
Investigating the Impact of Management Practices on Retail Store Productivity

Proposal of an Agent-Based Approach

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Project Summary: 12/04/2006

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IDEAS Factory Network Group Project:

- Collaboration between Aston, Cambridge, Nottingham, and Sheffield
- Investigating the role of management practices in closing the productivity gap
- Focus on selected parts of the service sector, comparing UK with the USA

Our Contribution:

- Develop a model that helps to understand and predict the impact of different management practices on retail store productivity
- Incorporating variables from different levels of analysis
- Capture emergent phenomena

Our Approach (Step-by-Step):

1. Individual departments of one store
2. Different department stores
3. Cross-country comparison

Literature Review (1/2): Questions

Review Questions:

- Areas of interest to identify suitable approach?
- Existing models for retail practices?
- Commonly used modelling approaches?



Summary of Results:

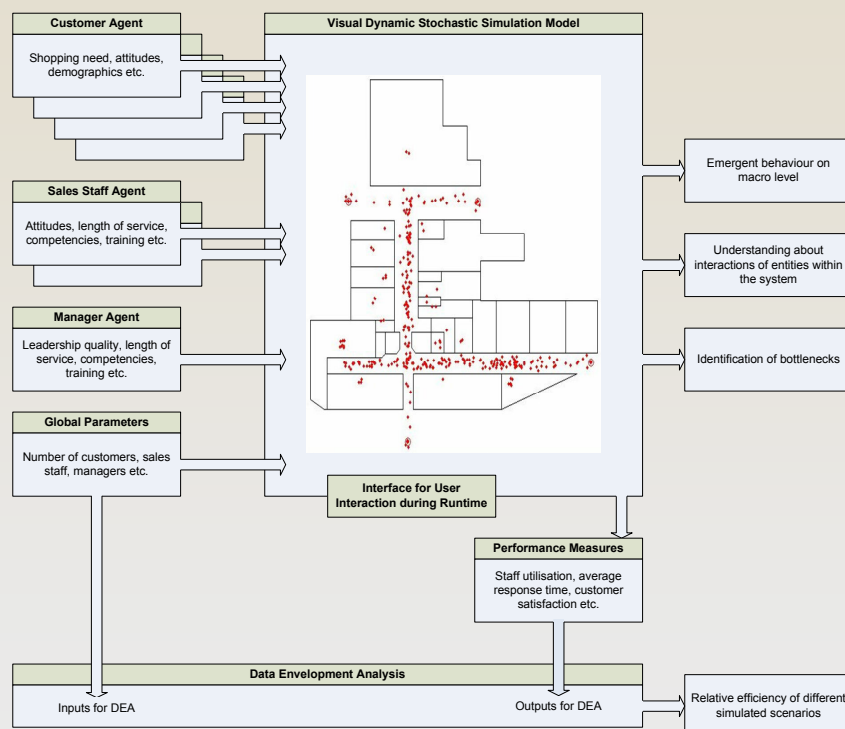
- Most papers focus on marketing practices and their effect on consumer behaviour
- Most frequently used technique for understanding: ABMS
- The agents themselves use analytical or heuristic models internally
- Example of applying the agent paradigm: ACE
- Most frequently used technique for comparing relative efficiency: DEA

“ABMS is used to study how micro level processes affect macro level outcome; macro behaviour is not simulated, it emerges from the micro decisions of the individual agents.”

Our Decision:

- Using ABMS in conjunction with Bayesian Reasoning (for decision making)
- If required, we use DEA as benchmarking instrument

Conceptual Tool Design



Management Practices to Consider?

- What management practices are used in the retail sector?
- Which ones are related to our project?
- How can we measure their impact?

Parameters, Input Variables and Performance Measures?

- Simulation outputs?
- Level of product distinction?
- Staff consideration (types / interactions)?
- Customer representation (data availability, learning)?
- Scope of management practices (local or company wide)?
- Are we interested to include costs in our model?
- How do we validate our model?