MODELLING BUSINESS STRATEGIES FOR VERIFICATION OF PLANNING

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Abstract

The state of the art of business strategy design today uses well developed sets of rules. If business segments and competitors are known, then the interaction of the competing firms takes place on two different levels.

In the market place one product outcompetes another within the same business segment. Within the different firms clearing of the business portfolio's takes place across the market.

Based on the extensive groundwork by A. Lyneis [1] we prototyped a general strategy-verification model, which not only serves as a training for marketing managers as e.g. Markops [2] but which allows to start the simulation adapted to the specific business context for which a proposed strategy has been formulated.

Some cases will be used to illustrate the approach chosen.

Introduction

With the reported simulation exercise we wanted to explore the possibilities of System Dynamic Analysis (S.D.A.) to simulate and verify strategic planning for business units on divisional level.

A survey of work done elsewhere gives a sound basis to start the modelling task. The very extensive groundwork summarized by e.g. A. Lyneis [1] provides well proven modules for simulation of a company on the operational level. Different authors have reported models including so called spiral-loop approaches in order to include discontinuous decisions into the simulation. P.P. Merten [3] has shown application of such structures to strategy simulation in business applications. On a very different level there exist a few discrete simulation games for management education, like J.C. Larréché [2] with

the Markops-game. Simulation in all these reported cases uses some defining basic elements that comprise the business concerned, the market place and the interactions within the company and on the market.

The basic structure of the market simulation comprises two different loop-structures. The market-loops link the appropriate business segments of the competitors and define market share on an operational day to day basis. The strategy-loops on the other hand interlink the business segments of different markets of a company to the company-portfolio based on strategic budgeting.

The approach for modelling, e.g. in [2] consists of automatically defining the strategy for the competitors and thereby generating a highly interactive and reactive environment to test and develop your own operational and strategic skills.

Our goal was to have available an adaptable simulation tool to model any real practical planning context in order to get at strategic planning with appreciation of the context of known competition.

Basic modelling structures

The exploratory simulation exercise reported covers two simplified cases just to demonstrate the approach.

In a first step a company with just one single business segment is analysed. Since it is assumed that this company is immersed in a stable market environment, competition only shows up by imposing stable reference values e.g. for price, delivery delay and sales effort on the market place.

The inner loops of adjusting and managing the company over time (capacity increase, changing sales effort, adjusting prices etc.) are realized with modules taken from [1], whereas the accounting procedures to arrive at the portfolio-strategy are implemented according to common accounting practice. Fig. 1 summarizes the structure for one business segment immersed in a stable market.

A second step was to model two competitors immersed in a stable market. By this a minimum configuration to test reactive behaviour between competitors is implemented.

Going further would include considering more than one business segment in order to include the strategic budgeting process at company level between different business segments [4].

Simulation exercise

In this chapter we report the results of some simulation exercises in order to illustrate the approach chosen.

The market clearing is implemented as incremental increase or decrease of market share according to differences of price, delivery delay, product newness, sales effort and contribution of the competitors offers to the choices available to the customer.

The graphs reproduced are printouts from Professional Dynamo [5], the software used, and give of course only a very narrow selection of an inherently rich amount of information which can be extracted from the simulations.

The first batch of simulation runs should demonstrate the behaviour found for the single one-business-segment-company immersed in a stable market context.

The questions addressed were:

- Behaviour with aging product, do we have a following of a natural strategy, e.g. the phases question-mark, star, cow, dog?

Fig. A shows the base run.

The variables plotted are:

MAR: market share of company
NPS: accumulated net profit
Price: -
PC: production capacity used

The total interval shown covers about twice normal product life-time, so we should see

- a growth phase until about time = 50
- a consolidate phase followed by harvest up to time = 150
- a divest phase thereafter

It is assumed that capacity once installed cannot be divested. Underutilisation just helps cutting variable cost.

A second batch of simulation runs is summarized below, giving the behaviour of a one-business-segment two-competitors-model.

The cases covered concern the following simulation set-ups:

Fig. B both competitors are identical with identical parameter settings

Fig. C one of the competitor uses for strategy setting longer time periods than for operations

The additional variables for Fig. B are:

OB: orders backlog
YOB: orders backlog competitor
PC: capacity used
YPC: capacity used competitor

The discrepancy of development is due to the fact that in each time step of the calculations of the simulation the competitor is treated first. So demand first hits the competitor, so delivery delays build on him, giving the own company a better start to receive orders.

In Fig. C it is the own company that instead of setting the strategic positioning every day does so only after a fixed period lapse. The effect of this is a much more gradual and matched capacity usage which results in a significantly better net profit result.

Netpc: net profit
Ynetpc: net profit of competitor

Questions and problems

So far the prototype-work reported appears to have demonstrated functionality enough to warrant further effort.

After a few exploratory rounds with the new tool a list of questions arised that were new to us:

- What is the difference between strategic and operational management (time span and goal setting)?

- What is the optimum mix between operational flexibility and strategic rigidity?

- Interaction of typical reaction time constants of the business and competitors and the strategy-setting period used.

Faced with planning for a reactive environment it is to expect that the few questions above just give a few hints for more. It has been a quite discomforting revelation that using an inappropriate planning period could contribute to failure of an otherwise sound strategy.

Conclusion

Centered on a strict definition of business segments and their allocated markets [6] a generalized model structure for business simulation has been protoyped.

The evidence found with the protoype models so far is different enough from classical quasi-static strategy reasoning to expect some possibly new insights [7].

References

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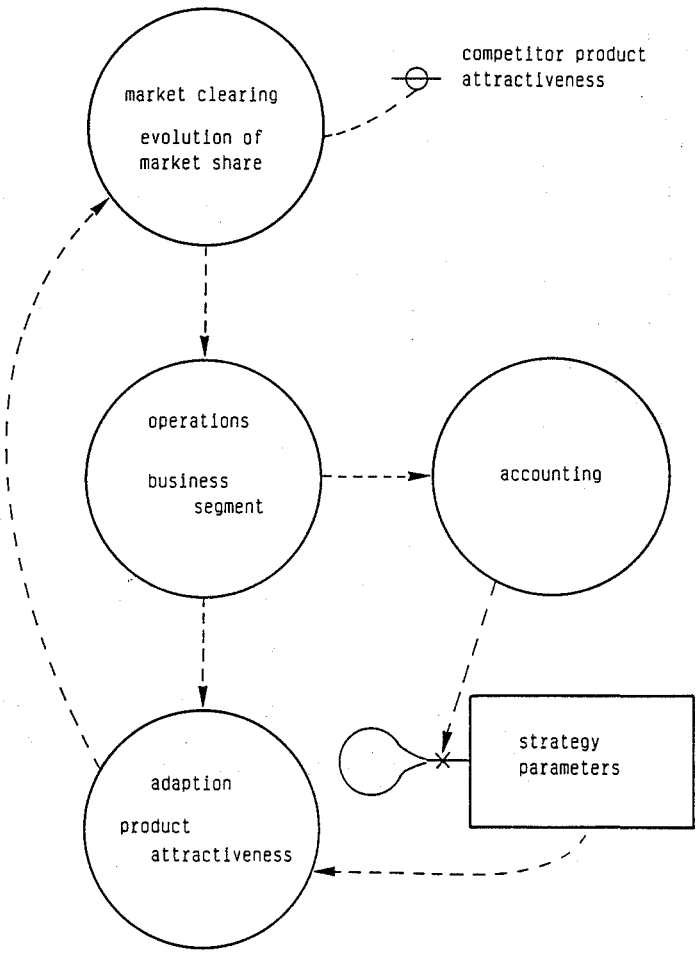

Fig. 1 Simplified one company one segment model

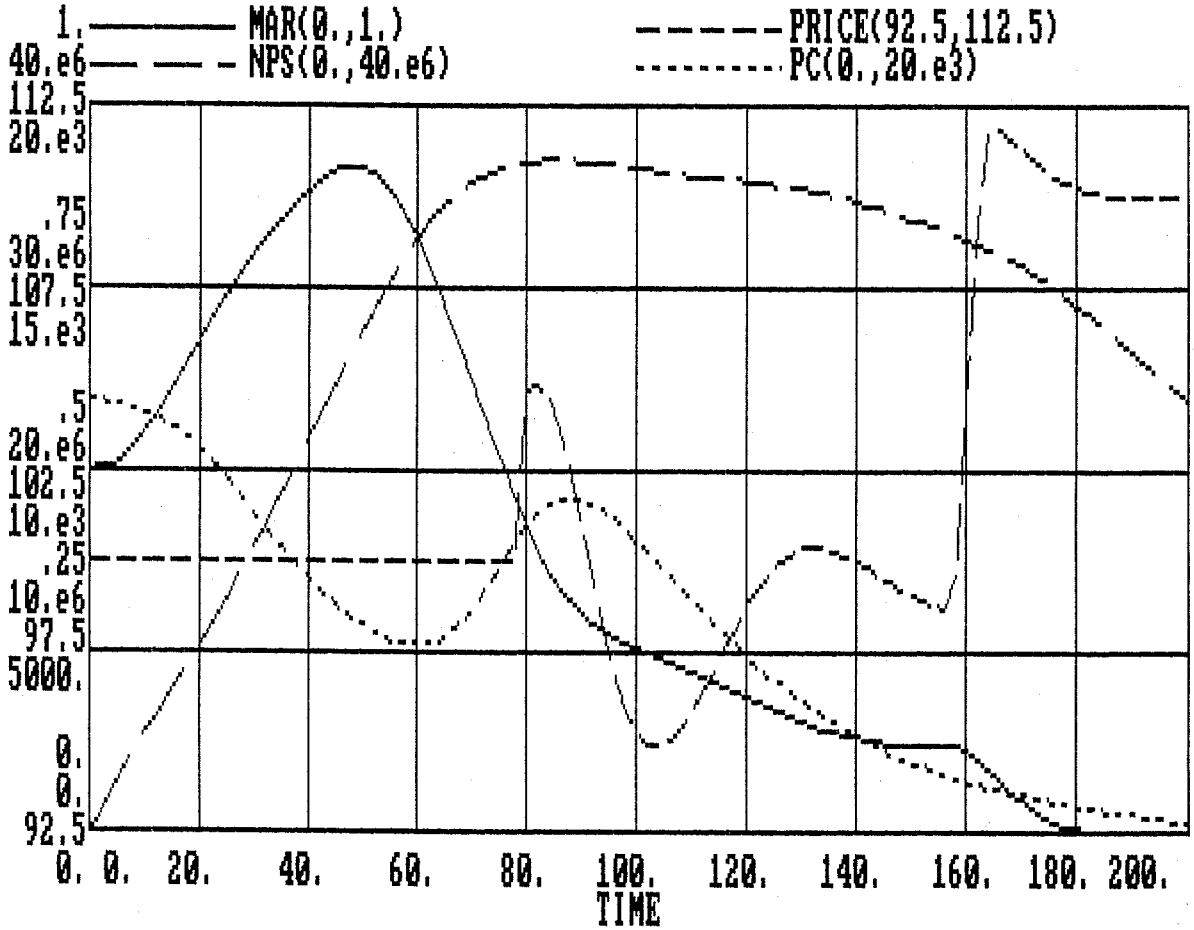

Fig. A One-business-segment-company base run:
Behaviour with aging product

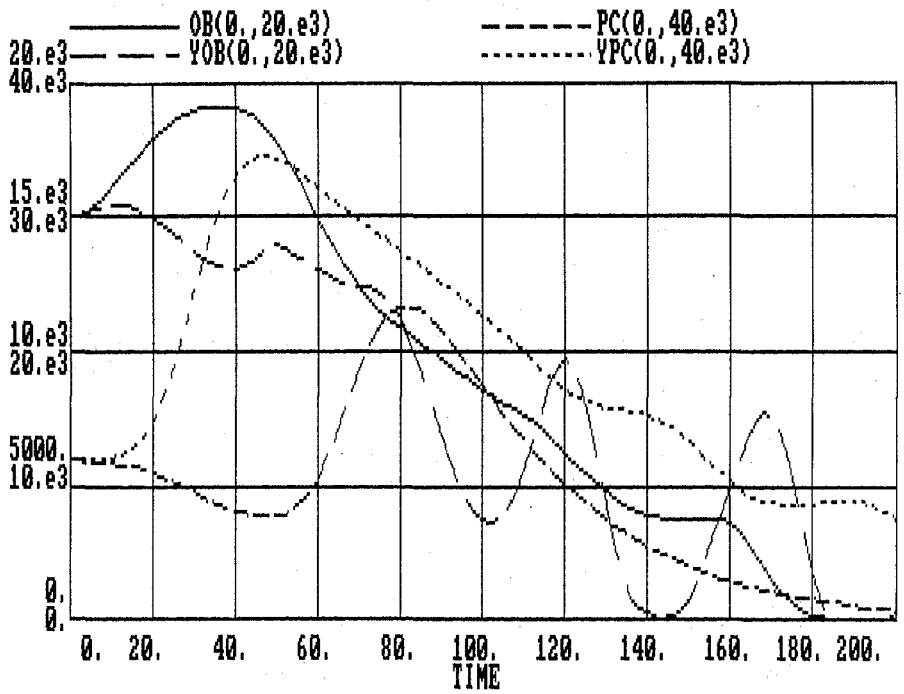

Fig. B One business segment two competitors:
Identical competitors, Y-competitor is first in calc-period

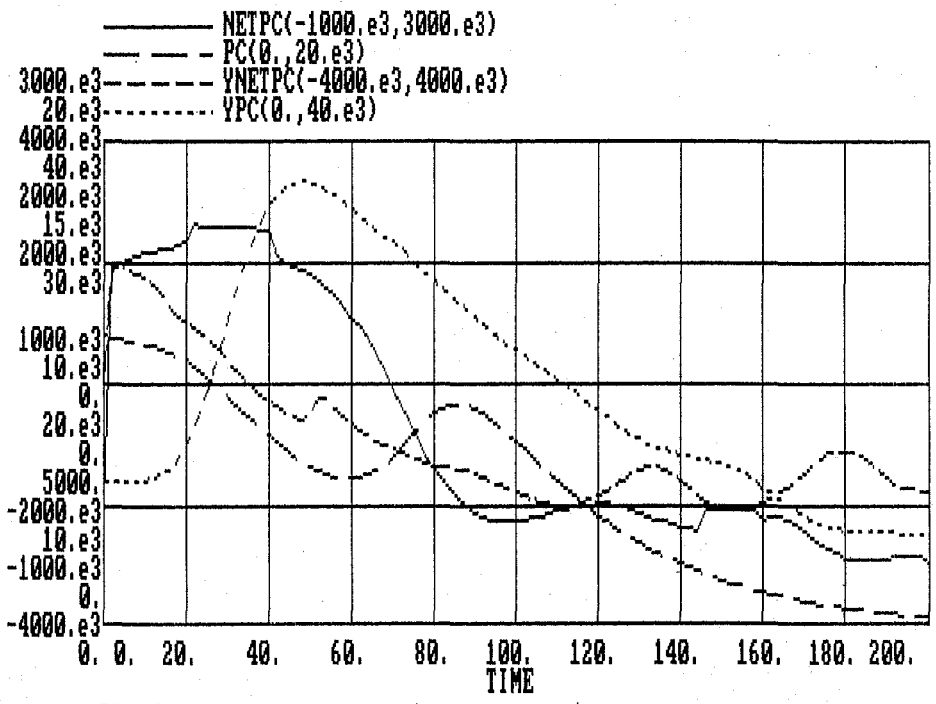

Fig. C One business segment two competitors:
Own company uses longer strategy setting period