Management Information Systems

A Comparative Analysis of SAP and Inova Using the Balanced Scorecard Approach

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Content

Figures

Tables

1 Introduction

Information systems start to play a key-role in modern business as well as in modern government. When speaking of them, most European organisations will think first of SAP. This is mainly because of the first mover advantage of SAP, being one of the first to offer solutions that worked. Comparisons to other products are difficult, since SAP offers basically everything, from process management to data mining. Here it is important to clearly define a range, in within different products are compared, and to find a proper methodology.

This paper will focus on the Balanced Scorecard (BSC), a concept introduced by Kaplan and Norton in 1996. In a first step, the BSC and its philosophy will be introduced. This is important because the BSC is more than just another Management Information System (MIS). In a second step, crucial factors for a general implementation will be singled out. In a third step, Inova IndikatorWorkshop and mySAP.com will be introduced and compared, using the previously found critical factors.

2 Management Information System (MIS)

2.1 General Overview

The shift from the industrial age towards the information age requires new capabilities for competitive success. In private business this means that the ability of a company to mobilise and exploit its tangible or invisible assets becomes more important than the question of economies of scale and scope.

Kaplan and Norton (1996, p. 3) point out that these new assets lead to the following advantages:

- Better customer relationship for existing customers and easier access to new customers
- Better customer focus of products and services
- Improved production processes, thus higher quality at lower prices in shorter time

Information systems must be seen as one tool set to exploit these assets. Other sets include Total Quality Management (TQM) and its successor EFQM, Business Process Reengineering (BPR) and Lean Management.

There are several types of information systems. Transaction Processing Systems (TPS) as a tool to collect data such as Sales, Prices etc., Decision Support Systems (DSS) as a support for badly structured problems, Executive Information Systems (EIS) as a tool to compress and visualise the findings of a DSS, and Management Information Systems (MIS). MIS try to supply the management with information through the whole decision process – a difficult task that lead to DSS and EIS.

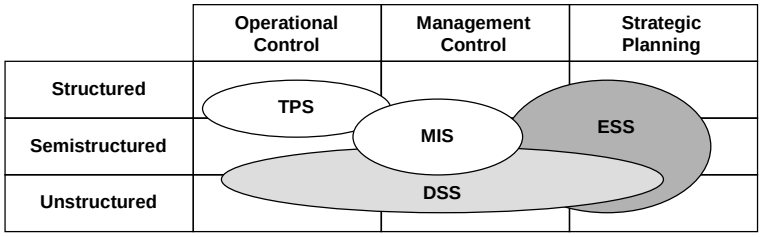

Figure 1: Information systems (Oesze, 2000, p. 37)

2.2 Balanced Scorecard

Kaplan and Norton introduced the concept of Balanced Scorecard (BSC) to Management Information Systems (MIS) in 1996. Essentially, the concept treats four different perspectives and provides hereby a framework to translate mission and strategy into operational terms (Kaplan and Norton, 1996, p. 25). Kaplan and Norton speak of a financial perspective, an

internal business process perspective, a learning and growth perspective, and a customer perspective.

Basically you take your strategic goal and build around it a few perspectives. They do not necessarily have to be the four named by Kaplan and Norton, yet they are widely used (Kaplan and Norton, 1996, p. 9). Then you define the objectives to be reached in the different perspectives, set up a model to measure them, and define target values to be met. Finally, initiatives have to be taken to reach the previously defined objectives.

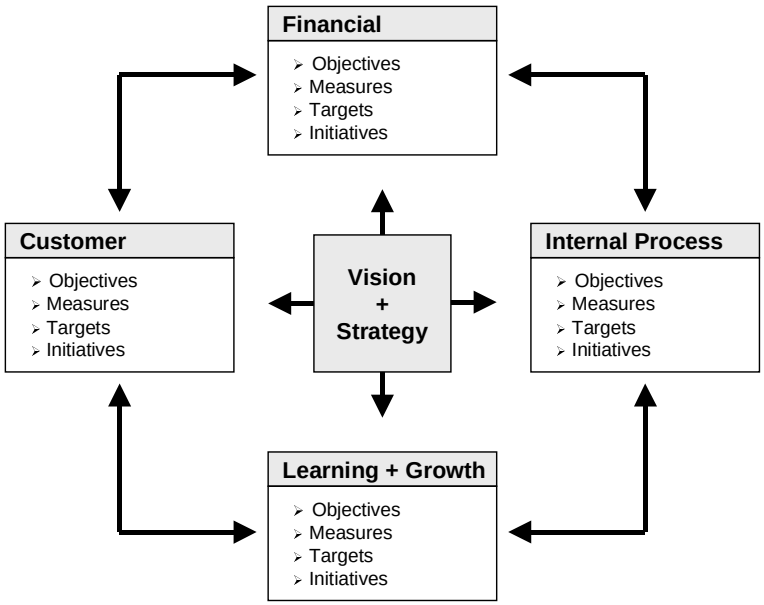

Figure 2: Balanced Scorecard (Kaplan and Norton, 1996, p. 9)

The Balanced Scorecard cleverly combines both an internal and an external view and a time range from past to future. Furthermore, it uses soft factors as well as hard factors.

Internally, we are looking at the financial perspective, the internal process perspective, and the learning and growth perspective, externally it is the customer perspective. The strategy on which the Balanced Scorecards are built is by definition long-term oriented. Financially, for instance, we are looking at past years, the current data and the future goal we want to reach. Some measures we use are derived from hard factors such as financial data or production statistics, other come from soft factors such as customer satisfaction.

While it is impossible to define a detailed scorecard without incorporating measures from an organisation's strategy, some generic measures are commonly used:

Financial Perspective
Return on investment and economic value-added
Customer Perspective
Satisfaction, retention, market and account share
Internal Perspective
Quality, response time, cost and new product introduction
Learning and Growth Perspective
Employee satisfaction and information system availability

Table 1: Generic Measures (Kaplan and Norton, 1996, p. 44)

The Balanced Scorecard measures must finally be linked to the strategy. According to Kaplan and Norton (1996, p. 148) it is crucial to the successful link that strategy is communicated through measurements. There are three principles that enable this:

Cause-and-Effect Relationships
These relationships can be expressed by a sequence of if-then statements.
If we increase employee training about products, then they will become more knowledgeable about the full range of products they can sell; if employees are more knowledgeable about products, then their sales effectiveness will improve. If their sales effectiveness improves, then the average margins of the products they sell will increase.
A properly constructed scorecard should tell the story of the business unit's strategy through such a sequence.
Outcomes and Performance Drivers
There are two kinds of measures. The previously introduced generic measures tend to be core outcome measures, which reflect the common goals of many strategies, as well as similar structures across industries and companies. They tend to be lag indicators.
Performance drivers, on the other hand, tend to be unique for a particular business. They tend to be lead indicators.
A good Balanced Scorecard should have an appropriate mix of outcomes and performance drivers that have been customised to the business unit's strategy.
Linkage to Financials
It is easy to become preoccupied with such goals as quality, customer satisfaction, innovation and employee empowerment for their own sake. If these goals are taken as ends in themselves, they may not lead to improved business-unit performance.
Ultimately, causal path from all the measures on a scorecard should be linked to financial objectives.

Table 2: Principles of Linkage (Kaplan and Norton, 1996, p. 149)

Formulating a BSC that links a business unit's mission and strategy to explicit objectives and measures is only the start of using the scorecard as a management system. It must then be communicated to a variety of organisational constituents, especially employees, corporate-level managers, and boards of directors. (Kaplan and Norton, 1996, p. 222).

Since BSC reflects the strategy and must be communicated, it is clearly a top-down approach. It is also important to note that communication must reflect the level of the organisational constituents. Employees, for example, require a rather detailed information regarding their particular job, whereas the board of directors should get information about everything that is strategically relevant.

Not only the communication must be appropriate to the respective level, information delivered from BSC and the feedback derived from it must also meet this criteria. The strength of the BSC approach lies in linking information to feedback that can be used to improve business. Kaplan and Norton (1996, p. 269) see the capacity for organisational learning especially at the executive level as the perhaps most innovative aspect of the BSC.

2.3 Summary and Conclusions

Information systems and Management Information Systems (MIS) are the challenge in the information age. Its successful implementation are crucial for today's business and government.

Balanced Scorecard (BSC) is more than just an information system. It uses a top-down approach and translates the strategy of an organisation in operational measures. These measures are furthermore applied on different levels – always providing the right amount of data necessary.

The strength of this approach is, that every single unit has clearly defined goals to reach to meet the strategy of the organisation rather than only to optimise its single field of operation.

The weakness, however, is that it requires a lot of time to rethink business, to find measures that work and that it must be supported on all levels. Strategic and conceptual design of the entire relation model take a lot more time than its technical implementation.

3 Identifying Critical Factors

3.1 General Overview

There are a few criteria that must be met by every information system. These criteria are helpful to define general framework of what an information system should do. They are, however, extremely abstract and cannot be used as a guideline to compare software products.

Individual Definition on User Level
Quick availability, easy and cost-efficient maintenance
Easy Integration with OLTP-Systems
Short reactions if the organisation or the demand for information changes
Date Basis
Everybody uses the same information
Modern Client/Server Architecture or Intranet Access
Scalability for OLAP with many users

Table 3: Characteristics of modern information systems (Oesze, 2000, p. 176)

3.2 Balanced Scorecard (BSC) Approach

Some less abstract criteria can also be derived from the previously introduced Balanced Scorecard (BSC) methodology. BSC relies heavily on strategy, therefore we must ask if the software can do the following things:

Can the Strategy be structured?
Are there tools such as Strategy Mapping or BSC approaches?
Can the Strategy be valued?
Are there tools such as scenario planning or activity-based planning?
Can the Strategy be linked?
Are there tools that enable linking with operative targets settings, resource allocation and personal goals and incentives?
Can the Strategy be communicated?
Are there tools to communicate the strategy and to collect feedback?

Table 4: Software Criteria for a BSC Approach (SAP AG, homepage, 2000)

Other criteria can be derived from almost any information system. They are, however, also part of the BSC approach and should not be forgotten:

Can Information be collected?
Are there tools that allow to collect data internally as well as externally?
Can Performance be monitored?
Are there tools such as Management Cockpits or BSC approaches that allow benchmarking?

Table 5: Underlying Software Criteria for a BSC approach (SAP AG, homepage, 2000)

3.3 Modelling Requirements

Knowing the business processes, how they are working, how they are linked to each other, is one of the factors crucial to the successful implementation of a Balanced Scorecard (BSC). Kaplan and Norton do not speak of this modelling, yet they assume it implicitly throughout the entire book. One perspective is dedicated to business processes, they look at it, however, from a point of view of breaking down the strategy (1996, p. 92).

Common information systems collect and structure data. BSC goes beyond that in selecting only the data relevant for strategy. This approach essentially takes the strategy, translates it in operational terms and defines measures. To find this particular data, intensive modelling of business processes is necessary.

A further point is that the BSC approach links feedback in a cycle that enables strategic learning. Here, too, deep knowledge of the processes are necessary to link this feedback to the appropriate person or process.

In a more general perspective, it makes no sense to apply an information system before business processes are linked economically and intelligently (Nilsson, 1995, p. 203).

A typical modelling process has the following steps with some problems that the appropriate software should handle. It is derived from an evaluation of Business Process Reengineering (BPR) requirements in modelling made by the Marshall School of Business, University of Southern California (Hars, 1998), and fits as well for the general modelling.

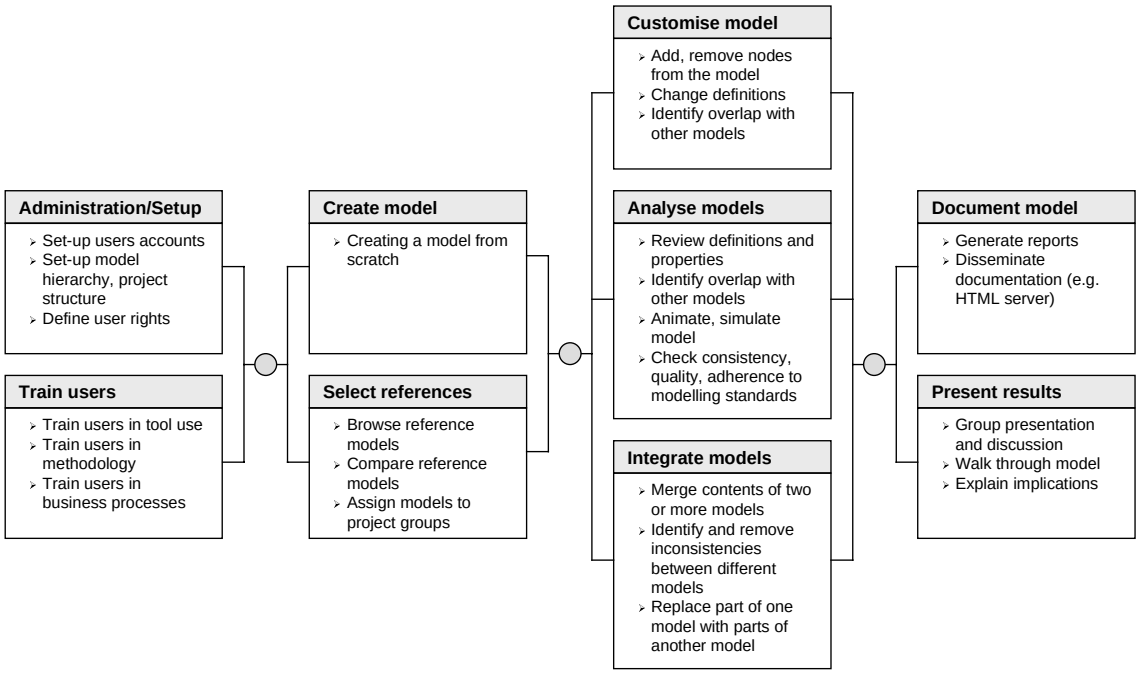

Figure 3: Process-oriented Evaluation of BSC Tools (Hars, 1998)

The key requirements for modelling and setting up a BSC can be summed up. Basically, the following six aspects must be considered when looking at software.

Administration and Setup
How easy is setup? Is the system flexible enough to reflect hierarchy and structure? How easy is administration of its users?
Training
How easy are users accustomed to this system? Are there any tools, references and workshops available to support training?
Modelling
How easy can a model be created, either from scratch or with the use or reference models? Are reference models supplied with the product and do they fit to the particular size and industry?
Adapting and Integrating Models
How easy are existing models integrated in the previously designed model? How easy can an existing model be modified to adapt changes in strategy, organisation or processes? Can models from previous versions or other software be adapted?
Documentation
How easy is the documentation of the modelling process?
Communication
Does the software include features that help communicating the strategy based model?

Table 6: Requirements for Implementing the Strategy (Hars, 1998)

3.4 Costs

Software is often compared in terms of buying costs. In a large scale implementation such as information systems or Balanced Scorecards (BSC), this comparison is somewhat dangerous. Wieser (1995, p. 289) shows that only a small percentage of the money required to implement such a system is spent on software. Because the cost of software is clearly visible by looking at its price tag, this aspect is often overestimated.

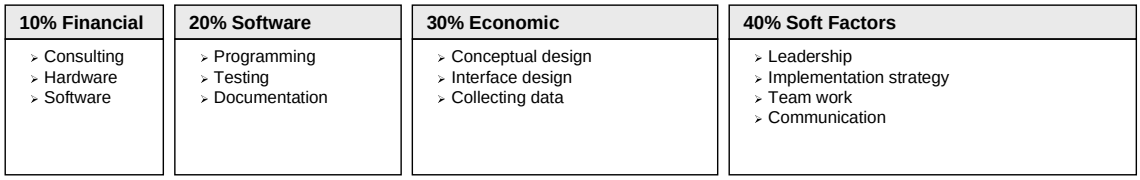

Figure 4: Importance of MIS Realisation (Wieser, 1995, p. 289)

3.5 Summary and Conclusion

Possible ways of comparing software for Management Information Systems (MIS) are either by deriving criteria from the Balanced Scorecard (BSC), by looking at the most important aspects of such an implementation (modelling) or by costs.

While the first way is good to sum up the features a programme must have, the second approach extends this by looking at the key problem of the implementation. When using the latter, we cover the range from software aspects, economic aspects as well as soft factors. Financial aspects of the software itself are not important, considering the total cost of implementation.

The most important criteria for a comparison analysis of such software is, how easy modelling takes place. Since every organisation, to some point, remains individually, adaptability and customisation are key factors of the modelling.

4 Comparison

4.1 SAP

4.1.1 General Overview

Founded in 1972 in Germany, SAP is the world's largest inter-enterprise software company and the world's fourth-largest independent software supplier, overall. In its most recent fiscal year, ending Dec. 31, 1999, SAP AG reported revenues of EUR 5.11 billion. SAP employs over 21,700 people in more than 50 countries (SAP AG, homepage, 2000).

SAP released SAP R/3 in 1992, an inter-enterprise software solution that includes systems, applications and products in data processing. In 1999, SAP widened its field with mySAP.com, a collaborative business environment of personalised solutions on demand. It is targeted at companies of all sizes and industries and marks a step towards collaborative business (c-business). Following this strategy, SAP introduced SAP Hosting in 2000. Going beyond traditional hosting, SAP offers end-to-end hosting solutions for either just a few applications or the entire online business community.

The product relevant for my comparison analysis is mySAP.com, since it reflects the latest generation of software from SAP. Its business applications cover the following areas:

Application Areas of SAP
Customer Relationship Management
e-Commerce
Supply Chain Management
Product Lifecycle Management
Knowledge Management
Business Intelligence
Strategic Enterprise Management
Financials and Cost Management
Human Capital Management

Table 7: Application Areas (SAP AG, homepage, 2000)

Content and services for collaborative business scenarios and business processes are enabled by the underlying mySAP.com application. In most cases, more than one mySAP.com application component is used.

Application Components of SAP
SAP Advanced Planner and Optimizer
SAP Business Connector
SAP Business-to-Business Procurement
SAP Business Information Warehouse
SAP Corporate Finance Management
SAP Customer Relationship Management
SAP Employee Self-Service
SAP Environment Health & Safety
SAP Internet Sales
SAP Knowledge Warehouse
SAP Logistics Execution System
SAP Online Store
SAP R/3 Enterprise Resource Planning
SAP R/3 Financials
SAP R/3 Human Resources
SAP R/3 Logistics
SAP Real Estate Management
SAP Strategic Enterprise Management
SAP R/3 Enterprise Resource Planning
SAP Complementary Software

Table 8: Application Components (SAP AG, homepage, 2000)

As we can see, SAP covers the entire range of intra- and inter-business systems. Its system is based upon modules which are embraced by mySAP.com. While SAP claims to support smaller businesses as well, its main customers are large firms with complex implementation problems. The largest systems in the world have about one-terabyte databases supporting users (Andersen Consulting, homepage, 2000). Most system integrators are talking between nine and twenty-four months to install SAP (Andersen Consulting, homepage, 2000).

In this comparison we will have a closer look at the module SAP Strategic Enterprise Management.

4.1.2 SAP Strategic Enterprise Management

According to SAP AG, the SAP Strategic Enterprise Management (SEM) is the most comprehensive analytical SEM software application on the market (SAP AG, homepage, 2000). It is also fully Web-enabled, providing access to not only internal resources but also to the growing number of data resources from business partners and other third parties.

Figure 5: Screenshots of SAP Strategic Enterprise Management (SAP AG, homepage, 2000)

While SAP offers basic modelling function, there are third-party modelling products used to modify or enhance modelling. These products include ARIS by IDS-Scheer, Visio's Business Modeler, and Intellicorp's LiveModel. According to Andersen Consulting, one of the leading SAP consultants, each product has its own niche and benefits. Because of this, the choice of product is very dependent on the requirements and situation of the organisation (Andersen Consulting, homepage, 2000).

4.1.3 Summary

SAP covers the full range of business activities. While offering solutions for almost every problem, the software package becomes relatively complex and difficult to install. Additional products may be used for modelling. With mySAP.com and SAP Hosting, attempts are made to simplify the implementation. There is also a wide range of support available, from white papers to implementation issues to process design. Typical customers are large firms, SAP tries, however, to reach smaller units as well.

4.2 Inova

4.2.1 General Overview

Inova was founded 1995 in Switzerland and is a small firm producing software exclusively for public administration. This software is designed around the methodology of New Public Management (NPM), in fact it started with a project for public administration. It employs around twenty-five people and its revenues are not public (Inova AG, 2000, p. 17)

The product relevant for my comparison analysis is ipm.ControllerStudio, since it is the latest product of Inova. It is a Management Information System (MIS) built on four modules that cover the following areas:

Application Areas of Inova
Reporting
Controlling
Management Information
Financials and Cost Management

Table 9: Application Areas (Inova AG, 2000, p. 4)

Workshop applications are designed as stand-alone solutions. Integration between is possible through ipm.ControllerStudio, not unlike mySAP.com. To get a brief overview of the applications, they are listed below.

Application Components of Inova
ipm.TimeWorkshop
ipm.PersonalWorkshop
ipm.CostWorkshop
ipm.IndikatorWorkshop

Table 10: Application Components (Inova AG, 2000, p. 4)

As we can see, Inova covers the most important aspects of public administration controlling. Since Inova is specialised software for public administration, its range is obviously smaller than that of SAP.

In this comparison, we will have a closer look at ipm.IndikatorWorkshop.

4.2.2 Inova ipm.IndikatorWorkshop

According to Inova AG (2000, p. 4), ipm.IndikatorWorkshop is part of a comprehensive package. It completes financial controlling with performance measurement and quality controlling. ipm.IndikatorWorkshop allows a rather individual modelling based upon the philosophy and methods of New Public Management (NPM).

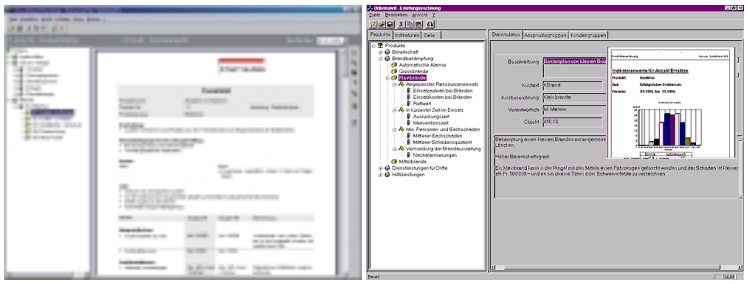

Figure 6: Screenshots of Inova IndikatorWorkshop (Inova AG, homepage, 2000)

Inova offers modelling functions tailored to the need of public administration implementing New Public Management (NPM). All functions are provided in-house and no external product is available for additional modelling.

4.2.3 Summary

Inova covers a smaller range of public administration activities. Its products are stand-alone solutions that may be linked with each other. Most of its products have only a limited intranet or internet capability – clearly a sign that Inova is targeted at smaller units. Typical customers are medium sized public administration units, such as the city of Bern (Inova AG, homepage, 2000). Furthermore, Inova has to be integrated into existing systems, whereas SAP tries to substitute these systems with solutions of its own.

4.3 Comparison

4.3.1 Features

It is important to note that feature comparison does not reflect the usability or quality of a software product. Rather obvious the much larger product (SAP) will also provide more features. Furthermore, SAP Strategic Enterprise Management is an implementation of the Balanced Scorecard (BSC) methodology, whereas Inova IndikatorWorkshop is not. Since the criteria of this comparison are derived from the BSC approach, this feature comparison must be seen with care.

Software Criteria for a BSC Approach	SAP	Inova
Strategy Mapping, BSC Approach	☆☆☆	☆☆
Scenario Planning, Activity Based Planning	☆☆☆	☆☆
Linking with Operative Targets Settings, Resource Allocation, Personal Goals and Incentives	☆☆☆	☆☆
Communication and Feedback	☆☆☆	☆☆

Table 11: Software Criteria for a BSC Approach

Both products provide plenty of ways to implement a BSC approach. SAP has the methodology already implemented, whereas this could be a problem for Inova regarding communication and feedback. Also Inova does not incorporate personal goals and incentives, but this is partly to the nature of its customers, since public administration has a somewhat different approach.

Underlying Software Criteria for a BSC approach	SAP	Inova
Internal and External Data Collcection	☆☆☆	☆☆
Cockpits and Benchmarking	☆☆☆	☆☆☆

Table 12: Underlying Software Criteria for a BSC approach

BSC, in the contrary to other information systems, relies only on some data. The rule of thumb is, that the 20 percent of data that covers 80 percent of the strategic issues are used (Yamaguchi, 1995, p. 60). Therefore, the ability of SAP to handle huge amounts of data is not important in this comparison. SAP allows to add external data through the internet, where Inova only provides access to data from intranets. Cockpits are a way of simplifying complex data. Yamaguchi (1995, p. 61). All relevant data are reduced, compressed and displayed in a graphical manner that resembles a cockpit of an aeroplane. Benchmarking, on the other hand, allows either comparisons between different periods of time or between different (somewhat similar) units. Both SAP and Inova offer here a comprehensive range of possibilities.

4.3.2 Modelling

The crucial part of a Balanced Scorecard (BSC) approach is its implementation. This part is far more relevant than a simple count of features. We will follow here the criteria we have derived from a classical implementation process.

Requirements for Implementing (Modelling) the Strategy	SAP	Inova
Setup	☆	☆☆☆
Training	☆☆☆	☆☆
Modelling	☆☆☆	☆☆
Adapting and Integrating Models	☆☆☆	☆
Documentation	☆☆	☆☆
Communication	☆☆☆	☆☆

Table 13: Requirements for Implementing (Modelling) the Strategy

The setup of such a program shows the entirely different nature of the two contenders; SAP being very large and complex and Inova concentrating on small-but-beautiful. Inova has the approach of being integrated in existing systems and offering only the limited features of its field, whereas SAP tries to include everything and offers additional third-party products. Setup of SAP is, therefore, very complex and difficult, compared to Inova.

Training can be split in two parts. Usability of the programme on one hand and other support such as books, training, and availability of workshops. Here, due to its wide use, SAP has a clear advantage in the support. Software usability is not such an issue anymore, both interfaces are designed fairly well and are intuitive, as far as complex systems can be.

The probably most important point of this comparison is how well modelling can be done. There are two cases, designing a model from scratch or using reference models supplied by the programme to speed up implementation. Both SAP and Inova come with reference models. While Inova relies heavily on the concepts of NPM (indicators, product groups, etc.), SAP provides reference models and scenarios for almost any kind of business. It is, however, reported that SAP works particularly well for companies that have strong top-down organisations or that are structured in the same way that the programme is structured. Hanseth and Braa compare SAP with concrete – being very flexible until it sets (1998, p. 7).

Over time, the models must be fine tuned, adjusted, or combined with other models. SAP provides here a better way to introduce new models because its modules cover a wider area and are extendable. Modifications in predefined models can, however, cause major upgrade problems (Hanseth and Braa, 1998, p. 7). Inova, on the other hand, has some weaknesses since it must be implemented in other existing systems. Here, upgrade problems can arise from external systems as well.

4.3.3 Financial

In my opinion, a financial comparison based solely upon the price of the hard- and software is dangerous. As we can see in Figure 5, only ten percent of the cost result from this. I will, therefore, not compare them at all.

4.3.4 Summary and Conclusions

The criteria used in this comparison are well set and justifiable. The results from it in my comparison, however, are fairly arbitrary. This results mainly from not using a specific problem as the foundation on which the comparison should be based. While the scope of this paper simply does not allow such a foundation, it is also important to note that problems and thus requirements may differ heavily.

SAP clearly wins in terms of implementation of the Balanced Scorecard (BSC) methodology. Inova, on the other hand, does not claim to support this concept at all. The philosophy of the New Public Management (NPM), however, incorporates some aspects of the BSC as well.

Both SAP and Inova use somewhat standardised processes for information gathering. Here, it is important to point out that too much standardisation may slow down the continuous evolution of an organisation and decrease the acceptance of such a product as well (Ciborra and Hanseth, 1998, p. 7).

This leads to an important question of how well processes will fit these (predefined) models and how fast these processes have to be changed. The answer is not easy – yet it determines the success or failure of a Management Information System (MIS) implementation.

5 Resources

5.1 Bibliography

Ciborra, C. U. and Hanseth O. *Toward a Contingency View of Infrastructure and Knowledge: An Explanatory Study.* 1998. Online. Internet. 19 June 2000. Available HTTP: www.ifi.uio.no/~oleha/Research/infraglobe.html.

Hanseth, O. and Braa K. *Technology as Traitor: Emergent SAP Infrastructure in a Global Organization.* 1998. Online. Internet. 19 June 2000. Available HTTP: www.ifi.uio.no/~oleha/Research/infraglobe.html.

Hars A. *Evaluation of enterprise-scale BPR tools.* 1998. Online. Internet. 19 June 2000. Available HTTP: http://www-rcf.usc.edu/~hars/pub/1997/toolseval/index.html.

Kaplan R. S. and Norton D. P. *The Balanced Scorecard*. Boston: Harvard Business School Press, 1996.

Nilson R. "Effizienzsteigerung von Geschäftsprozessen durch ablauforganisatorische Verbesserung durchgängiger Arbeitsabläufe" in Hichert R. and Moritz M. (Eds.) *Management Informationssysteme: Praktische Beispiele.* Berlin, Heidelberg, New York: Springer, 1996, 2nd Edition.

Oesze D. *Managementinformationen im New Public Management am Beispiel der Steuerverwaltung des Kantons Bern*. Bern, Stuttgart, Wien: Haupt, 2000.

Inova AG. *ipm.ControllerStudio: Kosten-, Leistungs- und Qualitätskontrolling*. 2000. Online. Internet. 21 June 2000. Available EMAIL: prohrbach@inova.ch.

SAP AG and PricewaterhouseCoopers. *SAP Strategic Enterprise Management: Enabling Value Based Management.* 1999. Online. Internet. 19 June 2000. Available HTTP: www.mysap.com/sem/index.html.

SAP AG. *SAP Strategic Enterprise Management with mySAP.com: Translating Strategy into Action.* 2000. Online. Internet. 19 June 2000. Available HTTP: www.mysap.com/sem/index.html.

SAP AG. *Welcome to the Strategic Enterprise Management Community: Join the Collaboration to Master the Challenges of the New Economy*. 2000. Online. Internet. 19 June 2000, Available HTTP: www.mysap.com/sem/index.html.

Wieser H. “EIS/MIS-Einführung in einer prozessorientierten Betrachtung” in Hichert R. and Moritz M. (Eds.) *Management Informationssysteme: Praktische Beispiele.* Berlin, Heidelberg, New York: Springer, 1996, 2nd Edition.

Yamaguchi A. “Management-Informationssysteme – Versuch einer Positionierung und Perspektiven für zukünftige Entwicklungen” in Hichert R. and Moritz M. (Eds.) *Management Informationssysteme: Praktische Beispiele.* Berlin, Heidelberg, New York: Springer, 1996, 2nd Edition.

5.2 Homepages

Andersen Consulting. Enterprise Business Solutions: SAP. 2000. Online. Internet. 19 June 2000. Available HTTP: www.ac.com/services/ebs/sap_home.html.

Inova AG. 2000. Online. Internet. 19 June 2000. Available HTTP: www.inova.ch.

SAP AG. 2000. Online. Internet. 19. June 2000. Available HTTP: www.mysap.com.