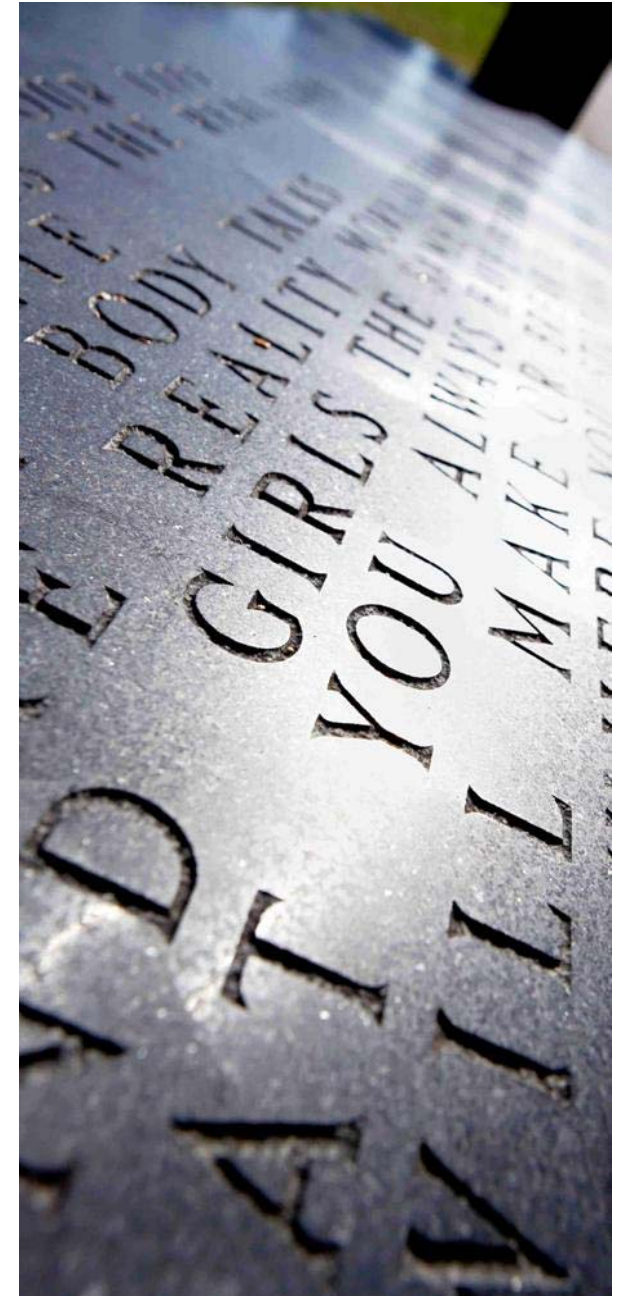


ERP SYSTEMS AND COMPETITIVE ADVANTAGE: SOME INITIAL RESULTS

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Introduction

- **Basic Research Question:**

If every company in a sector is using the same so-called “vanilla” software (e.g. an SAP ERP system) what happens to the competitive advantage from implementing IT systems?

We outline a framework summarizing prior research and present some preliminary results



Introduction (continued)

- “Common System Paradox”
 - Beard and Sumner (2004)
- Porter’s five-forces CA model
 - Inter-industry rivalry
 - Suppliers
 - Customers
 - New entrants
 - Substitute goods and services



Porter's Five Forces Competitive Advantage Model

Porter's Five Forces

Threat of New Entry:

- Time and cost of entry
- Specialist knowledge
- Economies of scale
- Cost advantages
- Technology protection
- Barriers to entry
- etc.

Threat of
New
Entry

Competitive Rivalry:

- Number of competitors
- Quality differences
- Other differences
- Switching costs
- Customer loyalty
- Costs of leaving market
- etc.

Supplier
Power

Competitive
Rivalry

Buyer
Power

Supplier Power:

- Number of suppliers
- Size of suppliers
- Uniqueness of service
- Your ability to substitute
- Cost of changing
- etc.

Threat of Substitutions:

- Substitute performance
- Cost of change

Threat of
Substitution

Buyer Power:

- Number of customers
- Size of each order
- Differences between competitors
- Price sensitivity
- Ability to substitute
- Cost of changing
- etc.

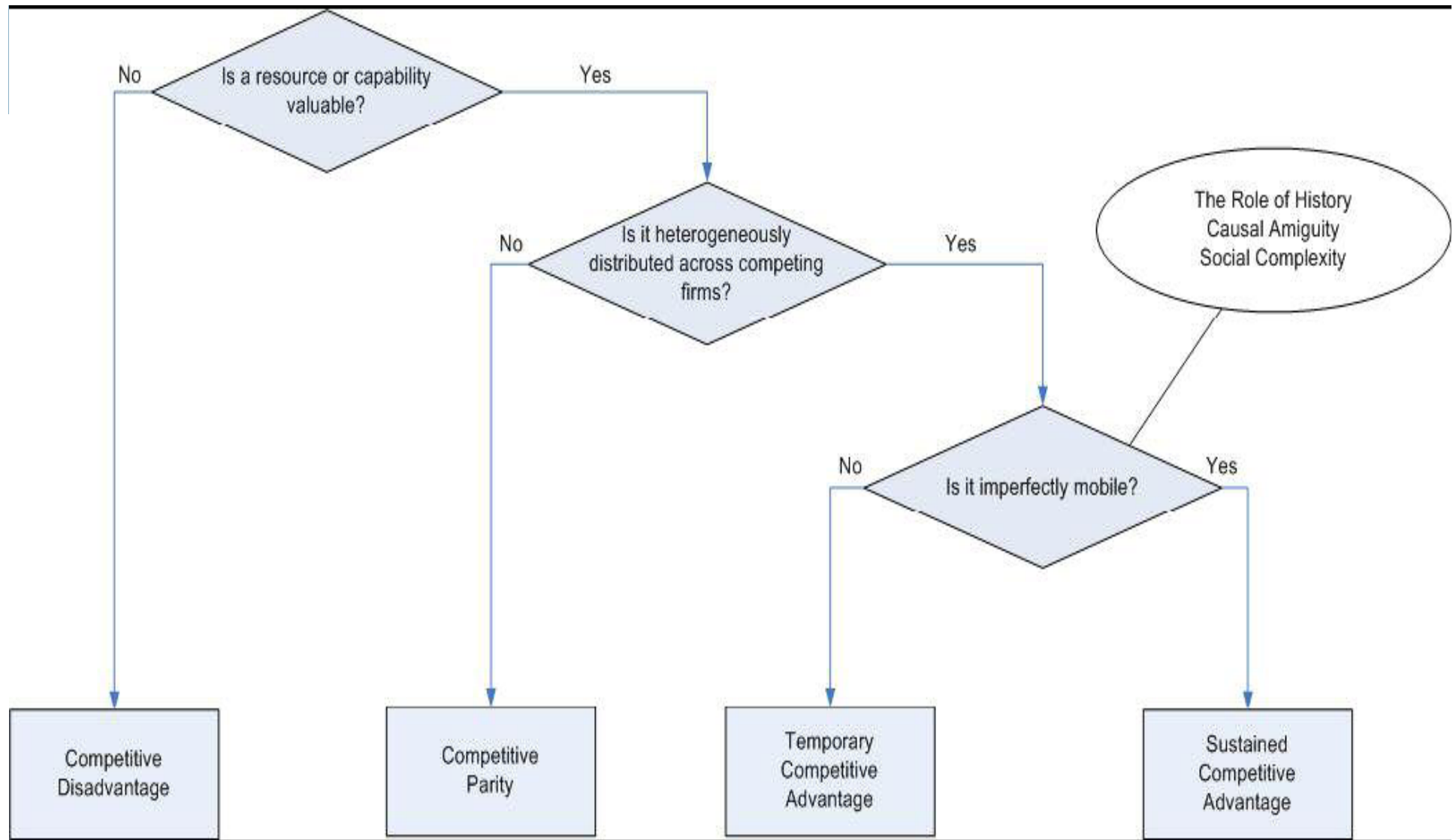


- Porter's generic strategies
 - differentiation e.g. IT here
 - cost-leadership e.g. IT here as well

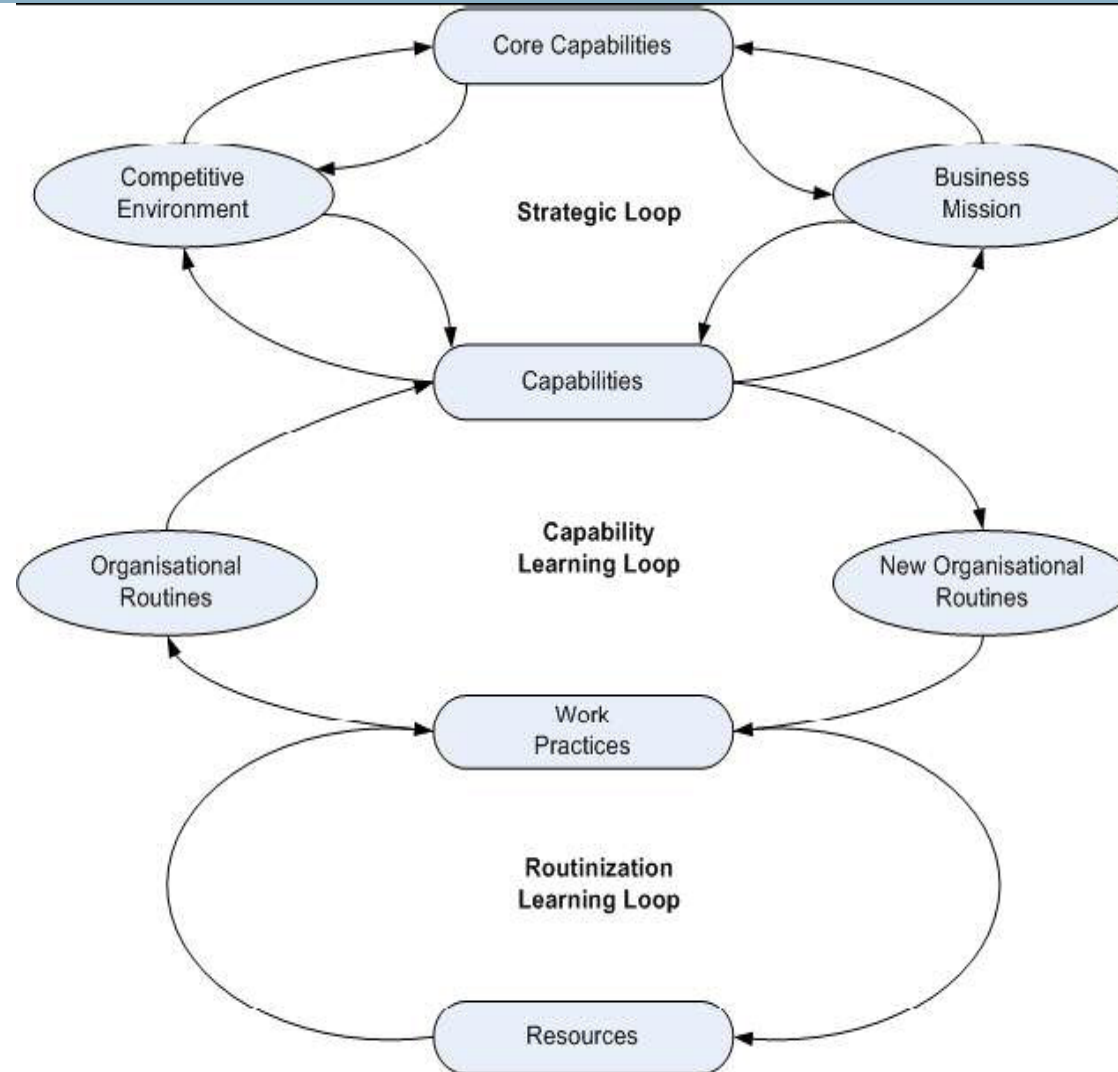


Resource-based view to define competitive advantage (Mata et al., 1995)

- Two basic assumptions:
 - resource heterogeneity
 - resource immobility
- Questions:
 - does a particular resource (e.g. ERPs) add value to the firm?
 - is a particular resource or capability heterogeneously distributed across competing firms?
 - Is a resource or capability imperfectly mobile?



**Resource-Based Model of Competitive Advantage
(after Mata et al., 1995)**



A simplified model of the strategic learning loop in an organizational context (Andreau and Ciborra, 1996)



Four research domains:

- ***Competitive advantage***
- ***Organizational capabilities for competitive advantage:***
 - managers' knowledge of the organisation and the ERP system
 - top management support
 - open and flexible culture
 - training, learning (bricolage) and communication
 - business competent IT/IS
 - organisational structures and processes
- ***A systems foundation***
 - e.g. "bolt-ons"
- ***Processes***
 - e.g. implementation issues



Research questions

- *How do organisations achieve competitive advantage even if they use the same ERP systems?*
- *What resources or capabilities do organisations use to achieve competitive advantages through ERP-systems?*

Some preliminary empirical findings.....



Date / time	Position	Years at the company
7 th of February 2005, 12.30 – 13.10	Director of Finance	7
7 th of February 2005, 13.30 – 14.25	IT Senior Consultant	15
8 th of February 2005, 13.00 – 13.50	Customer Marketing Manager	8
8 th of February 2005, 14.00 – 15.00	Director of IS	6
9 th of February 2005, 13.00 – 14.00	Assistant Director of Logistics	12
9 th of February 2005, 14.00 – 15.00	Assistant Director of Production	3
11 th of February 2005, 10.00 – 10.45	Senior Consultant	40
11 th of February 2005, 11.00 – 12.00	Senior Consultant	18
11 th of February 2005, 15.00 – 16.00	Senior SAP Consultant	14

Table 1: Interview information from Sllim



Date / time	Position	Years at the company
22 nd of February 2005, 09.00 – 09.40	Quality Manager	18
22 nd of February 2005, 09.45 – 10.40	Managing Director	25
22 nd of February 2005, 12.30 – 13.35	Procurement Manager and Procurement Coordinator	17 and 11
2 nd of March 2005, 12.15 – 13.00	Director of Logistics	2 ½
2 nd of March 2005, 13.15 – 14.00	Director of Production	2
2 nd of March 2005, 14.00 – 15.00	Chief Information Officer (CIO)	24
2 nd of March 2005, 15.00 – 16.00	Director of Finance	3 ½

Table 2: Interview information from Foody



	Foody	Sllim
Established	1920s	1880s
Profit / Revenue 2003 (NOK)	46 millions / 470 millions	137 millions / 1.3 billion
Profit / Revenue 2004 (NOK)	32 millions / 485 millions	179 millions / 1.5 billion
The ERP implementation finalisation date	01.10.2003	01.11.2001
Time spent on implementation	10 months	9 months
Cost of implementation (System + consultancy fees)	5.5 millions	Not given
IT budget per year	4.5 millions	15 millions
Number of employees in IT organisation / Number of employees in IS organisation	3 / 0	8 / 8
Number of computer users	150 - 160	350 - 400

Table 3: Comparison of Foody and Sllim



ERP Systems and Competitive Advantage

The majority of the managers in both organisations stated that they had not **lost** any competitive advantage with their new ERP system. It was stated that important structures or processes had to be reshaped because of the ERP system, but none of these had eliminated their competitive advantage. On the contrary, most believe that the new technology has improved CA or kept parity:

- Assistant director of logistics (Sllim): *“An ERP system is something you just **need to do business today**. But the way we have implemented it and configured it has given us a competitive advantage.”*
- Senior consultants (Sllim): *“I believe that it is mostly **a system you need to have**. But an ERP system can be utilized to achieve a competitive advantage, if you are skilful.”*

ERP Systems and Competitive Advantage – results from Foody

- The quality manager (Foody):
*“It keeps us on the **same level as our competitors**. We are focusing on quality products. That is our competitive advantage. An ERP system cannot help us with that”.*
- Managing Director (Foody):
*“I don’t think we have got any competitive advantage. All our competitors are running such a system, **so it is just something we need to have**. It is actually a **competitive disadvantage** because we have not managed to get as far as the others, with the system.”*

The Managers' Competitive Advantage Processes

- The director of finance (Foody):

*"I try to **exploit the available tools in SAP**, without investing money in new functionality. There are a lot of possibilities in the ERP systems, e.g. HR, which we are working with to utilise our resources more efficiently."*

- The director of IS (Foody):

*"I try to **find the best system solutions that support our business strategy**. This is divided into three. We do everyday rationalization on existing processes. My people walk around and help the users to do things better through the ERP system. We do education and training of the users. And finally, we have bigger projects like starting to use a new module in the ERP system."*

Not all managers were so positive and some used legacy systems:

- The director of production (Sllim):

*"I don't use the system that much, only to get out some key statistics. I usually use another system. It is much easier. It takes too much time to use the new ERP system. **I think that SAP is useless for our department**. It would be too much customisation to make it work properly."*

The Organisation's Competitive Advantage

- Assistant director of logistics (Sllim):
*"We have a **unique configuration** of the system that **fits our organisation** and this gives us a competitive advantage. The IS department is very important in this context."*
- Director of IS (Sllim):
*"I actually hold lectures about how we do things in our organisation. I tell others about the big things, but I think it is the small things that make us good. **All the small things are not possible to copy**. I think it is a strength that we have a rumour for being good at ERP and data warehouse. It gives [Sllim] a good image. Though, we are exposed to head hunters from other organisations."*



Top Management Support

At Sllim, some managers mentioned that they had good top management support.

IT Senior Consultant:

- *"We have a unique support from the top management concerning the data warehouse. I don't think you will find that in any other organisation. I feel that we have a strong 'backing' from our top management"*

This was in contrast to the situation at Foody - Manager (anon.):

- *"The top management favours more fragmented solutions. They often support solutions that solve one problem, but do not encounter the entire value chain. It may be because they do not understand the ERP system that well. You have to use the ERP system to understand it. If you never use it, you will never understand it."*



Creative Usage of Information from the ERP system

At Sllim, the ERP system was not set up to use information creatively. The job of the ERP system was to deliver the information to their data warehouse where all analysis was done. The Assistant Director of Production said:

- *“The data warehouse makes it possible for us to assemble different information. This can be used to analyse problems and find improvement areas. It varies between the different leaders how good they are to use the information creatively.”*

In contrast, at Foody the Quality Manager acknowledged:

- *“We could be better at making reports. Until recently, we have mainly focused on making the ERP system work. I don’t think we encourage our employees to use the information in a creative way.”*

Extensions to the ERP System, “bolt-ons”

Most managers at Sllim agreed on the importance of linking the ERP system with a data warehouse. As the Director of Finance put it:

- *“The ERP system does not give us a competitive advantage, **but the data warehouse does**. The ERP is needed to feed the data warehouse though.”*

At Foody, the managing director was unsure if a data warehouse was the right thing, but he stated that:

- *“[...] we need to develop reports to customers, stores, retailing chains and that is not good enough today. **We should probably have a data warehouse**, but I think it is quite stupid that we have to use money on that after we have used millions on SAP. [...] But maybe we have to invest in a data warehouse...”*

Summary

- ***How do organisations achieve competitive advantage even if they use the same ERP systems?***
 - *Need an ERP for at least achieving competitive parity*
 - *The way it is configured and implemented can give CA*
 - *Inability to exploit it can bring a competitive disadvantage*
- ***What resources or capabilities do organisations use to achieve competitive advantages through ERP-systems?***
 - *Individual management skills and knowledge are important*
 - *Configure the ERP in a unique manner for CA*
 - *Many small changes are difficult for others to duplicate (e.g. causal ambiguity)*
 - *Top management support and knowledge of ERPs is vital*
 - *ERP extensions (e.g. warehousing) may be crucial for CA*