Business Game

Strategic Decisions

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1. BUSINESS GAME STRATEGIC DECISIONS

In this document you can find the description of the main entry variables of our Business Game. These variables correspond to the company strategic decisions. The variables have been classified according to their relevant functional area.

1.1. Marketing and Sales

Demand management strategy

The demand management strategy defines the *lead time* between order receipt and customer delivery. The customer is the distributor (i.e. wholesaler, department store, retail store) and acts as an intermediary between the company and the customer. The model envisages the following options:

- **MTS (Make To Stock)** production [delivery time is reduced to the sole transportation time].
- **ATO (Assemble To Order)** production until pre-assembling [delivery time is equal to assembling and transportation time].
- **MTO (Make To Order)** production [delivery time is equal to production and transportation time].

The demand management strategy has a deep impact on the internal performances of *time* and *flexibility*. As a matter of fact, make to stock production shortens lead time in order to advantage the internal performance of time, whereas make to order production improves the capacity to manage product mix variations, in order to advantage the internal flexibility. Moreover, the model assumes that this strategic decision can be only made at the beginning of the year.

Price

Price is an extremely relevant decision, since it has a considerable impact on the consumer's propensity to purchase, especially when the simulated market has been saturated.
Since different models [product width] and different variants [product depth] can be envisaged for each single product, the price entry variable represents the average selling price.

Trade Promotion

Investments in trade promotion in the selling outlets aim at developing consumer's *familiarity*, *usage* and *need* about the product by directly showing its functioning. This investment has only a direct impact on the quarter under analysis.

Advertising

Investments in advertising aim at promoting consumer information about the *presence* of a given product on the market. These initiatives usually tend to highlight the product innovative features in

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comparison to the competitors' products. Such investments deeply affect product image and have a long-term effect.

Sales forecast

Sales forecast defines the *marketing plan*. The whole business strategy turns around this strategic decision. As a matter of fact, the management of the other entry variables must be aligned with sales forecasts, since this value enables to check if the investments made are aligned with the available business resources (if the value is confirmed by the number of real sales). The *production plan* also depends on this value. The production plan refers to the allocation of the aggregate resources according to the different products. In other words, production will be organized in a way to achieve the number of components defined by the marketing plan, excluding provisions.

1.2. Production

Flexibility of production lines

The degree of production lines flexibility strongly impacts on *plant efficiency* and has therefore indirect effects on business flexibility. The model envisages the following options:

- **Flexible lines with wide product range.** Production lines are highly flexible in terms of product mix, i.e. number of models [product width] and variants [product depth].
- **Flexible lines with limited product range.** Production lines are fairly flexible in terms of product mix, i.e. number of models and variants.
- **Dedicated lines.** Production lines are scarcely flexible in terms of product mix, i.e. number of models and variants.

Furthermore, the model assumes that this strategic decision can be adopted solely at the beginning of the period of time under analysis.

Automation of production lines

The degree of plant automation strongly impacts on *plant efficiency* and has therefore indirect effects on company flexibility. The model envisages the following options:

- **Manual**. The plant is scarcely automated and therefore a great number of personnel is needed. However, this option allows higher flexibility.
- **Semiautomatic**. The plant is automated and an average number of personnel is needed. This option allows a fair degree of flexibility.
- **Automatic**. The plant is completely automated. The number of personnel is extremely low but flexibility is limited.

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Furthermore, the model assumes that this strategic decision can be adopted solely at the beginning of the period of time under analysis.

Lot sizing

The criterion of production lot sizing entails a trade-off between the internal performances of *time* and *cost*. The model envisages the following options:

- **Lot-for-lot.** The production lot is scaled to needs, to advantage of the internal performance of time.
- **Economic order quantity.** The production lot is scaled to the quantity of economic orders, to advantage of the internal performance of cost.

Production capacity

Production capacity refers to the plant potential in terms of components per hour. The relevant strategic decision allows shifts in the available production capacity within a limited range [0% to 20%]. An increase in the production capacity consequently leads to an increase in the maintenance costs. The model assumes that this strategic decision can be adopted solely at the beginning of the year.

Maintenance

Investments in maintenance aim at keeping the production plant at its *nominal* operational *condition*. The size of such investments must be scaled to the degree of plant automation and production capacity.

Outsourcing

The outsourcing percentage shows the tendency to outsource production to third parties. Outsourcing enables the company to full satisfy demand, even when it overcomes its production capacity. However, this option has considerable effects on production costs. This decision not only impacts on production but considerably affects internal flexibility. Suppliers (see section "suppliers") can be selected according to their level of performance and cost.

Financing

Companies can ask for bank loans to improve their financial situation. The loan must be paid back within the last game period at the latest. Several repayment options are envisaged:

- **Capital redemption at the end**. The loan is paid back at the end and installments are equal to interests.
- **Constant amortization quota.** This repayment method, also called "Italian method", splits up the loan in constant quotas which are equal to the total amount of the loan

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divided for its duration. Interests, whose amount decreases as periods advance, must also be paid.

- **Constant payment.** The loan is paid back with constant payment. This method, also called French method, is widely adopted by banks.

Calls for funds can be made at every time, except the last period.

1.3. Sourcing

Suppliers for *raw materials, components* and *finished products* (outsourcing) can be defined through the following strategic decisions.

Accounts payable period

This value refers to the period of time (up to a maximum of 90 days) during which the company can extend payments for supplies. It affects company flexibility and the money on hand. A long period of time increases the availability of money on hand, but makes the relationship with suppliers more stressed. On the contrary, a short period of time reduces the availability of money on hand.

Numerousness of suppliers

The number of suppliers per component impacts on the internal performances of *quality* and *cost*. The model envisages the following options:

- **Single sourcing.** A sole supplier has a greater bargaining power towards the company. Nonetheless, relationship such as partnerships and co-design are preferable.
- **Dual sourcing.** The company protects itself from any opportunistic behavior by one of the two suppliers. Nonetheless, suppliers may come to a bilateral agreement.
- **Parallel sourcing**. Suppliers deliver different products, but can deliver the same component in the short term.
- **Multiple sourcing**. The company avoids possible opportunistic actions, but relationship such as partnerships and co-design are less practicable.

Actually, the number of suppliers is determined by the weighted average of the number of suppliers for raw materials, components and finished products, which imply different strategic decisions. The higher the number of suppliers, the lesser sourcing costs and quality. However, if the company decides to start a co-design relationship to improve quality, costs increase in proportion to the number of suppliers. For this reason, sourcing and co-design costs plus the internal performance of quality are to be taken in due consideration in the choice of suppliers.

Supplier localization

Supplier localization affects the internal performance of *time* and *cost*. The model envisages the following options:

- **Regional.** Shorter delivery time

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- **National.** Standard delivery time.
- **International**. Longer delivery time.

The choice of international suppliers is justified by better price and quality.

Supplier dependability

Supplier dependability affects the internal performances of *time* and *cost*. The model envisages the following options:

- **Fair**. Punctuality and dependability of delivery are fair, though costs are lower.
- **Good**. Punctuality and dependability of delivery are good, though cost is standard.
- **Excellent**. Punctuality and dependability of delivery are excellent, though costs are higher.

Supplier lot sizing

The criterion of supplier lot sizing impacts on the internal performances of *time* and *cost*. The model envisages the following options:

- **Lot-for-lot**. The supplier lot is scaled lot-for-lot, to advantage of the internal performance of time.
- **Fixed amount**. The supplier lot is scaled to a fixed amount, to advantage of the internal performance of cost.

1.4. Distribution

Accounts receivable period

This entry refers to the period of time (up to a maximum of 90 days) during which customers can extend purchase payments towards the company. It affects service performance and money on hand. A shorter time leads to a higher availability of money on hand, but a lower level of customer service.

After-sale service

Investments in the after-sale service are made to fund *maintenance*, *repair* and *replacement* of components in case of malfunctioning or breakdowns.

Distribution channel

The company selects its *favorite* distribution channel among the different typologies envisaged by the model:

- **Indirect distributors**. They are the most expensive distributors, as the company does not sell its products to the distributors.

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- **Direct distributors**. The company sells its products to the distributors.

Transportation

The company selects its *favorite* transportation channel among the different typologies envisaged by the model:

- **By rail.** It is the cheapest, though less flexible solution.
- **By road**. It is the most expensive, but also the most flexible solution.

Inventory level (only increase)

The storage capacity reflects the *number of components* which can be stored as *supply on hand*. The strategic decision under analysis allows shifts in the available storage capacity within a limited range [0% up to 20%]. An increase in the production capacity consequently leads to increased fixed costs for storage, on the one hand, and higher internal flexibility, on the other hand.
The model assumes that this strategic decision can be adopted solely at the beginning of the year.

1.5. Human Resources

Shifts

The number of work shifts [one, two, or three] impacts on the total amount of plant working hours per quarter and indirectly affects *internal production*. An increase in the number of shifts leads to the over-exploitation of the plant and a subsequent decrease of its efficiency[1].

Overtime work

The amount of overtime work enables to increase personnel productivity by indirectly affecting internal *flexibility*. According to the existing legislation[2], some parameters have been introduced, which set some limits on the impact and cost of overtime work.

Personnel

The number of personnel impacts on *production* and on the internal performance of *cost*. The model envisages three types of agreement:

- **Long-term agreements**. Their cost is lower, but dismissal is not allowed[3].
- **Seasonal agreements**. Their cost is standard, but their engagement is limited to one single period.
- **Temporary agreements**. Their cost is considerable but their engagement is limited to fractions of periods.

[1] Investments in plant maintenance and adjustments can help to limit such effect.
[2] The policy adopted by the government aims at promoting employment as an alternative to overtime work.
[3] This obligation derives from the mid-term view envisaged by the economic model under analysis.

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The number of personnel required cannot be decided in advance, as it depends upon the production plan, which is in its turn determined by sales forecasts, stored goods and the previously selected outsourcing level. Therefore, during the application, the amount of personnel is determined automatically through approximations resulting from simulations.

Personnel specialization

According to the different types of agreement, the degree of personnel specialization impacts on *personnel's efficiency* and on the internal performance of *cost*. Moreover, the higher the specialization, the lower the flexibility in terms of internal mobility.

Life of temporary agreements

The duration of temporary agreements [one or two months] determines the ratio between the number of the newly employed and the company personnel who are bound by the other obligations envisaged by the model.

1.6. Research and Development

Co-design

Co-design with suppliers has a heavy impact on the internal performance of *quality*. Indeed, when this strategic decision is adopted, raw materials and components are specifically tailored to the relevant product. Co-design implies a surcharge in the production costs: the bigger the surcharge, the larger the number of suppliers.
The model assumes that this decision can be adopted solely at the beginning of the year.

Industrial Design

Investments in design are made to develop the product image which needs to accomplish the consumer's *aesthetic expectations*. They impact on the external performance of product quality.

Product technology

Investments in product technology are made to develop the product image which needs to accomplish the consumer's *functional expectations*. They impact on the external performance of product quality.

Product width

Product width reflects the number of models available on the market for each single product. This decision impacts on the external performance of *service* quality.

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Product depth

Product depth reflects the number of versions available on the market for each single model. This decision impacts on the external performance of *product* quality. Offers related to product depth are limited to a maximum of 9.

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