Assessment of online patent rating system in Korea

Youngkwan Kwon[1], Tae-Kyu Ryu[2], Jong Bok Park[3]

[1]Graduate School of Management of Technology, Sogang University,
1 Shinsu-dong, Mapo-gu, Seoul 121-742, Republic of Korea
kwonyk@sogang.ac.kr.

[2]Korea Institute of Intellectual Property,
131 Teheran-ro, Gangnam-gu, Seoul 135-980, Republic of Korea
tkryu@kiip.re.kr.

[3]Corresponding author, Department of Venture & Business,
Gyeongnam National University of Science and Technology,
150 Chilam-Dong, Jinju, Gyeongnam, South Korea, 660-758
jxpark@gntech.ac.kr

Abstract. This paper investigates the structure of K-PEG, the representative online automatic evaluation system of patents, and points to its characteristics qualitatively. The K-PEG has several strengths, but it would meet needs of public sectors rather than those of private sectors under current status. That is, it would be more competitive for R&D planning, evaluation of R&D outputs, S&T forecasting, etc.

Keywords: technology evaluation, web-based evaluation, automatic evaluation system of patents, text mining, technology transfer.

1 Introduction

Korean government and policy makers have paid attention on technology evaluation. So the government developed an online automatic evaluation system of patents called 'Korea-Patent Evaluation & Grading (K-PEG)' in 2007.[1] Basically, objective tools for evaluating technologies are needed in order to promote the technology trading between technology sellers and buyers (Reilly and Schweihs, 1998). However, objectivity on its evaluation results has been a significant challenge because of asymmetry of information, differences of negotiation powers among parties, and resulting transaction costs (Arora et al., 2001). Thus a new approach based on information technology could be an alternative to overcome limitations of off-line technology evaluation.

A variety of consulting companies like Ocean Tomo, IPB, etc. have emerged to provide the competitive tools of the web-based evaluation. For example,

1 The website of the K-PEG is *kpeg.forx.org*.

PatentRatings® of Ocean Tomo provides a validated platform that can be practically used in markets (Viscounty et al., 2006) by giving practitioners and experts reliable data for relative grade of patents and relatedness. However, it is difficult to find literature dealing with online patents evaluation platforms (Witte et al., 2008; Tseng et al., 2007). Lee (2001) and Crowsey et al. (2007) evaluate several different text mining software tools. In addition, the K-PEG in Korea doesn't seem to work effectively. This is partly because the system depends upon text mining highly and regression analysis for evaluation. Very little is known about the K-PEG, so the paper investigates its current status and its characteristics in order to get implications for its advance in future.

2 Methodology

For preliminary survey, the authors asked several staffs in charge of K-PEG in the Korea Institute of Patent Information (KIPI) about their experiences and expectations, and their concerns in the middle of K-PEG operations, processes, and outcomes as a result of their involvement in the on-line automatic evaluation system of patents. We could obtain only limited information on it, so we employed In-depth interview for collecting more concrete data on K-PEG and brainstorming strategies of its performance increase. Focus group included eight professionals across the sectors of patent right holder, potential patents seller and buyer, intermediary agent, and investor. Questions were asked in an interactive group setting where participants were free to talk with other group members.

3 Overview of K-PEG and its diagnosis

K-PEG was developed by KIPI in 2007, and it is in the early stages of its development. Since Korean patent statements do not include citation information, the system attempts to evaluate patents based on text mining technique. Using text mining technique, K-PEG calculates various indicators for evaluating registered patents from patent statements and bibliographic data. This is its main features and also its limitations. This system could be helpful in evaluating R&D results as well as creating basic information for strategic management of patents such as whether a patent has to be filed or not, and whether a patent could be licensed or not.

Concrete evaluation model consists of three categories: strength of patent, commercial potential, and technological potential. Each category has a several evaluation indicators for measuring the contribution to the value of registered patents, and each evaluation indicator have been modified. [Fig.1] shows configurational diagram of K-PEG. It has five characteristic modules for evaluating subject patents: syntax analysis module, morpheme analysis module, vectorization module of registered patents, vectorization module of subject patent, and extraction module.

K-PEG has a variety of strengths in the perspective of functionality. For example, it has analysis modules of both phrase and morpheme by building thesaurus DB that can handle various morpheme as well as index DB in order to consider the diversity of Korean language in text mining. This can increase reliability of evaluation results

because weights of evaluation indicators can be obtained reflecting characteristics of subject patents. And the evaluation model of K-PEG can be easily modified by adding or eliminating the indicators of evaluation, taking objectives of patent evaluation into account.

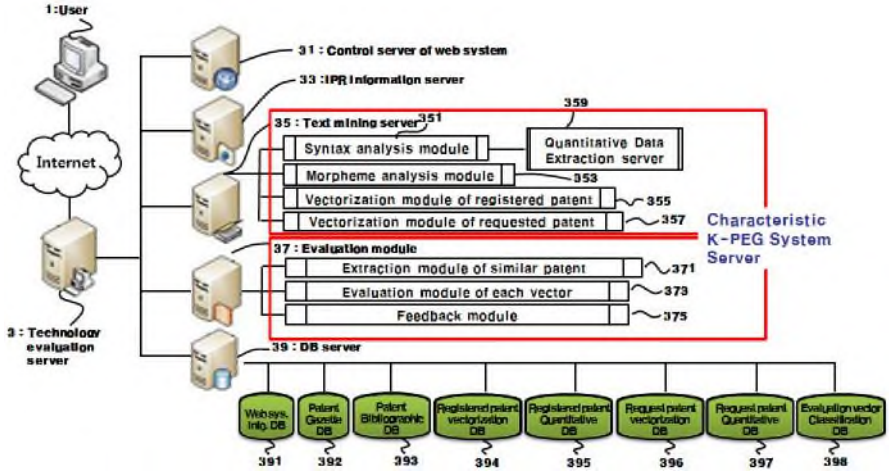

Fig. 1. Configurational diagram of K-PEG

In the viewpoint of reliability, however, it seems that the system is exposed to several weaknesses. First, high dependence of K-PEG on the text mining techniques could give rise to concerns about reliability of evaluation results. Second, in spite of flexible setting of evaluation indicators' weights, the simple linear regression model is likely to decrease accuracy of its evaluation. Third, the evaluation model cannot reflect information on trend of technologies related to evaluation subject, related markets, and foreign patents. Forth, there could be other questions about objectivity for evaluation indicators comprising of the strength of patent, the commercial potential, and the technological potential.

Finally, there are both strengths and weaknesses in the perspective of usability of the system. In spite there could be questions about objectivity for evaluation indicators, the evaluation results from K-PEG have showed very high correlations with peer-review evaluation results by experts and maintenance rate of patent registration, respectively. However, the system also has fundamental weaknesses as follows: first, users cannot get evaluation results in currency needed to trade technology because it employs semi-quantitative evaluation technique calculating values of patents in grade; second, the technologies that can apply to the system are confined to only registered patents.

4 Concluding remarks

This paper investigates the structure of K-PEG and diagnoses its performance qualitatively. The system could be more competitive for R&D planning based on long-run trends of technical changes and/or evaluation of R&D outputs in public sectors under its current status because it may not satisfy the needs of private sectors requiring quick and timely decision making under complex and fast-changing business environments. In the same contexts, it can be more appropriate for planning and evaluation of government-funded R&D program focusing on fundamental technologies or standard technologies among S&T fields. We argue that K-PEG will give new knowledge base competitive to public sectors that require more objective information about future S&T forecasting and trend of technical changes if it is advanced to an evaluation system specialized in R&D investment and policy making applications.

References

1. Arora, A., Fosfuri, A., Gambardella, A.: Markets for technology: The Economics of Innovation and Corporate Strategy. MIT Press, Cambridge, MA (2001)
2. Crowsey, M. J., Ramstad, A. R., Gutierrez, D. H., Paladino, G. W., and White, K. P., Jr.: An Evaluation of Unstructured Text Mining Software. Systems and Information Engineering Design Symposium 2007, IEEE, 1-6 (2007)
3. Lee, D.-K.: A Comparison on the efficiency of Data Mining Software. Master's thesis, Hoseo University (in Korean) (2001)
4. Reilly, R.F. and Schweihs, R.P. : Valuing Intangible Assets, McGraw-Hill, New York (1998).
5. Tseng, Y.-H., Lin, C.-J., and Lin, Y.-I.: Text mining techniques for patent analysis. Information Processing and Management 43, 1216–1247 (2007)
6. Viscounty, P. J., De Vries, M. W., and Kennedy, E. M. : Patent auctions: emerging trend?. The National Law Journal Article, May 8, 2006.
7. Witte, R., Li, Q., Zhang, Y., and Rilling, J.: Text Mining and Software Engineering: An Integrated Source Code and Document Analysis Approach. IET Software 2(1), 3-16 (2008)