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"Playing seriously" with strategic management: a case study matching *Role Playing* and *System Dynamics* to develop SCM policies

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A brief overview

- *Gaming* has acquired increasing relevance in management education/training programs over the last years.
- *Role playing games* may be used to explore complex and dynamic business domains, such as supply chain contexts, and to support strategy formulation in such contexts.
- Main problems, however, are connected to gaming, in:
  - correctly making sense of the gaming experience;
  - evaluating players' performance (and learning);
  - really/deeply understanding the features of the simulated environment under analysis, in order to support policy analysis and strategy implementation.

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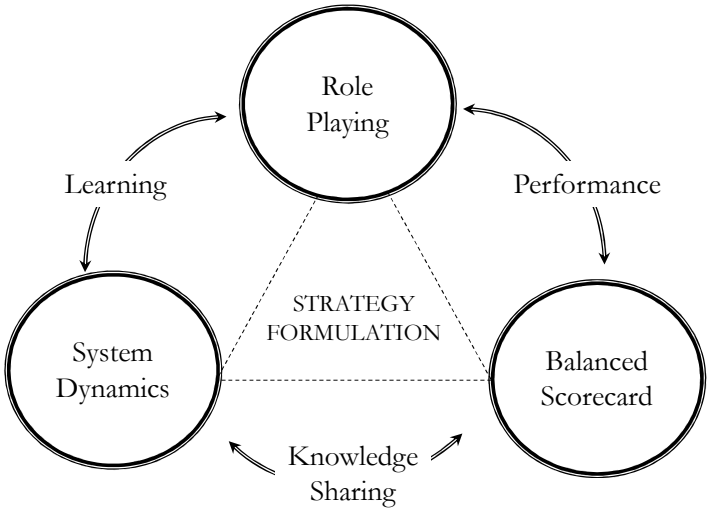
Theoretical framework and methodology



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Expected outcomes

- Demonstrate that role playing games in management training provide concrete experiences in which participants acquire conceptual knowledge and operative skills.
- Explore the role of the BSC in making sense of role playing games and evaluating players' performance.
- Test the role of a SD model to support managers/students in making sense of their playing experience and formulate better strategies, especially dealing with Supply Chain domains.

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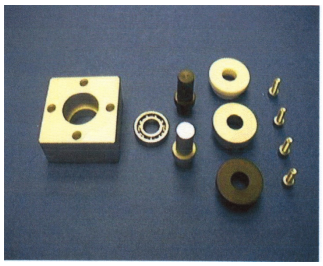
The "Strategic Micro-Firm" Game: key features of the gaming experiment

- The game reproduces the main operational (and managerial) features of a typical manufacturing supply chain.
- The firm produces four different finished goods for the reference market (a routing device - similar to an axle shaft - in different customizations).
- Each finished good is made of 5 different raw materials assembled together: 1 base; 1 bearing (a small cushion); 1 pin; 1 cover; 4 screws.



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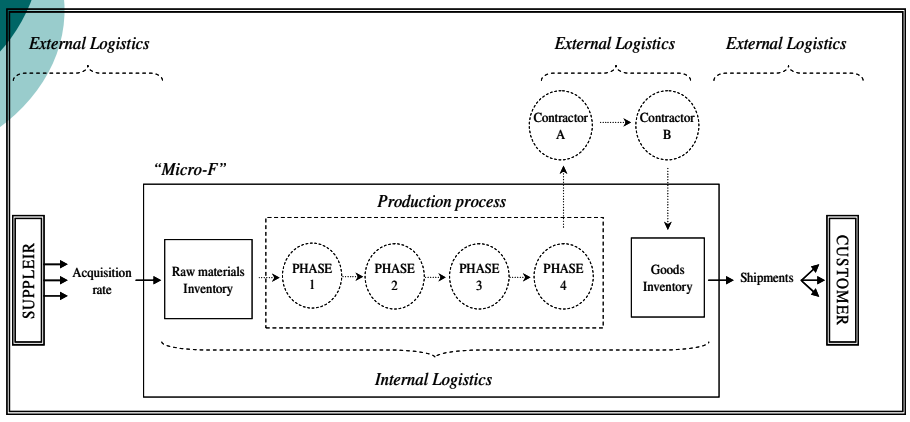
The simulated supply chain



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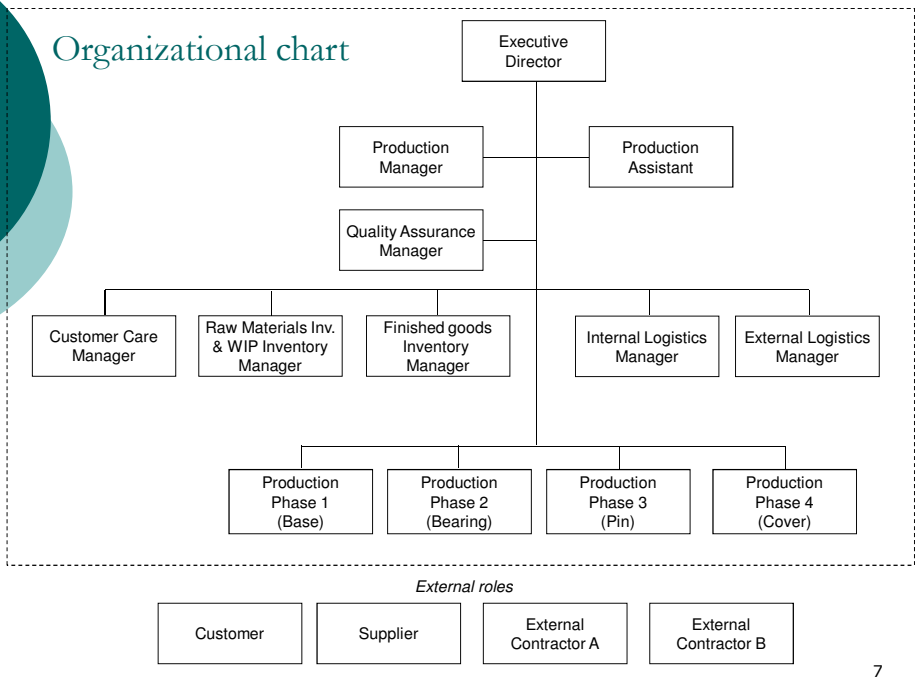
Organizational chart



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Key features of the gaming experiment

1	Duration of the role playing game	The overall game is played over a 2-day session. Each day includes sessions of briefing, game and debriefing.
2	The setting	Each player is assigned a specific role within the simulated SC. In the 2nd day the roles are switched among the players.
3	Time horizon of the game	12 months. Each simulated month lasts 15 "real" minutes.
4	Objectives to achieve	Deliver goods on time. Maximise customer satisfaction. High operating profit. Increase firm's value.

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Key features of the gaming experiment

5	Performance outputs	The key performance indicators (KPIs) are defined on the basis of the previous objectives and are identified across the four perspectives of the Balanced Scorecard (Financial; Customer; Internal Processes; Learning and Growth).
6	Additional features	The game may include inconveniences, such as machinery failures. Capacity constraints are also imposed.
7	Teaching support materials	Player's guide. Micro-F organizational chart. Micro-F strategic plan. Micro-F strategy map and BSC reports. Teaching Note.

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A *role playing* game …

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Typical problems and…

- Lack of coordination and communication.
- Players' typical attitude is to "act locally ignoring the global system and its interrelationships".
- Creation of bottle necks and bullwhip effect.
- Poor performance, at the *beginning* of the game, in terms of:
  - number of finished goods;
  - punctuality of shipments;
  - customer satisfaction;
  - net revenues and contribution margin;
  - …

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… and causes of typical problems

- In more detail, there are 3 specific underlying causes for the participants' poor performance and overall management inefficiencies:
  - a) incomplete understanding of the cause-effect linkages and the complex structure of the SC ;
  - b) a lack of collaboration and coordination among the players;
  - c) poor decision-making, mainly due to a lack of a strategic management attitude and a partial lack of information
    - All these problems are interconnected and are a consequence of a simple but powerful principle: *structure generates behaviour* (Spector and Davidsen, 1997).
- Use of the BSC and the SD model …

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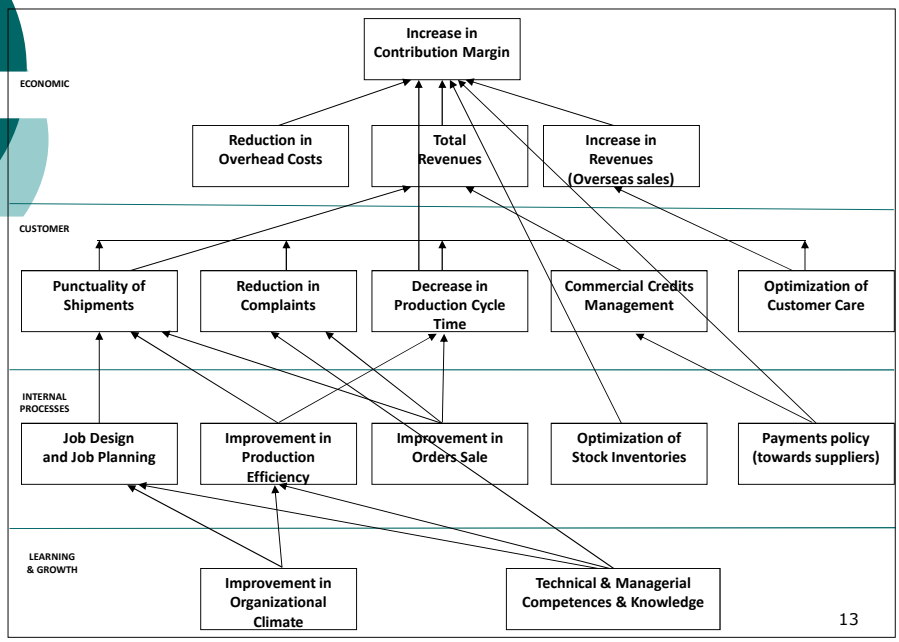
The Strategy Map



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The Micro-Firm Balanced Scorecard

Financial Perspective	**Customer Perspective**
Net Revenues	Punctuality of shipments
Contribution Margin	Customer Satisfaction
Overhead Costs/Goods sold	Pct. of orders completed
Net Revenues (new customers)	
Internal Processes Perspective	**Learning and Growth Perspective**
Number of goods manufactured	Organizational climate
Raw Materials Inventory Rotation (%)	Efficacy of information flows mgt
Plant Usage (%)	Capacity of self-improvement
Number of reworks	Activities carried out/Planned activities
New customers	
Returned goods	

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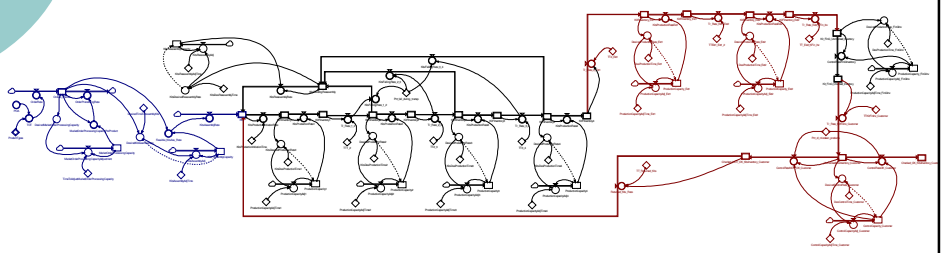
Modeling the SC domain



NB: *Simplified* SD model of the simulated SC.

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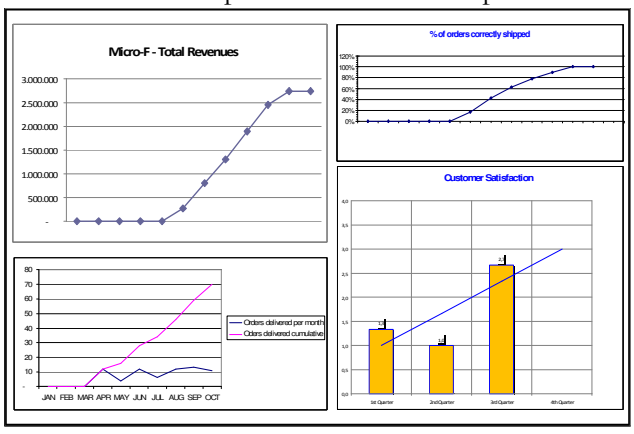
Typical results

- Typical results show improvements in all the performance areas.



- Cooperation, communication and team working are among the skills developed within the game.

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Discussion and final remarks

- It is our opinion that the overall approach (the gaming experience plus the use of a specific performance measurement system - the BSC - and a System Dynamics model) helped the participants and the facilitators to reach the educational goals.
- The project led the participants to:
  - question and challenge their mental models and their assumptions about complex SC domains;
  - cooperate and think in terms of team (and not individual) goals;
  - develop a comprehensive vision of the production process and the main features of the reference market;
  - develop a trans-disciplinary professional approach to SCM.

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Discussion and final remarks

- In particular, the approach helps the players to conceptualize the main lessons learnt and suggest/develop feasible SCM policies as well as identify new tools and devices to be implemented in order to increase efficiency and performance along typical SCs:
  - improve information and communication flows;
  - introduce specific inventory management policies;
  - improve integration through the use of IT tools, such as ERP systems;
  - use specific performance management systems, such as the Balanced Scorecard, in order to monitor performance over time and the discrepancies between targets and actual values;
  - use advanced analytical tools (e.g. a simulation model) to better understand the pattern of cause-effect links within the system and identify leverage points.

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Discussion and final remarks

- It is interesting to note that most of the proposals/ideas/policies identified by the participants are mentioned by the literature as feasible solutions to SC problems and for improved SCM practices (e.g. see Goldratt and Cox 1984; Towill 1996; Levy 1998; Akkermans *et al.* 2003; Shah and Ward 2003; Akkermans and Dellaert 2005; Granlund and Mouritsen 2003; Gunasekaran et al. 2004; Bhagwat and Sharma 2007).

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