Utilization of Human Virtual Intelligence Framework in Managing Technopreneur Knowledge

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Abstract—This paper trying to discuss a framework to assist technopreneurs in managing knowledge. Using the concept of Human Virtual Intelligence, it is expected that the technopreneurs will be able to accelerate their abilities and competency to a desired level. Technopreneurs are mostly busy people with extreme time constraint. They do not have time and luxury to learn in the traditional way, but must go quickly to accommodate the chaotic changes and complex situations in their daily life. In such conditions, they must have a decision support system to help them do their daily strategic tasks. Knowledge Management System plays an important role to capture, share and exploit the knowledge from knowledge agents to the technopreneur's Human Virtual Intelligence. This paper believes that using the Human Virtual Intelligence framework and Knowledge Management System will significantly help the development of technopreneurs.*

Keywords—Framework, knowledge management system, human virtual intelligence, technopreneur

I. INTRODUCTION

IN the new information era and digital economy, the rules of business have changed dramatically. The trend has changed from traditional 'brick and mortar' business to new challenging e-business which are global in nature and extensively web-based. As any artificial environment, the dotcom economic bubble finally burst. With no solid business foundation, many dotcom companies running on untested e-business model fail to deliver what they promised. Many investors lost their money after many dotcom companies were forced to close down.

Private sector financial institutions perceive high technology ventures as risky [1]. However, high technology small firms have been a key feature of growth in high technology development in the UK and the US [2]. Much of the growth in the high technology sphere in the US was provided by small firms [2],[3]. In Malaysia, after concentrating on larger enterprises for many years, the focus has changed to indigenous high technology small firms [4]. In this case, technopreneur is found to play an important role and is critical success factor for any high-tech ventures.

II. TECHNOLOGY ENTREPRENEUR

The terminology of technology entrepreneur or 'technopreneur' is used to describe the combination between pure technologist and traditional business people. There is a significant difference between an entrepreneur and a technopreneur, with the latter having an advantage on the mastery of the technology element besides possessing good business acumen.

Technopreneurs are people who make or found their own technology-based business by recognizing opportunities and organizing resources. They are owner, manager, leader, or founder of an organization. They make decisions and take consequences on every aspect within the organization.

The typical of technology entrepreneurs are technology minded, risk taker, leader / organizer. They are busy people with very limited time. They have to do many things in many areas of knowledge. To do such things, they need to prepare themselves with the abilities to make use of available information to make strategic decisions. They also have to learn very fast to accommodate the chaotic changes in market trends and conditions. The Human Virtual Intelligence or HVI framework is expected to assist those technopreneur's challenges.

III. HUMAN VIRTUAL INTELLIGENCE

Not to be confused by the terminology Virtual Intelligence for computer, we call this as Human Virtual Intelligence (HVI). Human Virtual Intelligence is not physically attributed from an individual but is a collective intelligence accumulated by the organization through contributions from various people and systems in and outside the organization.

Along with the Virtual Intelligence, there are other human intelligences, namely Spiritual Intelligence, Emotional Intelligence, and Intellectual Intelligence. Together, they form a complete intelligence of a technopreneur. Figure 1 shows how knowledge agents who can be staff members, consultants, advisers, friend and family, customer, competitor, etc. are combined to provide a powerful support system for technopreneur.

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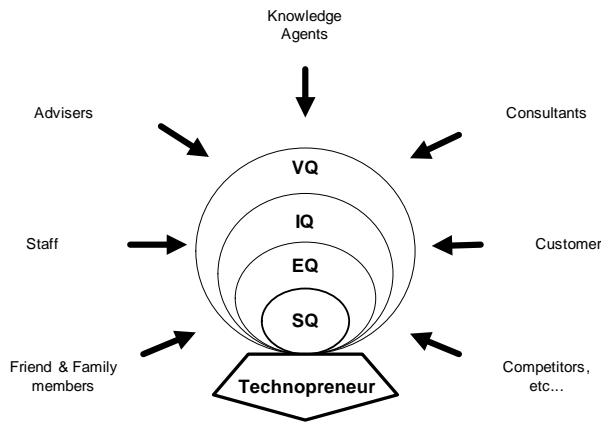
Figure 1. Human Virtual Intelligence

The concept of Virtual Intelligence was developed to challenge the Peter Principle which states, "In a hierarchy structure, every employee tends to rise to his level of incompetence" [5]. This means that if someone is promoted, his/her jobs tend to become more difficult. At some point they find the demands of their position greater than their personal resources and capability. Then, they are no longer capable of doing their jobs or are deemed to be incompetent.

Human Virtual intelligence framework is expected to help any leader, entrepreneur, and other leader-like positions to catalyze their performance and competence as they don't have time to learn in traditional ways. HVI is an effective mechanism to minimize the effects of the Peter Principle. As illustrated below in Figure 2, the learning curve can be shortened using Virtual Intelligence.
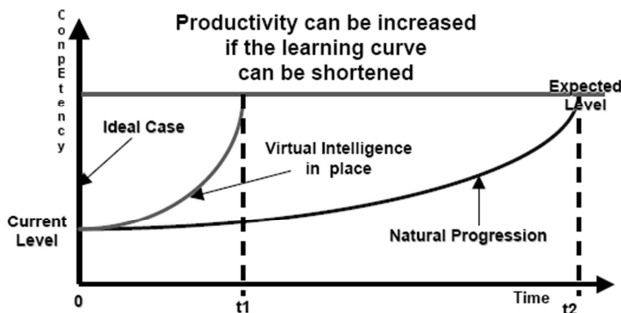

Figure 2. Virtual Intelligence in Action

Human Virtual Intelligence is based on the collaboration of knowledge agents in an intelligent learning organization and transcends virtual corporations. HVI will be able to address the incompetent leadership issue as in Peter Principle postulate through a leadership support system in the form of a knowledge management system (KMS).

IV. KMS FOR TECHNOPRENEUR

A Virtual Intelligence System is basically a Knowledge Management System (KMS). As such, KMS technology could be utilized to capture, share and exploit the knowledge from knowledge agents associated to technopreneurs (Figure 3). The question is 'what is knowledge management system

suitable for technopreneur?' or 'what is the best way of transferring knowledge from agents to technopreneur?

The first modern KM model was developed by Nonaka and Takeuchi with their SECI model [6]. SECI model focuses on the movement of knowledge between tacit and explicit states through the four processes of socialization, externalization, combination and internalization (Figure 4).
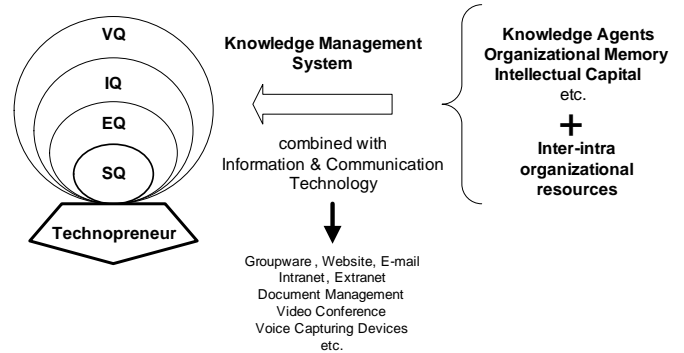

Figure 3. Knowledge Management System Flow

Figure 4. SECI Model

In current common KM implementation, the program attempt to disembody all knowledge from its possessors to make it an organizational asset [7]. This is actually shifting tacit to explicit knowledge according to SECI model. However, approaches to knowledge management based on the codification of knowledge to databases that operate on a pull basis have largely failed [8]. One of the common errors in knowledge management is assuming that experts sharing knowledge are sharing all their knowledge or the best knowledge they have [7],[8]. Polanyi (1967) considered that "we know more than we can tell" [9]. As the extension, Snowden also added that "we tell more than we can write down" [10]. Assume that an agent could only externalize less than 30% of his/her knowledge and the technopreneur could only receive 30% of the knowledge efficiently, then the technopreneur will only receive less than 10% of knowledge from knowledge agents [11]. Thus, the process of tacit-explicit-tacit knowledge sharing is not an effective solution for technopreneur.

If we look at the nature of a technopreneur, we must look at more practical consideration in managing technopreneur knowledge. Rational decision-making implies an ability to make explicit the "process" of decision-making. Outside the bounds of rationality technopreneurs will rely on intuition

and emotion to guide their decision-making [11]. Intellectual capital is too diverse, too complex and too heavily dependent on individuals and communities who do not behave rationally [8]-[10]. In this condition, knowledge management that relies on knowledge codification is not very effective.

A business practice is seen as a frequently repeated act, habit or custom performed to a recognized level of skill. It is often thought of as the uncodified "know-how" resulting from human experience, improvisation and innovation [12]. The proportion of business practices that can be formally codified is really only the tip of an iceberg, and that the vast majority of knowledge encompassed in a successful practice in uncodified and held tacitly in the minds of the knowledge agents.

Researcher would like to propose that direct tacit-to-tacit (socialization) knowledge transfer is more suitable KM solution for technopreneur. Community of practice (group of tacit knowledge) is an excellent vehicle for socializing improvement ideas and innovations. Using the advantage of ICT, we can develop a virtual knowledge-sharing communities of practice. The term 'knowledge-sharing' is associated with tacit-to-tacit, one-to-one, more active and hands-on active learning approaches. Normal 'education' knowledge transfer using tacit-explicit-tacit method which relies on courses, modules, and databases resources is not suitable [13]. It is more effective for technopreneur to involve in direct open discussion, case and experience-based communities of practice, not a 'teacher-student'-like learning process.

Communities of practice are not formal structures. Instead, they are informal entities, which exist in the minds of their members and are glued together by the connection the members have each other, and by their specific shared problem or areas of interest [14]. One of the ways to help people share and internalize tacit knowledge is to allow them talk about their experiences and to exchange their knowledge while working on specific problems [15]. Since opportunities for face-to-face interactions are rather limited due to dispersed knowledge agents, virtual communities of practice that are supported by Internet technologies are among few viable alternatives to live conversations and knowledge exchange [16], [17].

V. DISCUSSION AND FUTURE WORK

We have discussed the concept to manage technopreneur's knowledge and decision support system by utilizing Human Virtual Intelligence framework. However, there are still many issues that have not been tackled. Also in this paper, the implementations have not been done thoroughly and are very limited in many aspects.

Although researcher believes virtual knowledge-sharing communities of practice is a better choice KM solution for technopreneur, it also has some constraints. The successful functioning of a knowledge-sharing community of practice is impossible without an active participation of its members. For a virtual community to be successful, the members need to be comfortable with participating in a computer-mediated, Internet-based community of practice, which involve very little face-to-face communication. As researcher will not go into very detail on these constraints, the discussion on motivation and barrier to participation in virtual knowledge-sharing communities of practice is very interesting for future research.

VI. CONCLUSION

This paper has attempted to show that Virtual Intelligence framework can be utilized to help the development of technopreneurs. The issues of technopreneur's incompetence as the effects of The Peter Principle in organizations can be minimized using Human Virtual Intelligence framework.

To have access to Virtual Intelligence, a Knowledge Management System with the ability to capture, share, exploit and distribute knowledge from knowledge agents must be implemented. The virtual knowledge-sharing community of practice is expected to be a better choice KMS solution for technopreneurs to help them do their daily strategic tasks.

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