Understanding the Strategic Organization Propensity Through "Managerial Discussion and Analysis"

Paola Pisano, Ginaluca Vagnani, Marco Pironti, Michele Simoni, and Mauro Giraudo

***Abstract*—The objective of this work is to investigate the content analysis methodology in the strategic propensity such as explorative/exploitative behavior. After theoretical analysis on the meaning and definition of exploitation and exploration, the authors have applied the content analysis methodology to a practice case. The conclusion is that the qualitative content analysis is a good methodology to study the strategy propensity having the same results of the other methodologies used in the strategy researches such as practice case and grounded theory.**

***Index Terms*—content analysis, SVM, exploration, exploitation.**

I. Introduction

The panorama of the different methodologies applied to the strategy studies is really vast. Three of these are being particularly used Action research, Case studies and Grounded theory. The Table I summarize the use of these methodologies on the strategic problematic in the literature researches.

In the action theory the researcher has to work in a close contact with the organization to define the strategies. In the Case studies, a team or a singular researcher carry out the profound work in the analysis of the organization strategic problematic, using written documents, interviews and analysis of the data. At the end in the Grounded theory the researcher formulate the theory useful for the subject involved in the analysis, through the reality [7]. In this framework the content analysis is a new methodology that have provided good results in the strategy studies. The content analysis is a "systematic technique, replicable for the compression of huge number of worlds in a define number of content categories on the basis of explicit codify rule" [33].

In this work the author will applied the content analysis to define the exploration/exploitation propensity in the organization.

Manuscript received March 11, 2011.

P. Pisano is with E-business Lab, University of Torino, Torino, ITALY (e-mail: pisano@di.unito.it).

G. Vagnani is with Department of Management and Technologies, Sapienza, University of Rome, Rome, ITALY (e-mail: gianluca.vagnani@uniroma1.it).

M. Pironti is with E-business Lab, University of Torino, Torino, ITALY (e-mail: pironti@di.unito.it)

M. Simoni is with Department of Business Studies, Parthenope University of Naples, Naple, ITALY (e-mail: michele.simoni@uniparthenope.it).

M. Giraudo is with Department of Computer Science, University of Torino, Torino, ITALY (e-mail: giraudo@di.unito.it).

TABLE I: The use of different methodologies in strategic problematic.

Journal	Grounded Theory	Action research	Case studies
Administrative Science Quarterly	14	0	19
Journal of Business Ethics	56	19	118
Journal of International Business Studies	8	2	0
Journal of Organizational Behavior	11	8	20
Management Science	5	2	42
MIS Quarterly	14	11	40
Organization Science	30	0	89
Public Administration Review	6	10	85
Risk Management	4	3	13
Strategic Management Journal	16	1	63
The Academy of Management Journal	22	13	20
The Journal of Consumer Research	9	1	5
The Journal of the Operational Research Society	13	50	201
Managerial and Decision Economics	3	0	21
The Journal of Marketing	4	0	26
Journal of Economic Literature	3	6	152

After a content analysis description and the definition of the exploration and exploitation strategy, a new qualitative content analysis methodology is applied to a practice case demonstrating the goodness of the methodology.

II. The Content Analysis

The content analysis borned in the 1931 thank to Alfred R Lindesmith, and became famous thank to "The Constant Comparative Method of Qualitative Analysis" [11] in which the content analysis was defined like a "Grounded Theory" extension. The content analysis is based on the belief that it is possible to analyze a text in a systematic way to verify the existence or absence of certain concepts within it.

This methodology bases its structure on the text to analyze, on framework in which the text is inserted and on definition of the concept to investigate [18]. The different application of the content analysis on strategic problematic are summarized in the Table II investigating on different journal (Strategic Management Review, Management Science, Organizational Science, Organizational Behavior and Human Decision Processes, Journal of organizational behavior, Administrative science Quarterly, Journal of Marketing and Journal of management) from 1997 to 2010.

TABLE II: THE USE OF THE CONTET ANALYSIS IN STRATEGIC PROBLEMATIC.

Authors	Content analysis application
D. Osborne, C. I. Stubbart, and A Ramaprasad [27]	Analysis of 400 letters from presidents of companies to shareholders for define the empirical boundaries based on performance or strategies
P. H. Bam [2]	Analysis of a group of colleagues to determine what perceptions influence performance and discussion groups
B. K. Boyd, S. Gove, and M. A. Hitt [5]	Analysis of research methodologies used in the management through the study of journal articles from 1998 to 2000
R. Hodson [14]	Analysis of employee behaviors and skills of managers to develop honest behavior
E. Abrahamson, and D. C. Hambrick [1]	Analysis of managers' discretion in relation to the characteristics of the different sectors
R. A. D'Aveni, and I. C. MacMitlan [8]	Analysis of letters to shareholders of 57 companies in times of crisis with a view to analyzing which elements of the environment are taken more into account.
R. Nag, D. C. Hambrick, and M.-J. Chen [26]	Analysis of the concept of "strategic management" through the use of research on journal
J. C. Short, and T. B. Palmer [32]	The study of the mechanisms for judging personal success through the analysis of 119 letters to shareholders in the restaurant sector
J. Uotila, M. Maula, T. Keil, and S. A. Zahra [34]	Analysis of exploration and exploitation related to performance for companies in the S&P 500
M. S. Yadav, J. C. Prabhu, and R. K. Chandy [38]	Analysis of the banking sector on the attention of the CEO to innovation.
J. P. Walsh, K. Weber, J. D. Margolis [35]	Analysis if Americans business are more focused on competitive behavior to achieve a economic advantage rather than on social welfare business

The application of the methodology is complex in the definition of the term to analyze and in the classification of the text through identified concept.

Beside the use of words set using to define a concept cannot be the same in all industries analyzed (e.g., the word *explor* may refer to concepts related to Exploration, but in the oil sector it's related to the exploration of land to find oil, nothing to do with a strategic inclination). In the words of Weber [36]: "To make valid inferences from the text, it is important that the classification procedure be reliable in the sense of being consistent: different people should code the same text in the same way".

The Table III sums up the strengths and complexities of content analysis.

TABLE III: STRENGTHS AND COMPLEXITIES OF CONTENT ANALYSIS.

Strengths	Complexities
Analysis of text documents and not just numerical results	Unambiguous definition of the concepts to be analyzed
Analysis of any text document	Need of encoding of the text by at least two different subjects
Analysis of a large quantity of data	Need to contextualize the concepts
Possibility of repeating the analysis in the case of non-fulfillment of the result	

The content analysis can be approached in quantitative or qualitative way.

The quantitative approach analyses the concept by the frequencies of a set of word (more high is the frequency of the words in the words list more stress is the concept inside the text). In the quantitative content analysis the "word crunch" and the "Category Tagging" are the method most used.

The principal difference between the two approaches is that in the word crunch the categories are defined using just one set of words (or dictionary) instead of more dictionaries using in the Category tagging.

While the quantitative approach transforms the categories in statistic data, the qualitative ones allow to investigate on the text regardless of the word used to express the categories.

Qualitative approach to content analysis has been defined as:

• a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns [15],

• an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules and step by step models, without rash quantification [22], and

• any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings [28].

The qualitative methodology used a combination of word or a sentence to describe the category analyzed such as happened in the natural language.

In the qualitative approach the methods more use are the Naïve Bayes, Neural network and Support Vector Machine (SVM). In the Table IV are summarized the characteristics of the two approaches and of their different methods.

TABLE VI: QUALITATIVE AND QUANTITATIVE CONTENT ANALYSIS APPROACH.

Content Analysis	Method	Coding		Category Assignment	
		Numerical	Approximation	Statistic Method	Algorithm
Quantitative	Word Crunch	**x**		**x**	
	Category Tagging	**x**		**x**	
Qualitative	Naïve Bayes		**x**		**x**
	Neural Networks		**x**		**x**
	SVM		**x**		**x**

III. THE DEFINITION OF THE CONCEPTS: EXPLORATION AND EXPLOITATION STRATEGY

Many studies have been done on the analysis of exploration and exploitation and their interconnection. From March [21] to Moran, Vagnani and Simoni [25], Benner and Tushman [3][4], Ghemawat and Ricart i Costa [10], Gupta, Smith, Shalley [12] and McGrath [23].

In this paper the category of the exploitation is defined as the introduction of new alternatives that born and develop thank to continuously adjustment inside the organization [30].

The alternative strategies that organization takes in consider are limited to knowledge and skill that already

reside inside the company. The exploitation activities include such things as "refinement, choice, production, efficiency, selection, implementation, execution" [21]. Vice versa the exploration category considers new alternatives also out of the organization boundary, taking in consider competitors and industry where develops its businesses. Exploration activities include things like search, variation, risk taking, experimentation, play, flexibility, discovery, innovation [21].

It's obvious that both the behaviors have a point of strength and weakness but the real difficulty is to guarantee a good balance between exploration and exploitation strategies [19].

In studies of organizational learning, the problem of balancing exploration and exploitation is exhibited in distinctions made between refinement of an existing technology and invention of a new one [37] [19]. It is clear that exploration of new alternatives reduces the speed with which skills at existing ones are improved. It is also clear that improvements in competence at existing procedures make experimentation with others less attractive (Levitt and March 1988). Finding an appropriate balance is made particularly difficult by the fact that the same issues occur at levels of a nested system-at the individual level, the organizational level, and the social system level. An organization that based all strategies on the exploration excluded exploitation will be suffered of high experimentation and research costs. On the contrary an organization that based all strategies on exploitation risk to fall down in the optimization trap improving only the skills already acquired don't taking new skills or the innovations arriving from the industry. If we compare the return of the two strategies the exploration has returns less certain and more time remote while exploitation avoid the activities with less skill that lead to a return of investment under the expectation [13].

IV. Practical Case: Application Of SVM To The Case Of Bausch & Lomb By SVMlight

The propose of this paragraph is the application of the qualitative content analysis to Bausch & Lomb. The content analysis was done from 1989 to 2004 on:

- the section "managerial discussion and analysis" of the balance sheet (K10);
- the "letter to shareholder".

While, the text choice is in line with the literature on the methodology (e.g.: Uotila et al. [34]), the methodology selection depend on next position:

1) difficulty in the strategic concepts identification: the exploration and exploitation strategies couldn't be described with a simple list of words;

2) difficulty to separate in a clear way the two category concepts;

3) the needs to decontextualize the strategic concepts from the industry.

A. The company

Bausch & Lomb is an eye health company dedicated to Bringing Visionary Ideas to Eye Health.

Bausch & Lomb traces its roots to 1853, when John Jacob Bausch, a German immigrant, set up a tiny optical goods shop in Rochester, New York. When he needed more money to keep the business going, Bausch borrowed $60 from his good friend, Henry Lomb. Bausch promised that if the business grew, Lomb would be made a full partner. The business did grow and the partnership was formed.

Baush & Lomb bases its activities on three macro area.

Vision Care: the contact lens offerings span the entire spectrum of wearing modalities and include such well-known brand names as PureVision®, SofLens®, Boston® and Optima® .

Pharmaceuticals: the products treat a wide range of eye conditions including glaucoma, eye allergies, conjunctivitis, dry eye and retinal diseases. B&L offers proprietary and generic medicines available by prescription, over-the-counter eye drops and other medications.

Cataract and Vitreoretinal Surgery: B&L offers a full suite of products including intraocular lenses and delivery systems featuring the Crystalens®, SofPort® and Akreos™ brands of IOLs, the Stellaris® and Millennium™ lines of phacoemulsification equipment, and other surgical instruments and devices, including the Storz® line of instruments.

B. The content analysis application

The SVM application was done follow the next steps:

- software selection;
- definition of the coding scheme for the concepts to analyze and validity text;
- text coding;
- evaluation of the encoding consistency with the concepts definition;
- analysis of the results.

1) Software selection

The software used in the text coding was SVMlight for its efficiency in computational time and in the coding results.

SVMlight belong to SVM (Support Vector Machine), a set of supervised learning methods for regression and classification of patterns. They belong to the family of generalized linear classifiers also known as maximum margin classifiers, because at the same time minimize the empirical classification error and maximize the geometric margin, i.e. the distance of the point corresponding to an element of the training set from the hyper plane of separation. Given a training set the natural objective is to find a hyper plane separating the two classes that maximizes the geometric margin, extending as far as possible the distance between the hyper plane and the points corresponding to the elements that increase the confidence of the classification. The SVM can be thought as an alternative technique for learning polynomial classifiers, as opposed to the classical techniques of neural networks training. This type of instruments presents an efficient algorithm and is capable of representing complex nonlinear functions. The use of SVM in the literature is not new, Fabrice Colas and Pavel Brazdil [6] wrote an article comparing the SVM and the Naïve Bayes method, Pawel Ewaryst Tkacz and Kostka [17] proposed a success case study of SVM for the management of medical data, other authors analyzed how changing a few variables of the SVM could change the performance of coding, Anthony Khoo, Yuval Marom and David Albrecht [16] applied SVM to a case study analyzing the inclusion or not of stop word within the text, Shai Shalev-Shwartz and Nathan Srebro [31] analyzed the relationship between the magnitude of the training set and the performance of SVM.

In the case of linearly separable sets the basic idea of SVM is to construct the separating hyper plane (optimal hyper plane) that maximizes the distance between the elements of different classes.

In this way the concepts to be analyzed (e.g., exploration/exploitation) are well separated and defined by a set of sentences. The optimal hyper plane defines a surface that separates the elements of the two classes. The property of maximize the margin between the elements of the two classes ensure to SVM good chances of generalization in classification problems.

The operation of allocating a classification to the sentence (i.e. explorative or exploitative) occurs according to the optimization of a linear SVM, especially it is to optimize the following equation:

$$\alpha^* = \text{maximise}_\alpha \Sigma_{i=1} \Sigma_{j=1} y_i y_j \alpha_i \alpha_j \langle x_i, x_j \rangle \quad (1)$$

with the limitations imposed by conditions of Karush-Kuhn-Tucker (KKT):

$$\Sigma_{i=1} y_i \alpha_i = 0$$

$$0 \leq \alpha_i \leq C$$

$$i = 1 \ldots l \quad (2)$$

where α is the weight of the samples, C the relative importance of model complexity and error. This leads to a prediction function:

$$\square(x') = \text{sign}(\Sigma_{i=1} \alpha_i y_i \langle x_i, x' \rangle + b) = \text{sign}(\langle w^*, x' \rangle + b) \quad (3)$$

where

$$w^* = \Sigma_{i=1} \alpha_i y_i x_i \, . \quad (4)$$

The results of the classification using the SVM can be represented according to the Fig. 1 below, where the hyperspace is simplified to a two-dimensional plane and the optimal hyper plan in a straight line.

For each sentence is assigned a prediction based on the model built during training: a positive result identifies the phrase as belong to the category, while a negative result identifies it's not belonging to the same category.

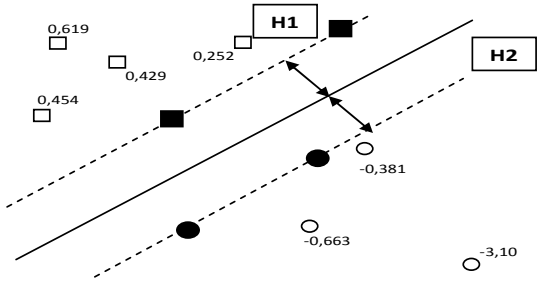

Figure 1. Visual rapresentation of the exploit sentence with SVM.

In the Fig. 1 the black squares and circles represent the support vectors selected by SVM training within the collection, respectively, to define the margin positive H1 and negative H2, while the white squares represent vectors, or sentences, with positive classification, the white circles those with a negative rating. Their prediction is identified with the optimal hyper plane distance: greater is this distance in terms of absolute value greater is the confidence that can be attributed to the classification. Tables V and VI reports some examples of classification of sentences exploration and exploitation of the Bausch & Lomb in 1991.

TABLE V: EXAMPLES OF SENTENCES IN THE EXPLOIT CATEGORY

Sentence	Prediction
we are very pleased to report that the complex challenges encountered in 1991 were overcome, and that bausch & lomb had a highly successful year	-0,38159
the company manages its established core businesses for both growth and cash flow, and continues to seek opportunities for improving asset management and reducing manufacturing costs	0,61917
sales for oral care products outside the usa increased more than 70 % from the prior year based on growth in europe, canada, and the far east	-0,66395
this progress reflected continuing improvements in profitability for sunglass sales in worldwide markets	0,252858
for 1990 this ratio benefited from improved pricing and production efficiencies for the usa lens care and sunglass businesses	0,429077
this trend is being facilitated by the expansion of marketing and manufacturing operations into untapped markets such as india and china	0,454072
cash flow from operations totaled $230.8 million in 1991 versus $177.3 million in 1990 and $109.4 million in 1989	-3,10291

TABLE VI: EXAMPLES OF SENTENCES IN THE EXPLOR CATEGORY.

Sentence	Prediction
we are very pleased to report that the complex challenges encountered in 1991 were overcome, and that bausch & lomb had a highly successful year	-0,4496
our development strategies in this area encompass proprietary research, product licensing, joint ventures, and acquisitions	0,53283
we stand ready to fill this need through our new pharmaceutical plant that was completed in tampa, florida during 1991	0,32798
these products accounted for 62% of the company's 1991 revenues and 42% of its business segment earnings	-1,07011
for 1990 this ratio benefited from improved pricing and production efficiencies for the usa lens care and sunglass businesses	-0,93759
several major customers are awaiting fda marketing approval for new products using this technology	0,501014

2) Definition of the coding scheme for the concepts to analyze and validity text

The sentence was selected as the basic unit of the analysis. The basic unit definition is really important [36] because could influence the analysis results [9] and impact on the definition of the coding scheme.

As far as the coding categories, the exploration and exploitation categories are defined in SVMlight thanks to a set of sentence that defines the salient features.

In the following box the authors selects a set of sentences that defined the explorative/exploitative behaviors.

Exploitative sentence

- The Company will also continue to evaluate the profit margins of existing businesses, making investments where necessary to improve quality, efficiency and cost, actively managing the supply chain, and selectively adjusting cost structures, if appropriate.

- The new technology requires adjustments to the design of existing models and will increase manufacturing costs in the near term, however, per unit costs are expected to decline as sales of these engines increase.

Explorative sentences

- …, we continue to make substantial investments for the expansion of our current product lines and future products to promote strong, long-term growth.

- In addition, we need to further expand our new products pipeline and continue to develop our innovation capabilities.

The number of sentences must be consistent in order to cover all the different nuances of the concept to analyze. By the way, there is no "golden rule" that indicates the amount of sentences necessary to define adequately the training set. The parameter that indicates the goodness of all training is the effectiveness of the classification model built assessed on a test set belonging to the corpus. Define a concept through a set of words rather than sentences are a difficult task especially in terms of consistency. It is therefore useful to work both sessions of separate coding and coding joint sessions of the resources allocated by the project. In the practice case pre-classified examples constitute the training set for SVM algorithms, that through the procedures of optimization used, in this case SVMlight, will lead to the development of a classification model that can be applied to the entire corpus. The coding model is tested on a portion of the text, and based on the result it's possible to proceed to optimize the algorithm parameters.

3) Text coding

When sufficient consistency has been achieved, the coding rules can be applied to the entire text. During the coding process, it's useful to check the coding repeatedly, to prevent "drifting into an idiosyncratic sense of what the codes mean" [29]: in this way it must avoid the risk of building words and sentence structures in accordance with the imagination and their (personal) cognitive structure to tell the coding as we would.

This is the step with more use of machine time, since the entire corpus of data must be encode to the software procedure. Human intervention at this point is much reduced, since you may use software procedures which carry out the work themselves and produce the results of the classification.

4) Evaluation of the encoding consistency with the concepts definition

After coding the entire data set, you need to recheck the consistency of the codify. It is not safe to assume that, if a sample was coded in a consistent and reliable way, the coding of the whole corpus of text is consistent as well. New codes may have been added since the original consistency check, the understanding of categories and coding rules may change subtly over the time, which may lead to greater inconsistency [24][36]. This step is one that involves the greatest amount of work by the research team, as we must re-check the results of coding, correct dictionaries or training set and then iteratively repeats the steps outlined so far, to obtain a correct and consistent coding.

5) Analysis of the results

This step is to make explicit the meaning of the themes and categories identified and their properties. The activities may involve exploring the properties and dimensions of categories, identifying relationships between categories, discovering new categories and models to be applied to the full range of data. The Table VII sums up the results of coding, i.e. the numbers of sentences coded as exploit and explore the proportion of total sentences in the text and finally the degree of exploration of an enterprise during the reference year that was measured by the following formula:

$$\text{Degree of Explor}=|\text{Explor}|/(|\text{Explor}|+|\text{Exploit}|). \quad (5)$$

TABLE VII: RESULT OF MASSIVE DATA CLASSIFICATION OF B&L

Year	Total	Explor	Exploit	Sentence Explor rate	Sentence Exploit rate	Degree of Explor
1989	225	12	15	5%	7%	0,44
1990	267	11	25	4%	9%	0,31
1991	332	18	18	5%	5%	0,50
1992	310	12	19	4%	6%	0,39
1993	373	12	22	3%	6%	0,35
1994	486	18	32	4%	7%	0,36
1995	448	33	40	7%	9%	0,45
1996	365	37	39	10%	11%	0,49
1997	322	21	25	7%	8%	0,46
1998	361	33	21	9%	6%	0,61
1999	329	20	16	6%	5%	0,56
2000	459	39	29	8%	6%	0,57
2001	459	29	32	6%	7%	0,48
2002	629	28	31	4%	5%	0,47
2003	637	49	36	8%	6%	0,58
2004	574	46	37	8%	6%	0,55

Same data have been reported in the Fig. 2, showing total number of sentence of Exploration, Fig. 3, showing total number of sentence of Exploration, and Fig. 4, showing the comparison between degree of Exploration and of Exploitation.

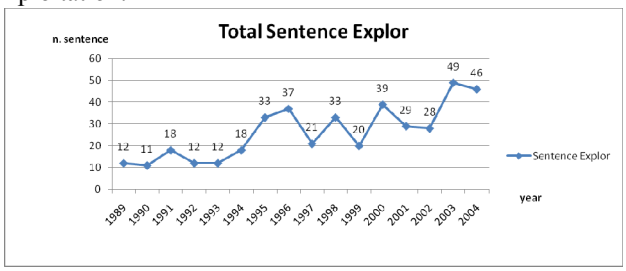

Figure 2. Chart showing total number of sentence of Exploration.

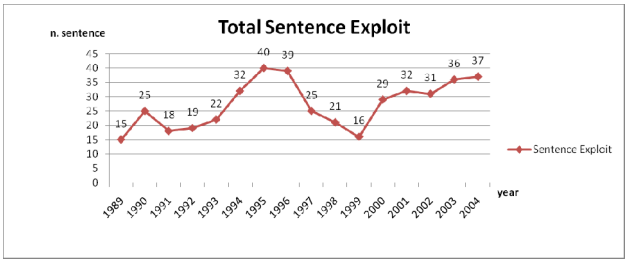

Figure 3. Chart showing total number of sentence of Exploitaion.

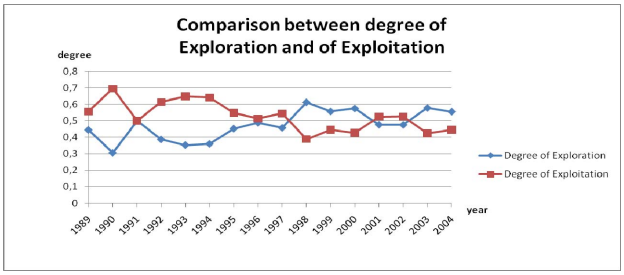

Figure 4. Chart comparing the degree of Exploitation and of Exploration.

V. Conclusion

Analyzing the graph of content analysis on exploration and exploitation outlined it possible to summarize the next results:

1. high degree of exploitation:
   a. 1990: 0,69% of exploitation against 0.31 of exploration;
   b. 1992 to 1994: an average of 0,63% of exploitation against 0,37% of exploration;
2. high degree of exploration:
   a. 1998: 0,61% of exploration against 0,39% of exploitation;
   b. 2003 : 0,58% of exploration against 0,42 of exploitation;

In the analysis of these periods based on B & L practice case analysis it possible to highlight that:

- In 1990: B & L decided to focus its activities on core competencies of the company continuing to invest in eye care.
- In 1992: build a new plant for production of contact lenses and lens cleaning solutions in India.
- In 1998: through the acquisition of Chiron Vision and Storz Ophthalmics enter in the new market of surgery for cataract operations.
- In 2003: includes in its portfolio of business new activities such as property and the production of generic medicines such as PreserVision Ocular Vitamins.

The content analysis has created a methodological support for the definition of strategic concepts of exploration and exploitation that is correct and in line with the strategic activities of the company in that years.

References

[1] E. Abrahamson, and D. C. Hambrick, "Attentional homogeneity in industries: the effect of discretion", Journal Of Organizational Behavior, vol. 18, 1997, pp. 513-532.

[2] P. H. Bam, "When private beliefs shape collective reality: the effects of beliefs about coworkers on group discussion and performance", Management Science, vol. 49, no. 6, Jun. 2003, pp. 801-815.

[3] M. J. Benner, and M. L. Tushman, "Process management and technological innovation: a longitudinal study of the photography and paint industries", Administrative Science Quarterly, vol. 47, 2002, pp. 676-706.

[4] M. J. Benner, and M. L. Tushman, "Exploitation, exploration, and process management: the productivity dilemma revisited", Academy of Management Review, vol. 28, 2003, pp. 238-256.

[5] B. K. Boyd, S. Gove, and M. A. Hitt, "Construct measurement in strategic management research: illusion or reality?". Strategic Management Journal, vol. 26, No. 3, Mar., 2005, pp. 239-257.

[6] F. Colas, and P. Brazdil, "Comparison of svm and some older classification algorithms in text classification tasks", in IFIP International Federation for Information Processing, Volume 217, Artificial Intelligence in Theory and Practice, ed. M. Bramer, Boston: Springer, 2006, pp. 169-178.

[7] J. Collis, and R. Hussey, Businnes research: a pratical guide for undergraduate and postgraduate students. 2nd edition, Basingstoke: Palgrave Macmillan, 2003.

[8] R. D'Aveni, and I. MacMillan, "Crisis and the content of managerial communications: a study of the focus of attention of top managers in surviving and failing firms", Administrative Science Quarterly, vol. 35, 1990,pp. 634-657.

[9] B. De Wever, T. Schellens, M. Valcke, and H. Van Keer, "Content analysis schemes to analyze transcripts of online asynchronous discussion groups: a review", Computer & Education, vol. 46, 2006, pp. 6-28.

[10] P. Ghemawat, and J. E. Ricart i Costa, "The organizational tension between static and dynamic efficiency", Strategic Management Journal, vol. 14, Winter 1993, pp. 59-73.

[11] B. G. Glaser, "The Constant Comparative Method of Qualitative Analysis", Social Problems, vol. 12, no. 4, Spring 1965, pp. 436-445.

[12] A. K. Gupta, K. G. Smith, and C. E. Shalley, "The interplay between exploration and exploitation", Academy of Management Journal, vol. 49, 2006, pp. 693-706.

[13] S. R. Herriott, D. Levinthal, and J. G. March, "Learning from experience in organizations", The American Economic Review, vol. 75, no. 2, Papers and Proceedings of the Ninety-Seventh Annual Meeting of the American Economic Association, May 1985, pp. 298-302.

[14] R. Hodson, "Organizational trustworthiness: findings from the population of organizational ethnographies", Organization Science, vol. 15, no. 4 (Jul. - Aug. 2004), pp. 432-445.

[15] H. F. Hsieh and S. E. Shannon, "Three approaches to qualitative content analysis", Qualitative Health Research, 15(9), 2005.

[16] A. Khoo, Y. Marom, and D. Albrecht, "Experiments with sentence classification", in proc. of the Australasian Language Technology Workshop (ALTW'06), Sydney, Australia, December 2006, pp. 18–25.

[17] P. Kostka, and E. Tkacz, "Support vector machine classifier with feature extraction stage as an efficient tool for atrial fibrillation detection improvement", Computer Recognition Systems, vol. 2, 2008, pp. 356-363.

[18] K. Krippendorff, Content analysis: an introduction to its methodology. 2nd edition, Thousand Oaks, CA: Sage, 2004.

[19] D. A. Levinthal, and J. G. March, "A model of adaptive organizational search", Journal of Economic Behavior and Organization, vol. 2, 1981, pp. 307-333.

[20] B. Levitt and J. G. March , "Organizational Learning," Annual Review of Sociology, 14, 1988, pp. 319-340.

[21] J. G. March, "Exploration and exploitation in organizational learning", Organization Science, vol. 2, 1991, pp. 71-87.

[22] P. Mayring, "Qualitative content analysis", Forum: Qualitative Social Research, 1(2), 2000.

[23] R. G. McGrath, "Exploratory learning, adaptive capacity, and the role of managerial oversight", Academy of Management Journal, vol. 44, 2001, pp. 118-131.

[24] M. Miles, and A.M. Huberman, Qualitative Data Analysis. Thousand Oaks, CA: Sage Publications, 1994.

[25] P. Moran, M. Simoni , and G. Vagnani, "Becoming the best: by beating or ignoring the best? Toward an expanded view of the role of managerial selection in complex and turbulent environments", Journal of Management and Governance, in press, 2010, DOI: 10.1007/s10997-010-9129-2.

[26] R. Nag, D. C. Hambrick, and M.-J. Chen, "Is strategic management, really? Inductive derivation of a consensus definition of the field", Strategic Management Journal, vol. 28, no. 9, Sep. 2007, pp. 935-955.

[27] J. D. Osborne, C. I. Stubbart, and A. Ramaprasad, "Strategic groups and competitive enactment: a study of dynamic relationships between mental models and performance", Strategic Management Journal, vol. 22, no. 5, May 2001, pp. 435-454.

[28] M. Q. Patton, Qualitative Research and Evaluation Methods, Thousand Oaks, CA: Sage, 2002.

[29] J. Schilling, "On the pragmatics of qualitative assessment: designing the process for content analysis", European Journal of Psychological Assessment, vol. 22, no. 1, 2006, pp. 28-37.

[30] J. A. Schumpeter, The Theory of Economic Development. Cambridge, Mass: Harvard University Press, 1934 [Translated by Redvers Opie from the second German edition, 1926].

[31] S. Shalev-Shwartz, and N. Srebro, "SVM optimization: inverse dependence on training set size", in proc. of the 25th international conference on Machine learning, Helsinki, Finland, Jul. 05-09, 2008, pp. 928-935.

[32] J. C. Short, and T. B. Palmer, "Organizational performance referents: an empirical examination of their content and influences",

Organizational Behavior and Human Decision Processes, vol. 90, 2003, pp. 209-224.
[33] S. Stemler, "An overview of content analysis", Practical Assessment, Research & Evaluation, vol. 7, no. 17, 2001.
[34] J. Uotila, M. Maula, T. Keil, and S.A. Zahra, "Exploration, exploitation, and financial performance: analysis of S&P 500 corporations", Strategic Management Journal, vol. 30, 2009, pp.221-231.
[35] J.P. Walsh, K. Weber, and J.D. Margolis, "Social issues and management: our lost cause found", Journal of Management, vol. 29, no. 6, 2003, pp. 859-881.
[36] R. P. Weber, Basic Content Analysis. 2nd ed., Newbury Park, CA: Sage, 1990.
[37] S. G. Winter, "Satisficing, Selection, and the Innovating Remnant," Quarterly Journal of Economics, 85,1971, pp. 237-261.
[38] M. S. Yadav, J. P. Prabhu, and R.K. Chandy, "Managing the future: CEO attention and innovation outcomes", Journal of Marketing, vol. 71, 2007, pp. 84-101.