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A rough-set based-approach for anticipating competitor's decisions

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Abstract

In the evolving competitive environment, characterized by competition, rapid market change, and globalization, companies have to enhance their competitive advantage to survive. In such a context, they have to continuously monitor and process information on their competitive environment in order to have an informational advantage over their competitors (their capabilities, vulnerabilities, intentions and potential moves). Getting better informational and intelligence support is critical and vital. Competitive Intelligence (CI) appears then as a vital component of strategic planning and management process. Developing a CI process within a company leads to several benefits such as anticipating moves of the other competitors by shedding light on competitor strategies, discovering new competitors or potential customers, identifying and analyzing situations, from competitors, customers, suppliers and others factors that influence the success or the failure of the company.

The competitive intelligence concept has attracted growing attention in the last two decades. Existing literature shows that CI is a multi-disciplinary concept studied by researchers with different fields of expertise and from different points of view either as a concept, a product, a process, a practice/discipline, a method, or a system. Despite this great diversity in the body of knowledge related to the CI, CI solutions proposed to the decision-maker are limited. The objective of this paper is to propose a practical CI solution for the anticipation of competitor's decisions in order to support the decision-making of a company. Since anticipation evolves under uncertainty, our proposed solution adapts the rough set theory, which has the ability to deal with vagueness, uncertainty, and inconsistencies. A modified rough set and LEM2 algorithms were used to generate rules that help the decision maker anticipating competitor actions. The proposed solution goes further with the aggregation of the generated decision rules using a new proposed algorithm that will contribute to enhancing manager's decision-making process. To motivate the research, the whole proposed approach is illustrated considering a case study in the field of telecommunications.

Keywords (12 font)
Rules generation, Rough set theory, Competitive intelligence, Action anticipation.

Biographies

Dhekra Ben Sassi is assistant professor in the information system department of Prince Sattam bin Abdulaziz University, College of Computer Engineering and Science (Riyadh, KSA). She holds a doctorate and a master in information systems from the higher Institute of Management of Tunis (ISG Tunis). She is member at RIADI Laboratory in the National School of Computer Science of Tunis. She has expertise in computer science, business & competitive intelligence, reasoning under uncertainty, and statistical and intelligent methods. Her research interests concern decision anticipation, decision aid for competitive intelligence context, intelligent methods and rule induction algorithms.

Anissa Frini is professor in quantitative methods and production in the department of management science of University of Québec at Rimouski (Canada). She holds a Ph.D in operations and decision support systems and an MBA in Information Systems, both from Laval University. She has expertise with decision science, multiple criteria decision aid, dynamic and sequential decisions, temporal evaluations, and uncertainty management. Her research is applied for sustainable development, project selection, healthcare, competitive intelligence, and military contexts.