Intangible Assets Management and Soft-computing

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Abstract－The source of the company's competitive power has shifted from tangible assets to intangible assets rapidly. Since Intangible assets have subjective value and contains many complicated and ambiguous portions like goodwill or brand, it is difficult to quantify from the first. Although intangible assets have such features, soft-computing and intelligence science give us a useful tools to let those intangible assets visible. In this paper, the outline of this intangible assts is explained and practical use domain of soft-computing technique is tried to introduce based on the classification of intangible assets.

Ⅰ. Introduction

In the industry and corporations of the 20th century, the monopoly and utilization of tangible assets were the source of the capitalism premised on mass production and mass sales. Greenspan[1] with FRB commented in 1995, "In the new economy (post capitalism society of 21st century), conceptualization will play a large role." Thus, it will be an important key of corporate competition to bring up and utilize intangible assets.

For instance, Itoh and Honda[2] pointed, "Compared with ROIC(Return On Investment Capital) of the U.S. companies showing 16 - 17% also on an average, Japan has hung low with about 3%. This shows that the U.S. companies produce more value that Japanese companies with the same capital(physical assets and financial assets)."

Moreover, according to M.Blair[3] at the Brookings Institution, as recently as 1978 the book value of property, plant, and equipment owned by publicly traded non-financial corporations equaled 83 percent of the long-term financial claims on the U.S. company. The comparable figure for 1998 was 31 percent. In other words, as of 1998, 69 percent of the value of companies was based on intangible assets. Well, according to METI(Ministry of Economy, Trade and Industry)[4] reported, as of 1986, 58.6 percent of the value of companies was based on intangible assets, but as of 2003, the percentage of the value of company based on intangible assets reduced to 37.8. In order to win international business competition, it is important to take in these intangible assets positively to corporate strategy and manage them well. So, soft-computing techniques will give us useful tools to deal such complicated and ambiguous intangible assets. In this paper, the outline of this intangible assts is explained and practical use domain of soft-computing technique is tried to introduce based on the classification of intangible assets.

Ⅱ. Intangible Assets Management

Intangible assets mean assets that are not listed in the corporate balance sheet in brief. Tangible assets mean physical assets (land, factories, facilities, equipments, and others), and financial assets (cash and equivalents, securities, and investments). Table 1 shows the

classification of intangible assets.

Table 1. Intangible Assets[3],[4]

A. Intangible assets in human resource	・Leadership ・Workforce caliber ・Ethics view
B. Intangible assets in customer	・Customer Database ・Customer Royalty
C. Intangible assets in organization	・Unique Organization Design ・Business Model ・Corporate Culture ・Sense of Values ・Organizational (including networks)
D. Intangible assets in innovation	・patent ・trademark right
E. Material supply contracts	・Licenses ・Quotas ・Franchises
F. Intangible competences	・Distinctive competence ・Core competences ・Routine competences
G. Combination of A to G	・Corporate Brand ・Enterprise Architecture ・Innovation,/R&D in-process ・Market/reputational ・Corporate renewal ・Tacit knowledge ・Kansei, ignorance, know-how ・Collaboration ・Software Asset ・Goodwill ・Lease

Ⅲ. The practical use domain of Soft-computing

Thought it is very difficult to quantify intangible assets, it will be possible to let these visible using soft-computing techniques, which are combined with financial engineering techniques (real option, etc.).

Here, the practical use domain of soft-computing techniques will be explained based on the classification of Table 1 as bellows.

A. Intangible assets in human resource

Current corporations have the detailed employee's data in their personnel database, but it cannot be said those data are fully utilized as intangible assets. For instance, User support functions, such as personal mining that selects the optimal stuffs connected to value creation of product development, are required. Recently, there is a lot of corporations fall into crisis by the lack of employee's moral such as the incidents of Yukijirushi and Mitsubishi Motor. And, the employee's moral management model that can acquire, accumulate, utilize the employee's moral using personnel databases, will be researched by the soft-computing researchers.

B. Intangible assets in customer

The customer database and the data-mining practical use by various membership systems is progressing in each corporations with activity of CRM(Customer Relationship Management). And, R.S.Kaplan and D.P.Norton[5] have proposed the balance scorecard as a framework of a performance evaluation system of corporation. They pointed, "In the case of a corporate performance evaluation, not only the viewpoint of financial affairs but a customer's viewpoint, the viewpoint of an operating process, and the viewpoint of study and growth are required." So, it is effective to use KPI(Key Performance Indicator) that evaluates the customer loyalty and corporate brand using soft-computing technique.

C． Intangible assets in organization

About system theory modeling of the intangible assets in organization, it has seldom progressed since decision-making theory by H.A.Simon[6]. But, the multi-agent simulation model[7] of organization is proposed by some researcher in recent years.

Because it is called for building the design support system, which asks for optimal organization, business model, corporate culture, sense of values, etc. from the corporate environment, it waits for more various modeling, simulation technology, evaluation index, and various kinds of positive researches.

The intangible assets in D, E, F of business units of the corporations should be evaluated quantitatively in order to trade these business units. So some intangible assets, such as patents and trade right marks, are tried to trade based on the evaluation by the real option model[8]. But, there are no active market dealings in a patent or a trademark right same as the Tokyo stock exchange. So, there is a problem in evaluation by stochastic real option model of intangible assets on condition of a rational market hypothesis. It expects that research of evaluation by the option model using fuzzy measure [9] will make progress.

G. Combination of A to G

Here, the architecture and brand property are mentioned as an intangible example, and the practical use method of soft computing is explained.

Recently, the governments and the corporations are tackling the enterprise architecture[10] actively in the West. In Japan, METI is taking the initiative to tackle the enterprise architecture as “EA Pilot Project” focusing on IT(Information Technology) since 2003.

Now, the enterprise architecture is the design principle, framework, and blueprint that defines the overall structure of the business and the information and infrastructure that supports the business, based on defined enterprise strategies and principles that guide implementation choices. Simultaneously, the U.S. and Euro are tackling modulization of IT resources and organization resources positively, and reconstruction is made by thorough modulization of the whole industry. Further, web service gives a method to unify the modularized business process in the world based on each corporation’s enterprise architecture. So, the U.S. and Euro will raise the competitive power as a nation much more. Concretely, it enables U.S. and Euro enterprises to complete the optimal business structure based on a business strategy quickly, efficiently and virtually, using modularized business units(business process outsourcing service through web service) in the world. Here, in order to manage the virtual and global enterprise, just the conventional integration-indices, such as ROIC and EVA(Economic Value Added), are insufficient. It is called for the analytical index, which can manage not only tangible assets but also intangible assets well, and soft-computing techniques should be useful. And, soft-computing techniques have the possibility of practical use in business process mining which module is extracted and combined out of business process outsourcing services of various corporations in the world(See Fig 1).

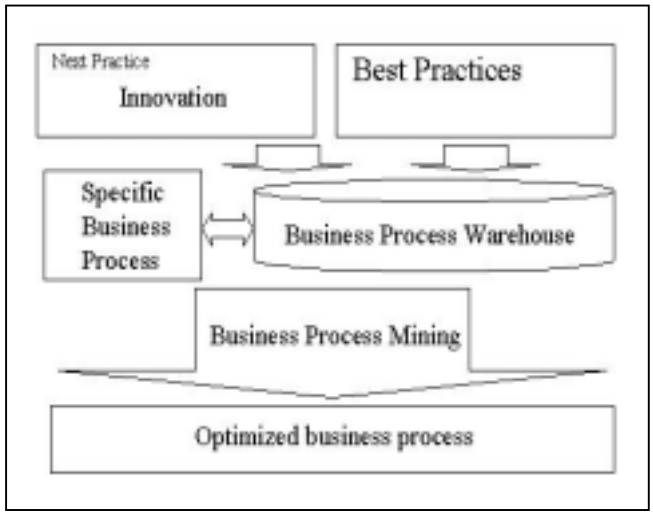

Fig. 1． Business Process Mining

Effective use of brand property is one of the reasons why the ROIC of US corporations is high. The business model based on a corporate brand has a high profit ratio, and its life cycle is also long. Moreover, it is known well that the company which has succeeded in corporate brand formation is going to raise reliability and safety, and not which quality functional brand but the emotional brand(status, fashionable, etc.).

Thus, Kansei occupies a lot of portion in a brand management, so it is called for the soft-computing research to apply the technique how to evaluate quantitatively a stakeholder's Kansei[11] over actions, such as goods, an advertisement, IR, etc. of a company, and to manage it from now on(See fig.2).

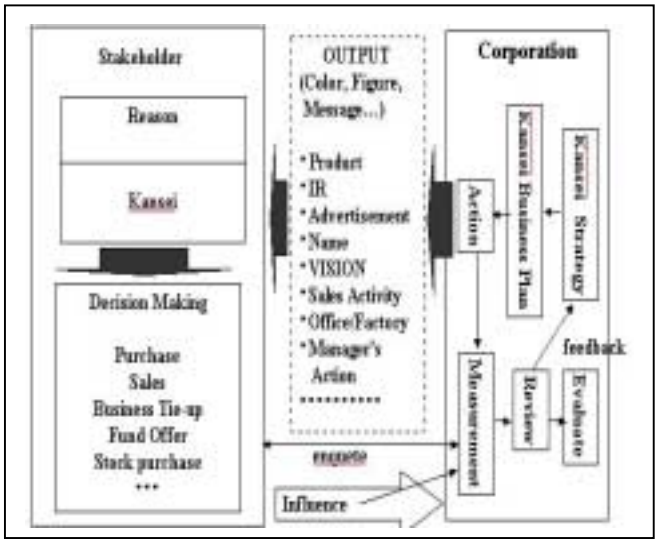

Fig.2. Kansei Management Process

Ⅳ. Conclusions

In this paper, the outline of this intangible assts was explained and practical use domain of soft-computing technique was tried to introduce based on the classification of intangible assets. Intangible assets are just the properties based on human wisdom. So, soft-computing techniques should be applied to this area. Moreover, it is called for making the best use of not only tangible assets, but also intangible assets in order to survive. The research, which visualizes complicated and invisible assets with soft-computing techniques is expected. And also, it is necessary to research combination of soft-computing and financial engineering to convert intangible assets into money.

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