**LEVEL 0 SUMMARY TEMPLATE**

* **Name:** Jie Jacques YANG
* **Name of your Level 1:** Anissat MOHAMED
* **Paper title:** AI MODELS FOR BUSINESS PROCESS REENGINEERING
* **Source (e.g. scholars.google.com):** https://scholar.google.com/
* **Keywords specific to the paper:** Business process models modeling and AI
* **Summary of the main contributions (use text paragraphs, tables and if necessary, figures):**

This paper outlines a framework for modeling and analyzing organizations to support business process reengineering. Traditional modeling techniques like data flow diagrams and entity relationship diagrams fail to capture the strategic rationale behind processes, making business engineering less effective.

The authors describe two models, the i\* framework and ConGolog framework, to address these issues. The i\* framework views organizations as networks of actors with strategic interests and interdependencies involving goals, tasks and resources. It includes the Strategic Dependency Model describing relationships among actors, and the Strategic Rationale Model describing each actor's reasoning about relationships. The authors formally represent these models in the Telos conceptual modeling language. ConGolog provides a more precise characterization of processes. It allows specifying and analyzing partial process models and world states.

The paper aims to develop tools integrating these frameworks to aid process analysis, redesign and information systems development. The sample problem examines redesigning an insurance company's claims processing. Traditional models obscure the strategic rationale behind activities. Without understanding why things are done, outdated processes may be automated.

The Strategic Dependency Model reveals dependencies among claimants, insurance agents, adjusters and body shops. Each actor pursues opportunities while vulnerable to others. The model informed possible redesigns like agents handling small claims directly.The Strategic Rationale Model structures process elements into goal and task decompositions, capturing reasoning behind each actor's relationships. It models alternatives like traditional centralized handling versus others. Each alternative differently impacts soft goals like customer satisfaction and costs.

ConGolog precisely defines process dynamics through pre postconditioned actions. It supports partial specifications and world states important for business processes' uncertainties. The paper develops tools integrating these frameworks.

The strategic relationships analysis tool constructs and analyzes dependency networks, identifying opportunities and vulnerabilities. The strategic relationships redesign tool supports exploring alternative relationships.Qualitative reasoning aids analyzing collections of soft goal interdependencies. Given a satisfied unsatisfied soft goal graph, it propagates labels through qualitative dependencies.

A process model validation tool confirms a model aligns with the user's understanding through simulation. A process verification tool confirms a specified process maintains given constraints like integrity constraints in databases. A means-ends analysis tool supports exploring goal-linked process designs. A knowledge base of generic methods might simplify traversing means-end hierarchies. The tools integrate through a message bus and shared repository managed by an object-oriented database.

Their graphical interfaces support constructing and manipulating models. Integration brings synergies like the validation tool simulating processes from the strategic relationships tool. Qualitative reasoning insights could inform strategic analysis. Means-ends and method knowledge bases might structure analysis across tools.

The authors apply the modeling and reasoning techniques to insurance claims redesign and power plant procedure analysis case studies. The goal is a unified Tropos framework incorporating context management of actor viewpoints and design alternatives. Verification techniques aim to strengthen the practical applicability.

As competitive pressures drive more process rethinking, formal modeling and analysis support will be increasingly important. The knowledge representation approach connects processes and objectives. It provides several analysis tools to systematically explore alternatives and credibility to outcomes. Process models make information systems development easier. While in development, the integrated toolkit shows promise for aiding organizational reengineering.

* **AI model used (e.g. Neural network, etc.) :**

The AI Model used is : i\* framework and ConGolog framework

* **Introduce the AI models :**

The i\* framework incorporates AI techniques such as means-ends analysis, qualitative reasoning, agent modeling, and theories of action. It views processes as involving social actors who depend on one another for goals to be achieved, tasks to be performed, and resources to be furnished.

The ConGolog framework supports reasoning about the dynamics of processes under incomplete knowledge. It is described as suitable for declarative modeling language for business processes and is used to model business process dynamics.

* **How do they contribute to the idea proposed by the paper?**

The i\* framework and the ConGolog framework contribute to the proposed idea by providing structured approaches to modeling and analyzing organizations and business processes. The i\* framework helps understand the rationale for relationships between actors within organizations and strategic dependencies. The ConGolog framework provides a way to reason and model about business process dynamics, particularly partial information or in situations of uncertainty. To conclude, the proposed idea of using AI for business process reengineering and organizational modeling by addressing the complexities and uncertainties of business processes is supported by these AI models.

* **Supported by a software application? (If yes, provide more details) :**

No, this article is not supported by a software application