Kobe University Repository : Kernel

PDF issue: 2026-11-21

Influence of Intellectual Capital Information on Credit Risk Rating Process/Criterion and Credit Conditions - Survey Analysis to Japanese Financial Institutions

Yosano, Tadanori

Koga, Chitoshi

(Citation)
神戸大学経営学研究科 Discussion paper,2008・52

(Issue Date)
2008-10

(Resource Type)
technical report

(Version)
Version of Record

(URL)
https://hdl.handle.net/20.500.14094/81000790

KOBE UNIVERSITY

Graduate School of
Business Administration

KOBE UNIVERSITY

ROKKO KOBE JAPAN

2008-52

Influence of Intellectual Capital Information on Credit Risk Rating Process/Criterion and Credit Conditions
- Survey Analysis to Japanese Financial Institutions

Tadanori Yosano Chitoshi Koga

Discussion Paper Series

Influence of Intellectual Capital Information on Credit Risk Rating Process/Criterion and Credit Conditions - Survey Analysis to Japanese Financial Institutions

Tadanori Yosano

Associate Professor, in Graduate School of Business Administration of Kobe University, Japan,

yosano@kobe-u.ac.jp

Chitoshi Koga

Professor, in Graduate School of Business Administration of Kobe University, Japan,

koga@kobe-u.ac.jp

1. Introduction

Intellectual capital is becoming increasingly important as a propellent or value driver for economic activation. Lenders are increasingly paying more attention to not only resources of production such as land, building, and machine/equipment, etc, but also intellectual capital including the business model, the executive skill which practices it, knowhow, superiority of technology, relationship with customers/suppliers, are growth drivers of the firm. This trend suggests a qualitative conversion from a past credit rating style which highly weighs the mortgage value of security required, to the new financing form which fully accounts for intellectual capital to the financing of lenders. Especially, a drastic conversion will be needed in the relationship banking of small /medium-sized and regional financial institutions, whose main clients are small/medium-sized enterprises. This trend was clearly described by the Financial Services Agency in their “General supervisory guidance for small/medium-sized and regional financial institutions” (FSA guideline, July 2008). The guideline emphasized the need for improvement in the ability to evaluate the importance of intellectual capital.

Against such a background, the “Organization for Small & Medium Enterprises and Regional Innovation, JAPAN” (SMRJ) set up a working group for financing based on the intellectual capital of small and medium-sized enterprises under the committee for management of intellectual capital of small and medium-sized enterprises. The SMRJ carried out survey, and analyzed the credit valuation in financing judgments, especially for small and medium-sized enterprises, which are of the most concern to the managers of such enterprises. Questionnaires were sent to all lenders in Japan (575 financial institutions: responses [76.3%] returned by 6 commercial banks [100%], 42 regional banks [65.6%], 34 second regional banks [93.3%], 243 credit unions [86.2%], 99 credit cooperatives [68.3%], and 4 other financial institutions [12.1%]). The results and analysis of the survey were reported in the “Investigation research business for the use of intellectual capital by small and medium-sized enterprises – a chapter of the investigation and research of financing based on

intellectual capital" (SMRJ report, September 2008). Firstly this paper reports on the realities concerning the use of non-financial information, where main information are composed by intellectual capital, in the financing judgment of the small and medium-sized enterprises by lenders, especially from the credit risk rating process/criterion points of view, based on the SMRJ report, September 2008. Secondly this paper reports which intellectual capital information have a real impact on financing decisions/credit conditions of given facilities, such as interest rate offered, amount granted, the length of financing, and mortgage value, based on the SMRJ report, September 2008.

2. Financing decision process of financial institutions -Statistics model vs. Judgment model

It is thought that the credit risk rating system of the financial institution is extremely varied and strongly reflects characteristics or "credit culture" of individual financial institutions. In the financing judgment, some financial institutions attach great importance to a "Statistical model" which primarily focuses on quantitative information, such as the financial index analysis and the adjusted balance sheet analysis, etc. Other financial institutions make decisions based on "Judgment model" which primarily focuses on qualitative information, such as internal/outside business environment, stake-holder information, history and track record of the firm, and strong/weak points of the business. The criteria and processes of credit risk rating of each financial institution differ greatly, when in the financing judgment. In fact, it is thought of as a very wide spectrum, at one end of which are the "Statistical model," types, and at the other, the "Judgment model" types (Morck et al, 2003, pp. 20-21).

The ratio of the use levels of non-financial information vs. financial information varies greatly, and is reported to be 72:28 on average [SMRJ report, September 2008, Table 1]. In fact, 293 financial institutions (83.3%) are using non-financial information at a weight of 20% or more. The use ratio 'about 28%' of non-financial information falls below use ratio (35%) of non-financial information as in decision making for stock investment, which ratio was reported in the survey analysis to institutional investors in E.U. and U.S. (Mavrinac and Siesfeld, 1995, p. 13). Taking into consideration the fact that the reward of financing is constant (interest income) and therefore the risk financial institutions can take is limited, and this is totally different from the volatile reward of the investment by the investors, the use ratio of 28% in "conservative" credit risk rating is considerably high. This ratio might reflect the current economic circumstances, in which financial institutions are being encouraged to convert into the financing style which focuses more on the ability to judge the borrowing firms' intellectual capital.

9 financial institutions, 2.5% of the sample, whose standing point is nearest to one end of the spectrum, the "Statistical model" (100:0), explain the reasons why they stand there are the: "difficulty in evaluating" and "exclusion of arbitrary use of" non-financial information. 27 financial

institutions, 7.6% of the sample, stand near other end the spectrum, the “Judgment model,” and value the non-financial information more or to at least the same level as financial information. Some financial institutions (40:60) said that “Information not seen in the financial information is abundant.” Others (30:70) explained that “The company is small, and the shortage of or reliability of financial information prompts the valuation of non-financial information.” Here, we understood that the subjective judgment of qualitative information that centers on intellectual capital is very important, especially for the regional bank, the credit union, and the credit cooperative, whose main clients are small and medium-sized enterprises, and whose business models are based on regional relationship with clients.

All financial institutions, except for second regional banks (23.8%), use about 30% of non-financial information when in financing decisions [commercial banks (27.5%), regional banks (28.2%), credit unions (28.0%), and credit cooperatives (28.9%)] (Table 2), and there were no remarkable differences between type of financial institution.

[Table 1]

[Table 2]

3. Credit risk rating process/criterion of financial institutions

The credit risk rating process in the financing judgment of financial institutions can be seen in Figure 1, from the aspect of the assignment and use of the rating points of view. Figure 1 was illustrated based on Treacy and Carey (1998, p. 910, Diagram 1) and Chapter 1.1 (“The result of hearing investigation of 7 financial institutions”) of the SMRJ report.

The process of assignment of rating includes (1) factors considered in rating, such as both financial information (sales-current profit ratio, cash flow, the length of debt redemption time remaining, etc.) and non-financial information (strong/weak points of the industry, management, and customers/suppliers, etc.), and (2) ratings criteria which consist of written/formal elements and subjective/informal elements (cultural). We assume that the latter is based on the “credit culture” of each financial institution as the knowledge form is not formally written in the banks’ own manuals (Treacy and Carey, 1998, p. 910; Morck et al, 2003, p. 19).

[Figure 1]

In the SMRJ report, it is confirmed that the majority of 50.1% financial institutions are collecting non-financial information by using a fixed form of hearing or check sheet. The typical name of the hearing or check sheet is “Client management table,” “Input table of qualitative information for corporate rating,” and “Informal decision sheet in the credit risk ranking system,” etc (pp. 31-32). There is no standard, formal, universal form for the checking sheet used by all institutions. Institutions which use one, make and fix their own, and use fix their own criteria and guideline, for the usage of the forms and how the information included in the forms is used in making financial

decisions. Almost all 95.5% financial institutions have an internal rule for a fixed form of hearing sheet, etc (p. 32). Among these cases, 80% of financial institutions standardize/systematize and manage a ruled fixed form of hearing seat, etc (p. 33). We conclude that financial institutions, whose fixed form of the hearing sheet, etc is ruled, systematically manage non-financial information on average. In the next section, we discuss which intellectual capital information is used more positively for the financing judgment, and whether financial institutions prepare written/formal rating criteria of non-financial information.

4. Fixed internal criterion/guidelines for evaluation of non-financial information

Table 3 shows to what degree financial institutions take into consideration –non-financial information when in financing decisions (1= "Do not value at all", 5= "Considerably value" by five likert-type scale) for 54 non-financial items in line with the SMRJ report categories, including manager (13), internal/external business environment (3), business contents (6), customers/suppliers (9), employees (6), basis of organization (14), and risk management/governance (3). Table 4 shows the positively significant differences compared to the average levels of evaluation for financial institutions using or not using a fixed form of hearing/check sheet. Out of 54 items, 24 were positively significant. The table also shows the difference between the users and non-users, of hearing/check sheet, and the results are ranked by this difference.

[Table 3]

[Table 4]

(1) "Basic management philosophy" and "Outline of business character"

"Guideline for Disclosure of Intellectual Assets Based Management" (GDIABM), issued by Ministry of Economy, Trade and Industry in Japan (METI) in October 2005, attaches importance to "showing the overall picture of corporate management from top manager's eye in a story" (chapter 2-2), and illustrates the description of the main story as "basic management philosophy" and "Outline of business" from general points of view, and as "management policy/visions of the past" and "past investment performance" from 'past to present' points of view (Figure 3). Table 4 suggests that financial institutions, which prepare the fixed form of hearing/check sheet for non-financial information, make great account of "business model" in financing judgment, where the difference from the average is the highest (0.18 points). Table 4 also shows other significant difference, such as "business schedules" (0.11 points) and "management philosophy" (0.09 points). On the other hand, "history and track record of business" was the 9th highest valued item [3.85] in financial judgments, by financial institutions both using the hearing/check sheet, and not using it, might not be related with fixed criterion/guideline.

“Basic management philosophy” is shown to be by the ability to instill the use of the overall picture of corporate management by many employees, such as “capability of management” (evaluation level=3.93), “the ability to make a plan/idea” (3.36), “leadership” (3.49), “character of management” (3.78), “age of top management” (3.47), “career in the sector” (3.35), “career of management” (3.41), “networks of management” (3.25), “health condition of top management” (3.61), “concentration level of the business” (3.37), and “publicity activities” (3.08). Table 4 suggests that financial institutions which prepare the fixed form of hearing/check sheet for non-financial information, put the greatest importance on “capability of management” (highest in the above list) in financing judgment, where the average level is 0.10 points higher than that of the financial institutions that don’t prepare the fixed form. Table 4 also shows the significant difference for “career in the sector” and “the ability to make a plan/idea” (both 0.11 points). Moreover, “successor's presence” (3.95) is a powerful means for small and medium-sized enterprises to elect able leaders continuously, and although this might not be related with the fixed criteria/guideline, its evaluation level is considerably high (4^{th} of 54 non-financial items) in the decision making of financing.

To recognize the “Outline of business character,” it is important to understand the status of products/services, customers/suppliers, and supply chain, including upstream and downstream parties, in the main business. As for the products/services, the SMRJ report listed “superiority and brand of products/services,” (evaluation level = 3.68), “profit margin of products/services,” (3.81), and “superiority of the main business” (3.84). As for customers/suppliers and supply chain, the SMRJ report listed “customers and their status” (3.63), “suppliers and their status” (3.42), “relationship with customers” (3.41), “relationship with suppliers” (3.30), “customer satisfaction” (3.32), and “sales promotion/advertising campaign activities” (3.12). Table 4 also suggests that financial institutions, which prepare the fixed form of hearing/check sheet for non-financial information, put great importance on “superiority of the main business” and “superiority and brand of products/services” in financing judgment, where the evaluation level averages are 0.11 and 0.10 points higher than that of the financial institutions that don’t prepare the fixed form. Table 4 also shows significant differences, such for items “customers and their status” (0.16 points), “suppliers and their status,” “the relationship with customers” (both 0.12 points) and “the relationship with suppliers” (0.1 points). We found that this non-financial information regarding external negotiation power/relationships leads to the utilization when the financial institutions prepare the formal criterion/guideline.

To grasp the “Outline of business character,” it is important to understand the status of the main market and relationship with the competitors, as an outside environment over the main business. As for this understanding, the SMRJ report listed “market share/position in the sector” (evaluation level =3.53 points), “business climate/sensitivity” (3.80), and “status of competitors” (3.73). Only “business climate/sensitivity” shows the difference of the evaluation level of 0.10 points, when

financial institutions prepare the fixed criterion/guideline.

(2) Unique intellectual assets and strength/value creation method based on them

In the next section of the general perspective of "Basic management philosophy" and "Outline of business characteristics," GDIABM illustrates "management policy in the past," "investment based on that policy," and "unique intellectual assets accumulated in the firm, strengths/value creation method based on them," from the 'past to present' perspectives. Firstly, we could list "superiority of technologies," (evaluation level =3.85), "intellectual property (rights)" (3.44), "corporate brand" (3.32), and "status of research and development" (3.26), of non-financial items in the SMRJ report. "Corporate brand" and "status of research and development" show the difference of the evaluation level of 0.15 points, each, when financial institutions prepare the formal criterion/guideline, though both items' evaluation level are not high (below the average of all 54 non-financial items).

Moreover, as for non-financial information which express organizational power (collective strength) and solidarity as a unity of individual capacities, we could list "the number of employees" (evaluation level =3.13), "average age of employees (year to year)" (2.95), "turnover ratio" (3.04), "incentive system" (2.77), "know-how" (3.23), "holders of qualifications/technologies" (3.24), as for items concerning employees, and "the number of branches" (2.99), "smoothness of management-labor relations" (3.09), "in-house improvement proposal system/the number of improvement executions" (2.87), "personnel evaluation system" (2.81), "enhancement level of corporate education" (3.03), "situations of introduction of the IT system" (3.06), "in-house mechanism" (3.28), "support system of the parent company" (3.66) and "affiliates" (3.88), as for items concerning the teamwork/organizational knowledge and base. Generally, the evaluation level in financing decision is low for these items, except for "support system of the parent company" and "affiliates," which is consistent with the low evaluation level for the items relating employees and quality assurance when financial analysts evaluates the small and medium-sized enterprise (Sakakibara, Hansson and Yosano, 2005, p. 8). However, "in-house mechanism," "the number of employees," and "smoothness of management-labor relations" shows differences of the evaluation level for 0.16, 0.12, and 0.11 points respectively, when financial institutions have the fixed criterion/guideline, as well as "support system of the parent company" and "affiliates" show the difference for 0.17 and 0.14 points respectively.

(3) Identification of future uncertainty/risk

Following the section of 'past to present' perspectives, GDIABM shows the importance of "identification of uncertainty factor for future profit" and "how to manage and deal with future uncertainty/risk (method and system of risk management)," from the 'present to future' perspectives. As for non-financial information, which is related to the capital cost that has much effect on future

profit, we could list “presence of main financial institutions” (evaluation level=3.86), “financing from another main financial institutions” (3.96). As for the items concerning the risk management/compliance system, we listed “risk management of information leakage” (3.34), “legal risk management” (3.60), and “compliance system” (3.64). Here, “legal risk management” and “compliance system” are valued to a higher degree 0.16 and 0.10 points respectively, on average, when financial institutions prepare the fixed criterion/guideline of non-financial information.

4. Application mechanism of credit rating criteria

Figure 2 is a concept diagram to show how to control and validate “credit rating process/criteria” and “quantitative loss characteristics of financing” (When the financing was executed, what loss, including any loss in event of default and the probability of default were multiplied, is expected) when the financing was decided. Controls and validation are practiced by the incentive and training system in the financial institutions.

[Figure 2]

The SMRJ report shows that the collection of non-financial information and the skill improvement of financing and reviewing were attempted by at least 40% of financial institutions; using an internal/external seminar, in each main section [marketing, financing, and reviewing]. Moreover, an external educational institution has been used in about 30% of financial institutions. 15% of financial institutions internally shared their knowledge in the shape of a document through in-house magazines etc; This is considerably less than the former two incentive/training systems (Table 5).

[Table 5]

5. Intellectual capital and framework of credit risk analysis

The basic attributes of credit risk of loan or other exposure over a given period involves “probability of default; [PD],” and “loss in the event of default; [LIED].” “Probability of default” is the probability that the borrower goes into default. “Loss in the event of default” is the portion of amount granted if the borrower goes/faces bankruptcy and financial institution cannot collect. The “expected loss; [EL]” is the product which is “probability of default” being multiplied by “default loss” [PD*LIED=EL]. The concept of loss in financing decisions is classified as one-dimension/two-dimension model by the interview investigation to large banks in U.S. (Treacy and Carey, 1998, pp. 899-900). 60% of large banks adopt a one-dimensional rating system, in which the rating is assigned to a given facility. Here, EL is approximately the scale of this dimension. The remainder, 40%, adopts a two-dimensional rating system, in which one-dimension is assigned to general creditworthiness, the other is to the exposure risk of a facility. Here, PD is approximately the scale of one-dimension, and EL is approximately the other.

Thus, two attributes, “probability of loss” and “default loss,” lie in the basis of the concept of loss.

Intellectual capital is the nexus of knowledge systems which are the resources of value creation. It include intellectual property rights (legally recognizable rights, such as patents, trademarks, programme copyrights, etc), and intangible competences/latent faculties (not legally recognizable assets, such as employee training programmes, incentive systems, channels of distribution, capability of management, the ability to make a plan/idea, etc). Intellectual property rights, which include legal rights, could be grasped from the expansive view points of mortgage financing, where the value lies in the proprietary rights, such as traditional tangible/financial assets. On the other hand, the "intangible competences," which are represented by incentive systems and the channels of distribution, and the "latent faculties," such as the ability to make a plan/idea and corporate culture, could be grasped as the influencing knowledge to the capability of the borrower to generate future cash flows. Therefore, we could understand that the 'improvement of the ability to evaluate intellectual capital' needs the perspective which relates the "probability of default" to the firm's capability to generate future cash flows.

6. Previous research of intellectual capital information and credit conditions of lenders

Intellectual capital report [IC report] is regarded as a communication tool for financial institutions to accelerate an understanding of the "intangible competences" and "latent faculties" of the borrowing firm, which are a value driver of the firm's competition, and reinforce a credit rating positively. Guimon (2005) is the first research to investigate whether IC report has an impact on the credit conditions of a bank or not. He interviewed 12 experienced credit analysts of Banco Santander Central Hispano (BSCH), where the market share and size (market value) is top ranked in Spain, and investigated the influence of intellectual capital information to credit conditions [interest rate, amount offered]. In his laboratory research procedure, credit analysts firstly decided the credit conditions from the annual report and the business schemes of a given facility of a virtual company. Secondly, they could reconsider whether to change their financing decisions after reviewing additional an IC report thoroughly. The style of IC report followed guideline of MERITUM. The results showed that 2 credit analysts (16.7%) answered that IC report is an influencing tool for credit conditions [interest rate, amount offered]. Koga, Sakakibara, and Yosano (2007) also investigated the impact of IC report on credit conditions [interest rate, the amount offered, and the value of security required], in Japan. They surveyed 13 commercial bankers from the reviewing section of one of the 3 largest multi-national banks in Japan, and 9 regional bankers from the financing section of their bank. Here, bankers firstly decided the credit conditions from the company information, annual report and the business schemes of a given facility of a virtual company, which are in line with the information/material of Japanese typical financing practice, following the advice of a commercial banker. Secondly, they could reconsider whether to change their financing decision after reviewing additional IC report following the MERITUM style. The result of commercial bankers showed that

(1) 3 bankers (23%) answered ‘Probably yes,’ that IC reports had an impact on the decision of the interest rate, (2) 5 bankers (38%) answered ‘Probably yes,’ that IC reports had an impact on the decision of the amount offered, and (3) 6 bankers (46%) answered ‘Probably yes,’ that IC reports had an impact on the decision of the value of security required. Contrarily, the result from regional bankers showed that IC reports had less impact on the credit conditions than commercial bankers; (1) 2 bankers (22%) answered ‘Probably yes,’ that IC reports had an impact to the decision of the interest rate, (2) 1 bankers (11%) answered ‘Probably yes,’ that IC reports had an impact to the decision of the amount offered, and (3) 3 bankers (33%) answered ‘Probably yes,’ that IC reports had an impact to the decision of the value of security required. Here, no bankers answered ‘Definitely yes’ to all credit conditions, but focusing on commercial bankers, where financing services are spread out internationally, Japanese bankers put more importance on intellectual capital information to influence credit conditions than Spanish bankers, on average. These analyses were based on the laboratory procedure where bankers make a financing decision on a virtual company, so the sample size must have been limited. In the next section, we report the results of the questionnaire analysis to investigate the influence of the non-financial information, where intellectual capital information is centered, to the credit conditions.

7. Non-financial information which has an impact on the decision of the interest rate

Table 6 shows the positively significant difference between the users and non-users of non-financial information in the decision of the interest rate. Out of 54 items, 8 non-financial items were positively significant, and the results are ranked by this difference. These results suggest that, “business schedules” (evaluation level of the users of non-financial information in the decision of the interest rate=4.03) and the elements of “business characteristics and outline” concerning selection and concentration of products/services, such as “superiority and brand of products/services” (3.74) and “profit margin of products/services” (3.86), have an impact on the decision of the interest rate. Moreover, it is interesting that the ability to execute “basic management philosophy” and instill the use of its philosophy by employees, such as the “health condition” (3.67) “leadership” (3.54) and “the ability to make a plan/idea” (3.41) of top management, have an influence on the interest rate. These abilities, reinforced by the centre leadership, are considered as the key factors, which generate value creation/forfeiture, to predict future cash flows of the firm. Lastly, the results suggest that “holders of qualifications/technologies” (3.29) have an impact on the interest rate.

8. Non-financial information which has an impact on the decision of the amount offered

Table 7 shows the positively significant difference between the users and non-users of non-financial information in the decision of the amount offered. Out of 54 items, surprisingly 45 non-financial items were positively significant, and the results are ranked by this difference. Especially focusing

on the top 20 items, the main items are concerning supply chain, including upstream and downstream parties, in the main business. That is, the main items are related to negotiation power/relationship, such as “customers and their status” (evaluation level of the users of non-financial information in the decision of the amount offered=3.74), “relationship with customers” (3.51), “suppliers and their status” (3.50), and “relationship with suppliers” (3.38), and concentration of products/services, such as “superiority of the main business” (3.94), “profit margin of products/services” (3.86). Moreover, non-financial items concerning “unique intellectual assets accumulated in the firm,” such as “corporate brand” (3.41), “superiority of technologies” (3.93), and “status of research and development” (3.33), is centered in top 20 items. The “risk management of information leakage” (3.44) and “compliance system” (3.73), that are concerning the risk management/compliance system, are distinguishingly ranked in the top 5 items, which suggests that the items concerning recognition of future uncertainty/risk have an impact on the decision of the amount offered. Lastly, it is interesting that the ability to execute “basic management philosophy” and instill the use of its philosophy by employees, such as the “character” (3.87), “career” (3.49) and “leadership” (3.56) of management, also have an influence on the amount offered, although influencing items are different from those used in the decision of the interest rate.

9. Non-financial information which has an impact on the decision of the length of financing

Table 8 shows the positively significant difference between the users and non-users of non-financial information in the decision of the length of financing. Out of 54 items, extremely 40 non-financial items were positively significant, and the results are ranked by this difference. The different items of Table 7 (influence on the amount offered) and Table 8 (influence on the length of financing) are shown in shade. Especially focusing on the items concerning the management practical capability, Table 7 shows the significant difference for “leadership” (evaluation level of the users of non-financial information in the decision of the length of financing=3.56), “health condition” (3.68), and “capability” (4.00) of management. Table 7 also shows the significant difference for “successor's presence” (4.01), which is a powerful means for small and medium-sized enterprises to elect able leaders continuously. Moreover, the “age of top management” (3.61), “career in the sector” (3.45), and “concentration level of the business” of a manager (3.44) are distinguishingly ranked. Thus, it is interesting that financial institutions are taking different items into consideration, between the decision of the amount offered and the length of financing.

10. Non-financial information which has an impact on determining the value of the property which the loan is secured on

Table 9 shows the positively significant difference between the users and non-users of non-financial information in determining the value of the property which the loan is secured on. Out of 54 items,

24 non-financial items were positively significant, and the results are ranked by this difference. When focusing on top 15 items of 24, we could firstly understand that “support system of the parent company” (evaluation level of the users of non-financial information in determining the value of security required=3.83) “personnel assets of the manager” (4.08), “presence of main financial institutions” (3.94) and “affiliates” (3.97) are related with the portion of the amount which a lender cannot collect when in the default. The “relationship with customers” (3.52), “customers and their status” (3.72) and “relationship with suppliers” (3.40) that are concerning negotiation power/relationship, are distinguishingly ranked in the 15th place. Moreover, the results showed that the items which express a unity of individual capacities, such as “smoothness of management-labor relations” (3.20) and “turnover ratio” (3.15) have an impact on the value of security required, although evaluation levels in financing judgments are comparatively low. Here, it is also interesting that the ability to execute “basic management philosophy” and instill the use of its philosophy by employees, such as the “capability of management” (4.03), “leadership” (3.59), “concentration level of the business” (3.47), “networks” (3.34) and “career in the sector” (3.43) of management, have an influence on value of the property which the loan is secured on. Lastly we expect the positive sign of difference for intellectual property in the judgment of security required, because these legal properties have proprietary rights which reduce the portion of the amount that a financial institution cannot collect when in bankruptcy. However the results suggest that the intellectual property has a positive impact on decision of amount offered, but don’t show significant impact on deciding the securities. This is a puzzle, and we expect to solve this matter in the progress of our future research.

11. Concluding remarks

There has been hardly any investigation into which procedure and to what degree non-financial information is used in financing process, and which non-financial items have an impact on credit conditions [interest rate, the amount offered, length of financing, and the value of the security required]. The SMRJ report was the first and only comprehensive survey analysis to investigate prospective non-financial information on risk rating process/criteria and credit conditions.

Especially, being focused on the financing decision, the financial institutions are strongly recognizing the importance of non-financial information, the main characteristics of which are intellectual capital, and taking into consideration this information, on average, though there is a difference the level of importance for each financial institution. PRISM reported that financial institutions are interested in non-financial information such as intangible assets to a limited degree (Morck et al, 2003, pp. 12-13). However, the SMRJ report shows that over half of financial institutions in Japan record non-financial information by using the hearing/check sheet such as a “Client management table” in their daily business process, and attempt the collection/analysis of non-financial information by inputting this information into the “customer management/support

system." We found that this fixed criteria/guideline leads to positive use of intellectual capital information, such as business model and external negotiation power/relationships. Nearly half of financial institutions control and validate risk rating criteria by giving employees guidance in the collection and rating of non-financial information, through internal/external training and seminar, and attempting skill improvement of financing and reviewing.

Moreover, as for financing conditions, our results suggest that the elements of "business characteristics and outline" concerning selection and concentration of products/services, the ability to execute "basic management philosophy" and instill the use of its philosophy by employees, and "holders of qualifications/technologies," have an impact on the decision of the interest rate. We also found that the ability to practice "basic management philosophy," among which "leadership" of management is central items, has an influence on all of the credit conditions, although influencing items are different from those used in the decision of each other. It is also interesting that non-financial items concerning negotiation power/relationship are ranked high of the significant difference between the users and non-users of non-financial information in the decision of the interest rate, the amount offered, and the value of the property which the loan is secured on. We also found that non-financial items concerning "unique intellectual assets accumulated in the firm," such as "corporate brand" and "superiority of technologies," have an impact on the decision of the amount offered. Lastly we found that the items concerning recognition of future uncertainty/risk, such as the "risk management of information leakage" and "compliance system," are distinguishingly ranked in the top 5 items, when in deciding the amount offered.

[October 2nd, 2008]

References

Financial Service Agency in Japan, *General Supervisory Guidance for Small/medium-sized and Regional Financial Institutions*, July 2008.

Koga C., *Accounting for Intellectual Assets*, Toyokeizai co. ltd, 2005. (in Japanese)

Koga C., S. Sakakibara, and T. Yosano, *Explore Financing Based on Intellectual Assets*, Chuokeizai co. ltd, 2007. (in Japanese)

Mavrinac S. and T. Siesfeld, "Measures that Matters: An Exploratory Investigation of Investors' Information Needs and Value Priorities," *Measuring Intangible Investment*, OECD, 1998, pp. 1-25.

Ministry of Economy, Trade and Industry in Japan, *Guidelines for Disclosure of Intellectual Assets Based Management*, October 2005.

Morck, F., Hall, M. and E. Vali, "Banking and Venture Capital Metrics," *Work Package 7*, Policy Research into Innovation and Measurement Practice in the Intangible Economy (PRISM), June 2003, pp. 1-53.

Organization for Small & Medium Enterprises and Regional Innovation in Japan, *Investigation research business for the use of intellectual capital by small and medium-sized enterprises – a chapter of the investigation and research of financing based on intellectual capital,* September 2008.

Sakakibara, S. Hansson, B, and T. Yosano, "Japanese analysts' perception of intellectual capital information," *Proceedings of 1st Work Shop on Visualising, Measuring and Managing Intangibles and Intellectual Capital*, pp. 1-26, 2005.

Treacy, W. and M. Carey, "Credit Risk Rating at Large U.S. Banks," *Federal Reserve Bulletin*, Vol. 84, No. 11, November 1998, pp. 897-921.

Young, D. W., "Toward a Set of General Principles for Measuring and Reporting on Intangible Assets," *Work Package 4*, Policy Research into Innovation and Measurement Practice in the Intangible Economy (PRISM), March 2003, pp. 1-16.

Table 1 Distribution of the ratio of the use levels of non-financial information

ratio of the use levels of non-financial information	N	ratio	cumulative ratio
0 through 10%	9	2.5%	2.5%
10% through 20%	51	14.4%	17.0%
20% through 30%	110	31.2%	48.2%
30% through 40%	127	36.0%	84.1%
40% through 50%	29	8.2%	92.4%
50% or more	27	7.6%	100%

Source: "Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital," by Organization for Small & Medium Enterprises and Regional Innovation, Japan, p. 49, Table 3-4-2.

Table 2 The ratio of the use levels of non-financial information by type of financial institution

categories	N	ratio
all	428	27.9%
commercial banks	6	27.5%
regional banks	42	28.1%
second regional banks	34	23.8%
credit unions	243	28.0%
credit cooperatives	99	28.9%
others	4	40.0%

Source: "Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital," by Organization for Small & Medium Enterprises and Regional Innovation, Japan, p. 48, Table 3-3.

Table 3 Results of what degree lenders taking into consideration when in financing decisions

SMRJ Categories	non-financial items	evaluation level
		average
manager	personal assets of management	3.99
	successor's presence	3.95
	capability of management	3.93
	character of management	3.78
	health condition of top management	3.61
	leadership	3.49
	age of top management	3.47
	career of management	3.41
	concentrative level of the business	3.37
	the ability of make a plan/idea	3.36
	career in the sector	3.35
	networks of management	3.25
	publicity activities	3.08
internal/external business environment	business climate/sensitivity	3.80
	status of competitors	3.73
	market share / position of the sector	3.53
business contents	history and track record of business	3.85
	superiority of technologies	3.85
	superiority of the main business	3.84
	profit margin of products/services	3.81
	superiority and brand of products/services	3.68
	intellectual property (rights)	3.44
customers / suppliers	financing affordable	4.01
	financing from another main financial institutions	3.96
	presence of main financial institution	3.86
	customers and their status	3.63
	suppliers and their status	3.42
	relationship with customers	3.41
	customer satisfaction	3.32
	relationship with suppliers	3.30
	sales promotion/advertising campaign activities	3.12
employees	holders of qualifications/technologies	3.24
	know-how	3.23
	the number of employees	3.13
	turnover ratio	3.04
	average age of employees (year to year)	2.95
	incentive system	2.77
basic of organization	business schedules	3.95
	affiliates	3.88
	support system of parent company	3.66
	management philosophy	3.45
	business model	3.43
	corporate brand	3.32
	In-house mechanism	3.28
	status of research and development	3.26
	smoothness of management-labor relations	3.09
	situations of introduction of the IT system	3.06
	enhancement level of corporate education	3.03
	the number of branches	2.99
	in-house improvement proposal system/the number of improvement executions	2.87
	personnel evaluation system	2.81
risk management / governance	compliance system	3.64
	legal risk management	3.60
	risk management of information leakage	3.34

Source: “Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital,” by Organization for Small & Medium Enterprises and Regional Innovation, Japan, pp. 61-62, Research materials.

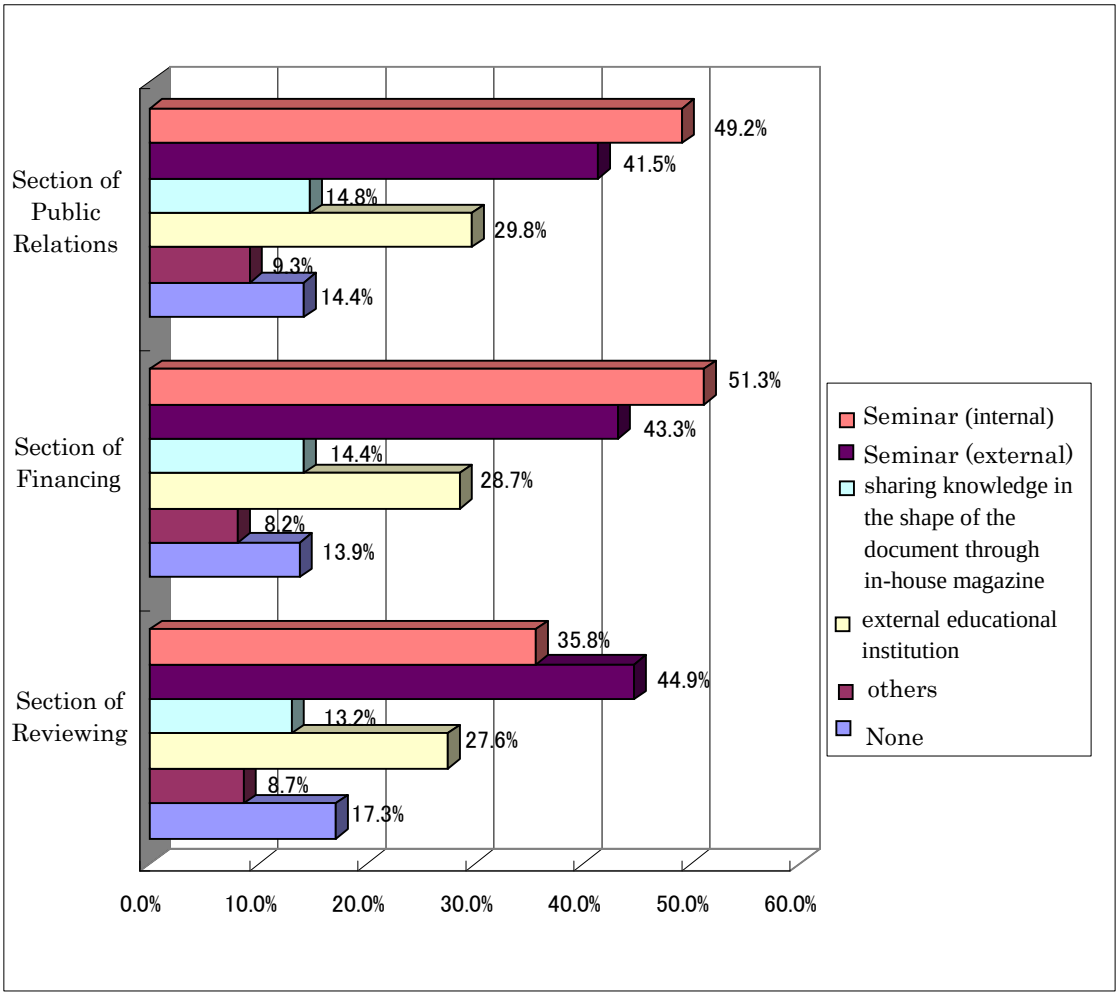
Table 4 Positively significant differences of credit evaluation for lenders using or not using a fixed form of hearing/check sheet ranked by difference

non-financial items	using a fixed form of hearing/check sheet	not using a fixed form of hearing sheet		
	average	average	difference	significant level
business model	3.52	3.33	0.18	***
support system of the parent company	3.74	3.58	0.17	***
legal risk management	3.68	3.52	0.16	***
customers and their status	3.71	3.55	0.16	***
In-house mechanism	3.36	3.20	0.16	***
corporate brand	3.40	3.25	0.15	***
status of research and development	3.33	3.19	0.15	***
affiliates	3.95	3.81	0.14	**
suppliers and their status	3.48	3.36	0.12	**
the number of branches	3.05	2.93	0.12	**
personal assets of management	4.05	3.93	0.12	**
relationship with customers	3.47	3.36	0.12	**
career in the sector	3.40	3.29	0.11	**
superiority of the main business	3.90	3.79	0.11	*
business schedules	4.00	3.89	0.11	**
the member of employees	3.18	3.07	0.11	**
the ability of make a plan/idea	3.41	3.31	0.11	**
capability of management	3.98	3.88	0.10	*
compliance system	3.69	3.59	0.10	*
relationship with suppliers	3.36	3.25	0.10	**
superiority and brand of products/services	3.73	3.63	0.10	*
business climate/sensitivity	3.85	3.75	0.10	*
management philosophy	3.50	3.41	0.09	*
smoothness of management-labor relations	3.12	3.06	0.07	*

Note) *** shows 1% significant level (two-tailed), ** shows 5% significant level (two-tailed) and * shows 10% significant level (two-tailed), by Mann-Whitney U test.

Source: “Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital,” by Organization for Small & Medium Enterprises and Regional Innovation, Japan, p. 52, Table 3-8.

Table 5 Incentive/Training system of collection of non-financial information and the skill improvement of financing and reviewing



Source: “Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital,” by Organization for Small & Medium Enterprises and Regional Innovation, Japan, p. 42.

Table 6 Positively significant difference between the users and non-users of non-financial information in the decision of the interest rate

non-financial items	Impact (N=223)	No impact (N=203)		
	average	average	difference	significant level
business schedules	4.03	3.86	0.16	***
superiority and brand of products/services	3.74	3.62	0.12	**
health condition of top management	3.67	3.55	0.12	**
leadership	3.54	3.43	0.11	**
holders of qualifications / technologies	3.29	3.19	0.10	**
profit margin of products/services	3.86	3.75	0.10	*
the ability of make a plan/idea	3.41	3.31	0.10	**
business model	3.47	3.37	0.10	*

Note) *** shows 1% significant level (two-tailed), ** shows 5% significant level (two-tailed) and * shows 10% significant level (two-tailed), by Mann-Whitney U test.

Source: “Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital,” by Organization for Small & Medium Enterprises and Regional Innovation, Japan, p. 54, Table 3-10.

Table 7 Positively significant difference between the users and non-users of non-financial information in the decision of the amount offered

non-financial items	Impact (N=233)	No impact (N=195)		
	average	average	difference	significant level
customers and their status	3.74	3.49	0.24	***
risk management of information leakage	3.44	3.21	0.23	***
relationship with customers	3.51	3.29	0.22	***
superiority of the main business	3.94	3.73	0.21	***
compliance system	3.73	3.52	0.21	***
character of management	3.87	3.67	0.21	***
in-house mechanism	3.37	3.17	0.20	***
corporate brand	3.41	3.22	0.10	***
suppliers and their status	3.50	3.31	0.19	***
personnel evaluation system	2.90	2.71	0.19	***
financing affordable	4.10	3.91	0.18	***
profit margin of products/services	3.89	3.71	0.18	***
smoothness of management-labor relations	3.17	2.99	0.18	***
market share/position of the sector	3.61	3.43	0.18	***
superiority of technologies	3.93	3.75	0.18	***
turnover ratio	3.12	2.95	0.17	***
career of management	3.49	3.32	0.17	***
status of research and development	3.33	3.17	0.17	***
relationship with suppliers	3.38	3.21	0.17	***
leadership	3.56	3.40	0.17	***
publicity activities	3.15	2.99	0.16	***
health conditions of top management	3.68	3.52	0.16	***
in-house improvement proposal system / the number of improvement	2.95	2.78	0.16	***
the number of employees	3.20	3.04	0.16	***
incentive system	2.84	2.68	0.16	***
business climate/sensitivity	3.87	3.71	0.16	**
know-how	3.30	3.14	0.15	**
capability of management	4.00	3.85	0.15	***
holders of qualifications/technologies	3.31	3.16	0.14	**
intellectual property (rights)	3.50	3.36	0.14	**
the ability of make a plan/idea	3.43	3.29	0.14	**
legal risk management	3.66	3.52	0.13	*
business model	3.49	3.35	0.13	**
successor's presence	4.01	3.88	0.13	**
average age of employees (year to year)	3.01	2.88	0.13	**
the number of branches	3.05	2.92	0.13	**
support system of parent company	3.72	3.59	0.13	*
presence of main financial institution	3.91	3.79	0.13	**
networks of management	3.31	3.18	0.12	**
status of competitors	3.78	3.66	0.12	*
situations of introduction of the IT system	3.11	2.99	0.12	*
history and track record of business	3.90	3.79	0.12	*
enhancement level of corporate education	3.08	2.96	0.12	*
business schedules	4.00	3.89	0.11	*
sales promotion/advertising campaign activities	3.16	3.07	0.09	*

Note) *** shows 1% significant level (two-tailed), ** shows 5% significant level (two-tailed) and * shows 10% significant level (two-tailed), by Mann-Whitney U test.

Source: “Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital,” by Organization for Small & Medium Enterprises and Regional Innovation, Japan, p. 56, Table 3-11.

Table 8 Positively significant difference between the users and non-users of non-financial information in the decision of the length of financing

non-financial items	Impact (N=126)	No impact (N=302)		
	average	average	difference	significant level
legal risk management	3.80	3.51	0.29	***
compliance system	3.80	3.57	0.24	***
support system of parent company	3.82	3.60	0.22	***
market share/position of the sector	3.68	3.46	0.22	***
relationship with customers	3.56	3.35	0.21	***
status of competitors	3.88	3.66	0.21	***
corporate brand	3.47	3.26	0.21	***
in-house mechanism	3.43	3.22	0.21	***
customers and their status	3.77	3.57	0.21	***
presence of main financial institution	4.00	3.80	0.20	***
age of top management	3.61	3.41	0.20	***
profit margin of products/services	3.95	3.75	0.19	***
affiliates	4.02	3.83	0.19	***
risk management of information leakage	3.47	3.28	0.18	***
business model	3.55	3.37	0.18	***
the number of branches	3.12	2.94	0.18	***
suppliers and their status	3.54	3.36	0.17	***
publicity activities	3.20	3.03	0.17	***
incentive system	2.89	2.72	0.17	**
smoothness of management-labor relations	3.21	3.04	0.17	***
financing affordable	4.13	3.96	0.17	***
relationship with suppliers	3.42	3.25	0.17	***
superiority of the main business	3.96	3.80	0.16	**
career of management	3.52	3.37	0.15	**
the number of employees	3.23	3.08	0.15	***
superiority and brand of products/services	3.79	3.64	0.15	**
customer satisfaction	3.43	3.28	0.15	**
know-how	3.33	3.18	0.15	**
status of research and development	3.36	3.22	0.15	**
history and track record of business	3.95	3.81	0.14	**
career in the sector	3.45	3.31	0.14	**
turnover ratio	3.14	3.00	0.14	**
character of management	3.87	3.74	0.13	*
superiority of technologies	3.94	3.81	0.13	*
enhancement level of corporate education	3.12	2.99	0.13	**
the ability of make a plan/idea	3.45	3.33	0.13	**
networks of management	3.34	3.22	0.12	*
holders of qualifications/technologies	3.33	3.21	0.12	**
financing from another main financial institutions	4.05	3.93	0.12	*
concentration level of the business	3.44	3.34	0.09	*

Note) *** shows 1% significant level (two-tailed), ** shows 5% significant level (two-tailed) and * shows 10% significant level (two-tailed), by Mann-Whitney U test.

Source: “Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital,” by Organization for Small & Medium Enterprises and Regional Innovation, Japan, p. 58, Table 3-12.

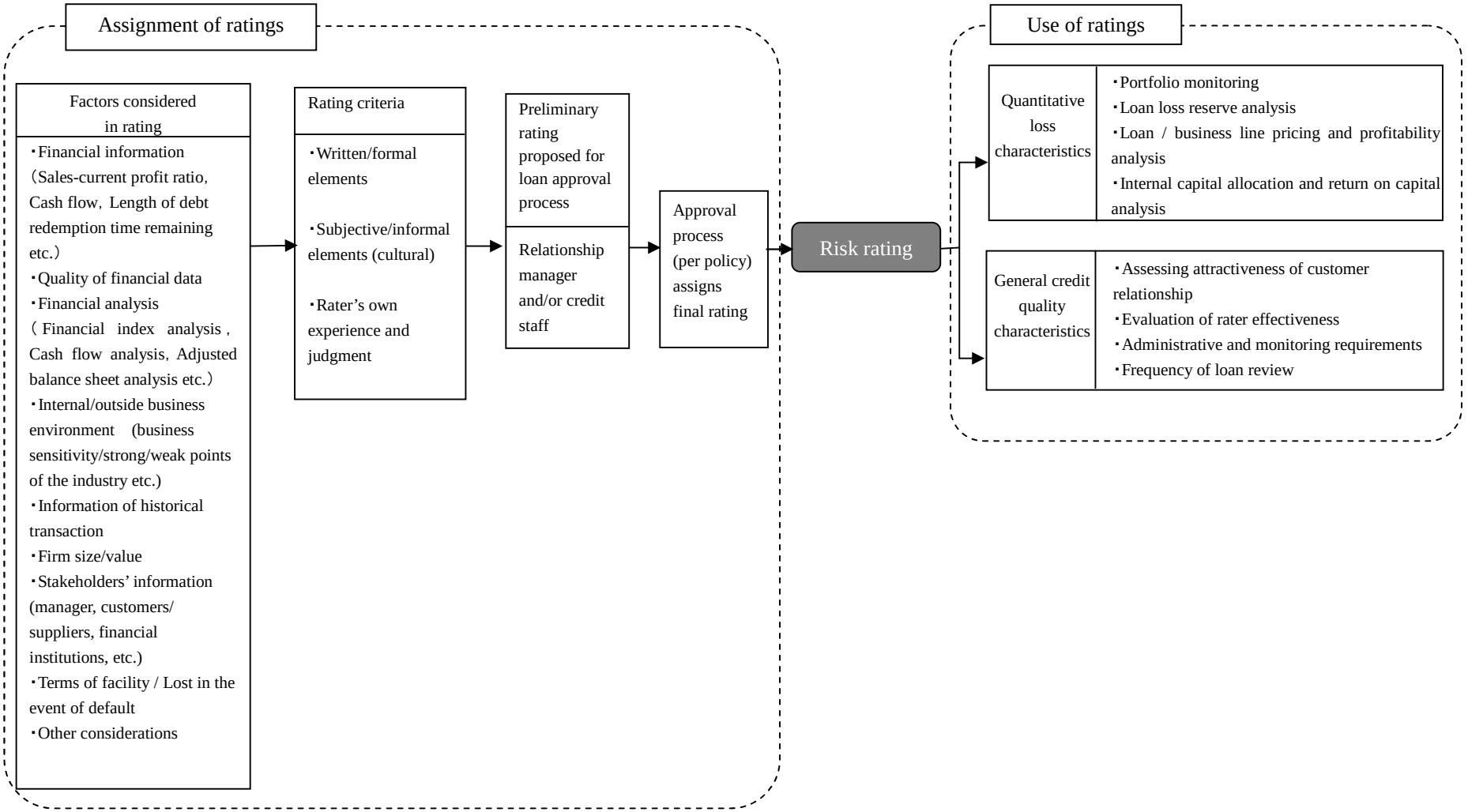
Table 9 Positively significant difference between the users and non-users of non-financial information in the decision of the value of security required

non-financial items	Impact (N=160)	No impact (N=268)		
	average	average	difference	significant level
support system of parent company	3.83	3.56	0.27	***
relationship with customers	3.52	3.34	0.18	***
smoothness of management-labor relations	3.20	3.03	0.17	**
turnover ratio	3.15	2.98	0.17	***
compliance system	3.74	3.57	0.17	**
capability of management	4.03	3.87	0.16	***
leadership	3.59	3.43	0.16	***
concentration level of the business	3.47	3.31	0.16	**
customers and their status	3.72	3.57	0.15	**
relationship with suppliers	3.40	3.25	0.15	**
personal assets of management	4.08	3.94	0.14	**
presence of main financial institution	3.94	3.80	0.14	**
networks of management	3.34	3.20	0.14	**
affiliates	3.97	3.83	0.14	**
career in the sector	3.43	3.30	0.13	**
business schedules	4.03	3.90	0.13	**
corporate brand	3.41	3.28	0.13	**
market share/position of the sector	3.60	3.48	0.12	*
status of competitors	3.80	3.68	0.11	*
character of management	3.85	3.74	0.11	*
average age of employees (year to year)	3.02	2.91	0.11	**
business model	3.49	3.39	0.10	*
the number of branches	3.06	2.96	0.10	*
publicity activities	3.14	3.05	0.09	*

Note) *** shows 1% significant level (two-tailed), ** shows 5% significant level (two-tailed) and * shows 10% significant level (two-tailed), by Mann-Whitney U test.

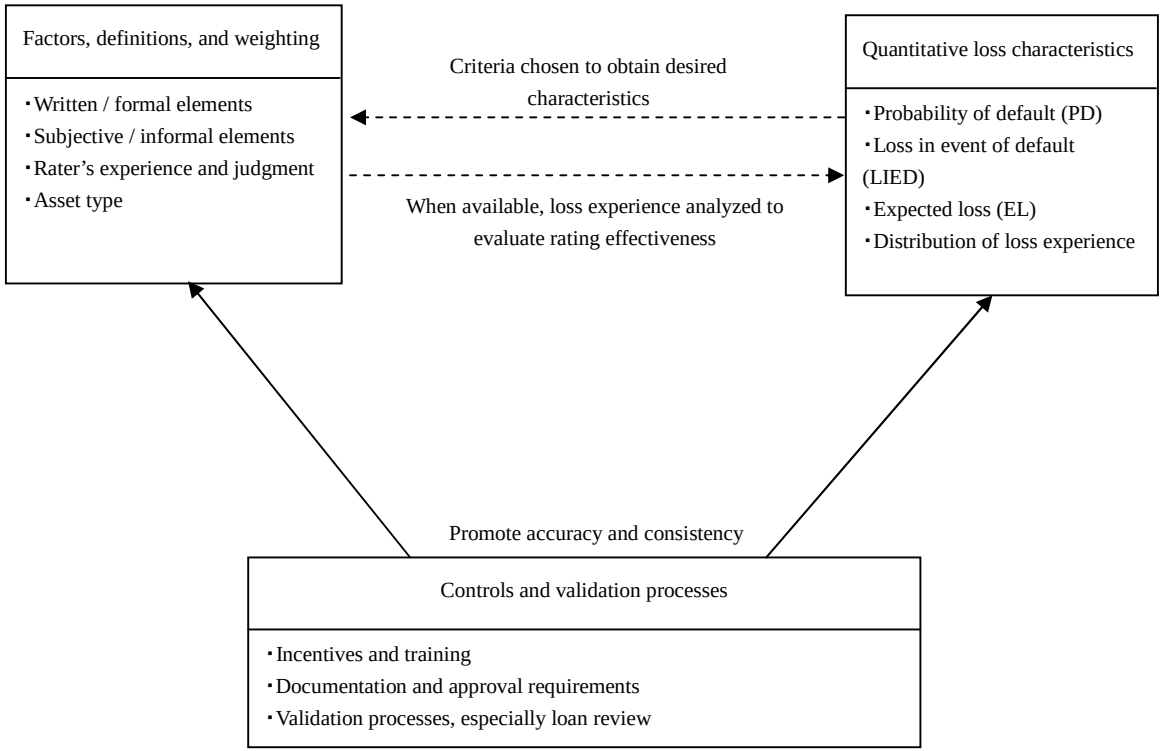
Source: “Investigation research business for the use of intellectual capital by small and medium-sized enterprises - a chapter of the investigation and research of financing based on intellectual capital,” by Organization for Small & Medium Enterprises and Regional Innovation, Japan, p. 60, Table 3-13.

Figure 1 Risk rating process of financial institutions



Source: Treacy and Carey 1998, p.910, Diagram 1.

Figure 2 Application mechanism of credit rating criteria



Source: Treacy and Carey 1998, p.913, Diagram 2.

Figure 3 Typical style of intellectual assets based management report by "Guidelines for Disclosure of Intellectual Assets Based Management"

[Main body]

(General) Basic management philosophy
Outline of business characteristics

(From Past to Present)

A: Management policy in the past
B: Investment (based on A) (performance figures included)
C: Unique intellectual assets accumulated in the company, strengths based on them, and value creation method (based on A and B) (supporting intellectual assets indicators included)
D: Actual performance in the past, such as profits (as a result of value creation C) (figures included)

(From Present to Future)

E: (Based on C and the assessment of the past to the present) Intellectual assets that rooted in the company and will be effective in the future, and future value creation method based on them (supporting intellectual assets indicators included)
F: Identification of future uncertainty/risk, how to deal with them, and the future management policy including those elements
G: New/Additional investment for maintenance and development of intellectual assets needed (in line with the management policy F) (figures included)
H: Expected future profits, etc. (based on E to G) (numerical targets included)

[Attachment]

Other intellectual assets indicators (optional)

［2008. 10. 30　897］