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Enhanced economical evaluation in factory planning: the Ukseproff OÜ case

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Introduction

- **Motivation:**

Is starting a door production more reasonable than staying on the market as a distributor?

- **Problem:**

Monetary and non-monetary targets have impact on decisions made during factory planning, especially on the economic evaluation of the solution.





Goal

- Economic feasibility of the project
 - Decision of investment focus
 - Calculation of classical monetary results
 - Considering fulfillment non-monetary targets





Solution

Enhanced Economic Evaluation (erweiterte Wirtschaftlichkeitsrechnung)

- Improvement of Value Benefit Analysis (Nutzwertanalyse)
- Considers factory as a complex, socio-technical system





Method

Enhanced Economic Evaluation

- 1 • Goals and criteria
- 2 • Selection of factory objects
- 3 • Separate evaluation
- 4 • Integrative evaluation
- 5 • Sensitivity analysis
- 6 • Validation and documentation






Method

Traditional economic evaluation

$$C_V = \sum_{T_n=t_0}^T \left(\sum_{m=1}^M \sum_{p=1}^P \sum_{k=1}^K (ZD) \right) * \frac{1}{(1+q)^n}$$

Enhanced economic evaluation

$$C_V = \sum_{T_n=t_0}^T \left(\sum_{m=1}^M \sum_{p=1}^P \sum_{k=1}^K (ZD + ZK) \right) * \frac{1}{(1+q)^n}$$






Case study

Company

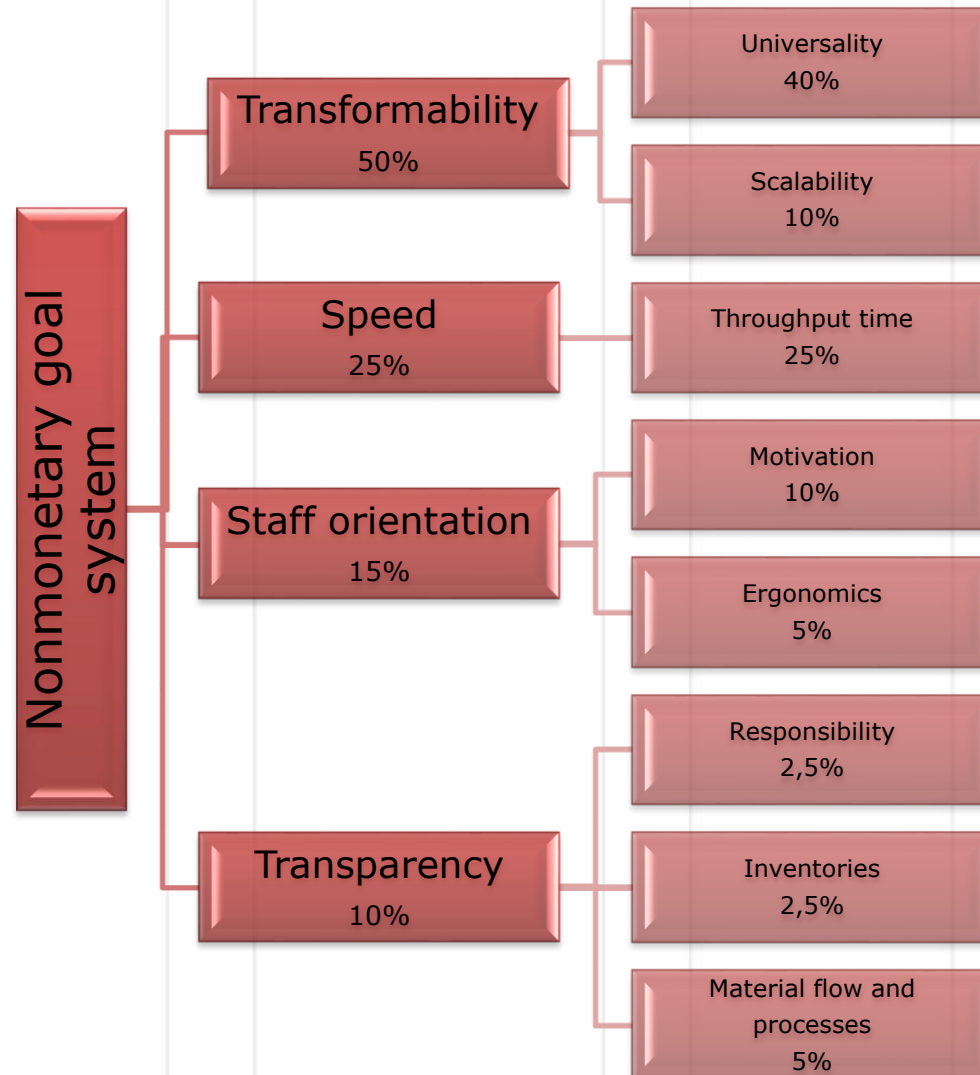
- Door dealer
- Custom design software
- Plans to start door production
- How is it feasible?





Case study

Nonmonetary goal system





Case study

Investment focus = Most relevant factory objects

	means	organisation	Space
Site	<ul style="list-style-type: none">•Provision of media and energy – centralized hubs	<ul style="list-style-type: none">•Organization structure	<ul style="list-style-type: none">•Real estate•building development•external facilities
Segment	<ul style="list-style-type: none">•Provision of media and energy – distribution• IT	<ul style="list-style-type: none">•production concept•logistics concept•Structure	<ul style="list-style-type: none">•factory layout•Girder•Shell•Form•Impression
System /Cell	<ul style="list-style-type: none">•Means of storage•Means of transportation and handling	<ul style="list-style-type: none">•Labor organization	<ul style="list-style-type: none">•Fitting-out
Station	<ul style="list-style-type: none">•Production technology•Quality assurance means•Production means•other means	<ul style="list-style-type: none">•Quality assurance concept	<ul style="list-style-type: none">•Ergonomics



Case study

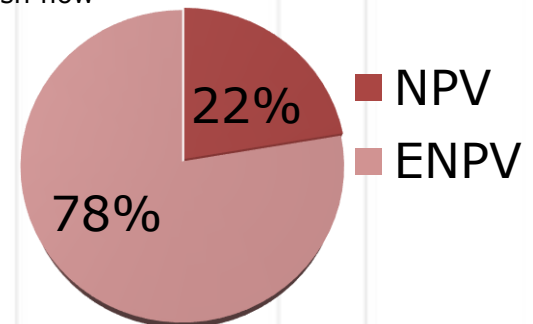
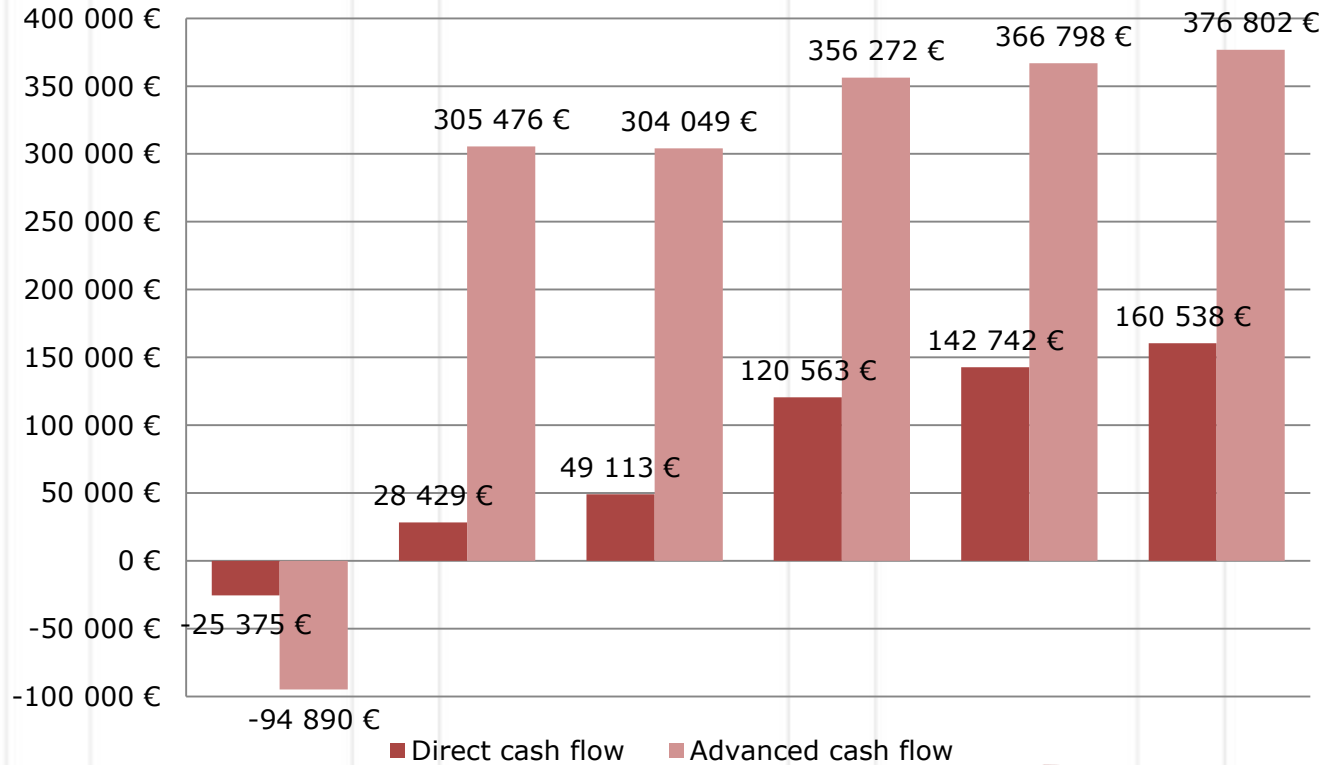
payment evaluation with causal-chains

Transformability (Scalability)							
fabric object	description	transformation aid	monetary value	transformation rule	impact	period	payments
Factory layout	reducibility of expandable areas	free areas which can be used for the production	turnover	working capacity / unit time X selling price	increase	one-time	turnover

Speed (Time-to-market)							
Quality assurance concept	ensuring quality in the ramp up to comply with the milestones	time variation of milestones in the ramp up	penalty	contractual penalties per time unit x time unit	increase	one-time	penalty
Production means	machine that can be changed quickly to other variants	the faster start-up allows the sale of more products	turnover	quantity x retail price	increase	continuous	turnover



Case study Results





Conclusion

- Nonmonetary goal system.
Nonmonetary goals into monetary values.
Enhanced net present value for Ukseproff OÜ
- Better long term competitiveness of the factories that are planned with the enhanced economic evaluation philosophy





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Thank you for your
attention!