Text-Mining Approach for Evaluation of Affective Management Practices

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Abstract—The purpose of this paper is to propose a text mining approach to evaluate companies' practices on affective management. *Affective management* argues that it is critical to take stakeholders' affects into consideration during decision-making process, along with the traditional numerical and rational indices. CSR reports published by companies were collected as source information. Indices were proposed based on the frequency and collocation of words relevant to affective management concept using text mining approach to analyze the text information of CSR reports. In addition, the relationships between the results obtained using proposed indices and traditional indicators of business performance were investigated using correlation analysis. Those correlations were also compared between manufacturing and non-manufacturing companies. The results of this study revealed the possibility to evaluate affective management practices of companies based on publicly available text documents.

Keywords—Affective management, Affect, Stakeholder, Text mining.

I. INTRODUCTION

NOWADAYS, it has become insufficient to emphasize only on numerical and rational indices in decision-making processes in management [1]. Stakeholders' experiences in terms of affects, such as emotions, feelings, and moods, have been gradually recognized as an important perspective when making management decisions in organizations. There have been several researches discussing the importance of considering stakeholders'(e.g., customer, employee, etc.) affects[2]-[5]in decision-making process. This idea of emphasis on stakeholders' affective experiences is referred to as *affective management*[1]. *Affective management* can be defined as a management that gives higher priority to stakeholders' affective experiences and takes them into management decision-makings[1].

Although the importance of taking stakeholders' affects into consideration has already been realized by many researchers, there has still been only a few researches on how to evaluate

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the affective management practices, or to what extent stakeholders' affects are valued by managements of an organization. Recently initial attempts have been made to clarify the dimensions of affective management measurement and a scorecard has also been proposed to measure companies' practices of affective management [6].

However, the affective management scorecard was based on subjective judgments of enterprise' top managements. Besides, availability of such top managements for participation in evaluation investigation with scorecards is limited in general. Consequently the number of companies that could be evaluated might be limited and it could be one of the disadvantages of the scorecard method. Thus it is still necessary to develop a more objective approach, which could be applied to a larger number of companies, to measure how affective management was practiced in various companies.

Text information in CSR reports is considered as a promising source to evaluate companies' practice on affective management. For the purpose of analysis of such text information, text-mining approach has become an important tool in the field of business research [7]. This approach has been widely used in previous researches, including analyses of drivers of business success and causes of companies' problems [8]-[10]. Those researches were conducted by counting frequency of relevant words. Relevant words related to the research topics were extracted in the beginning of text mining studies. It was argued that the frequencies of the extracted relevant words in companies' published documents are considered capable to reveal drivers of companies' business success, reasons for failure or trend in future. In previous studies, companies' annual reports were considered as important information source and adopted as research material.

In this study, CSR reports were adopted as significant sources to evaluate companies' affective management. CSR reports are published to address companies' opinions on management philosophy and activities concerning stakeholders' interest. Nowadays, CSR reports have attracted more attentions of researchers in business research field. For example, CSR reports have been used to analyze companies' information disclosure policy [11]. Furthermore, as more and more companies are now publishing CSR reports annually, it is possible to evaluate a larger number of companies with the same source. Therefore analysis based on CSR reports contents may be a promising approach to evaluate companies' affective management.

The purpose of this study is to propose a text-mining approach to evaluate companies' practices of affective

management based on CSR reports published by the companies. The relationships between companies' practices of affective management and traditional indices representing companies' business performance are also investigated in this study. Finally, the results of correlation analyses were also compared between manufacturing and non-manufacturing companies.

II. METHODOLOGY

Text mining approaches were adopted in this study in order to analyze the contents of CSR reports. The aim was to evaluate to what extent a company is committing the affective experiences of stakeholders based on the text descriptions in its CSR report.

In this study, it was assumed that the frequencies of words relevant to human affects, stakeholders as well as companies' concepts and activities that may evoke stakeholders' affects (referred to as *affective words* hereafter) could be representative indices of to what extent managements of the company valued stakeholders' affects. Previous researches suggested that the more often affective words are mentioned within the text information, the more the company is considered to concern stakeholders' affective experiences.

CSR reports were adopted as research material in this study. The digital files of CSR reports were collected online [12, 13] for both manufacturing and non-manufacturing companies in Japan.

A. Establishment of the Corpus of Affective Words

As the first step to evaluate companies' practices on affective management, the corpus of affective words was established. Three categories of affective words were collected: the *human affect* category, the *affective concept/activity* category, and the *stakeholder* category. Fig. 1 shows all the three categories and subcategories comprising each category.

Then, words representing human affects were extracted. In total, 2167 Japanese words representing human affects collected from the Dictionary of Emotional Expression [14] were used in this study. This category was named *human affect* category. This category consisted of ten subcategories: *happy, love/like, angry, sad, scared, ashamed, hate/dislike, excited, calm,* and *surprise*. Affective words pertaining to the *happy* and *love/like* subcategory comprise the *positive* category, which includes emotional words with positive meaning. Affective words pertaining to the *angry, sad, scared, ashamed*, and *hate/dislike* subcategory comprise the *negative* subcategory.

Words representing companies' concepts and activities towards affective experiences of stakeholders were also contemplated and extracted. Words indicating concepts or activities that may elicit stakeholders' affects were picked out manually from ten sample CSR reports randomly chosen from various industries. In total, 128 words were extracted. This category of words was named *affective concept/activity* category. The 128 words were grouped in four subcategories, *communication, coexistence, philosophy,* and *activity*.
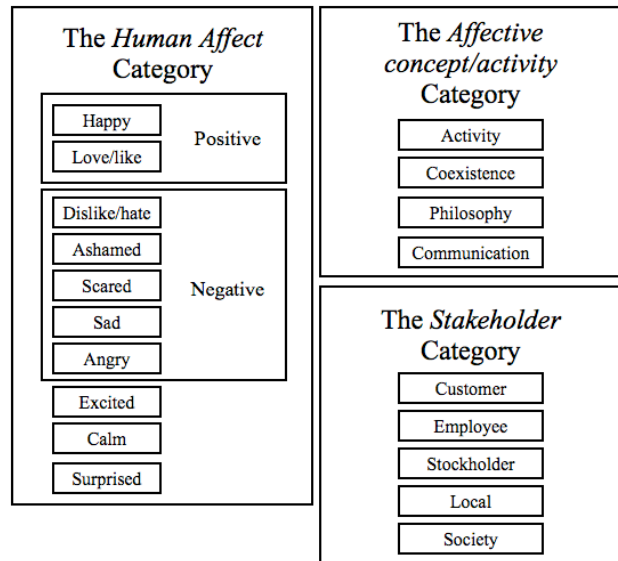

Fig. 1 Categories and subcategories of affective words

Words representing stakeholders (i.e., employee, customer, stockholder, local community, society) were also extracted as *stakeholder* category. The ten sample CSR reports used for extraction of words pertaining to the *affective concept/activity* category were also adopted in this step. Words representing stakeholders were extracted from the ten sample CSR reports. Besides, synonyms of the words extracted were also collected in reference to Weblio Dictionary of Synonyms [15]. In total, 102 words were extracted and grouped in five subcategories: *customer, employee, stockholder, local,* and *society*.

B. Material

In order to evaluate companies' practices on affective management based on text information, CSR reports published by companies were collected in this study. Some companies publish Sustainability Reports or Society/Environment Reports instead of CSR reports. Considering the similarity in the contents between CSR reports and the mentioned documents, they were also adopted in this study.

CSR reports of the year of 2009 were collected from 106 Japanese companies (56 from manufacturing industry, 50 from non-manufacturing industry). Text information obtained from one CSR report is considered as one sample.

C. Procedure

The indices used to evaluate companies' practices of affective managements were developed based on the corpus of affective words.

Firstly, frequencies of affective words were calculated and summed for each subcategory (e.g., the *happy* subcategory, which is included in the *human affect* category). The ratio of sum of frequencies of each subcategory to the total number of words in one sample is considered as an index to evaluate enterprises' practice on affective management. Fig. 2 gave an example of text sample and showed how to calculate the

indices for each sample. For instance, the word "customer" appears twice and the total number of words is 28. "Customer" is affective word belong to the *customer* subcategory. In this case, the frequency of the *customer* subcategory is 2/28 = 0.071.

Besides, the frequency of affective words pertaining to each category was also calculated. The sum of frequencies for each category was also considered as an index of affective management. As could be found in Fig. 2, the word "customer" belongs to the *stakeholder* category and it appears twice. The frequency of the *stakeholder* category is 2/28 = 0.071. The two indices above, *i.e.* frequency for subcategories and frequency for category, are referred to as *frequency indices*.

In addition, the collocations between affective words pertaining to different categories were also used as indices. In this study, collocation is defined as a event that two words appear in one sentence together. The collocations of affective words pertaining to any of subcategories of *human affect* or *affective concept/activity* categories and words in the five subcategories of the stakeholder category were investigated in this study. The number of occurrences of collocation of two subcategories were calculated and then divided by the total number of words in each sample. The symbol "$\wedge$" is used to represent the collocation between affective words pertaining to

Fig. 2 An example of index calculation on a sentence

different categories or subcategories. For instance, as presented in Fig. 2, the word "happiness" belongs to the subcategory *happy*, while the word "consumer" was grouped in the subcategory *customer*. In the sentence "we try to provide customers with services that make them happy", both of the two words appear together and thus collocation occurs once. The collocation was indicated as *happy* $\wedge$ *customer* and the frequency is 1/28 = 0.036.Indices based on the collocation are referred to as *collocation indices*.

To summarize, two types of indices were developed using text-mining approaches. One is frequency indices, which are the frequencies of affective words for each of three categories and21 subcategories. Another is collocation indies, which are the frequency of collocation between ether of 12 subcategories of the *human affects* category and four subcategories of the *affective concept/activity* category, and the affective words in the five subcategories of *stakeholder* category for each sample.

As conventional management performance indices, the following indices representing financial and employment status of a company were adopted. The financial indices include ROE, ROA, PER, and PBR. The employment indices included average years of continuous employment (AYCE), employee turnover rate (ETR), and retention rate of new graduates after three years (RRNG). The data were collected form *Japan Company Handbook for Job Hunting 2012* [16].

III. RESULTS

A. Comparison of Results between Ten Sample CSR Documents and Other CSR samples

Ten samples of CSR reports were used to extract affective words. In order to verify whether the choice of initial sample documents influenced the results obtained, a *t*-test was conducted to investigate the differences between the result of initial sample documents and the results of other CSR reports.

Both frequency and collocation indices were calculated for the ten CSR reports used as initial documents and other CSR reports separately. No significant differences were observed in any of the indices between the two groups of CSR reports.

B. Relationships between Indices Proposed and Companies' Financial Status

In order to investigate relationships between the affective management indices proposed in this study and the conventional management indices representing business performance, a series of correlation analyses were conducted. Firstly the relationships between frequency and collocation indices and the financial indices were investigated in this study.

Table I summarizes affective management indices that had significant correlations with ROE and/or ROA, along with their Pearson's correlation coefficients. While several collocation indices were found to have significant correlations with either ROA or ROE, or with both, none of frequency indices had any significant correlations with them. Most collocation indices that had significant correlations involve
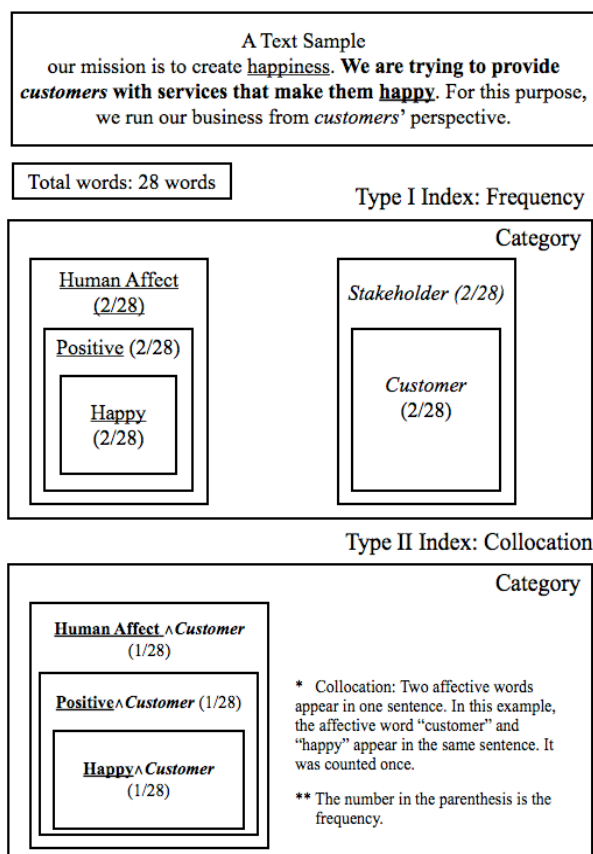
TABLE I
SIGNIFICANT CORRELATIONS BETWEEN AFFECTIVE MANAGEMENT INDICES
AND FINANCIAL PERFORMANCE INDICES (ROE, ROA)

Indices	ROE $n= 103$	ROA $n= 103$
Human Affect		
Human affect∧Stockholder	.268**	.240*
Positive∧Stockholder	.201**	.176
Negative∧Customer	.196*	.168
Negative∧Employee	.194*	.144
Negative∧Stockholder	.472**	.498**
Happy∧Stockholder	.209*	.183
Dislike∧Customer	.241*	.228*
Dislike∧Employee	.254*	.240*
Dislike∧Stockholder	.581**	.611**
Dislike∧Society	.169	.215*

$** p< 0.01; * p< 0.05$

TABLE II
SIGNIFICANT CORRELATIONS BETWEEN AFFECTIVE MANAGEMENT
INDICES AND FINANCIAL PERFORMANCE INDICES (PER, PBR)

Indices	PER $n= 94$	PBR $n= 94$
Human Affect∧Stockholder	.415**	.413**
Human Affect∧Society	.231**	.224*
Positive∧Stockholder	.412**	.406**
Happy∧Stockholder	.482**	.472**
Calm∧Employee	.298**	.307**
Calm∧Stockholder	.315**	.331**
Calm∧Society	.216*	.213*
Affective Concept/Activity		
Philosophy∧Local	.263*	.259*
Philosophy∧Society	.370**	.362**

$** p< 0.01; * p< 0.05$

affective words pertaining to *negative* and *dislike* subcategory.

Table II summarizes affective management indices that had significant correlations with PBR and/or PER, along with their Pearson's correlation coefficients. While several collocation indices were found to have significant positive correlations with both PBR and PER, none of frequency indices had any significant correlations with them. Affective words in *calm*, *philosophy,* and *stockholder* subcategories were more likely to be involved in these significant collocation indices than others.

C. Relationships between Indices Proposed and Companies' Employment Status

Relationships between proposed affective management indices proposed in this study and conventional indices for employment status of companies were also investigated.

Table III and IV summarize the affective management indices that had significant correlations with employment indices. Affective management indices in Table III showed either significant negative correlations with ETR or positive correlations with AYCE and/or RRNG, suggesting that the

TABLE III
AFFECTIVE MANAGEMENT INDICES THAT HAD SIGNIFICANT NEGATIVE
CORRELATIONS WITH EMPLOYMENT INDICES

Indices	AYCE $n= 103$	ETR $n= 40$	RRNG $n= 56$
Affective Concepts			
Activity	.017	-.467**	.312*
Human Affect			
Fear∧Society	.124	-.150	-.299*
Calm∧Employee	-.209*	.152	-.125
Affective Concept∧Employee	-.024	-.325*	.141
Activity∧Employee	-.043	-.350*	.180
Activity∧Society	.153	-.283	-.285*
Coexistence∧Employee	.196*	-.139	-.081

$** p< 0.01; * p< 0.05$

Note 1:AYCE stands for average years of continuous employment.
Note 2: ETR stands for employee turnover rate.
Note 3: RRNG stands for the retention rate of new graduates after three years.

higher these indices, the better employment status (lower turnover rate and longer continuous employment) the company are likely to have. The frequency index for *Activity* category showed significant negative correlations with ETR, suggesting that the more activity-related word appeared in texts, the less likely that employees leave the company. In the same way, collocation indices between Affective concept and Employee subcategories, as well as between Activity and Employee subcategories, had significant negative correlations with ETR. These results suggest that when words representing employee and those representing affective concept appeared together, it is also likely that employees are less likely to leave the company.

On the other hand, Affective management indices in Table IV showed either significant positive correlations with ETR or negative correlations with AYCE and/or RRNG, suggesting that the higher these indices, the worse employment status (higher turnover and shorter continuous employment) the company are likely to have. Frequency indices for the *like* and *happy* subcategories showed significant correlations with all three employment indices. In addition, frequency indices for the *Human Affect* category, as well as the *Positive*, *Dislike*, and *Excited* subcategories had significant correlations with two indicators both at 1% significance. On the other hand, among the collocation indices, the collocation of *Like*∧*Customer* was found to have significant correlations with all three indicators. The possible interpretation of this result will be discussed in *Discussion* section.

D. Comparison between Manufacturing and on-manufacturing Industries

CSR reports were collected from both manufacturing and non-manufacturing industries. In this section, correlation analyses were conducted separately for manufacturing samples and non-manufacturing samples, and the results were compared between industries.

TABLE IV
AFFECTIVE MANAGEMENT INDICES THAT HAD SIGNIFICANT NEGATIVE
CORRELATIONS WITH EMPLOYMENT STATUS (ALL INDUSTRIES)

Indices	AYCE n= 103	ETR n= 40	RRNG n= 56
Human Affect	-.186	.497**	-.518**
Positive	-.176	.412**	-.447**
Happy	-.195*	.354*	-.393**
Like	.254**	.363*	-.363**
Angry	-.285**	.114	-.217
Dislike	-.153	.461**	-.290**
Excited	-.028	.375**	-.264**
Calm	-.002	.358*	-.470**
Affective Concepts			
Coexistence	.037	.184	-.353**
Communication	-.220*	.083	-.197
Stakeholder			
Customer	-.082	.388*	-.297*
Human Affect			
Human Affect $\wedge$ Customer	-.141	.363*	-.363**
Positive $\wedge$ Customer	-.174	.301	-.280*
Negative $\wedge$ Stockholder	-.218*	.293	-.214
Negative $\wedge$ Customer	-.239*	.241	-.196
Happy $\wedge$ Local	.045	.345*	-.393**
Like $\wedge$ Customer	-.209*	.552**	-.460**
Angry $\wedge$ Customer	-.358**	-.001	-.093
Ashamed $\wedge$ Society	-.108	.433**	-.173
Excited $\wedge$ Customer	.006	.359**	-.174
Calm $\wedge$ Customer	.127	.064	-.322**
Calm $\wedge$ Society	.082	.015	-.344**
Affective Concepts/activities			
Coexistence $\wedge$ Customer	-.004	.172	-.395**
Coexistence $\wedge$ Stockholder	.035	-.007	-.270*
Communication $\wedge$ Customer	-.211*	.217	-.262

** $p<0.01$; * $p< 0.05$

Note 1:AYCE stands for average years of continuous employment.
Note 2: ETR stands for employee turnover rate.
Note 3: RRNG stands for the retention rate of new graduates after three

Firstly, correlations between affective management indices and financial indices were compared between two industry groups. Affective management indices that had significant correlations with ROE and/or ROA are summarized in Table V. All affective management indices presented in Table V had positive correlations with either ROA or ROE, or with both. It was also noticed that more affective management indices showed significant correlations with the financial indices in the non-manufacturing industry. It is noteworthy that the collocation of *Negative $\wedge$ Stockholder* and *Dislike $\wedge$ Stockholder* had correlation coefficients greater than 0.80 for the non-manufacturing industry. For non-manufacturing industry, the significant collocation indices are likely to involve the *Dislike* and *Hate* subcategory.

Table VI shows the affective management indices that had significant correlations with PER and/or PBR. On the contrary to the results with ROE and ROA, the manufacturing industry

TABLE V
AFFECTIVE MANAGEMENT INDICES THAT HAD SIGNIFICANT CORRELATIONS
WITH ROE AND/OR ROA BY MANUFACTURING AND NON-MANUFACTURING
INDUSTRIES

Industry	Manufacturing		Non-manufacturing	
Indices	ROE n= 56	ROA n= 56	ROE n= 47	ROA n= 47
Human Affect		.326*		
Human Affect				
Human affect $\wedge$ Employee		.267*		
Human affect $\wedge$ Stockholder			.337*	
Negative $\wedge$ Stockholder			.845**	.865**
Happy $\wedge$ Stockholder			.295*	
Negative $\wedge$ Society	.264*			
Scared $\wedge$ Customer			.390**	.416**
Dislike $\wedge$ Employee			.869**	.890**
Dislike $\wedge$ Stockholder			.318*	.377**
Dislike $\wedge$ Society				
Surprised $\wedge$ Customer		.282*		

** $p<0.01$; * $p< 0.05$

Note: Non-significant correlation coefficients were omitted in this table.

had more affective management indices that had significant correlations with either PER and/or PBR. Except for *Surprised $\wedge$ Society*, which had a significant negative correlation with PER for manufacturing industry, and *Scared $\wedge$ Society*, which showed a significant negative correlation with PBR for manufacturing industry, all other significant indices showed positive correlations with PER or PBR.

Finally, Table VII shows the indices that had significant correlations with indices representing companies' employment status. For manufacturing industry, only one index showed significant positive correlations with ETR, while a few indices had negative correlations with favorable employment status indices (AYCE and RRNG). On the contrary, for non-manufacturing industry, more indices showed significant correlations with the three employment indices.

IV. DISCUSSION

This study proposed a text-mining approach to evaluate affective management practices of companies. Two kinds of indices, *i.e.* frequency indices and collocation indices, were proposed that are supposed to represent to what extent companies are emphasizing and actually practicing affective management.

The correlation analyses between proposed affective management indices and financial performance revealed that several of proposed affective management indices showed positive correlations with conventional performance indices such as ROA, ROQ, PER, and PBR. These results suggested that the more companies practice affective management, the better the management performances of those companies are likely to be. This implies the importance of valuing stakeholders' affective experiences in management practices.

TABLE VI
AFFECTIVE MANAGEMENT INDICES THAT HAD SIGNIFICANT CORRELATIONS WITH PER AND/OR PBR BY MANUFACTURING AND NON-MANUFACTURING INDUSTRIES

Industry	Manufacturing		Non-manufacturing	
Indices	PER $n= 56$	PBR $n= 56$	PER $n= 47$	PBR $n= 47$
Human Affect				
Positive		.356**		
Like/love		.374**		
Stakeholder				
Customer		.292*		
Local	.402**			
Society	.268*			
Human Affect				
Human affect∧Stockholder			.510**	.520**
Human affect∧Local	.337*			
Positive∧Stockholder			.509**	.507**
Positive∧Local	.408**			
Happy∧Employee	.330*			
Happy∧Stockholder			.586**	.584**
Happy∧Local	.299*			
Like/love∧Local	.267*			
Angry∧Customer		.322*		
Scared∧Society		-.280*		
Dislike∧Stockholder		.292*		
Dislike∧Local		.284*		
Excited∧Customer	.391**			
Excited∧Employee	.288*			
Excited∧Stockholder	.358**			
Excited∧Local	.534**			
Excited∧Society	.386**			
Calm∧Employee			.331*	.345*
Calm∧Stockholder			.339*	.366*
Surprised∧Society	-.271*			
Affective Concept				
Affective concept∧Customer	.286*	.280*		
Activity∧Customer		.267*		
Philosophy∧Local			.338*	.339*
Philosophy∧Society			.482**	.476**
Coexistence∧Society	.270*			
Communcation∧Customer	.322*	.299*		
Communcation∧Society	.299*			

** p<0.01; * p< 0.05

Note: Insignificant correlation coefficients were omitted in this table.

On the other hand, the results of the correlation analyses between proposed affective management indices and employment status indices need considerations for interpretation. The results in Table IV showed that the more words related to positive affects (e.g. *Happy* or *Like* subcategory words) or words related to Customer appeared in CSR reports, the higher turnover rate of employees these companies showed. Careful examinations of the sample companies revealed that many of the companies that showed higher scores in both these affective management scores and

ETR were young and rapidly growing ones. In those companies, it is intuitive that the fluidity of the employee can be generally high. This could be one possible explanation for these results.

The results of comparison between manufacturing and non-manufacturing industries implied that management might have to emphasize the stakeholders' affective experiences in different ways according to the differences in industries. Table VI implied that, for example, manufacturing companies should emphasize more on positive experiences of stakeholders including customers, rather than non-manufacturing managements should do. However, the interpretation of these differences may need further investigations and reflections.

V. CONCLUSION

The purpose of this study is to propose text-mining approach and potential evaluation indices that could be used to evaluate practices on affective management of various companies. This study also investigated the relationships between the proposed affective management indices and companies' business performance in terms of traditional indices representing companies' financial performance and employment status.

CSR reports published by companies were adopted as sources for evaluation of affective management practices. A corpus of affective words with three categories, the *human affect*, *affective concept/activity*, *stakeholder* category, was developed. Two types of indices based on the frequency of different categories of affective words (*frequency indices*) and the frequency of collocation between different categories of affective words (*collocation indices*), were proposed.

The relationships between proposed affective management indices and traditional management performance indices were also investigated. Financial indices, i.e. ROE, ROA, PER, and PBR, as well as employment status indices, i.e. the average years of continuous employment, the employee turnover rate, and the retention rate of new graduates after three years were adopted. The results showed that several indices proposed in this study significantly correlated with some of these traditional indices. These correlations were also compared between manufacturing and non-manufacturing industries. It was observed that indices correlated with the traditional indicators differently due to industry.

The corpus of affective words, along with the frequency and collocation indices of affective words proposed in this paper offered a new objective approach to evaluate affective management practices of companies, i.e. how stakeholders' affects were valued in management decision-making processes. Adopting CSR reports for the source of evaluation enabled to evaluate larger number of target companies.

It should be noted, however, that the quality of the corpus of affective words can be further improved in the future research. Especially, affective words pertaining to the *affective concept/activity* category are extracted based only on ten sample CSR reports. It is highly possible that reviewing more documents and broadening the coverage of the corpus of affective words would improve the corpus.

TABLE VII
AFFECTIVE MANAGEMENT INDICES THAT HAD SIGNIFICANT CORRELATIONS WITH EMPLOYMENT STATUS INDICES BY MANUFACTURING AND NON-MANUFACTURING INDUSTRIES

Industry	Manufacturing			Non-manufacturing		
Indices	AYCE n= 56	ETR n= 23	RRNG n= 34	AYCE n= 47	ETR n= 15	RRNG n= 19
Human Affect					.499*	-.518*
Positive						-.529*
Negative	-.288*					
Happy						-.589**
Angry	-.347**			-.342*	.555*	
Sad					-.587*	
Dislike					.489*	
Calm			-.392*			
Affective Concepts	-.284*				-.497*	
Activity					-.681**	.469*
Communication						-.521*
Stakeholder						
Society					-.488*	
Human Affect						
Human affect∧Customer						-.501*
Positive∧Customer						-.494*
Negative∧Customer				-.318*	.557*	
Negative∧Employee	-.288*					
Negative∧Society	-.312*					.490*
Happy∧Local		.565**				
Love/like∧Customer					.610**	-.594**
Angry∧Customer				-.442**		
Angry∧Employee	-.278*					
Ashamed∧Society					.490*	
Dislike∧Customer					.589*	
Calm∧Customer			-.509**	.333*		
Calm∧Employee				.366*		
Calm∧Stockholder			-.370*			
Calm∧Society			-.545**	.293*		
Surprised∧Society	-.272*					
Affective Concept/activity						
Affective Concept∧Stockholder					-.541*	
Affective Concept∧Society				.291*	-.700**	.522*
Activity∧Employee						.456*
Activity∧Stockholder					-.691**	
Activity∧Society				.334*	-.680**	.586**
Philosophy∧Customer			-.417*			
Philosophy∧Employee			-.423*			
Philosophy∧Stockholder			-.361*			
Philosophy∧Society			-.362*	.310*		
Coexistence∧Customer						-.493*
Communication∧Customer						-.484*

** *p*<0.01; * *p*< 0.05

Note 1:AYCE stands for average years of continuous employment.
Note 2: ETR stands for employee turnover rate.
Note 3: RRNG stands for the retention rate of new graduates after three years.
Note 4: Non-significant correlation coefficients were omitted in this table.

In addition, although significant relationships between companies' business performance in terms of conventional indices and the affective management indices were validated to some extent, it might also be necessary to further

investigate with larger samples. In that way, effectiveness of each of affective management indices would be further validated.

Finally, in order to look into the industrial differences, further investigation with more detailed industrial categories and larger number of sample companies would be necessary.

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