage environment change around Copper Craft Cluster. Samples of 90 workers were chosen by Slovin at 10% critical value of 716 populations as workers at the Copper Carving Cluster Tumang Boyolali, Central Java as a chosen research location. The technique sampling was proportional random sampling. The validity and reliability were tested. The data analysis method has been used descriptive analysis and inferential statistics (used path analysis). The benefit of this research was to develop a model of quality of knowledge transformation path as one of the strategies to manage environment's change at the Copper Craft Cluster. The results showed that there were a positive and significant influences among variables as follow: personal mastery discipline on mental models discipline ; personal mastery discipline on shared vision discipline; personal mastery discipline on systemic thinking discipline; mental models discipline on shared vision discipline; mental models discipline on systemic thinking discipline; systemic thinking discipline on shared vision discipline; mental models discipline on team learning discipline; systemic thinking discipline on team learning discipline; and shared vision discipline on team learning discipline.

Keywords: *Personal Mastery Discipline, Mental Models Discipline, Shared Vision Discipline, Systemic Thinking Discipline, Team Learning Discipline*

1. Introduction

Companies often improve performances in maintaining and increasing its competitive advantage. We live in"a period of discontinuity" (Drucker, 1995), a term that forces us to move toward to a fundamental change, in a turbulent and complex business environment. The emergence of new competitors in the global economy require a set of skills that extent balancing of "hard" (technology) and "soft" (interpersonal and communication). According to several management authors, skills include management information, resources, influence humans, and self-management. The starting point, of course, is the basic skills: reading, writing, arithmetic, and, most important is "the ability to learn continuously throughout life". In addition, global workers require flexibility, the ability to solve problems and make decisions, adaptive, creative thinking, self-motivated, and has a reflective capacity. Initially the organization strives to improve the products, services, and innovations through continues improvement and breakthrough strategies. This method resulted in a concept known as Total Quality Management (TQM) and Business Process Re-engineering; however, the organization found that the failure or success of the programs also was determined larger by human factors such as: skills, attitudes and organizational culture. Learning, on the individual level: acquire knowledge, understanding, and skills. At the organizational level: changing perceptions, vision, strategy, and transferring knowledge. At the individual and organizational level: the discovery and renewal - the creation, assessment of new knowledge, and understanding new ideas.

The emergence of a global economic system that is highly dynamic requires us to develop the potential of human resources (HR) in adapting to various changes. It requires the managers of organizations certainly to rethink the mission, goals and strategies of the organization more flexible in an unpredictable and uncertainty circumstances. Company, in order to progress faster and more flexible, especially in full of opportunities in the world, companies should make everyone participated in organization willing to

contribute and develop their ideas. The need for information will be more important for each individual to conducting the work and contributing to the organization. This organization is called organization based on information (Drucker, 1988). On the other hand, the potential human in the resources context means that humans are –essentially- full of energy, able to think and equipped with superior mental ability to act. They are able to be proactive and reactive in addition to having a hidden energy (Kalra, 1997). The measuring of how the people in the organization were able to develop other people's ideas easily and manage information would form the corporate IQ. Surely this condition has been obtained by stimulating learning at the level of individuals or groups (Gates, 1999, in Ribhan, 2001)

Important benefits in rising a learning organization is able to encounter the challenges of change in all aspects of life environment thus accustomed with the change to survive and thrive, to achieve higher performance and to be a winner in competition, and to improve the quality of many innovations. The learning organization can be described as an organization where people improve their capacity continuously to create the desired result, where the using of new and expansive patterns of thinking, there is freedom in determining the ideals and people learn how to learn together continuously. Principles in learning organization used leadership division to maximize their resources and develop leadership capacity among individuals. Leadership development considered that leadership as a coach facilitator and guide has shifted from an expert, director, and controller to become a catalyst, information providers and coordinators. Leadership in learning organization based on collaboration and cooperation approach among co-workers. Individuals and their actions were the foundation of a learning organization. Organization culture including the organization's history, vision and mission, formal or informal policies and procedures were create context for the actions taken by individuals and the impacts of such actions.

Learning together organization would learn earnestly and constantly transforming they to collect manage and engage knowledge for business success. Organization empowered people both inside and outside the organization, learning by doing. The essence of learning organization is the organization's ability to utilize the mental capacity of all organization's member in order to create a process that will accomplish the organization. There were external and internal challenges. The internal challenges consist of 5 business areas encompassed people, products and service, finance, facilities and marketing. External challenge consists of economic environment, technology, politics/laws environment, social-culture environment, and global environment. Likewise the Small and Medium Industries in Indonesia, internal and external challenges almost always arise in their business development. Internal challenges related to human resources became the crucial factors to be solved. Knowledge of human resources as an organization virtual capital as Roos (1996) stated that this capital defined as an unseen capital but gave great value added for stakeholder. According to Brooking and Motta (1996) intellectual capital as unseen capital have human combined factors, processes and customers and giving the company a competitive advantage. In the export-based SME sector which is defined as industries had enough competitiveness thus the products able to fill the international market by themselves or by traders/mediators (RI-PIKM, 2002-2004). The intellectual capital would become the interesting issue, especially on the export-based SME which has characteristics such as sufficient competitiveness, domestic natural resource-based, labor-incentive, and wider market opportunity.

2. Literature Review

Previous several studies as references stated by Argyris & Schon (1978 *in* Tuomi, 1999) that shared mental is a major discipline in the process of transformation of knowledge of individual learning into learning organization, and Argyris (1993 *in* Tuomi, 1999) added that to build a learning organization needs high competency human. Senge (1994) indicated that The fifth discipline learning organization could play a role as developmental *path for acquiring certain skills or competencies to organization capital*. Explicitly, Senge's five disciplines learning concept can be used to measure the quality of the knowledge transformation path from personal mastery discipline towards team learning through the mental models discipline, shared vision and systems thinking. Implicitly, the five discipline learning concept of Senge implied that there was no direct correlation between a knot of personal mastery discipline and with a knot team learning discipline. Nonaka & Takeuchi (1995) strengthened the explanation that the process of transformation into a human tacit knowledge occurred through the process of socialization, in which a shared vision and shared mental models is a primary mechanism. Crossan et al. (1999) considered that process of transformation of human

knowledge into a knowledge team occurred through the integration process, in which shared understanding is the main mechanism. Study of Tjakraatmadja (2002) on Individual Characteristic and Learning Organization founded that to build LO needed the three pillars as follow: (1) individual learning, (2) knowledge transformation path and (3) organizational learning, these pillars were mutually supportive. Sudharatna & Lie (2004) on "Learning Characteristics Contributed to Its Readiness to Change: A Study of The Thai Mobile Phone Service Industry" proved that there were a positive correlation (significance level 0.01) of organizational readiness for change and learning organization characteristics which included culture value, *leadership commitment and empowerment, communication, employee characteristics,* and *performance upgrading*. This finding indicated that organization has strong characteristics of LO meant its organization also has a high level of readiness for change. It was important for an organization to develop into LO to be able to survive in a business environment change.

Senge (1994) asserted learning organization as "whose ideals have attracted the widest attention, sees them as organizations where people "continually expand their capacity to create the results they truly desire, where new and expensive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together". To support all of learning organization components became coherent and integrated needs a three pillars of learning organization: individual learning pillar, knowledge transformation pathways pillar and organizational learning pillar (Tjakraatmadja, 2002). Knowledge transformation pathways serves to integrating, combining and synergizing the individual outcome learning knowledge becomes organizational human capital as a result of organizational learning. Without transformation knowledge pathway, hard work and employees' commitment, it would not produce value-added to the organization significantly (Kofman & Senge, 1993). The five disciplines of the learning organization was built and developed by Senge (1990) are: 1) Personal mastery: is the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively; 2) Shared vision: if any one idea about leadership has inspired organizations for thousands of years, 'it's the capacity to hold a share picture of the future we seek to create'. Such a vision has the power to be uplifting – and to encourage experimentation and innovation; 3) Mental models: These are 'deeply ingrained assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action', it also includes the ability to carry on 'learningful' conversations that balance inquiry and advocacy, where people expose their own thinking effectively and make that thinking open to the influence of others; 4) Systemic thinking: The systems viewpoint is generally oriented toward the long-term view.

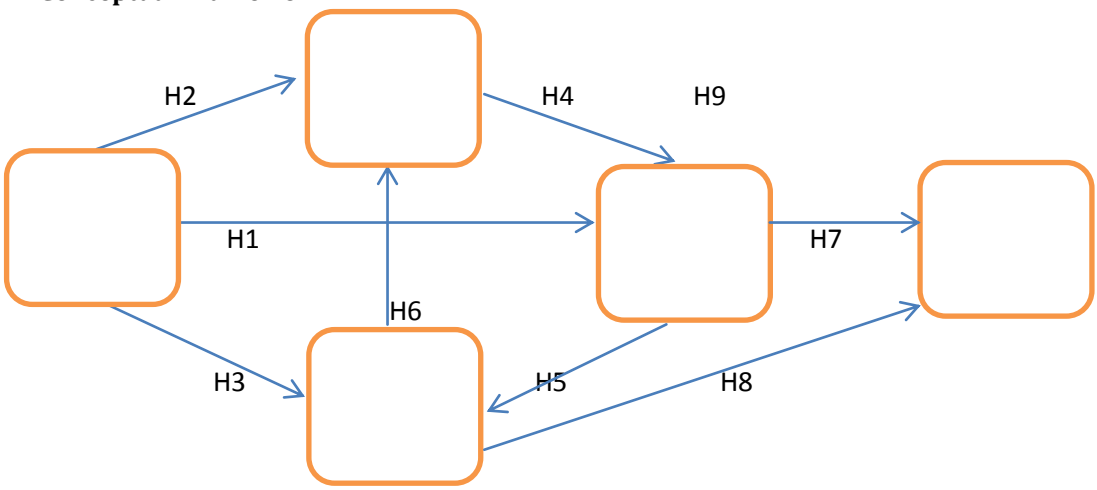
That's why delays and feedback loops are so important. In the short term, you can often ignore them; they're inconsequential. They only come back to haunt you in the long term; and 5) Team learning: Such learning is viewed as 'the process of aligning and developing the capacities of a team to create the results its members truly desire'. It builds on personal mastery and shared vision – but these are not enough. The discipline of team learning starts with 'dialogue', the capacity of members of a team to suspend assumptions and enter into a genuine 'thinking together'. Based on these concepts of individual and organization learning, we concluded that: a) Quality of Senge's fifth discipline learning organization (1990) can be used as indicators to refer the habitat quality learning of an organization; b) Organizational learning process starts with the knowledge transformation discipline of personal mastery (as a result of learning individual process), become team learning discipline (as a result of team/organizational learning process); c) knowledge transformation process from individual learning process becomes learning organizational occurred through mental model discipline path, shared vision, and systemic thinking; whereas shared vision, shared model mental and shared knowledge as the mechanism, and systemic thinking as the integrator framework.
Based on the description, herewith the conceptual framework as follow:

Hypothesis of this research are:

- Personal mastery influenced to model mental significantly
- Personal mastery influenced to shared vision significantly
- Personal mastery influenced to systemic thinking significantly
- Mental model influenced to shared vision significantly
- Mental model influenced to systemic thinking significantly

- Systemic thinking influenced to shared vision significantly
- Mental model influenced to team learning significantly
- Systemic thinking influenced to team learning significantly
- Shared vision influenced to team learning significantly

Figure 1: Conceptual Framework



Source: *Developmental Path for Acquiring Organization Capital* (Senge, 1990&1994)

3. Methodology

This explanatory research was conducted in Boyolali region, Central Java at copper carving cluster within employees as the target research. Population in this study includes all employees of copper carving cluster as cited from Boyolali in Number (2010). There were 716 employees, then counting it based on sample measured by Slovin formula and proportionally at 10%. We found 87, 74 (rounded to 90 respondents) and taken by proportional random sampling. The analysist data methods is descriptive and inferential statistics, its inferential statistics methods used path analysis.

4. Results

The majority of respondents were male (63.5%) and the remaining were women (36.5%) were women. The majority of respondents including these condition as follow: the equal of age groups to 31-35 years (31.25%), married (72.9%), elementary school graduates (54.25%), bearing 1-2 persons on family life, has worked for more than 4 years, and the average income IDR 500,000.00 –IDR 750,000.00 monthly
The descriptive statistics of organization learning showed the values as follow:
***Personal mastery* discipline:** mean value of variable 3.62 showed that indicator/item average at agree answer catagory, in the other words, personal mastery discipline at the copper carving cluster was in the good condition.Able to understand the ability to complete the job as the indicator/item with the highest mean value 3.67 meant that the distribution of the respondents' answer at "the agree answer" was in the interval, or in other words the employee had a good understanding to be able to understand the ability to complete the job.
Mental model discipline: mean value of variable 3.73 showed that indicator/item average at agree answer catagory, in the other words, mental model discipline at the copper carving cluster was in good condition. Understanding strengths and weaknesses of the company as the indicator/item with the highest mean value 4.23 meant that the distribution of the respondents' answer at"the agree answer" was in the interval, or in other words, the employees' comprehension of strengths and weaknesses of the company were good understood.
Shared vision discipline: mean value of variable 3.76, showed that indicator/item average at agree answer catagory, in the other words, shared vision discipline at the copper carving cluster was in the good condition. Disseminating success to employees as the the indicator/item with the highest mean value 4.02 meant that

the distribution of the respondents' answer at "the agree answer" was in the interval, or in other words employees at the copper carving cluster had a good understanding to disseminating success to the other employees in organization.

Systemic thinking discipline: mean value of variable 3.64, showed that indicator/item average at agree answer catagory, in the other words, systemic thinking discipline at the copper carving cluster was in the good condition. Being able to assess strengths and weaknesses of work habits as the the indicator/item with the highest mean value 4.02 meant that the distribution of the respondents' answer at"the agree answer" was in the interval, or in other words employees at the copper carving cluster had a good understanding on being able to assess strengths and weaknesses of work habits.

Team learning discipline: mean value of variable 3.84, showed that indicator/item average at agree answer catagory, in the other words, team learning discipline at the copper carving cluster was in the good condition. Valuation of individual assets must be transformed into organizational assets as the indicator/item with the highest mean value 4.42 meant that the distribution of the respondents' answer at "the agree answer" was in the interval, or in other words, employees at the copper carving cluster had a good understanding on valuation of individual assets must be transformed into organizational assets.

Regression analysis result to identifying influences among variables of personal mastery (PM), mental model (MM), shared vision (SV), systemic thinking (ST), and team learning (TL) directly and through the mediating variable as shown:

Table 1: Recapitulation of influences among variables directly

Relationship	Constanta	Regression coefficient	Sig. t	Correlation coefficient	Determination coefficient	Decision to Ho
PM – MM	3.114	0.862	.000	0.944	0.891	Rejected
PM – SV	13.664	0.282	.018	0.340	0.183	Rejected
PM – ST	9.021	0.509	.000	0.780	0.608	Rejected
MM – SV	13.132	0.301	.021	0.332	0.110	Rejected
MM – ST	8.251	0.533	.000	0.746	0.557	Rejected
ST – SV	15.984	0.152	.000	0.120	0.14	Rejected
MM – TL	8.728	0.564	.000	0.814	0.662	Rejected
ST – TL	5.759	0.741	.000	0.764	0.584	Rejected
SV – TL	15.228	0.214	.000	0.281	0.079	Rejected

Source: Data processed

Based on the table 1, we concluded:

1. 2 knowledge transformation paths at the high catagory, and 1 knowledge transformation path at the average catagory, according to Guilford norms, these three knowledge transformation as correlations of PM with disciplines of MM, SV, ST. These correlation values as paths to transform knowledge from individual learning process to organizational learning process, or called first step of transformation path. At the copper carving cluster, the lowest correlation (average on quality) founded at the path between the knot of PM discipline and the knot of SV discipline (0.340), then at the knot of PM discipline and the knot ST discipline at the high catagory (0.780), and the highest correlation value founded at the knot of PM discipline with the knot of MM discipline (0.944). This result considered that knowledge transformation process has been run well.
2. 6 knowledge transformation paths at the second step, herewith: 1 knowledge transformation step between the knot of ST discipline and the knot of SV discipline at weak catagory (0.120), 2 knowledge transformation paths between the knot of MM discipline and the knot of SV discipline (0.332), and the knot of SV discipline and knot of TL discipline (0.281) at the average catagory, 3 knowledge transformation between the knot of MM discipline and ST discipline (0.746), the knot of MM discipline and the knot of TL discipline (0.814), the knot of ST discipline and the knot of TL discipline (0.764) at the high catagory. This result indicated that knowledge transformation process at the second step (learning organizational process) at the copper carving cluster still not running well at several relationship processes on learning organizational discipline.

Discussion: The other purpose of this research was to determine the quality of habitat learning of transformation knowledge path at the small-medium enterprises, specifically at copper carving cluster. This study appropriates with Argyris & Schon (1978) in Tuomi (1999) declared that vary of mental models as the main discipline in knowledge transformation of individual learning into organizational learning, and

supported Argyris (1993) in Tuomi (1999) that to building organizational learning needs people with high competencies. This research strengthened Senge's finding about fifth organizational learning disciplines. Senge noted (1994) that the fifth disciplines played roles as development path for acquiring certain skills or competencies to organization capital. Explicitly, the fifth disciplines concept can be used to measuring the quality of knowledge transformation based on the knot of personal mastery discipline towards the knot of team learning discipline through the knot of mental model discipline, shared vision, and systemic thinking. Implicitly, the fifth discipline concept of Senge implied that there were no correlations of the knot of personal mastery discipline and the knot of team learning discipline directly. This result is consistent with Nonaka & Takeuchi (1995) stated that the human tacit of transformation knowledge process become team tacit occurred through socialization process, in which share vision and shared mental model as the main mechanism, and in accordance with the research of Crossan et al. (1999) human knowledge transformation became team knowledge through integration process, in which shared understanding and shared comprehension as the main mechanism. Specifically, this research strengthened Tjakraatmadja (2002) noted that to build learning organization needs 3 pillars: (1) individual learning, (2) knowledge transformation path, and (3) organizational learning. The 3 pillars are intercorrelated and supported in developing organization. Overall, this research confirmed further that if any organization has the stronger learning organization characteristics, thus organization have the higher level of readiness to be changed. It meant that important for organization to be Learning Organization (LO) to maintain their ability to survive in a business change environment.

5. Conclusion

Several conclusions can be obtained as follow: 1) Personal mastery discipline influenced to model mental discipline significantly, 2) Personal mastery discipline influenced to shared vision discipline significantly, 3) Personal mastery discipline influenced to systemic thinking discipline significantly, 4) Mental model discipline influenced to shared vision discipline significantly, 5) Mental model discipline influenced to systemic thinking discipline significantly, 6) Systemic thinking discipline influenced to shared vision discipline significantly, 7) Mental model discipline influenced to team learning discipline significantly, 8) Systemic thinking discipline influenced to team learning discipline significantly, 9) Shared vision discipline influenced to team learning discipline significantly 10) Result of quality of knowledge transformation path established that the first step of knowledge transformation process (individual learning process) at the copper carving cluster has been run well, and 11) result of quality of knowledge transformation path avered that the second step of knowledge transformation process at the copper carving cluster cluster still not running well at several relationship processes on knot of learning organizational discipline.

Recommendations: 1) Personal Mastery disciplin has been good but needed to be increased concerning with the understanding of company vision, harmonized the personal vision and company vision, better understanding of job description of the company, and try to create the condusive working envionment. Need to socialize companies' vision and mission by put on the lettering of vision, mission and target of companies at the right places, organizational culture slogans about philosophy, as well as the need for socialized on individual performance for employees' evaluation. 2) Shared vision has been good but needed to be increased concerning with the importance of training and learning culture among employees by held training of employees' soft skill and hard skill emphasized on team work training thus learning culture and sharing would be flourished among employees, and 3) Systemic thinking discipline vision has been good but needed to be increased concerning with the ability to formulate personal goals and vision to support the company's goals and vision by conducting briefings before and after carrying out the work so that the values of the company could be transferred to employees.

References

Brooking, A. & Motta, E. (1996). Taxonomy of Intellectual Capital for Auditing It, Annual Conference 17 Mc Master Canada: Hamilton University, Ontario.

Crossan, M. M., Lane, H. W. & White, R. E. (1999). An Organizational Learning Framework: From Intuition to Institution. *Academy of Management*, 24(3), 522-537.

Drucker, P. F. (1995). The Information Execitives Truly need. *Harvard Business Review*, 2, 54-63.

Drucker, P. F. (1988). The Coming of The New Organization. *Harvard Business Review*, 2, 45-53.
Kofman, F. & Senge, P. (1993). Communities of Commitment. *Organizational Dynamic*, 22(2).
Kalra, S. K. (1997) Human Potential Management: Time to Move Beyond the Concept of Human Resorce Management. *Journal of European Industrial Training*, 9(4), 176-180.
Nonaka, I. & Takeuchi, H. (1995). The Knowledge Creating Company: How Japanese Companies Create Dynamic Innovation, Oxford: Oxford University Press.
Ribhan, L. (2001). Knowledge Management: Organization Behavior in the Future. *Entrepreneur Management*, 06(4), 17-29.
Roos, J. (1996). Intellectual Performance: Exploring an Intellectual Capital System in Small Companies, Conference of Knowledge in Action, Israel: Herzila.
Senge, P. M. (1990). The Fifth Discipline: The Age and Practise of The Learning Organization, Century and Business, NY.
Senge, P. M. (1994). The Fifth Discipline Fieldbook, Doubleday & Currency. NY.
Sudharatna, Y. & Laubie, L. (2004). Learning Organization Characteristic Contributed to Its Readiness to Change; A Study of The Thai Mobile Phone Service Industry Managing Global Transitions.
Tjakraatmadja, J. H. (2002). Concept Development and Empirical Study of Quality of Transformation Knowledge Path towards Learning Organization. Working Paper, SM TI-ITB.
Tuomi, I. (1999). Corporate Knowledge: Theory and Practice of Intelligent Organizations, Helsinki: Metaxis.