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Developing competitive technical intelligence in Indonesia

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Abstract

In Indonesia, political concern promotes the development of autonomy in provinces and in certain academic institutions. This paper relates that with the commencing of AFTA in 2003, there is a strong need for competitive intelligence (CI) and technology watch (TW) in Indonesian industries. The model developed takes its roots within Indonesian constraints and leads to a general guideline to introduce CI in industries and institutions in most developing countries.

Keywords: Competitive intelligence; Developing country; Indonesia; Regional development; Mental models

1. Introduction

After a period of recession and inflation, most of the developing countries have to face the necessity of improving their capacities to innovate and increase the competitivity of their industries. At the same time, various political movements in countries like Indonesia, seek to give political and financial autonomy to provinces and various institutions. In this framework, we discuss briefly the case of Indonesia and the Technology Institute of Bandung. This institute is located in Java, in the town of Bandung, and is one of the most respected technological institutions of the country. It will have full autonomy, in 4 years, that is to say, more freedom, but also less money coming from the Central Government. In this situation, the Bandung Institute of Technology has decided to promote a Center of Technology Watch and Competitive Intelligence. (Technology watch may also be equivalent to the term 'competitive technological intelligence', as promoted by the Society of Competitive Intelligence professionals (SCIP, 2003) several years ago.)

2. Background

In South East Asia, the ASEAN Free Trade Area (AFTA, 1992) will commence from 2003. All countries in this region must get ready to face this new situation. It will be a challenge for Indonesia's free market, and especially for all sectors and activities concerned by AFTA (1992) to become more productive and competitive in a short time. One of the political answers of the Central Indonesian Government was to change the economical system of the country and to move from a centralized organization to a decentralized one. As result, provinces (Regencies) got their *financial management autonomy* (CGI, 2000). On the other side, focusing on higher education, the Indonesian government decided to grant autonomy status to five universities. The Bandung Institute of Technology (ITB) is one of them. This autonomy allows the state university to constitute an academic society that possesses high moral values, and special expertise in applicable domains. To be able to raise financial resources and sustain their development, these institutions will 'sell' this expertise to industry, local institutions and even to students for specialization and post-graduate courses. To achieve such a goal, Competitive Intelligence and Technology Watch could be one of the answers. But an analysis of the situation in most of the mid-size and even large companies shows that on one hand, the use of information as a critical material for strategic decision is far less understood, and on the

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other, that to try to promote this use will take more time than expected (Mallarangeng, 2000).

Subsequently, we have been facing a challenge of providing as rapidly as possible the facilities offered by Competitive Intelligence Systems to the most competitive companies, and at the same time to promote more slowly the introduction of such a system into other industrial and institutional sectors of the country. To develop such a solution for ITB, we decided to implement the methodologies and work developed by Indonesian students while doing their PhD in the field of Technology Watch (Supriyadi, 1998; Achmadi, 1998; Aulia, 1999; Purusitawati, 1999; Ifan, 2001).

This will be achieved by creating a center named CEVIC (Center of Technology Watch and Competitive Intelligence TW-CI). This center will be located in LAPI (Research Center of the ITB).

The CEVIC will concentrate its activities on research and development in the regional strategic industry sectors. Using the concepts and methodology of Technology Watch-Competitive Intelligence, the objective of CEVIC is to make ITB more competitive in the field of research, development and continuing education. We hope that in the era of hypercompetition (D'Aveni, 1994) and hyperinformation (Dou, 2002), ITB will be able to play a key role in promoting or creating in all enterprises, public or private and in higher educational institutions, practical knowledge gained by a better use of strategic information.

3. Gaps and breaks to promote Competitive Intelligence

As in most educational institutions (e.g. universities), most of the people are research oriented and most of them do not have the capability to promote their R&D knowledge to develop business or new projects in association with local or national industries or institutions. Most of the time, it was the industry which came to hire some expertise from the ITB institution, (this situation is comfortable most of the time since on all contracts, a certain amount of money goes directly to the people who are responsible and carry out the research).

In a few words, it can be said that the institution is slightly reactive and practically not pro-active. Our goal, by promoting a center like the CEVIC, is to help the institution become more pro-active.

What needs to be done to achieve such an objective?

If we examine the cycle of intelligence (Toronto University, 2000; Dou, 2000), it roughly goes through the following steps:

- Vision and strategic goals of the corporation
- Questions about strategy, competitors, markets, etc.
- Collection of information (formal or informal, internal and external to the company) linked to this vision
- Management of this information
- Understanding to help people to develop serendipity
- Answer the questions underlining threats and opportunities

All these steps being cyclic, the period of the cycle is linked to the turnaround of the technologies and market opportunities.

If such a cycle is well understood globally, most of the companies do not perform all of it, and even if they believe that they are doing it well, they forget many important points. To reach a certain level of performance in developing countries, and especially in Indonesia, we believe that the following aspects are very important and that the expertise and assistance of the CEVIC should be developed in the following directions:

- *Vision of the future*. The vision must be realistic, and an analysis of the company's own capability is very important. To help institutions and corporations in this field, we will advise using widely the tools developed by the United Nations University which are described in great detail with numerous examples of various methodologies to shape future projects. (The United Nations University, 1999). The goal is to orient people to think in terms of future and not in terms of the past (Mogel, 2002).
- *Collection of information*. Based on the cost of access to commercial databases on the one hand, and on the other, to the poor development of high speed Internet networks, the average university person is not very familiar with the use of large information and a systematic information retrieval to sustain one's knowledge. The process of information analysis (within the framework of a very precise objective) by expert groups is not very (if not at all) developed in most of the academic institutions.
- *Formal information* (reviews, commercial databases, books...) is sufficiently understood, but the interface with informal (network, human type) information is not common practice, as is an extensive use of Internet.
- *Patents*, mainly due to the cost of commercial patent databases, are seldom used as a 'think tank'. This situation should change according to the free access of patents and courses which are developed via Internet for developing countries (WIPO, 2000). Of course, this situation will improve more or less rapidly depending on the availability and the cost of Internet within the region.
- *Information Management.* This is not a problem for all information in an electronic format. But there is a large gap when internal competencies have to be considered. Most of the institutions or regencies

(within the framework of autonomy) do not have even a simple system of internal knowledge management.

- *Understanding information* is quite possible according to the level of competency of people. But the networks of experts are very local, because most of the communication is by telephone or letters. Internet is used for e-mail, but the lack of availability and the low speed of the network do not allow the development of platforms to create knowledge (Dou, 2000).
- The last point will be to find a suitable format to give an answer to the questions of the CEOs of corporations or institutions. This point is delicate since it is grounded to the culture of the people and especially to the relations which exist between the decision makers and the other employees. It is not possible to expand on these aspects in this paper, but it must be mentioned that they are important and that they must be solved if one wants to achieve a certain degree of success (Manullang, 2002). Note also that Heuer et al. (1999) mentioned that the style of working of Indonesian managers is now closer (in the field of practice) to that of the United States managers. This will not mean that information use and practice, as well as methodologies of Competitive Intelligence, will be put into practice. In fact, because Competitive Intelligence is a very recent (Stanat, 1999) (around 1984 in the United States) academic discipline, the impact of the United States type of education (specially MBA) is not yet important enough in this field.

4. Recommendations and guidelines

To be able to promote Competitive Intelligence as rapidly as possible in Bandung's region (which, however, remains the same for other regions in developing countries) and also to set up a model for other Indonesian regencies, we propose the following actions:

- *To position the CEVIC center* (or any other system) at the interface of the business unit and research unit of ITB or other equivalent institutions for other Indonesian regencies. This will help its perception by industrial managers and it will also place it in a good position to promote various educational programs in this area. When facing the free market, application of Technology Watch is a necessary and indispensable condition for all Indonesian enterprises to understand the position of their competitors and products and eventually to win some market shares. Another important aspect is to understand that this is not by sending only crude materials that one makes a large amount of money, but that it is by promoting products of higher added value.
- *To develop within the CEVIC a task force that is able* to retrieve information, set up human networks and access modern information infrastructure.
- *The CEVIC should create as quickly as possible a network of experts* in various strategic industrial areas of the Bandung 's region. To accelerate the constitution of such a network, which should extend widely beyond the frontiers of Indonesia, the development of the use of Internet as a tool to retrieve information, to communicate and to build knowledge is essential.
- *To increase the use of patents*, first as a think tank and as a means of analyzing the technological production as well as the main factors in various fields, and secondly to give to large companies or to high-tech researchers the idea to patent their inventions to protect their knowledge and know-how. Patent use should also be important in joint venture, contracts with foreign firms and technology transfer (IMCS, 2000).
- *To provide a 'commercial interface'* between the CEVIC, the industries and institutions seem essential. The CEVIC should, after some time, work as a business unit within the ITB institution. This is the only way to provide a strong incentive for the persons who will be in charge of the center.
- *To advertise the role of CEVIC*, to provide good contacts and a clear interface with the decision makers are important. This is a key point to develop.
- *To remember that the cultural aspect* of the use of information is important from information sharing and to highlight threats and opportunities. The format, discussion, and interface with decision makers are then of primary importance. This is why we strongly advise the promoters of the CEVIC to associate some people from the human resource department and from the field of economics to this center. A center that only focuses on exact sciences and technology will not be able to achieve all the necessary steps to develop Competitive Intelligence.
- *Do not work alone*. Collaborative work is now more and more important (Breu and Christopher, 2002). In this respect the cultural aspect of Indonesia may help in this direction (Manullang, 2002).

5. Comparison with the guidelines of the European Community (EC)

Recently, the EC (European Community) sponsored a study dealing with the best practices of Technology Watch in Europe for SMEs (Quazzotti et al., 1999). In this book, the authors emphasized the fact that SMEs must be more sensitive to the use of information, and to achieve this, they promote 10 commitments as a good practice. They are the following:

1. Be certain of the will and conviction of the company's decision makers
2. Analyze the level of information practice within the company
3. Analyze the mechanism of the dissemination of information into the company
4. Define and formalize the information needs
5. Make sensitive the company's people concerned by information to its cost and value
6. Diversify one's information sources
7. Systematically use formal information sources
8. Organize the information collection in one's company
9. Patent for protection of your information
10. Use information professionals if necessary

It is interesting to note, that in the case of EC, it is taken for granted that information is available and that the processes to get it are commonplace. Only the will of the decision maker of the company must be developed. That is to say, one does not even think that in the Western world, the above situation is possible because the basic information infrastructures are commonly available. This includes, for instance, high speed Internet, various networks to access at a decent price commercial databases such as Dialog, Questel, specialized journals, libraries, governmental and regional bodies.

But in the case of developing countries, the situation is exactly the opposite. Even if one wants to do it, the lack of infrastructure and the high information cost will prevent one from going any further. This is the reason why we recommend developing some specialized centers first which can be used to access and share the cost of the basic facilities to provide information for their own use and later to various customers. It should become commonplace for people dealing with Competitive Intelligence or Technology Watch in developing countries to forget that most of their feelings in these matters are not well adapted to the local context. The above example is straightforward. Very often, we have to go back to a very basic system and avoid the 'exode interne' which is, we think locally, the point of view and the frame of mind of a Western country. The use of patents is also a good example. Because the cost of patenting is far more important for most of the mid-size industries, patents should be first used as a think tank, because their availability through the Internet is free.

But at the same time, we must try to ensure to the local forces the necessary strength which will help them bypass some steps and then accelerate the process of Competitive Intelligence and Technology Watch. This is why we recommend developing the role of Information Technology not only to access information, but also to create a shared knowledge for action. This could be very important especially for countries like Indonesia which have a very large territory, in this case 5000 km long and more than 18,000 islands! Platform to create knowledge will certainly help people to think differently and speed up their entry to the information society.[1]

6. Conclusion

To introduce Competitive Intelligence and Technology Watch in developing countries successfully there is a strong necessity to analyze the context in which the method will be implemented. The modification of mental models is one of the most important tasks for people who believe that the creation of knowledge that can be put into use is crucial. Competitive Intelligence and Technology Watch which are relatively recent as a discipline will provide a good leverage if it is properly introduced in educational institutions (Stanat, 1999).

Another point which seems essential is that even in the framework of autonomy, Competitive Intelligence and Technology Watch will be decentralized, a question will remain on how the basic infrastructures, which are by their overall cost of the competence of the central government, will be provided to all parts of the country, and at which speed.

References

Achmadi, F., 1998. Information system and technology watch at BBI (Boma Bisma Indra). Ph.D. Thesis, University of Aix Marseille III.

AFTA, 1992. ASEAN Free Trade Area—which should be in operation in 2003.

Aulia, F., 1999. L'intelligence économique. L'information stratégique au coeur de la décision de la banque d'Indonésieé. Ph.D. Thesis, Bank of Indonesia, and CRRM, University Aix Marseille III.

"CGI group—Principles of regional autonomy policy: toward a democratic and prosperous Indonesia", speech by Minister of Home Affairs and Autonomy Policy, Surjadi Soedirdja, Pre-Consultative Group on Indonesia (CGI) Meeting on Decentralization, Jakarta, October 13, 2000.

Breu K., Christopher, H., 2002. Collaborative processes and knowledge creation in communities-of-practice. Available from http://www.sses.com/public/events/euram/complete_tracks/knowledge_collaboration/breu_hemingway.pdf

D'Aveni, R.A., 1994. Hypercompetition, Managing the Dynamic of Strategic Maneuvering. The Free Press, New York, pp. 342–349.

Dou, H., 2000. De l'Information a l'Intelligence. Les procédés de création d'Intelligence Compétitive pour action dans les PME et PMI, Colloque A3F, Sophia Antipolis (October).

[1] Many platforms are available. For more information on this subject, see www.imcsline.com for simpler facilities and for more complicated ones http://userver.fw.at/~niklfeld/pub/nikfeld_ hltkm01.pdf or http://www.sses.com/public/events/euram/complete_tracks/knowledgebased_firm/binks_ratcheva.pdf or http://www.agsm.unsw.edu.au/~timdev/research/CCC98.PDF or http://www.cipher-sys.com/website.nsf/Demonstrations?OpenPage

Dou, Jr. J.-M., 2000. Virtual Places: Creating Knowledge in the 21st Century. The Process of Building Knowledge—Coda Millenium. Baveno, Italy (October).

Dou, H., 2002. Hyperinformation, CRRM Editor, Marseilles. Available from http://crrm.u-3mrs.fr.

Heuer, M., Cummings, J.L., Hutabarat, W., 1999. Global stability or change among managers In Indonesia. Journal of International Business Studies 30 (3), 599–610.

Ifan, H.-K., 2001. La creation d'un centre de la veille et l'intelligence economique, application a l'Institut pour la recherche et l'affiliation industrielle. Thèse Centre Scientifique Saint Jérôme, Université Aix Marseille III.

IMCS, 2000. See for more information http://www.imcsline.com.

Mallarangeng, A., 2000. Many regencies not ready for autonomy. Indonesia-News November 23.

Manullang, S., 2002. Veilles, Intelligence Compétitive et développement régional dans le cadre de l'autonomie en Indonésie. Colloque sur l'Information Elaborée, Ile Rousse (October).

Mogel, R., 2002. Future Thinking. Competitive Intelligence Magazine 5 (3), 1–2, (May–June).

Purusitawati, P.D., 1999. Bank of Indonesia, 'Rôle de la veille technologique/l'intelligence économique pour le développement du système de paiement en Indonésie (un travail pour la banque centrale d'Indonésie)'. Ph.D. Thesis, University Aix Marseille III.

Quazzotti, S., Dubois, C., Dou, H., 1999. Veille Technologique, Guide des bonnes pratiques en PME et PMI (Technology Watch, guide of the best practices for Small and Middle size industries.)—DGXIII-D-Programme Innovation ISBN 2-9599776-0-2 Ed CRPHT Eschy sur Azette, Luxembourg.

SCIP Society of Competitive Intelligence Professional, 2003. US organization. see www.scip.org for more information.

Stanat R., 1999. Conference on Competitive Intelligence and Knowledge Management. Rio de Janeiro, Brésil, July 1999.

Supriyadi, Y., 1998. Technology Watch and Strategic Information Systems. Ph.D. Thesis, University Padjadjaran, Bandung, and University of Aix Marseille III.

Toronto University, 2000. Available from http://conted.fis.utoronto.ca/tig/courses.htm.

The United Nations University, 1999. The millennium project, version 1.0 ISBN 0-9657362-2-9, CD-ROM Future Projects, Future Research Methodology American Council for the United Nations University, 4421 Garrison Street, NW-Washington, D.C. 20016-4055 USA, available from http://millennium-project.org, Tel./fax: +1-202-686-5179.

WIPO, 2000. WIPO, Academy for instance, provides patent courses for developing countries using Internet. For more information see http:// www.wipo.int/academy/en/index.html or mail dl101e.academy@wipo.int.

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