Knowledge Management in partnerships for product development

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What is Target Costing?

- At first glance, a set of management techniques and calculation methods...
- "built around the "key formula": improve product design and planning till
  \* estimated cost = target cost
  \* estimated cost = target selling price - target profit...
- providing market-based cost targets for future products and deploying them to functions, components and parts through analytical methods.
Target Costing: an Organizational Learning Issue

What seems to set apart the outstanding companies in product development is the overall pattern of consistency in their total development system, including organizational structure, technical skills, problem-solving processes, culture and strategy.

Kim B. Clark and Takahiro Fujimoto

But...What is really Target Costing?

- A set of management tools and practices...
- bound to support organizational learning ...
- about the economic performance ...
- of a future product.

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But...What is really Target Costing?

- A set of management tools and practices...
- bound to support organizational learning ...
  to support organizational learning, those tools and practices
  must have an actual impact on individual and collective
  behaviors
- about the economic performance ...
  product economic performance is the ratio between cost and
  customer value
- of a future product
  to optimize the economic performance of a product, it is
  necessary to take into account the whole value chain which
  will provide it.
Keypoints of the learning system

- Target Costing is about the whole value chain
- Target Costing tries to optimize the whole product:
  - problems of teams transparency and risk management
  - problems of communication between different forms of expertise
- Target Costing must integrate economic objectives and technological knowledge
- Target Costing requires an efficient learning process:
  - experience feedback
  - organizational memory
- Target Costing must have a concrete impact upon behaviors

Target Costing is about Value Chain

![Value Chain Diagram]
Target Costing is about Value Chain

- For the global optimization of the product, the in-house activities are not sufficient
- There must be a multi-firm cooperation about value and cost optimization:
  - problems of transparency
  - problems of profit-sharing rules (win-win game)

How to ensure value chain cooperation?

- 1st solution: a very dominant actor
  - example: some Japanese groups (Komatsu) with “Midori Kai” concept (“club” of suppliers)
- 2nd solution: cultural acceptance of “win-win” practices
  - example: Japanese practice of buyer-supplier cooperation in automotive industry - no contract, no price in the early stages, cooperation to cost-optimize design
  - implicit profit-sharing rules
- 3rd solution: formal agreement on a “win-win” practice
  - establishment of clear and explicit rules for profit-sharing
  - open communication and cooperation for cost-value optimization of the product
Present difficulties of "Midori Kai"

- strong competitive pressure: reduced selling prices and quantities, increased differentiation in customers' requirements, cost pressure
- many "midori kai" suppliers cannot follow, particularly on costs
- "midori kai" has become a bottleneck for Komatsu
- actions: merge "midori kai" suppliers, open competition with non-"midori kai" suppliers, develop "midori kai" sales to other customers

similar situation: SHARP's "Kyoku Kai"
Cultural acceptance of "win-win"

- usual suppliers are ready to contribute to a project even without a contract
  - example: Toyota
- first tender and consultations are organized about supplier's cost, not about price; first cooperation phase: technical issues (feasibility) + cost issues, no price negotiation
  - example: NEC/supplier joint management of the supplier's cost on the basis of NEC specifications
- requires a strong involvement of Engineering in the suppliers' choice and management
  - example: NEC, Sharp; but Toyota's problems for suppliers' choice
- requires (implicit?) rules about profit-sharing

Formal agreement on "win-win"

- agreed description of the Value Chain (activities, cost-value description)
- agreed rules on profit-sharing and risk management
- tools (costing, value analysis) and practices (steering committee, decision processes) to manage the Value Chain
- loss of autonomy paid by profit increase and risk sharing
Formal agreement on "win-win" 
Example: Usinor

- strategic background: iron and steel industry and the automotive market
- strategic objective: remain "tier one" supplier, increase value added
- financial constraint: limited possibility of vertical integration through acquisitions
- perceived opportunities: significant technological changes
  * example: hydro-forming
- build a multi-firm consortium around automotive modules
  * example: exhaust system

Formal agreement on "win-win" 
Example: Usinor

- Value Chain economic simulation (decision analysis tool)
- scenarios
- decision to invest in the key technology
- deals proposed to other partners on the basis of "contribution/retribution" balance
  * example: hydro-forming for exhaust systems; investment and technological risk in Usinor, complementary know-hows in other firms
- difficulty in achieving transparency and comparability of economic data of different firms and in establishing rules for profit-sharing and value-chain decision-making
Optimization of the whole product

- Optimization of the product as a whole requires trade-offs between functions and components.
- Optimization of the product as a whole requires some transparency of the potential for economic improvement of each development team.
- Such transparency cannot be achieved if the accomplishment of targets involves high personal risks; it requires global risk management.
- Optimization of the product as a whole requires high levels of communication between experts of different fields and "cross-expertise communication languages".
Risk management

• 1st solution: no Management By Objectives, protection of individuals, right to be wrong, global "reserve"
  ▪ example: traditional Japanese way of managing human resources in Engineering

• 2nd solution: explicit rules and tools for Risk Management
  ▪ a certain amount of risk is covered at the global project level
  ▪ there is an on-going global assessment of risk
  ▪ if there is MBO, objectives are neither too detailed (hence the importance of modular design) nor too rigid

Cross-expertise communication

• Economic language can (should) be a communication tool between different forms of expertise

• this requires that management tools (ex. target costing) be designed as communication tools and fully owned by technical functions (engineering, purchasing, production)

• cross-expertise communication can be supported by advanced information systems (data bases, expert systems...)

Economic (Cost/Value) optimization

- Cost/Value optimization in technological decisions requires:
  - either cost awareness and expertise of engineers, “Japanese way”,
  - or intensive, transparent and on-going cooperation on cost between engineers, controllers and purchasers

- same for Value:
  - either market awareness and expertise of engineers (market knowledge, customer direct contact)
  - or intensive, transparent and on-going cooperation between engineers and marketing
2 ways for Cost/Value optimization

- The "Japanese way": engineers integrate the economic, market and technical objectives and expertise “in their heads” (value engineering, cost tables)

- The "Western way": engineers do not; it is necessary to find ways to integrate economic and technical objectives and action
  - economic tools based upon technical operations
  - increased economic pressure upon engineering managers

An organisational learning process
The "knowledge gap" should be analyzed and measured as a "learning challenge"

- For Target Costing to identify the "knowledge gap", it must establish a very clear distinction between Value and Cost Target and Estimation Target Cost and Estimated Cost Objective and Forecast

**An organisational learning process**

- For the learning process to work correctly, it is necessary to ensure the feedback from experience

  - compare targets and actual results (learning loop): but in Product Development, the learning loop can be very long (years) with people and environment change between objective and actual result
  - systematic project post-audit
An organisational learning process

- For the organization to learn, it is necessary to have a memory (memory of problems and solutions from one project to another)
  - human resources are the first vector for memory: limit turnover, formalize and manage personal competences and experience paths
  - information systems can help: distributed data bases, expert systems with knowledge bases, problem/solution files, cost tables, networks...
  - but technological tools always raise the problem of context description and recording

An organisational learning process

- For the improvement of the product development process itself, it is useful to build some formal and shared description of it:
  - as a basis of continuous improvement (problem analysis),
  - as a basis of metrics for workload and performance measurement,
  - as a memory tool,

- even in a limited, incomplete and simplified way, since development processes are often complex and non-repetitive
Actual behaviors must be influenced

- How to avoid repetitive failures and actually change actors' real behaviors?
- Either political commitment: enforcement of objectives and responsibility through Management By Objectives
- Or cultural commitment: actors are involved by conviction
The political commitment

- Product development objectives are part of Management By Objectives, with formal contracting on objectives and individual incentives.

- The Development Targets become automatically the Production and Marketing objectives.
  - Integration of Target Costing with operative management systems (budgeting, production control).

- But then at risk transparency of communication, cross-departmental cooperation and sense of general interest...

The cultural commitment

- Actors are committed to global economic targets through:
  - Their sense of professional honour,
  - Their sense of the company as a community,
  - Their sense of global risks of failure and general survival.

- Development targets can then be introduced into operating management systems (budgeting and control) in a flexible way, with global and shared objectives.
Conclusions: do we have the key?

Summary: Target Costing contribution

- Make the knowledge gap visible for all and manageable
- Provide a cross-functional (cross-company) communication language for the product optimization
- Base management targets on value and market considerations
- Provide a formal tool to support collective learning processes
Summary: But...

Target Costing conditions of success

- Design some form of value chain joint management, with profit-sharing rules,
- Limit personal risks of actors through some form of global/mutual risk management
- Manage personal knowledge and experience of people through their professional life
- Apply Management By Objectives in a flexible way and not too detailed level

Summary:

Target Costing conditions of success

- Integrate Target Costing with operating management systems in a flexible way
- Establish a clear distinction between cost and value, objective and forecast
- Ensure economic tools and objectives are fully owned by technical functions
- Design target costing as a communication tool.
A challenge for TC: present changes in Japan...

- Pressure for economic performance is strongly increased
- Life employment, sense of community, steady growth are put into questions
- It is often considered as necessary to introduce much more of M.B.O. and individual objectives
- Suppliers' clubs are criticized for their lack of economic performances, broader and international suppliers' competition is pursued
- Modular design can increase suppliers's autonomy and... opacity

A permanent and balanced trade off

between...

too much competition...

...and too much cooperation.