Dynamic evaluation of balanced scorecard using fuzzy knowledge based representation

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This paper presents a model that allows the dynamic evaluation of Balanced Scorecard (BSC) using fuzzy knowledge based representation. BSC has proved being a powerful tool for management that allows connecting current actions to future strategic objectives considering measures based on indicators and inductors. BSC translates business vision and mission into a set of actions guided by strategies and classifies them into four axes according to their perspective: financial, processes, customer and learning and growth. A strategic map of cause and effect relationships is generated, showing the relationships between a set of objectives and/or indicators, classified according to the perspectives to which they belong; knowing these cause-effect relationships is important for engineering management in order to provide an adequate management, coordination and control framework for business development. Nevertheless, this approach does not consider: existing dynamics between perspectives of the BSC; order and priority of the connection between axes; degrees of influence between axes; particular state of each axe and state of the system on the basis of the combination of the diverse states of the axes; positive or negative influences between axes. This work also provides an application of these concepts in a Port Community, building a conceptual map of fuzzy relations represented by a diffuse interval knowledge base matrix based in expert knowledge. © 2018 IEEE.

Balanced Scorecard

Fuzzy Knowledge Representation

Incidence Matrix

Strategy

Knowledge representation

Strategic planning

Balanced scorecards

Cause-and-effect relationships

Cause-effect relationships

Coordination and Control

Engineering management

Fuzzy knowledge representation

Incidence matrices

Strategy

Knowledge based systems