

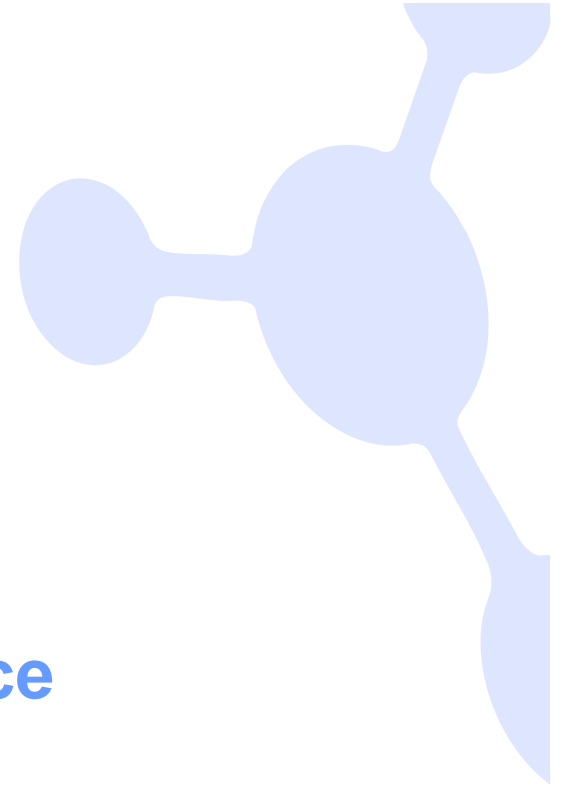


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IT impact on governance structures



Objectives of this module

- Introduce the basics of transaction cost economics
- Illustrate its application in IOS
 - What is the impact of IT on the economic organization (governance structures)?
 - Does IT affect cost structures so that specific governance forms become preferable?
- How can we explain different outcomes (contradicting predictions, lack of empirical findings)?
 - Inconsistencies in the theory?
 - Too narrow scope of the theory?

Agenda

1. Transaction cost economics

2. Move to the market

3. Move to the middle

4. Mixed-mode

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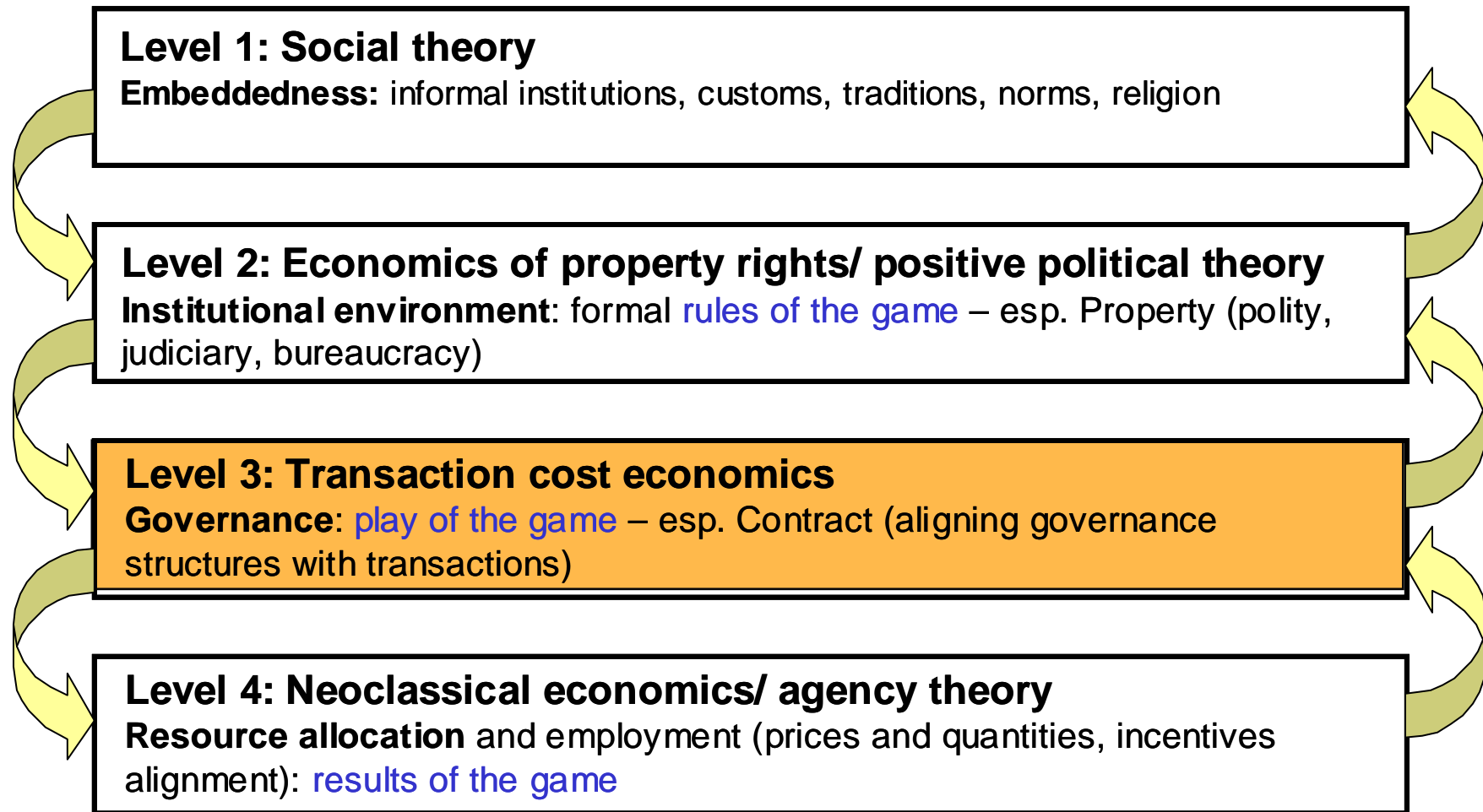
Theoretical argument: Transaction cost economics

- Coase (1937): Founder of the new institutional economics, i.e. a theory of economic organization (to which transaction cost economics belongs)

The question: “Why do firms exist?”

- Williamson (1975, 1985, 1991): Governance theory
Which institutional arrangements (governance structures, contractual arrangements) provide the most efficient setting for economic transactions: hierarchies, markets, or hybrids?

The theoretical context: Layers of social and economic theory



Williamson 2000

Coase and beyond: why do networks exist ...

"Coase's question was path breaking because it recognized that among the fictions of abstract classical economics, the one depicting economic agents as always acting alone rather than in co-operation with others in a defined social unit was especially intolerable, and had to be overcome if a powerful theory of economic organization were to be constructed.

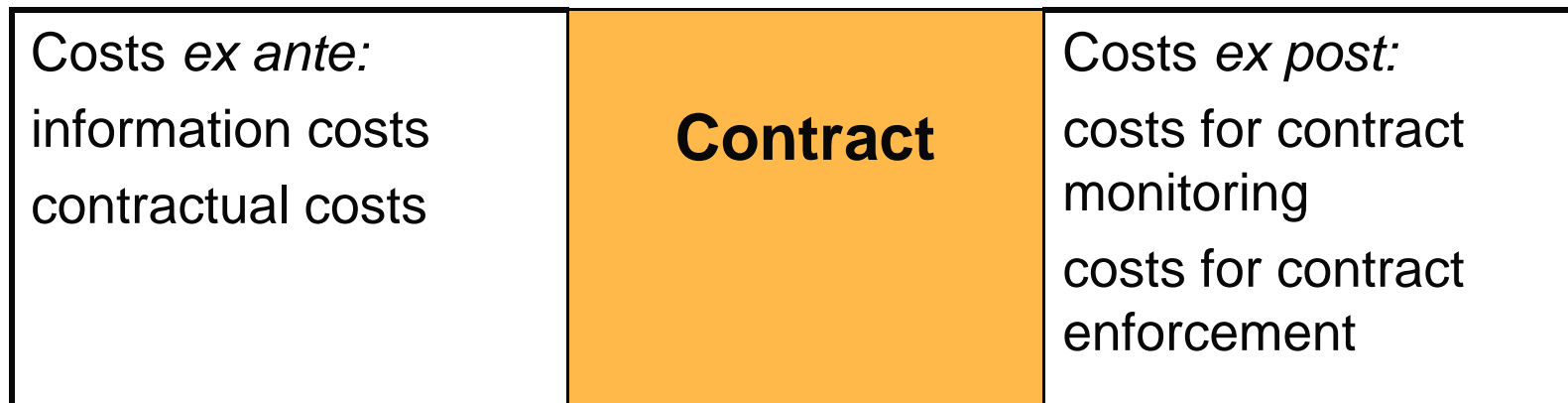
... This question is similar to Coase's, but takes firms rather than individuals as the object of inquiry, asking **why it is that in every known capitalist economy, firms do not conduct business as isolated units, but rather form cooperative relations with other firms**, with social boundaries of variable clarity around such relations."

(Granovetter 1994, 1)

The focus of analysis: Transaction costs

Transaction costs are

- “the costs of running the economic system” (Arrow 1969, 48)
- the costs of incomplete, less than perfect markets



Transaction costs vs. production costs

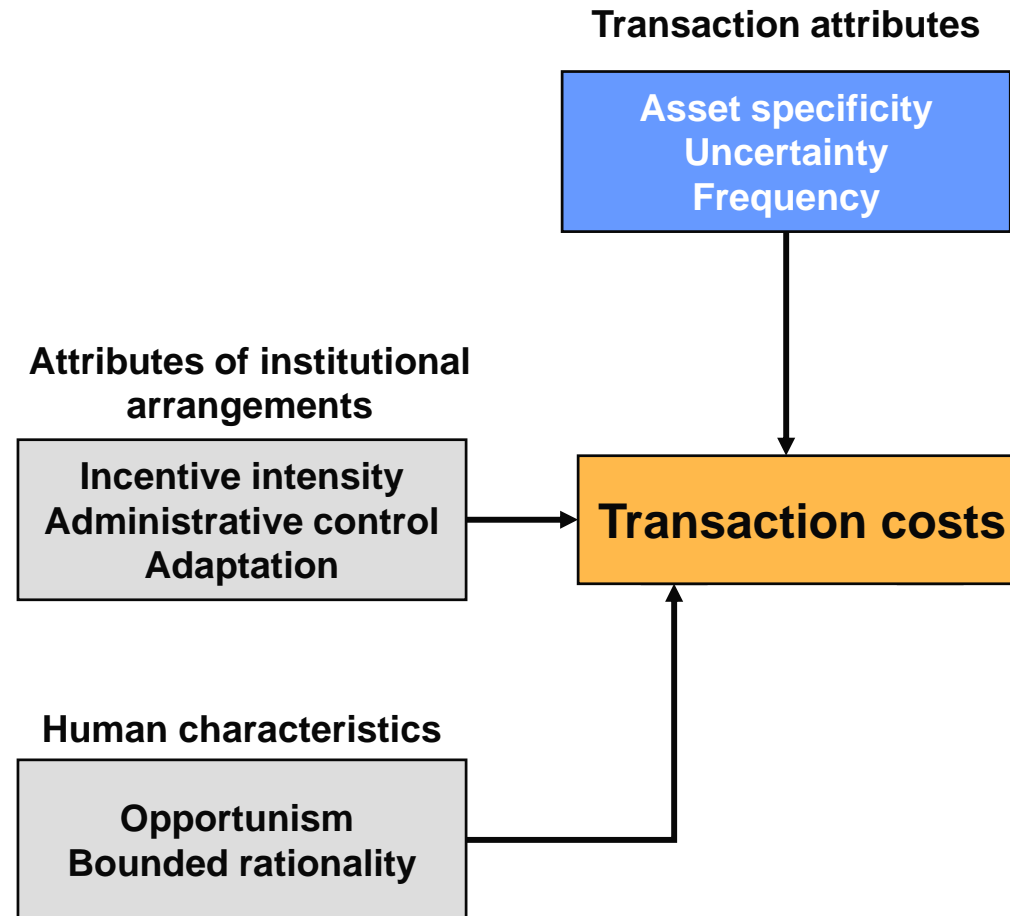
Transaction cost theory focuses on the costs of ...

- gathering information,
- negotiating contracts, and
- protecting against the risk of “opportunistic” bargaining/ opportunistic behavior.

Hypotheses

- Economic actors face a decision among distinct governance forms.
- Assuming that internal and external production costs are similar, the comparative advantage of governance structures depends on transaction costs.
- Transaction attributes determine the level of transaction costs, which also reflect attributes of governance structures and behavioral assumptions.
- Managers look for the most (transaction) cost efficient governance form.

Determinants of transaction



According to Harker (1990), 141

Transaction attributes

- Asset specificity (+), e.g. partner specific investments
 - Uncertainty (+)
 - Information asymmetries (+)
 - Frequency of transactions (-)
-
- Compare the transaction costs of shopping online at Amazon vs. at the local bookstore!
 - Which costs are higher?
 - What is the impact of IT?
 - Compare the transaction costs of shopping in an online shop vs. at eBay?

TC comparison when buying books

Transaction attributes	Local Bookstore	Amazon.com
Asset specificity		
Uncertainty		
Information asymmetry		
Frequency of transactions		

TC comparison

Trans- action attributes	Local Bookstore	Amazon.com
+ Asset specificity (partner specific investments)	-	Web access, however nothing specific for Amazon
+ Uncertainty (risks, e.g. related to quality of the product or fulfillment of the contract)	low	Low-medium
+ Information asymmetry (e.g. regarding product features or price level)	Medium-high	medium
- Frequency of transactions	?	?

TC comparison

Transaction attributes	Online shop	eBay
Asset specificity	Web access	Web access
Uncertainty	Medium	Medium-high
Information asymmetry	Medium	Medium-high
Frequency of transactions	?	?

Attributes of institutional arrangements

- **Incentive intensity** deals with the extent to which economic incentives vary according to performance.
- **Administrative control** refers to the firm's systems to monitor and either reward or penalize behavior that supports its objectives.
- **Autonomous adaptation** deals with the capacity of the parties to a transaction to individually make changes to unforeseen contingencies or disturbances.
- **Cooperative adaptation** refers to the capacity of the parties to respond to disturbances in a coordinated way, either through bargaining or administrative fiat.
- Finally, **contract law** deals with different requirements on contracts of particular governance structures.

Governance Structures: Hierarchies

- Hierarchical coordination is based on influence and control of a coordinating firm. The firm integrates goods and services, but it also processes orders externally by strict contractual regulations. A hierarchy is regulated by internal control systems and by authority.
- A hierarchy as a coordinating mechanism is characterized by the division of tasks, the pyramidal structure of organization, the mechanisms of authority, and the limits of autonomy. Hierarchical coordination causes control cost, but it permits enforcement of interests of the coordinating firm and prevention of coordination problems.

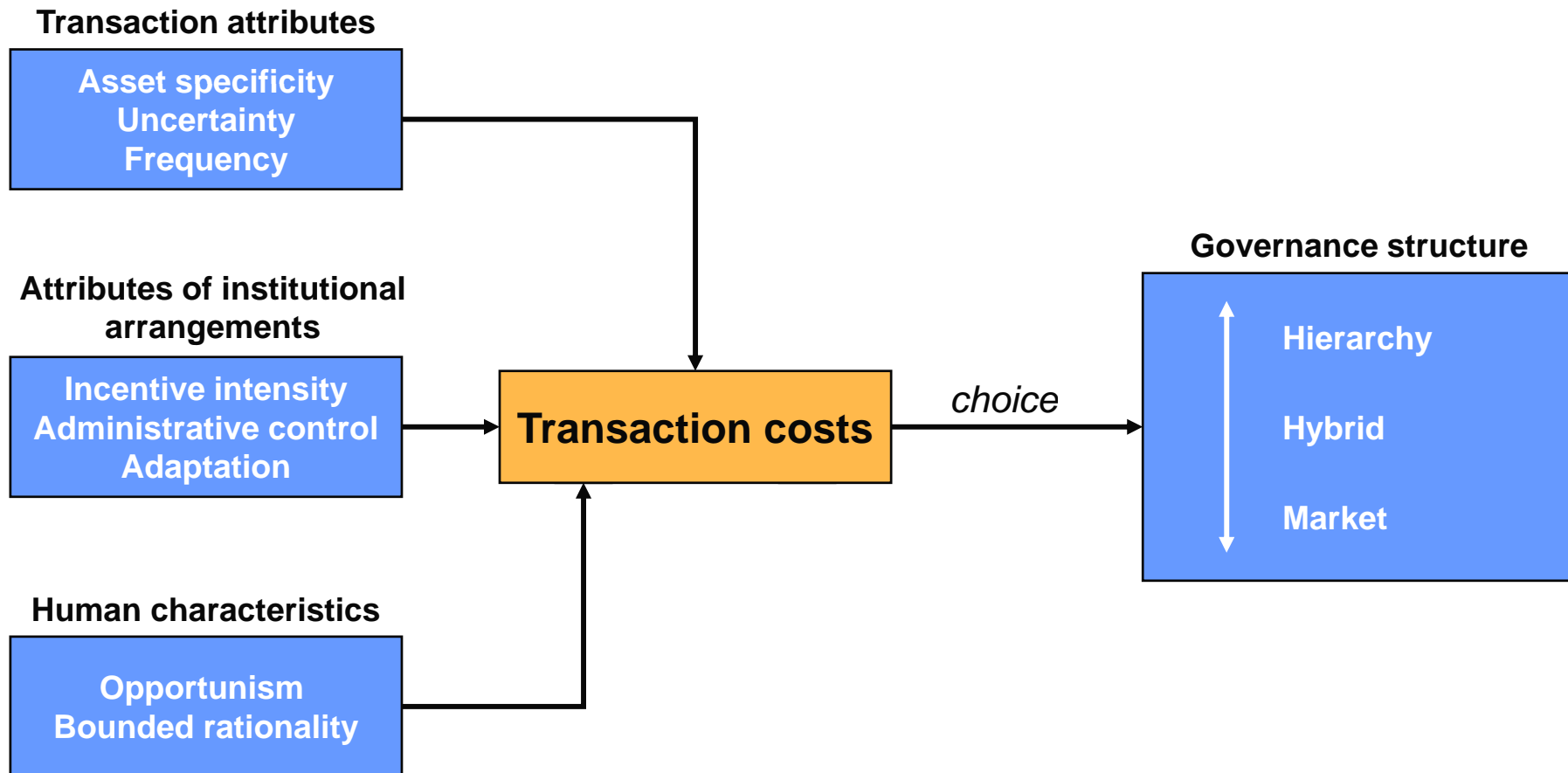
Governance Structures: Networks

- Networks combine the advantages of markets and hierarchies.
- As hybrid governance structures networks combine contradictions:
 - High incentives of market coordination and stability of hierarchical relationships,
 - Autonomy and mutual dependency,
 - Co-operation and competition,
 - Risk and trust,
 - And finally, they simultaneously expand (by expanded strategic opportunities) and restrict (by additional coordination efforts between partners) the scope of action of network's participants.

Governance Structures: Markets

- A main characteristic of markets is free exchange of goods. Organizations offer and demand goods and services that they do not generate themselves.
- In markets the prevailing strategy is to drive a hard bargain for each exchange. Markets are spontaneous coordination mechanisms based on the rationality and self-interest of economic agents. The market is open to everybody and after a completed transaction each agent is free from any future commitment. Prices are the central mechanism for transmitting information to all trading parties. Markets are particularly well suited for straightforward, volatile, non repetitive transactions that require no transaction-specific investment. Markets are inferior when the task is to coordinate highly complex and less vivid forms of exchange (Selz (1999), p. 26).
- Contracts regulate the behavior and the trade among parties.

Governance Theory



According to Hanker (1990), 141

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Impact of IT: Move to the market

Hypothesis:

IOS reduce external transaction costs and thus make market transactions comparatively more attractive, there will be a trend from electronic hierarchies to electronic markets.

Impact of IT: Move to the market

Malone et al. (1987):

- IT reduces coordination (and information) costs (due to electronic communication, brokerage and integration effects)
 - IT effects transaction attributes:
 - IT-based production technology becomes more versatile and reduces **asset specificity**,
 - new communication technology provides means to communicate easily and inexpensively even **complex product descriptions**
- ➔ IT facilitates an expansion of market coordination into the realm of complex and specialized products

Move to the market? But a lack of empirical evidence ...

An increasing number of suppliers can be taken as an indicator of the move-to-the-market. However, empirical findings show, on the contrary, that firms in many industries are reducing the number of their suppliers.

Bakos/Brynjolfsson argue in

“Why IT has not increased the optimal number of suppliers?” (1993) that coordination advantages of market transactions might be offset by quality concerns.

→ *non-contractible issues* (quality, trust, innovation, information-sharing and responsiveness) require credible commitments and contractual arrangements for a long-term, close exchange relationship

Conclusion: "When supplier quality is a concern, it can actually be optimal to reduce the number of suppliers."

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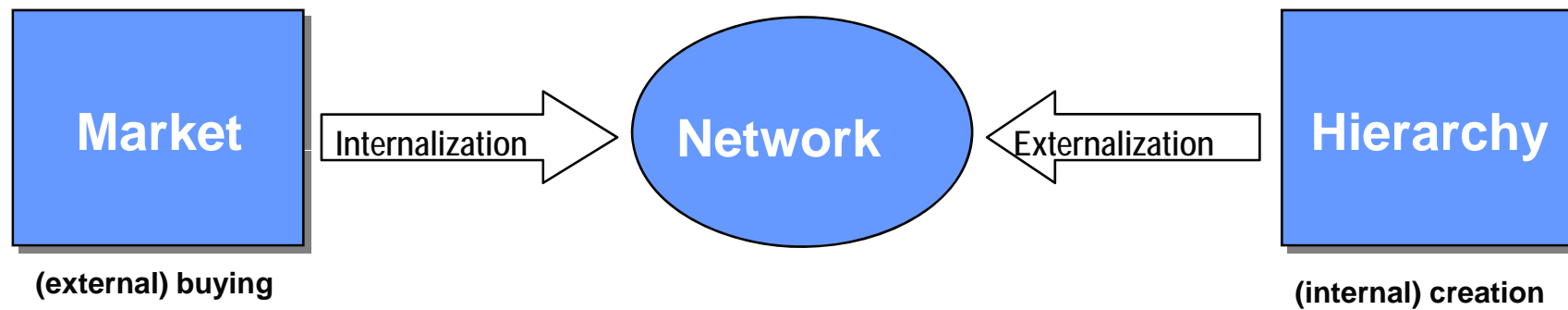
4. Mixed-mode

Impact of IT: Move to the Middle

“We find that depending on the product complexity ... and the variability of product prices over time and among suppliers, the reducing relationship-specificity of IT .. or the increasing cost-effectiveness of IT .. may produce either a 'move to the market' or a '**move to the middle**'. However, it is clear that IT will facilitate a greater degree of outsourcing and hence contribute to an evolution towards smaller organizations focused around their core activities.”

Clemons; Reddi (1994), 863

Move to the middle



Impact of IT: Move to the Middle

Clemons/Reddi (1993):

- lower cost and better monitoring capability of IT
 - IT offsets exogenous factors that usually increase transaction costs, namely relationship-specific investments, small numbers bargaining, demand uncertainty etc.
- **vs. hierarchy:** greater degree of outsourcing
- **vs. market:** long-term relationships which provide
- higher incentives to invest in IT and in the requisite organizational adaptations and learning processes and
 - some protection against the risks of opportunistic behavior and especially the loss of critical resources

The argument (1/2)

The impact of IT ...

- IT lowers transaction costs, the costs of coordination and monitoring and the relationship specificity of IT investments, and hence makes outsourcing an advantageous option.
- The role of IT in this process is to at least partly offset exogenous factors that usually increase transaction costs, such as relationship-specific investments, small numbers bargaining, demand uncertainty etc.

The argument (2/2)

Comparative **advantage of long-term relationships** over market relations:

- long-term relationships provide higher incentives to invest in IT and in the requisite organizational adaptations and learning processes (Seidmann, Wang 1992).
- At the same time long-term relationships provide some protection against the risks of opportunistic behavior and especially the loss of critical resources (Clemons, Row 1992).

Example: value-adding partnership

"... value added partnerships offer an **alternative to the megafirm structure**. ... While a motivation of such an arrangement is the **reduction in market transaction costs** achieved through the nurturing of cooperative relationship, IT facilitates the coordination necessary between the partners along the chain. Firms in a VAP obtain operational scale economics and lower internal coordination costs by choosing to be vertically small and horizontally large." (Gurbaxani; Whang 1991,71)

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Mixed mode hypothesis

"In essence, Information Systems enable organizations to do what they want much more efficiently and flexibly."

- IOS will increase the intensity of business relationships
- The dominant structure in an electronic trading environment will be product-market supply chains.

"... Instead of firms being locked into a particular type of relationship or form of network structure a more flexible approach will be followed in which a mixed mode of operation will be the norm."

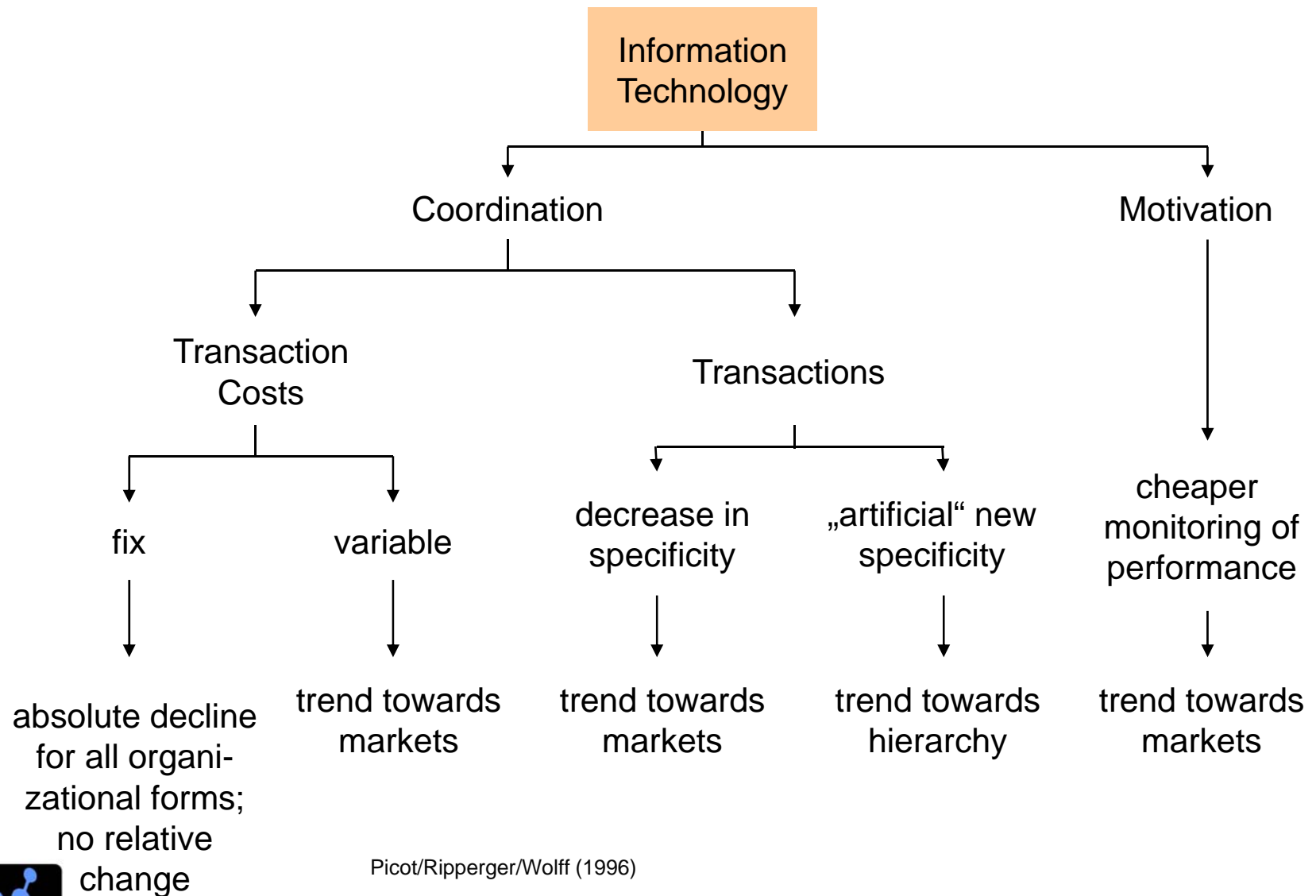
Holland; Lockett 1993

Summary: The arguments

- **The proposition:** From electronic hierarchies to electronic markets!
"... the result of reducing coordination costs without changing anything else should be an increase in the proportion of economic activity coordinated by markets." (Malone et al. 1988, 591)
- **The rebuttal:** Move to the middle!
"This hypothesis states that the lower cost and better monitoring capability of IT and the lower relationship specificity of IT investments will cause firms to engage in a greater degree of outsourcing; moreover, this increased outsourcing will be from a reduced set of suppliers with whom the firm has long-term cooperative relationships." (Clemons; Reddi 1993, 809)
- **The synthesis:** Mixed-mode hypothesis
"In essence, Information Systems enable organizations to do what they want much more efficiently and flexibly." (Holland; Lockett 1994, 409)

Conclusions

- Transaction cost economics (TCE) provides an explanatory framework for the impact of IT on economic organization
- Based on TCE several, partly contradicting predictions have been made
 - Move to the market
 - Move to the middle
- In contrast, Holland and Lockett argue with a stronger strategic focus. In addition to looking for economic determinants they underline the options management has to use IT in different ways. Moreover in reality they find combined (mixed mode) arrangements rather than pure forms.



Picot/Ripperger/Wolff (1996)

COVISINT

... during the Hype

Covisint: IOS platform for collaboration, procurement, SCM

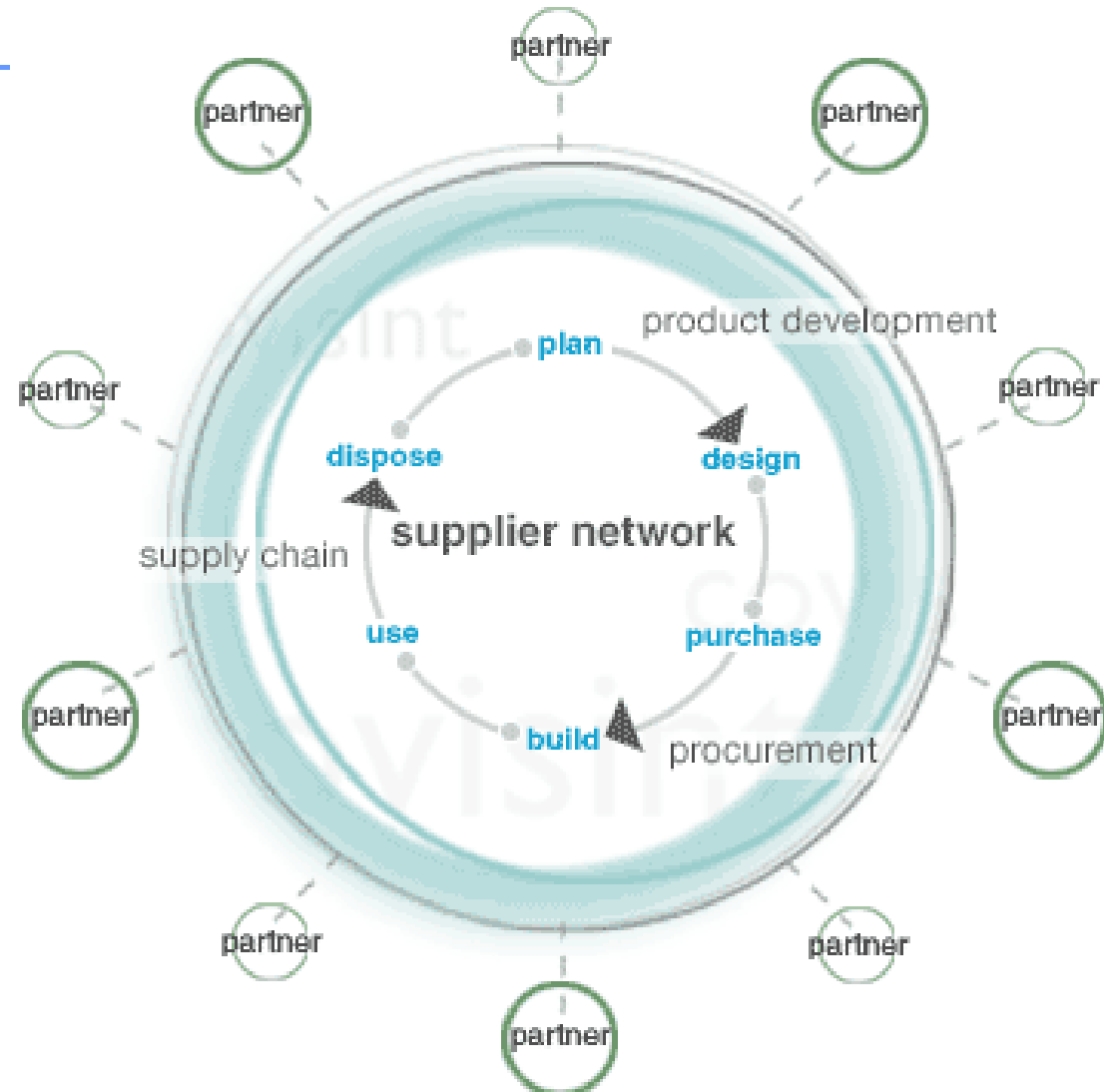
The screenshot shows the Covisint website homepage. At the top right, there are links for 'FAQs', 'Sitemap', 'Contact Us', and 'Language'. The main header features the 'covisint' logo on the left and a 'Covisint Users Login' button on the right. Below the header is a navigation bar with links for 'Home', 'About Covisint', 'Covisint Solutions', 'Trading Partners', 'Resources', and 'Help'. The main content area is divided into three columns. The left column contains sections for 'Who we are' (with links to 'About Covisint' and 'Current Members'), 'Our solution suites' (with links to 'Collaboration', 'Procurement', 'Supply Chain', 'Quality', and 'Corporate'), and 'Press room' (with links to 'Press Releases', 'Covisint News Stories', 'Speeches', and 'Media Kit'). The middle column features a large image of a clear Ethernet cable with a blue RJ45 connector. Below the image is the text: 'Covisint, LLC is a global, independent eBusiness exchange for the automotive industry' with a right-pointing arrow. Below this are two smaller article teasers: 'e-Business at DaimlerChrysler is Paying Off' with the subtext 'Savings Exceed Present Investment.', and 'Covisint Fulfillment' with the subtext 'See how Covisint Fulfillment - our web-based direct material fulfillment service - works.' The right column contains three sections: 'Asset Marketplace' with the text 'Buy and sell industry assets.' and a 'learn more' link with a right-pointing arrow; 'In the News' with two news items: 'Covisint Handles 100 Million Supply Transactions Monthly: informationweek.com' and 'CEO's busy reinventing all the rules: freep.com', followed by a '> more news' link; and 'March Events' with three dates: '.11 Accelerating Design and Product Collaboration', '.18 Seminarios Autodata - Automotive Strategic Purchases', and '.21 Enabling eBusiness with Web Access Management and...'. A small mouse cursor is visible at the bottom right of the page.

Covisint

Creating a Global Marketplace

The automotive industry faces an unprecedented opportunity. Internet technology will speed the **flow of material** through the supply chain, increase **response to consumer demand**, and **deliver new products** to market faster than ever before.

(source: covisint.com)





[about covisint](#) | [alliances](#)

Alliances

To ensure that Covisint is the most successful business-to-business electronic exchange the world has ever seen, many of the leading automotive and technology companies in the world have chosen to work together to provide vision, expertise and support. In this section you will find information on many of the companies that have directly contributed to Covisint's ongoing success.

OEM Founders

Upon the establishment of the Covisint venture in December 2000, DaimlerChrysler AG, Ford Motor Company, General Motors, Nissan, and Renault were named as the initial five OEM partners with an equity stake in the venture. In May 2001, Peugeot-Citroen committed to taking an equity stake in Covisint and will be joining the Covisint European Advisory Council.

Industry Participants

Covisint is actively engaging some of the largest global automotive suppliers. While respecting their need for privacy, the following organizations have publicly acknowledged their intended and actual participation in Covisint.

Technology Partners

Upon the establishment of the Covisint venture in December 2000, both CommerceOne and Oracle were designated as the sole technology partners with an equity stake in the venture.

Technology Providers

Covisint in the implementation of its "best-of-breed" strategy, has chosen several strong technology companies to provide key components of its applications and infrastructure. While not "partners" in the venture, these companies are important and integral members of the Covisint team.

Discussion and summary of Click2procure

B2B Market-places

1543 Services in 30 industries

1. Advertising, Media (31)
2. Agriculture, Farming, Fishing, Forestry, Flowers (95)
3. Automotive, Aerospace, Marine (70)
4. Bandwidth, Telecommunication Capacity (19)
5. Building, Construction (73)
6. Chemical (59)
7. Commercial Real Estate (15)
8. Electronic/Electromechanical Equipment, Components & Supplies (125)
9. Energy, Coal, Oil, Gas (10)
10. Environment, Recycling (10)
11. Excess Inventory, Rejection (3)
12. Expert Services, Freelance Consultant (46)
13. Financial, Insurance Services (2)
14. Food, Beverage, Tobacco Products & Services (104)
15. General Procurement (151)
16. Intellectual Property (31)
17. Laboratory, Measuring, Observing, Testing Equipment (23)
18. Logistics (96)
19. Manufacturing/Processing Machinery, Components & Supplies (89)
20. Medical Procurement, Health Care Services (95)
21. Metal Trade (49)
22. Miscellaneous Services (71)
23. Office Equipment, Supplies, MRO (76)
24. Plastic, Rubber, Elastomeric Materials (28)
25. Printing, Paper, Photo (74)
26. Services for small enterprises (10)
27. Textile, Clothing, Fashion, Footwear (40)
28. Travel, Events, Lodging, Entertainment (29)
29. Used Assets, Machinery (45)
30. Wholesale, Retail, Import/Export (66)

Quelle:

[www.berlecon.de/
services/b2bdb/](http://www.berlecon.de/services/b2bdb/)

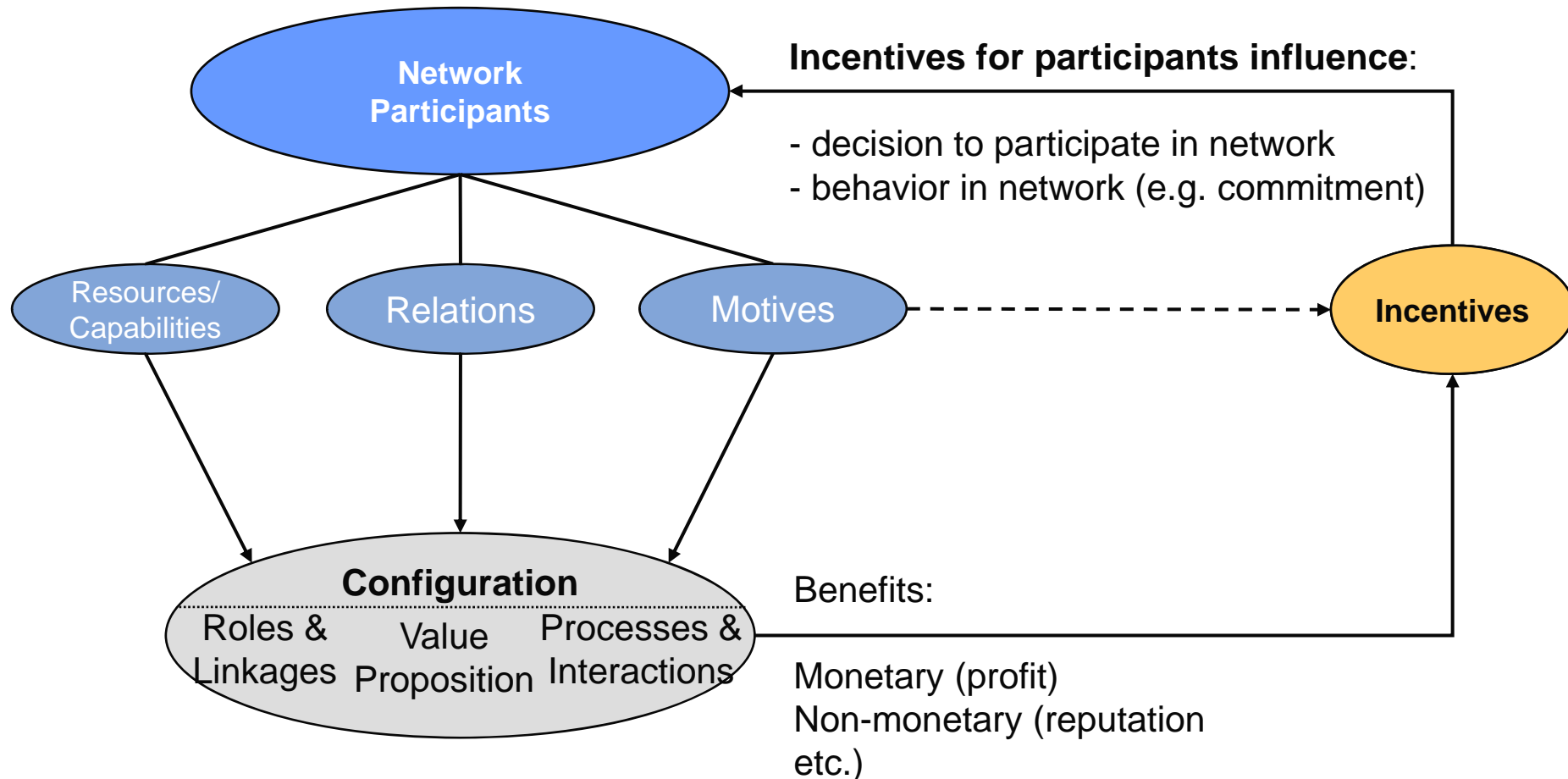
Zugriff: 11.07.2001

12.09.2003:
988 Services

B2B procurement platforms: a flawed business model?

- Landscape of Business-to-Business exchanges has experienced strong shakeout
- Amongst the survivors: trend towards b2b-exchanges operated by larger companies and consortia
- Buyside-operated platforms represent considerable share of these exchanges
- Design of Business-to-Business Exchanges is a challenging task:
 - Critical level of acceptance has to be ensured on both the buyer and the supplier side

Balancing incentives



Bundling Effects

- Approach to bundling reflects the logic of centralization and decentralization:
 - Indirect materials purchased centrally through SPLS
 - Direct materials often require more specific knowledge, purchasing managed through purchasing councils
 - Demand bundling leads to larger contract volumes, which might compensate those suppliers gaining a contract for decreasing unit prices
- A similar approach is taken for knowledge management: combine central and decentral knowledge

Case Discussion – trade mechanism effects

- Combination of trade mechanisms is
 - special case of mixed-mode strategy [Holland, Lockett]
 - an example of an „all-in-one market“ that simultaneously takes advantage of open market competition and long-term supplier partnerships [Kambil, Nunes, Wilson]
- Combination of competitive and integrative approaches on one platform might be difficult to pursue due to different underlying logics
- Dichotomy resolved through sequential use: competitive mechanisms aims to lower prices, subsequent integration lowers process costs

Case Discussion – trade mechanism effects

- Trade mechanism design tailored to lower purchasing prices for Siemens, attractiveness for suppliers doubtful
- Through access to supplier ratings and benchmarks, suppliers can estimate their standing
- A word of caution:
 - reverse auctions may lead to lower material costs
 - also potential negative effects impacts on non-monetary criteria (long-term supplier relationships, delivery times, quality) [Emiliani, Stec 2003]

Organizational Aspects

- Introduction of centralized procurement platform has influence on existing processes and power structures, which might lead to system rejection [Elbanna 2003]
- Lower process and material costs alone not always sufficient motivation for internal system acceptance
- Click2procure's design organizationally involves business groups, procurement not completely centralized
 - As associates, business groups steer c2p's development
 - OnRamp approach allows units to adapt processes to local requirements
- Supplier acceptance: Supplier councils create opportunity to involve suppliers in system development

Technical Aspects and Company Size

- Technical aspects:
 - Centralization of message conversion and transaction is centralized
 - Web interface for suppliers gives small suppliers access to click2procure
- Company Size:
 - Larger companies have greater potential to reach critical usage level required to pay off fixed costs
 - Opening of platform to external buyers contributes to this point
 - Siemens' purchasing power contributes to ability to increase competition amongst / pressure on suppliers

Conclusions and Outlook

- Trading mechanisms designed to support and improve Siemens' strategic and operative procurement activities and to generate benefits for Siemens
- Other design elements might positively influence suppliers' decision to use the platform, depending on individual supplier situations
- So far, no indication of supplier resistance (4,000 users at the moment)
- Ongoing development of platform functionality and an increasing number of external partners on the buy-side can have an impact on acceptance