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**Performance Measurement from the Intellectual Capital Perspective**

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**A theoretical approach to support a corporate performance measurement  
system through a groupware-based intranet application**

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## Abbreviations

AB	Aktiebolaget (equivalent to Plc. in Sweden)
AG	Aktiengesellschaft (equivalent to Plc. in Germany)
a.m.	above mentioned
BET	Break Even Time
BSC	Balanced Scorecard
CRM	Customer Relationship Management
CVP	Customer Value Proposition
DCF	Discounted Cash Flow
DIN	Deutsche Industrienorm
e.g.	exempli gratia (for example)
ERP	Enterprise Resource Planning
EVA	Economic Value Added
FAQ	Frequently Asked Question
GmbH	Gesellschaft mit beschränkter Haftung (equivalent to Ltd.)
HTML	Hypertext Markup Language
IC	Intellectual Capital
i.e.	id est (that is)
Inc.	Incorporated
ISO	International Standardization Organization
IT	Information Technology
KM	Knowledge Management
M&A	Mergers & Acquisitions
MS	Microsoft
NOPAT	Net Operating Profit After Taxes
OLAP	On-Line Analytical Processing
OTD	On-Time Delivery
Plc.	Public Limited Company
p.	Page
pp.	Pages
R&D	Research and Development
ROCE	Return on Capital Employed
ROE	Return on Equity

ROI	Return on Investment
ROIC	Return on Invested Capital
SBU	Strategic Business Unit
SEC	Security Exchange Commission
SEK	Swedish Crowns
SFC	Skandia Future Center
TQM	Total Quality Management
WACC	Weighted Average Cost of Capital
WWW	World Wide Web

## 1 Introduction

The transformation from the industrial age to the information age<sup>1</sup> or knowledge society<sup>2</sup> represents a time of great change for business organizations as well as for individuals. Service industries replace manufacturing industries and the traditional factors of production: land, labor, and capital are replaced by intellectual assets as the scarce resources. “If there is one distinguishing feature of the new economy that has developed as a result of powerful forces such as global competition, it is the ascendancy of intellectual capital.”<sup>3</sup> Intellectual capital (IC) and its measurement is the main topic of this research project. The declining importance of physical assets as well as the quest for shareholder value creation have made the performance evaluation of companies that used to be solely based on financial figures inadequate. For information age companies it is essential to value performance beyond quantitative measures.<sup>4</sup> Practitioners like Security Exchange Commissioner (SEC) Steven Wallmann as well as academics like New York University’s Stern School of Business accounting professor Baruch Lev stress the current accounting model’s bias towards physical assets and emphasize the necessity of incorporating non-financial measures to evaluate organizational performance.<sup>5</sup> The Balanced Scorecard (BSC) is a performance management and measurement system that fulfills this criterion. In addition to the traditional Financial Perspective, the BSC measures performance from the Customer Perspective, the Internal Business Process Perspective, and the Learning and Growth Perspective, thereby functioning as a tool to navigate businesses in a competitive environment that is growing more and more complex. The aim of the thesis is to illustrate how the BSC can be used as a strategic management system that places a strong focus IC and its measurement. Furthermore, it will be analyzed how information technology (IT) can be used to facilitate a BSC and its implementation.

The research project is based on a cooperation between Deutsche Bank AG and the Groupware Competence Center of the University of Paderborn. Along with Lotus Development GmbH, the two cooperation partners developed the product NetFicient, a groupware-based intranet application. NetFicient is marketed by the Deutsche Bank

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<sup>1</sup> Stewart (1997): p. 3

<sup>2</sup> Drucker (1996): p. 67

<sup>3</sup> Bontis (1998): p. 64

<sup>4</sup> Eccles (1991): p. 131

<sup>5</sup> Lev (1997): p. 1; Wallman (1997): p. 104



department GTS/Commercial Banking Applications/eCommerce/eCommunities internally as well as externally. The increasing utilization of BSCs was the reason to examine how potential NetFicient customers could benefit from the various NetFicient functions when introducing a BSC.

The paper begins with an introduction to Strategic Management in Chapter 2. It is intended to provide a brief overview of the historical evolution of strategy in management literature. The most important frameworks are going to be mentioned, however, the center of attention are the changes in the competitive environment that organizations have to cope with nowadays. Therefore, an emphasis is placed on the strategic prerequisites companies have to accomplish in order to successfully compete in the 'new economy'. Besides, the shifting perception about value creation will be briefly illustrated. Chapter 3 will deal with IC. The above mentioned shortcomings of traditional accounting will be explained with a focal point on economics of knowledge-based resources. Furthermore, the IC concept will be illustrated and explained. A case study about Skandia, a Swedish financial services and insurance company will be leading on to the BSC concept, presented in Chapter 4. The potential of the BSC to function as a strategic management system - focusing on performance measurement from the IC perspective by adding non-financial measures to the traditional financial ones - will be examined. In Chapter 5 enabling systems for BSCs will be discussed. On the one hand, automated BSC solutions are going to come under scrutiny and on the other hand it will be assessed how NetFicient can contribute to a BSC process.

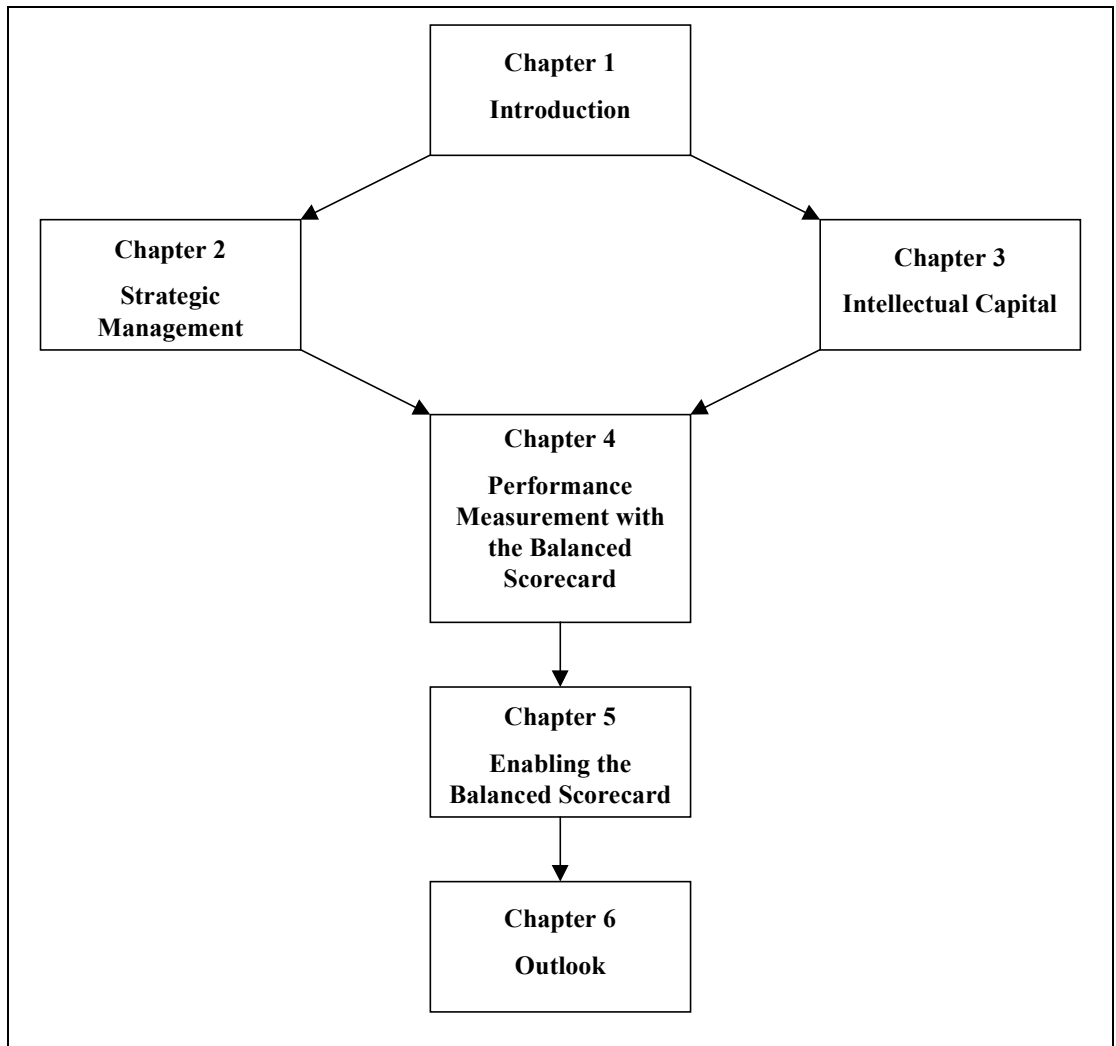


Figure 1-I - Outline

## 2 Strategic Management in the Information Age

The word strategy has its roots in the Greek language where *strategia* means generalship (formed from *stratos* – the army). It is not a coincidence that concepts and theories of corporate strategy or business strategy go back to a military background. Strategic management professors Henry Mintzberg and Brian Quinn even start their book on ‘The Strategy Process’ with a lengthy description of the battle of Chaeronea where Alexander the Great from Macedonia defeated the Athenian and Theban troops in 338 BC by carefully analyzing the strengths and weaknesses of his own troops as well as looking at the troops of his opponents.<sup>6</sup> Robert M. Grant, another leading researcher on strategic management outlines two similarities between military and business strategy: the distinction between strategy (“the science or art of planning and directing large-scale military movements and operations”<sup>7</sup>) and tactic (“a plan, procedure, or expedient for promoting a desired end”<sup>8</sup>). According to Grant tactic is the scheme to win a specific battle while a strategy is the means to win the whole war.<sup>9</sup> He emphasizes three common characteristics of strategic decisions military as well as business-related:<sup>10</sup>

1. They are important.
2. They involve a significant commitment of resources.
3. They are not easily reversible.

Hence, the translation of these rather martial words into the peaceful world of business means that strategy is the ‘battle’ of a company to create a competitive edge in the market. Therefore, companies formulate visions (defined as “view of a realistic, credible, attractive future for the organization, a condition that is better in some important ways than what now exists”<sup>11</sup>) and mission statements (“a firm’s mission provides a framework for organizing and communicating its basic identity and intentions”<sup>12</sup>) as a center for their strategy. The underlying goal of any business strategy must be the creation of value (value creation will be treated later on in this chapter) by performing activities different from the competition and therefore

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<sup>6</sup> Mintzberg/Quinn (1991): p. 6

<sup>7</sup> N.n. (1997): p. 778 (Webster’s Universal College Dictionary)

<sup>8</sup> N.n. (1997): p. 802 (Webster’s Universal College Dictionary)

<sup>9</sup> Grant (1998): p. 15

<sup>10</sup> Grant (1998): p. 15

<sup>11</sup> Fry/Killing (1995): p. 17 (A vision answers the question: “What do we want our business to look like in five years from now?” Fry/Killing (1995): p. 14)

<sup>12</sup> Fry/Killing (1995): p. 17 (A mission gives the answer to: “Why are we in business?” Fry/Killing (1995): p. 14)

delivering a higher value to the customer. Without activities “a strategy is nothing more than a marketing slogan that will not withstand competition”<sup>13</sup>

Mintzberg/Lampel have identified ten different schools of business strategy formation since 1960 that have been treated in management literature. These schools are reinforcing each other and researchers do not hesitate to stress that strategic management is an evolutionary process. Therefore, it is not possible to address a certain school to a specific event or time.<sup>14</sup> Nevertheless, it is possible to make a distinction between two perspectives in strategic management that are gaining relevance with the rapid changes currently occurring within the business environment.

Management literature has treated strategic management from two perspectives:

- The industry-based view.
- The resource-based view.

As the aspect of strategy will be relevant for chapter four both views will be briefly discussed.

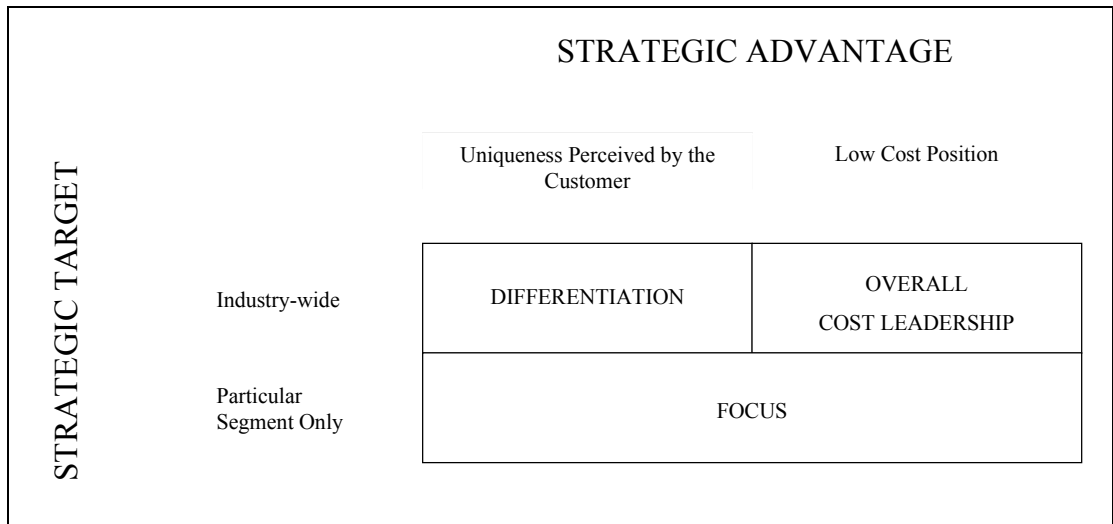
### **2.1.1 The Industry-Based View of the Firm**

In 1980 Michael Porter’s book “Competitive Strategy”, a groundbreaking work on strategic management appeared. According to Porter the strategic focus of a company had to be on the external environment, i.e. the industry a firm was competing in. The essence of his book was the idea that industry competition was driven by five forces (see Appendix 1) and that a company had the possibility to create a competitive advantage in its industry by choosing one of three generic strategies:

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<sup>13</sup> Porter (1996): p. 64

<sup>14</sup> Mintzberg/Lampel (1999): pp. 21



**Figure 2-I – Porter’s Three Generic Strategies<sup>15</sup>**

Choosing overall cost leadership as a strategy a company has to defend its low-cost position by achieving significant economies of scale and the maintaining of a relatively high market share.

The choice to compete on differentiation usually yields above-average returns by establishing, for example, a high brand loyalty and a resulting lower sensitivity to prices.

The focus on a specific market segment or product line creates a defensible market position by serving a narrow target group superior to other competitors.

For the information age company this differentiation does not represent an adequate approach anymore as Porter denies that, under normal circumstances, a company can choose more than one of the three generic strategies.<sup>16</sup> Nowadays, the business environment has significantly changed. Through the World Wide Web (WWW), mobile communications and other technological breakthroughs companies are able to choose more than one of the generic strategies. Computer producer Dell’s built-on-demand strategy<sup>17</sup> is a good example of a company being able to capitalize on the advantages of mass customization achieving significant economies of scale. In other words Dell can pursue the strategies cost leadership and differentiation simultaneously while still serving the mass market.<sup>18</sup> Hence, it is not sufficient anymore to solely focus on the external environment of a company as there is an urge to take internal factors into consideration that were neglected before.

<sup>15</sup> Porter (1980): p. 35

<sup>16</sup> Porter (1980): pp. 35 and 41

<sup>17</sup> Schinzer (1998): p. 6

<sup>18</sup> Kim/Mauborgne (1999): p. 45

### 2.1.2 The Resource-Based View of the Firm

The information age company needs to shift its focus of strategic management from the external industry analysis to a combination of external analysis and a focus on the internal environment of a company. Locating an attractive industry and trying to make money by choosing to compete on one of the generic strategies is not enough anymore. The resource-based view of the firm emphasizes the uniqueness of each organization.<sup>19</sup> It regards each organization as a combination of physical and intangible assets that interact with each other in order to create a competitive edge in the market.<sup>20</sup> But the competition on resources is nothing particularly new. It is, moreover, the resources that have changed over the last years. Not too long ago the most crucial resources were factors like capital (now more or less abundantly available to everybody with an internet-related business idea through venture capitalists or business angels, and increasingly backed by a large number of private investors on equity markets), brand loyalty (currently most traditional consumer goods companies have significant problems with the valuation of their shares on the stock markets<sup>21</sup> because customers tend to switch brands more easily and increase their purchases of private labels), or technological leadership (a technology can usually be copied without bigger problems nowadays).<sup>22</sup> Today the resource-based approach “sees competencies, capabilities, skills, or strategic assets as the source of sustainable competitive advantage for the firm”.<sup>23</sup> IC becomes the most valuable resource for any organization. Especially in this rapidly changing business environment the management of resources must be paid careful attention to. Investment in resources (such as training or research and development (R&D)), upgrading resources (“moving beyond what a company’s already good at”<sup>24</sup>), and last but not least leveraging existing resources into new markets foster the need to reassess the traditional structure of organizations.<sup>25</sup> In order to achieve these objectives a new type of organization is needed.

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<sup>19</sup> Grant (1998): p. 112

<sup>20</sup> Collis/Montgomery (1995): p. 118

<sup>21</sup> Baumann/Gorgs/Salz/Zöttl (2000): pp. 86

<sup>22</sup> Wernerfelt (1984): p. 174

<sup>23</sup> Nonaka/Takeuchi (1995): p. 46

<sup>24</sup> Collis/Montgomery (1995): p. 126

<sup>25</sup> Collis/Montgomery (1995): p. 127

## 2.2 A New Type of Organization

Currently organizations experience a business environment that is characterized by the rapid diffusion of what not long ago were considered sustainable competitive advantages such as new technologies, management techniques, or superior customer service.<sup>26</sup> It is the challenge of the information age company to find new sources of competitive advantage. But traditionally organized companies do not allow for the flexibility needed to compete in this environment. Moreover a new perception about business is needed. Companies need to consider new organizational forms and new values among their employees in order to guarantee for the evolution of new strategies.

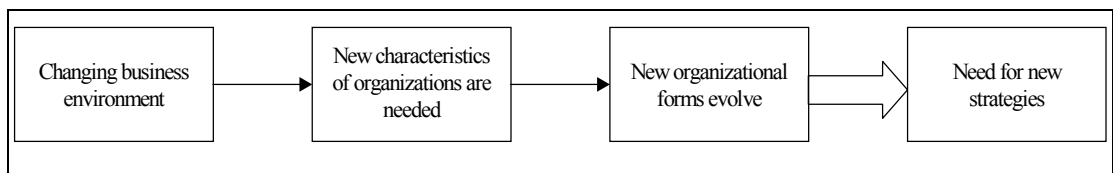


Figure 2-II - Strategic Changes in the Business Environment

### 2.2.1 Characteristics of the New Organization

It is obvious that economies, especially Germany where the old ‘Deutschland AG’<sup>27</sup> is still omnipresent, need to rethink their attitudes towards business culture. Lengthy decision processes through hierarchies and complicated ownership structures often restrain companies from reacting quickly to changes in the competitive environment. Kjell Nordström and Jonas Ridderståle, two professors from the Stockholm School of Economics as well as internet entrepreneurs (Spray Ventures, Razorfish) in their rather unconventional book ‘Funky Business’ have identified four characteristics that a company needs to possess to be successful on the market as well as internally in retaining key people and key competencies in the company. An organization needs to be:<sup>28</sup>

1. Focused: Market transparencies lead to demanding stakeholders. Nothing but superior value creation will be accepted. “So, funky organizations do not aspire to be the very thing for everyone. Instead, they are trying to become something for someone.”<sup>29</sup>

<sup>26</sup> Porter (1996): p. 63

<sup>27</sup> The term refers to the linkages between the big industrial conglomerates, banks and politics caused by cross-ownership of stocks and supervisory board mandates.

<sup>28</sup> Nordström/Ridderståle (1999): pp. 128

<sup>29</sup> Nordström/Ridderståle (1999): p. 132

2. Leveraged: Organizations have to recognize their core competencies, core business and core customers in order to leverage their main resources. In the information age this leverage can be used to compete in several industries without producing the actual good or service.
3. Innovative: Innovation goes beyond actual product development and can mean human resource innovations, financial innovations, or service innovations. It is a mindset that “turns the company into an idea and dream factory”.<sup>30</sup>
4. Heterarchical: Organizations need structures that foster experimentation. Failures must be accepted (“In Silicon Valley, failure is not a black dot – it is a badge of achievement.”<sup>31</sup>) and employees must feel that they were on playgrounds rather than in pyramids where strong hierarchies restrain innovation and creativity.<sup>32</sup>

Particularly, the plea for more freedom to experiment and the ability to accept failures as a part of the development process of IC is something that is lacking in the German business environment. The a.m. characteristics are the basis for the creation of new strategies.

### **2.2.2 New Organizational Forms**

Industrial age companies are usually organized hierarchically and often vertical integration was the means to control the whole value chain from production process to after sales service. But this type of organization does not fulfill the conditions needed to compete in the future. Sophisticated employees desire more responsibility and require a share of the company’s profits and for the development of resources partnerships and alliances are going to be formed with other companies that were formerly regarded as competitors. New organizational forms evolve through.<sup>33</sup>

1. Internal disaggregation: Decentralization and empowerment create an environment that shifts decision-making responsibility to the manager of the strategic business unit (SBU) while ownership of assets stays with the corporation.

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<sup>30</sup> Nordström/Ridderståle (1999): p. 152

<sup>31</sup> Nordström/Ridderståle (1999): p. 193

<sup>32</sup> Nordström/Ridderståle (1999): p. 168

<sup>33</sup> Day/Wendler (1998): pp. 9



2. External disaggregation: “Corporations spin off parts of their business to the financial markets, thus reducing or surrendering their ownership interest.”<sup>34</sup>  
This means is becoming more and more common as it makes performance visible and creates the incentive for employees to act as entrepreneurs (practical examples are Bertelsmann’s spin-off of Pixelpark and Siemens’ spin-off of Infineon).
3. Relational forms: Alliances, joint-ventures, licensing agreements and especially joint-partnerships become more and more important for the information age company. A good example is Deutsche Bank’s internet strategy.<sup>35</sup>

<b>Business Area</b>	<b>Private Customers</b>	<b>Corporate Customers</b>	<b>Financial Portal</b>
<b>Name</b>	Deutsche Bank 24	db marketplaces	moneyshelf.com
<b>Partners</b>	<ul style="list-style-type: none"> <li>• AOL</li> <li>• yahoo!</li> <li>• Nokia</li> </ul>	<ul style="list-style-type: none"> <li>• mySAP.com</li> <li>• mg technologies ag</li> <li>• eTime Capital</li> </ul>	<ul style="list-style-type: none"> <li>• Lycos</li> <li>• “la Caixa”</li> <li>• RTL</li> </ul>
<b>Targets to be achieved by the end of 2002</b>	Targeted number of online customers: <b>1.9 million</b>	Targeted transaction volume: <b>DM 120 billion</b>	Targeted number of users: <b>1.0 million</b>

**Table 2-I - Deutsche Bank’s Internet Strategy**

For organizations that are dependent on IC like Deutsche Bank these new organizational forms create the environment needed to develop the characteristics that allow for the flexibility to compete in the information age.

### **2.2.3 New Strategies**

Studying modern management literature, one realizes a shift in the fundamentals of strategy. While strategies of industrial age companies placed a predominant emphasis on the analysis of competition, the information age company shifts its focus to the buyer. The strategy to successfully compete in the future is what Kim/Mauborgne from INSEAD in Fontainebleau call value innovation. They describe shifts in the three basic building blocks of strategy: competition, customers, and corporate

<sup>34</sup> Day/Wendler (1998): p. 10

<sup>35</sup> N.n. (2000): p. 89 (Der Spiegel)

capabilities.<sup>36</sup> Competitive strategy is not about outperforming the competition by building layers of competitive advantage but “makes competition irrelevant by offering fundamentally new and superior buyer value in existing markets and by enabling a quantum leap in buyer value to create new markets”.<sup>37</sup> Reinventing existing industries is the reason for the success of many young and innovative companies like online investment bank Charles Schwab, airline Virgin Atlantic, German online broker ConSors or internet auctioneer Ebay just to name a few.

Customer strategy shifts from the delivery of superior service for a specific customer segment to targeting the mass market and accepting to eliminate unprofitable customers.<sup>38</sup>

The third building block of strategy - corporate capabilities - shifts due to the recognition that companies cannot develop all of the relevant capabilities on their own. Moreover, companies need to consider new organizational forms in order to combine capabilities with other companies (a good example for this is General Motor’s virtual logistic platform TradeXchange that rival car producers DaimlerChrysler and Ford decided to join in order to make procurement more efficient<sup>39</sup>). Furthermore, a shortage of qualified personnel, especially in the information technology sector makes building up of non-core capabilities expensive. The shift of strategy focus is illustrated below:

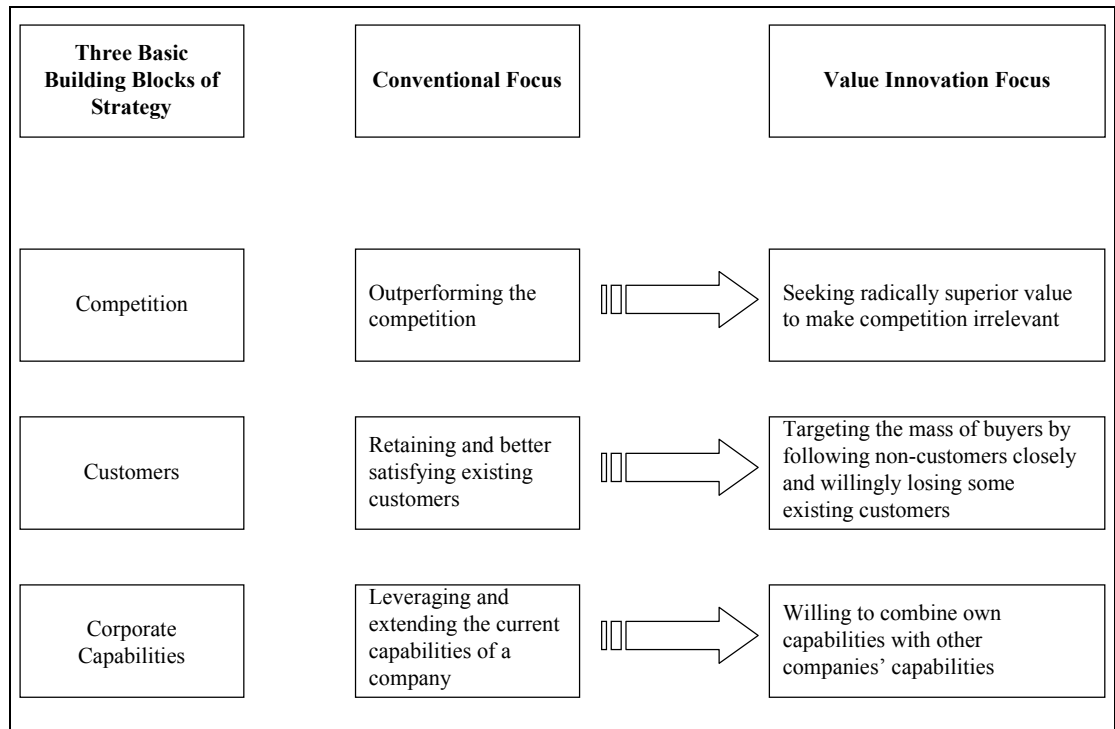
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<sup>36</sup> Kim/Mauborgne (1999): pp. 49

<sup>37</sup> Kim/Mauborgne (1999): p. 43

<sup>38</sup> Kaplan/Norton (1996): p. 73

<sup>39</sup> N.n. (2000): presentation Andersen Consulting

Figure 2-III - Shifting Strategy Focus<sup>40</sup>

A very important aspect in the development of new strategies is employee motivation. In the industrial age the prevalent strategy was the allocation of scarce resources in order to achieve a goal. Nowadays, companies use stretch goals i.e. the motivation of employees by setting goals that are not feasible at first sight. Stretch goals are achieved by leveraging resources<sup>41</sup> and they are supposed to transform the company in case they are reached.<sup>42</sup>

### 2.3 Value Creation in the Information Age

The ultimate goal of every business all over the world is the creation of value.<sup>43</sup> Nevertheless, the term value is subject to different interpretations in different cultures. The underlying idea of value in this thesis is based on the shareholder value approach predominantly used in the Anglo-Saxon influenced business world. While the stakeholder approach, prevalently used in continental Europe, advocates that companies have a social responsibility and should pay respect to public interests along with shareholder interests<sup>44</sup> shareholder value supporters argue that companies do neither have the political authority nor the competence to decide what is in social

<sup>40</sup> Kim/Mauborgne (1999): p. 50

<sup>41</sup> Hamel/Prahalad (1994): pp. 129

<sup>42</sup> Kaplan/Norton (1996): p. 226

<sup>43</sup> Grant (1998): p. 32

<sup>44</sup> Rappaport (1998): p. 5

interest. Moreover, they claim that an emphasis on shareholder value will maximize stakeholder interests in the long run as well.. Formerly the performance management of companies was based on accounting measures like Return on Investment (ROI):

$$ROI = \frac{\text{Net income}}{\text{Book value of assets}}$$

Especially in IC-based companies where the focus of investments is on intangible assets such as R&D, employee training, and information, the accounting based measure ROI becomes problematic because only a small part of the overall investment is capitalized in the book value of assets.<sup>45</sup> In addition, the ROI is a single-period measure disregarding future events. Finally, the nominator and the denominator are subject to accounting allocations based on individual decisions made in each company such as depreciation and capitalization methods. Instead of traditional accounting measures companies start to focus on cash flow-based valuation methods treating investments in physical assets and investments in intangible assets identically. The investments are solely evaluated on the cash-flows they create in the future and discounted by the cost of capital.<sup>46</sup> Alfred Rappaport, the author of the fundamental work on shareholder value, ‘Creating Shareholder Value’, defines the approach as follows: “The shareholder value approach estimates the economic value of an investment by discounting forecasted cash flows by the cost of capital.”<sup>47</sup> The result of this calculation is Net Present Value, which is

$$NPV = -A_0 + \sum_{t=1}^{\infty} \frac{\text{Expected cash flow}_t}{(1+i)^t}$$

i = interest

A<sub>0</sub> = Investment

In contrast to the one-period measure ROI, discounted cash flow-based measures include cash flows over the entire forecast period.

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<sup>45</sup> Rappaport (1998): p. 22

<sup>46</sup> Rappaport (1998): p. 31

<sup>47</sup> Rappaport (1998): p. 32

In order to maximize shareholder value companies should focus on the creation of economic profit which is defined by Copeland/Koller/Murrin from McKinsey & Company as:<sup>48</sup>

$$\text{Economic profit} = \text{Invested capital} * (\text{ROIC} - \text{WACC})$$

with:

$$\text{ROIC} = \frac{\text{NOPLAT}}{\text{Invested capital}}$$

and

$$\text{NOPLAT} = \text{Net operating profit less adjusted taxes}$$

and

$$\text{WACC} = i * (1 - t) * \frac{D}{V} + r_E * \frac{E}{V}$$

with:

i = interest	D = market value of debt
t = tax rate	E = market value of equity
r <sub>E</sub> = required rate of return on equity	V = value

WACC are equivalent to the weighted debt and equity costs.<sup>50</sup>

“Economic profit measures the gap between what a company earns during a period and the minimum it must earn to satisfy its investors.”<sup>51</sup> In the long run the maximization of economic profit will lead to the maximization of the company value. “Company value is determined by its discounted future cash flows, and value is created when a company invests capital at returns that exceed the cost of capital.”<sup>52</sup> The difference between Economic profit and traditional accounting profit is the charge for the opportunity cost of capital (WACC) which contains the cost of equity while accounting profit does not.<sup>53</sup> A business venture is not profitable unless it returns a profit exceeding its cost of capital. The economic profit concept takes into account that companies have to pay for the capital they invest.

Information-age companies will see themselves forced to rely on discounted cash flow-based measures as they depend on substantially high initial investments to

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<sup>48</sup> A similar concept invented by New York based consultancy Stern Stewart is Economic Value Added (EVA).

<sup>49</sup> Volkart (1999): p. 543

<sup>50</sup> Hostettler (2000): p. 53

<sup>51</sup> Copeland/Koller/Murrin (1996): p. 116

<sup>52</sup> Copeland/Koller/Murrin (1996): p. 96

<sup>53</sup> Due to generally accepted accounting principles, only the interest which is the cost of debt, are deductible as expenses.

develop and market products compared to costs that occur when manufacturing and distributing the products.<sup>54</sup> The discounted future cash flows will respect these high upfront investments better than an accounting-based measure such as ROI.

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<sup>54</sup> Rappaport (1998): p. 31

### **3 Intellectual Capital**

As addressed in the previous chapter the business environment is subject to rapid transformation. But new strategies, new types of organization, and new perceptions about value creation call for new ways to measure performance. Looking at the current valuation of companies on the stock markets two things become evident: traditional accounting measures have to come under scrutiny and the performance of information age organizations has to be evaluated differently than that of industrial age companies. This chapter will present the concept of IC. Outlining the shortcomings of traditional accounting methods IC will be defined. Furthermore, it is intended to provide the reader with an insight into Knowledge Management (KM) and its role in the IC concept as it has unarguably been one of the most frequently discussed terms in modern management literature. A focus will be on the economics of knowledge. The second part of the chapter will introduce IC measurement methods emphasizing the value creation potential of IC that has significantly increased over the last years. Finally, a case study about Skandia, will conclude this chapter because Skandia was the first company to ‘live’ IC. The case study will lead on to the BSC that will be discussed in Chapter Four.

#### ***3.1 Shortcomings of Traditional Accounting Methods***

The accounting system of double entry bookkeeping goes back over 500 years to the Venetian monk Luca Pacioli who in 1494 published a study called ‘Summa de arithmetica, geometrica, proportioni et proportionalita’.<sup>55</sup> Since then only more rules were added but no significant changes were made. The accounting principles used nowadays are clearly biased towards physical assets which has worked just fine for industrial age companies.<sup>56</sup> The main purpose of accounting is the delivery of information to management, investors, creditors, monitors, and other stakeholders such as partners, customers, and employees.<sup>57</sup> New technologies, however, allow for more transparency, more transaction speed and faster reaction time to market changes, in other words quicker access to more disaggregated information. This information is then collected, processed and finally aggregated into annual reports by

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<sup>55</sup> Stewart (1999): p. 58

<sup>56</sup> Wallmann (1997): p. 104; N.n. (1998): p. 22 (WM Data, Annual Report 1998)

<sup>57</sup> Wallmann (1996) p. 141

accountants only to be disaggregated again by analysts.<sup>58</sup> The relevance of annual reporting (even quarterly reporting) diminishes substantially when considering that capital markets can erase or add billions of dollars of a company's value within minutes. Even analysts start to look for information that go beyond mere financial reports when placing a company on their recommended lists.<sup>59</sup> For example, companies like Sun Microsystems, Amazon, or the virtual auctioneers Ebay.com or Ricardo.de operate with little assets (some of them are even far from making profits) compared with companies from traditional industries. Nevertheless, the stock markets value them at many times their net assets value. The following table contains a list with some of the top performing companies from the Fortune 500 list showing their market value on the 17<sup>th</sup> May 2000, as well as revenues, profits, and net assets in 1999. In case of companies operating in the IT sector such as Microsoft, Cisco Systems or Oracle neither revenue nor profits would justify the high market capitalization according to traditional accounting methods.

<b>Company</b>	<b>Market Value</b>	<b>Revenue</b>	<b>Profits</b>	<b>Net Assets</b>
<b>Microsoft</b>	\$ 492,462.1	\$ 19,747.0	\$ 7,785.0	\$ 37,156.0
<b>Cisco Systems</b>	\$ 453,878.8	\$ 12,154.0	\$ 2,096.0	\$ 14,725.0
<b>General Electric</b>	\$ 417,175.1	\$ 111,630.0	\$ 10,717.0	\$ 405,200.0
<b>Intel</b>	\$ 391,816.5	\$ 29,389.0	\$ 7,314.0	\$ 43,849.0
<b>AT &amp; T</b>	\$ 236,704.0	\$ 62,391.0	\$ 3,428.0	\$ 169,406.0
<b>Oracle</b>	\$ 217,257.8	\$ 8,827.3	\$ 1,289.8	\$ 7,259.7
<b>Lucent Techn.</b>	\$ 214,185.1	\$ 38,303.0	\$ 4,766.0	\$ 38,775.0
<b>Wal-Mart</b>	\$ 212,666.2	\$ 166,809.0	\$ 5,377.0	\$ 70,245.0
<b>IBM</b>	\$ 193,810.5	\$ 87,548.0	\$ 7,712.0	\$ 87,495.0
<b>Dell</b>	\$ 143,488.6	\$ 25,265.0	\$ 1,666.0	\$ 11,471.0
<b>AOL</b>	\$ 140,899.2	\$ 4,777.0	\$ 762.0	\$ 5,348.0

**Table 3-I - Book-to-Market Ratios in Million US \$<sup>60</sup>**

The example clarifies that intangible assets can account for a huge proportion of a company's value and that "our current system of financial measurement has become increasingly disconnected from what appears to be truly valuable in the new

<sup>58</sup> Karlgaard (1997): pg. 4

<sup>59</sup> Horváth/Kaufmann (1998): p. 41

<sup>60</sup> N.n. (2000): www.fortune.com



economy”.<sup>61</sup> Conventional accounting methods do not adequately measure the value of companies mainly relying on intangible assets. Internally generated assets such as R&D expenses, brand names, patents, and employee skills, i.e. the drivers of future company performance are neglected.<sup>62</sup> Expenses for R&D, employee training, and IT infrastructure are treated as costs which leads to a short term deterioration of profits which in turn reduces the value of the balance sheet.<sup>63</sup> It is paradox that a company that cuts cost by reducing R&D, training, etc. might well show short term profits while running into ‘intellectual bankruptcy’.<sup>64</sup> The call for additional information outlining the future earning potential of companies becomes more vehement. SEC commissioner Steven Wallmann and accounting professor Baruch Lev emphasize the need to extend traditional accounting information by including non-financial information to foster a broader awareness of knowledge-based companies. Wallmann outlines several reasons why traditional financial reporting loses relevance:<sup>65</sup>

- It is problematic to define the outer edges of a company as new organizational forms evolve.
- It is problematic to value and measure soft assets.
- Timing of reporting becomes problematic as rapid acceleration of events affects share prices and product life cycles become shorter.

It becomes evident that a new measurement system is needed that does not solely focus on ex-post financial figures but treats them among a broader set of measures.<sup>66</sup> The IC concept is the basis for new performance measurement which takes into account that information age companies are confronted with changing economics.

### ***3.2 Economics of Knowledge-Based Resources***

The most significant issue about the nature of IC based resources is the fact that the law of diminishing returns does not apply. Without going into more details, the law of diminishing returns states that the more a given resource is used, the smaller will be the incremental return from this resource.<sup>67</sup> Companies in industries like agriculture, heavy industries, bulk-goods production or mining work with limited

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<sup>61</sup> Baum/Ittner/Larcker/Low/Siesfeld/Malone (2000): [www.forbes.com](http://www.forbes.com)

<sup>62</sup> Lev (1997): [www.forbes.com](http://www.forbes.com)

<sup>63</sup> Edvinsson (1997): p. 366

<sup>64</sup> Roos/Reos (1997): p. 413

<sup>65</sup> Wallmann (1996): pp. 141

<sup>66</sup> Eccles (1991): p. 131

<sup>67</sup> Mankiw (1997): p. 526; Roos/Reos/Dragonetti/Edvinsson (1997): p. 10

physical resources where at one point return is declining as further expansion would be more expensive than the profit gained.<sup>68</sup>

Knowledge-based resources on the other hand are not intrinsically scarce. Information age companies face increasing returns for several reasons:<sup>69</sup>

- IC assets are appreciable. I.e., while plants, machinery, and real estate start to depreciate, the value of IC grows through sharing. Knowledge assets can be used simultaneously by many people. Users add, adapt and enrich the knowledge base.<sup>70</sup>
- While high up-front investments in R&D are necessary in order to develop, e.g. a software program, marginal costs of the new products are low.<sup>71</sup> This allows for significant scale economies as units sold increase.
- Especially high tech businesses benefit from network effects, i.e. a product has to be compatible with industry standard in order for the user to be able to access the product (e.g. MS Windows 95, 98 or 2000).
- Customers must get used to the product or must even be trained to use it. Afterwards incentives to switch products are low.

But it is also necessary to respect the problems associated with knowledge economics. Knowledge assets need to be cultivated. While a software that becomes a standard might have a great potential for future value creation, expiring patents lose value as soon as they are shared with the whole industry. Companies need to continuously refresh and update their knowledge base.<sup>72</sup> Furthermore, it is difficult to evaluate an investment into knowledge. And even, if the investments in knowledge generate value, it is not foreseeable who is going to benefit from it most. McKinsey & Company consultants Day and Wendler identified three reasons why this is so:<sup>73</sup>

- Knowledge is owned by people and is therefore hard to control.
- Knowledge assets are difficult to trade as property rights are hard to enforce.
- Knowledge is often generated in partnerships, alliances, and other new organizational forms. This makes the exact distribution problematic.

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<sup>68</sup> Reiß (1996): pp. 90

<sup>69</sup> Ulrich (1998): p. 15; Roos/Reos/Dragonetti/Edvinsson (1997): pp. 13

<sup>70</sup> Day/Wendler (1998): pp. 19-20

<sup>71</sup> Marginal costs are defined as the increase in total cost that arises from an extra unit of production. Mankiw (1997): p. 272

<sup>72</sup> Day/Wendler (1998): p. 20

<sup>73</sup> Day/Wendler (1998): p. 20

It becomes clear that knowledge based resources are subject to different economics which offers considerable chances. However, companies, especially those that solely rely on knowledge-based assets in order to create knowledge intensive products and services, have to acknowledge the difficulties that can emerge. The concept of IC is meant to provide a platform to make the value creation potential of knowledge assets more transparent.

### 3.3 The Concept of Intellectual Capital

Definitions of IC all have one thing in common: they outline the value creation potential and future earnings capabilities of non-physical assets. Despite the strong focus on KM which, is according to Fortune author Thomas Stewart, in most cases nothing more than “glorified data processing”<sup>74</sup>, the IC concept takes a strategic and a measurement perspective:

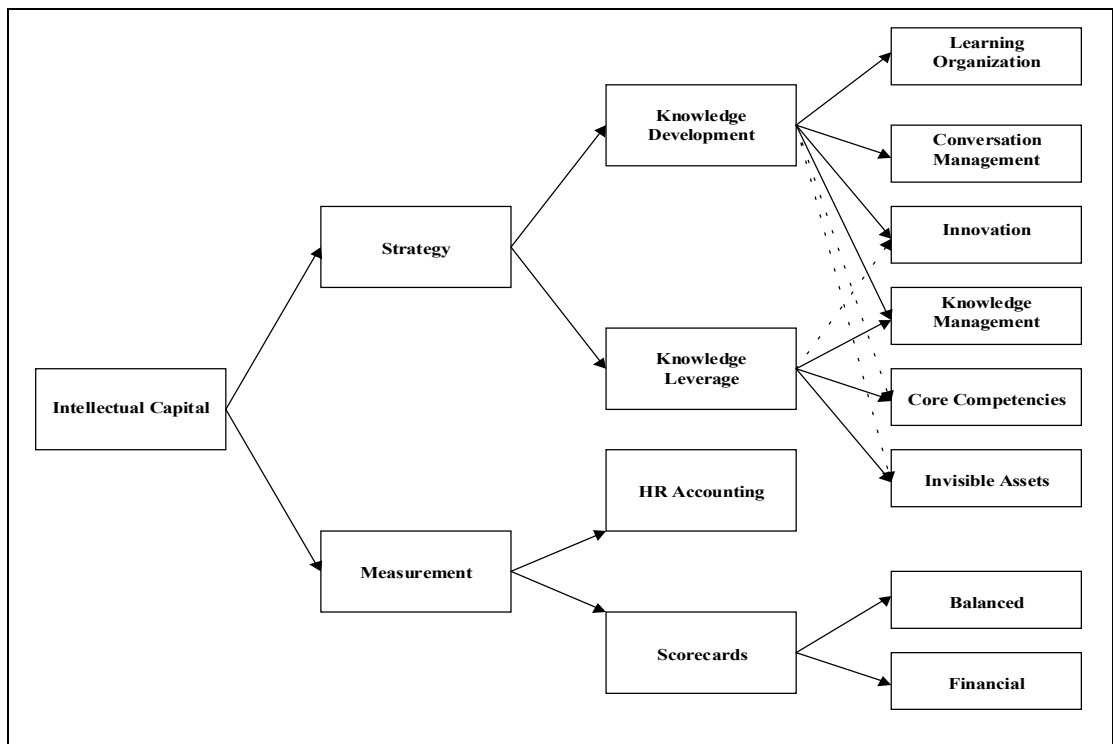


Figure 3-I - Conceptual Roots of Intellectual Capital<sup>75</sup>

The strategic stream focuses on the creation and use of knowledge while the measurement stream is focused on the development of a new measurement system that evaluates non-financial data as well as traditional financial ones.

<sup>74</sup> Stewart (1999): p. XIII

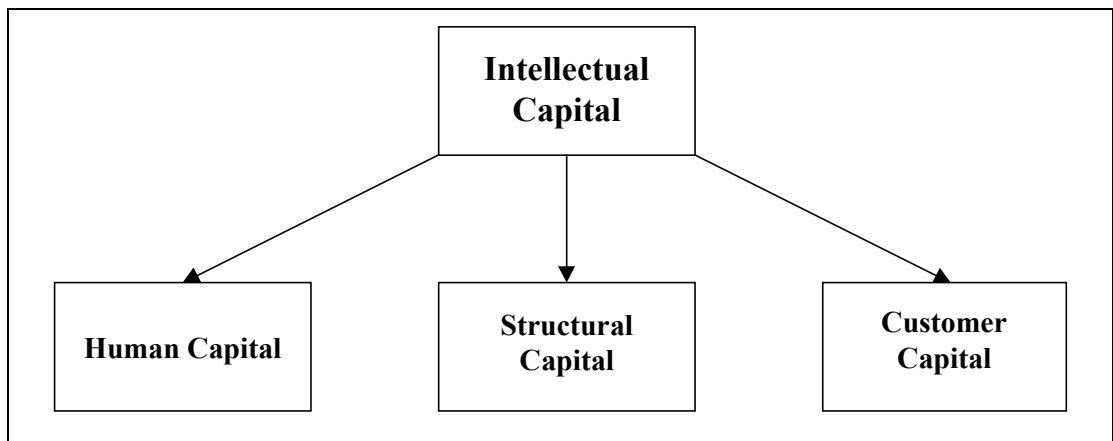
<sup>75</sup> Roos/Reos/Dragonetti/Edvinsson (1997): p. 15

Edvinsson/Malone emphasize the interaction of individual knowledge and organizational structure that provide organizations “with a competitive edge in the market”.<sup>76</sup> In order to capitalize on IC they furthermore stress the necessity to make IC financially measurable.

Karl Erik Sveiby distinguishes between three types of intangible assets, namely employee competence, internal structure, and external structure. He introduced a balance sheet of intangible assets (see Appendix 2).<sup>77</sup>

Cambridge-/UK based consultancy The Technology Broker’s Annie Brooking uses the a.m. difference between book value and the market value of a company. By including intellectual property assets she takes a slightly different approach than the other authors mentioned.<sup>78</sup>

The most coherent definition offers Stewart who defines IC as “packaged useful knowledge”<sup>79</sup>. His concept of dividing IC into Human Capital, Structural Capital, and Customer Capital is consistent with Skandia’s<sup>80</sup> and Dow Chemical’s<sup>81</sup> distinction of Customer Capital, Organizational Capital, and Human Capital.



**Figure 3-II - Stewart’s Three Columns of Intellectual Capital**

This division allows for an easier measurement of IC. The concept of Stewart will be presented more detailed in the following paragraphs. And as one cannot manage what cannot be measured<sup>82</sup> a list of indicators for IC measurement is included in the Appendix 3.

<sup>76</sup> Edvinsson/Malone (1997): p. 44

<sup>77</sup> Sveiby (1997): pp. 8

<sup>78</sup> Brooking (1997): pp. 13

<sup>79</sup> Stewart (1997): p. 67

<sup>80</sup> N.n., (1998): p. 4 (Human Capital in Transformation)

<sup>81</sup> Petrash (1996): p. 366

<sup>82</sup> Pettit (2000): p. 2; Kaplan/Norton (1996): p. 21

### 3.3.1 Human Capital

At the beginning of the information age Human Capital becomes more and more important.<sup>83</sup> Not the physical assets but the brains that created Notes were the reason for IBM's acquisition of Lotus at 15 times its book value.<sup>84</sup> It is crucial to realize that Human Capital is more mobile than ever and that the best people can easily walk out the door taking all their skills and knowledge with them. Thus, Human Capital cannot be owned by the company but only rented.<sup>85</sup> It can be defined as the employees' capabilities, their knowledge, their skills, and their experience. For a company to capitalize on its Human Capital it is essential to establish what is commonly referred to as efficient KM. Although KM is only a small part of the IC concept I am going to present it as a digression because of its growing importance. The intention is to offer a brief introduction to KM theory by giving some definitions and comparing the knowledge approaches of Japanese and Western companies. It is difficult to clearly distinguish between KM and Intellectual Capital Management as the two terms are often used synonymously although they are in fact complementing each other.<sup>86</sup> However, according to Edvinsson "the goal of KM is to improve a company's value creation capability through the more effective use of knowledge"<sup>87</sup> while the focus of Intellectual Capital is "to improve the company's value generating capabilities through identifying, capturing, leveraging, and recycling intellectual capital"<sup>88</sup> or as Johan Roos from IMD in Lausanne puts it: "Whereas knowledge management is a theory in search of practice, IC is a practice in search of theory."<sup>89</sup> Thus, IC includes value creation as well as value extraction. KM is not the focus of this study. Moreover, I am trying to show the role of KM within the IC approach and the necessity to give some definitions in order to make IC measurable.

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<sup>83</sup> Silverman/Lewis (2000): p. 24

<sup>84</sup> Edvinsson/Malone (1997): p. 34

<sup>85</sup> Edvinsson/Malone (1997): p. 11; Stewart (1997): p. 101

<sup>86</sup> Wiig (1997): p. 400

<sup>87</sup> Edvinsson (1997): p. 372

<sup>88</sup> Edvinsson (1997): p. 372

<sup>89</sup> Roos (1998): p. 151

### **Digression: Knowledge Management**

The original definition of knowledge goes back to the philosophical branch of epistemology in methodology.<sup>90</sup> However, in this thesis the focus will be on organizational knowledge definitions in order to establish a connection to KM.

Davenport/Prusak distinguish between data (“a structured record of transactions”<sup>91</sup>), information (a message that is supposed to influence the attitude of the receiver towards a certain topic or object<sup>92</sup>) and knowledge (a mix of “framed experiences, values, contextual information and expert insight”<sup>93</sup>) with data as a necessary input for the creation of information and knowledge as refined and processed information. With respect to the affluent availability of information and data through the WWW and organizational intranets this distinction grows more important as an organization has to choose carefully what kind of knowledge has a potential for value creation.

Sveiby uses the definition competence for practical knowledge<sup>94</sup> that was used first by Prahalad/Hamel who defined core competencies as the main source for long-term competitive advantage.<sup>95</sup>

Finally, the academics Nonaka and Takeuchi describe knowledge as a “dynamic human process of justifying personal belief toward the truth”<sup>96</sup> in their study on knowledge creation in Japanese companies. They explain the phenomenon of organizational knowledge creation with the interaction of tacit and explicit knowledge.<sup>97</sup>

Also called codified knowledge<sup>98</sup>, explicit knowledge is described as “knowledge that is transmittable in formal, systematic language”.<sup>99</sup> Sveiby also uses the definition focal knowledge which describes the knowledge one has about an object that is in focus.<sup>100</sup> Tacit knowledge is being defined as “personal, context-specific and therefore hard to formalize and

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<sup>90</sup> Epistemology deals with the ways of interpreting knowledge. v.Krogh/Roos/Slocum (1996): p. 157

<sup>91</sup> Davenport/Prusak (1998): p. 2

<sup>92</sup> Davenport/Prusak (1998): p. 3

<sup>93</sup> Davenport/Prusak (1998): p. 5

<sup>94</sup> Sveiby (1997): p. 37

<sup>95</sup> Prahalad/Hamel (1990): p. 81

<sup>96</sup> Nonaka/Takeuchi (1995): p. 58

<sup>97</sup> The concept of tacit and explicit knowledge was developed by the Hungarian medical scientist and philosopher Michael Polanyi (1891-1976). Sveiby (1997): p. 30

<sup>98</sup> Davenport/Prusak define codified knowledge as organizational knowledge that “has been put into a form that makes it accessible to those who need it.” Davenport/Prusak (1998): p. 69

<sup>99</sup> Nonaka/Takeuchi (1995): p. 59

<sup>100</sup> This definition also goes back to Michael Polanyi. Sveiby (1997): p. 30

communicate”.<sup>101</sup> In Japanese companies knowledge is primarily believed to be tacit.<sup>102</sup> It is based on experience, learning and subjective judgments. The social interaction between tacit and explicit knowledge allows for organizational knowledge creation.<sup>103</sup> In today’s business environment organizations have to create incentives for the employees to share their knowledge and making it accessible inside an organization as well as internalizing outside knowledge from the external business environment. The following matrix shows the four modes of knowledge conversion:

		To	
		Tacit knowledge	Explicit knowledge
From	Tacit knowledge	<b>Socialization</b>	<b>Externalization</b>
	Explicit knowledge	<b>Internalization</b>	<b>Combination</b>

**Table 3-II - Four Modes of Knowledge Conversion<sup>104</sup>**

The challenge information age companies are facing is the creation of an organizational infrastructure that allows for a flow of knowledge and information. After the waves of downsizing and reengineering in the 1980s employees especially in middle management are reluctant to share their knowledge as they regard it as an insurance to stay on their job. Organizations have to find ways to reward knowledge sharing and punish knowledge hoarding. Especially in the professional service sector (e.g. management consulting, accounting) where knowledge is the fundamental asset of the company<sup>105</sup> salaries are directly tied to the individual contribution to the corporate knowledge base. Furthermore, corporations need to install a knowledge market that allows a potential knowledge buyer to locate a knowledge seller.<sup>106</sup> Sometimes this can simply be achieved by installing a new espresso machine or water dispenser as the basis for bilateral knowledge exchange is mutual trust.<sup>107</sup> It is crucial to realize that a technological

<sup>101</sup> Nonaka/Takeuchi (1995): p. 59

<sup>102</sup> Nonaka/Takeuchi (1995): p. 8

<sup>103</sup> Nonaka/Takeuchi (1995): p. 61

<sup>104</sup> Nonaka/Takeuchi (1995): p. 62

<sup>105</sup> Hansen/Nohria/Tierney (1999): p. 106

<sup>106</sup> Davenport/Prusak (1998): pp. 25

<sup>107</sup> Davenport/Prusak (1998): p. 35

infrastructure is necessary but the best group- and shareware system does not guarantee for knowledge exchange if individuals do not see an incentive to share their knowledge.

The process of knowledge creation is vital for the survival of information age companies. Despite the current emphasis on KM Takeuchi argues that knowledge creation cannot be managed. It is furthermore the lack of management, the lack of control that allows for the natural emergence of knowledge.<sup>108</sup> What all definitions have in common is the fact that knowledge, managed or not, nowadays is considered the most valuable resource that, in an organizational context, is meant to create value for the business.

One thing becomes evident regarding KM: the necessity to link Human Capital to a specific organization. Especially in the information age company the need to retain qualified employees becomes ever more critical. Knowledge workers are turning out to be increasingly disloyal towards their employers. Their loyalty belongs to their profession or, what modern management literature calls community of practice.<sup>109</sup> A programmer who leaves a company to start up his or her own business is lost for the company but still belongs to the community. With employee ownership programs, stock options, and an increased tendency towards performance based salaries companies are trying to meet this challenge and try to increase loyalty and motivation among employees. Some companies are even actively supporting the formation of communities of practice inside the organization in order to benefit from the informal exchange of knowledge.<sup>110</sup>

### **3.3.2 Structural Capital**

In contrast to Human Capital, Structural Capital is owned by the company. Databases, organizational charts, process manuals as well as intellectual property such as brand names and patents are the Structural Capital of a company.<sup>111</sup> With Structural Capital being the part of IC that is owned by the organization its management is essential for the creation of shareholder value. It can be defined as a system to collect and process knowledge in order to transform it into a corporate

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<sup>108</sup>Takeuchi (1998): [www.sveiby.com.au](http://www.sveiby.com.au)

<sup>109</sup>Communities of practice are defined as: “A group of professionals, informally bound to one another through exposure to a common class of problems, common pursuit of solutions, and thereby themselves embodying a store of knowledge.” Stewart (1999): p. 96

<sup>110</sup>Wenger/Snyder (2000): p. 60

<sup>111</sup>Roos/Roos/Dragonetti/Edvinsson (1997): p. 42



property. Technological progress such as Internet or groupware applications like Lotus Notes make information a good that is abundantly available to everybody. It is the challenge of Structural Capital management to recognize the information that has a potential for value creation and make it available throughout a company. According to Stewart, Structural Capital has two purposes:<sup>112</sup>

1. Codifying bodies of knowledge that can be transferred, to preserve the recipes that might otherwise be lost.
2. Connecting people to data experts and expertise – including bodies of knowledge – on a just-in-time basis.

Edvinsson/Malone call structural capital the “embodiment, empowerment, and supportive infrastructure of Human capital”<sup>113</sup> and quote Hubert Saint-Onge from the Canadian Imperial Bank of Commerce who stresses that the better the Structural Capital of a company the better the Human Capital (he defines the relationship between structural capital and human capital as a mutual one, using the term ‘double arrow dynamics’).<sup>114</sup>

According to Edvinsson /Malone Structural Capital consists of three parts:

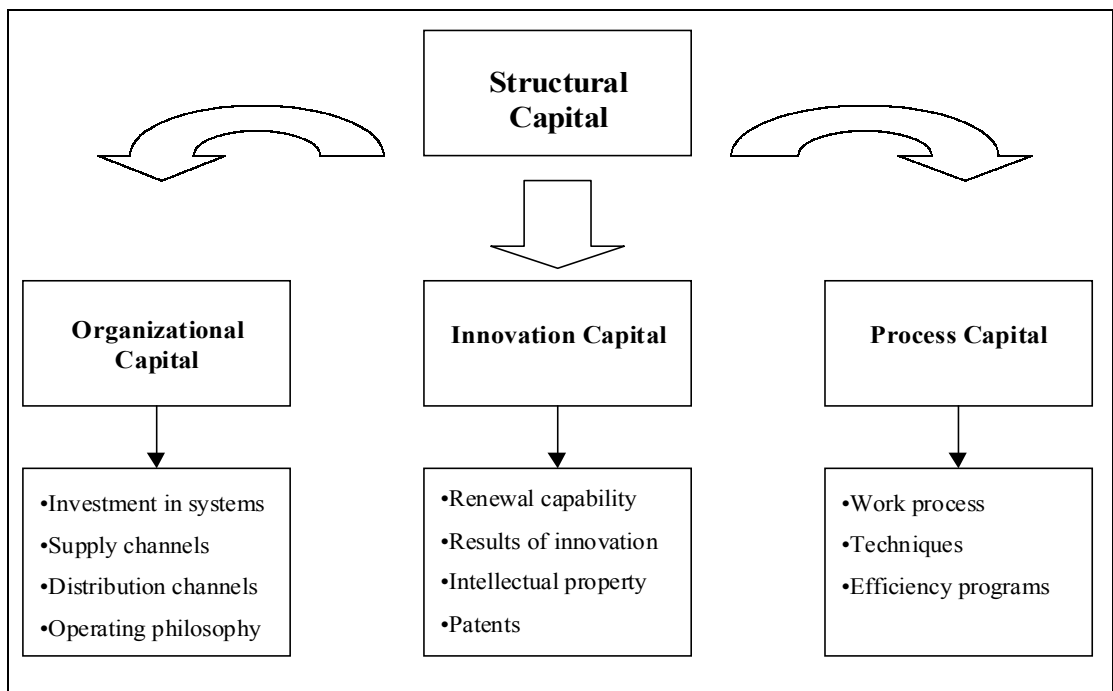


Figure 3-III - Structural Capital

Organizational Capital includes all the existing computer systems, distribution and supply channels as well as the corporate philosophy and culture. In other words: “the

<sup>112</sup> Stewart (1997): p. 132

<sup>113</sup> Edvinsson/Malone (1997): p. 35

<sup>114</sup> Edvinsson/Malone (1997): p. 35

systemized, packaged, and codified competence of the organization as well as the systems for leveraging that capability”.<sup>115</sup> The ability to create new products and services that represent an additional value for the client is called Innovation Capital. The information age is calling for quicker reaction time to market changes and the ability to meet the demands of clients with unlimited access to information. The last building block of Structural Capital is called Process Capital where work processes and efficiency programs are included. An example for Process Capital would be a DIN ISO 9000 quality management system.<sup>116</sup>

### **3.3.3 Customer Capital**

Like Human Capital, Customer Capital cannot be owned by the company. From the three categories Customer Capital has the most obvious value creation potential as the customer is the one paying the bills. Saint-Onge defines customer capital as “the value of its franchise, its ongoing relationships with the people or organizations to which it sells”.<sup>117</sup> For the information age company there is a need to turn what formerly was a simple buyer-seller relationship into a partnership (See Chapter 2.2.2). The following graph shows how a growing intimacy between buyer and seller can grow IC across the three perspectives:

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<sup>115</sup> Edvinsson/Malone (1997): p. 35

<sup>116</sup> Edvinsson/Malone (1997): p. 36

<sup>117</sup> Stewart (1997): p. 143

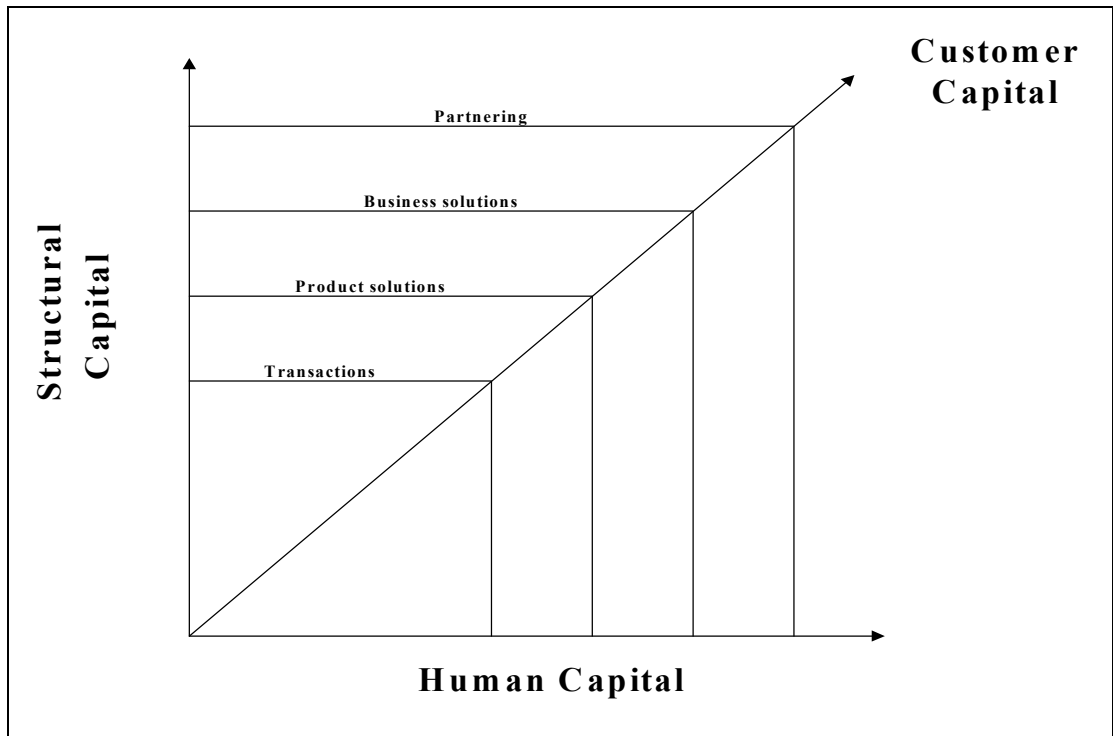


Figure 3-IV - Buyer-Seller Intimacy as a Reason for IC Growth<sup>118</sup>

At the bottom of the three dimensional graph there are simple transactions based on a supplier-customer relationship. At this stage buyer-seller intimacy is low and there is a need to increase IC. The more intimate the relationship gets the more IC is created in the three categories. The final stage is a partnership where the seller agrees to share, e.g. cost savings, with the customer. A partnership focuses on a long-term relationship in order to create superior value for both parties involved. Customers as an active source of value creation have long been neglected by companies but most information age companies are dependent on sound long-term relationships.<sup>119</sup> Especially software companies like SAP, Sun Microsystems or Microsoft are heavily relying on the use of their applications in order to sell additional products and services.

The following case study about Skandia describes an example of how a company found innovative ways to measure performance. According to Skandia's corporate philosophy "the core of IC is a company's future earnings capability with a deeper, broader, and more human perspective than that presented in financial reporting."<sup>120</sup>

<sup>118</sup> Stewart (1997): p. 158

<sup>119</sup> Prahalad/Ramaswamy (2000): p. 65

<sup>120</sup> N.n. (1998): p. 4 (Human Capital in Transformation)

### **Case Study: Skandia AB**

Skandia AB is an international financial services and insurance group with headquarters in Stockholm. In 1998 Skandia had SEK 596 billion in managed assets and over SEK 90 billion in sales.<sup>121</sup> Core businesses of Skandia are long term savings, asset management, and property and casualty insurance. In 1991 Skandia started to place an emphasis on IC as the management felt the need to develop a system to measure the difference between book value and market value of the company because accounting laws and standards did not show the future earnings capabilities of Skandia anymore. This ‘need for future accounting’<sup>122</sup> undermined the decision to appoint Leif Edvinsson the world’s first director of IC in 1991. In 1995, after four years of work, the first IC report was published as a supplement to the annual report. The IC mission at Skandia is defined as follows:<sup>123</sup>

- To identify and to enhance the visibility and measurability of intangible and soft assets.
- To capture and support packaging and accessibility by knowledge transparency and knowledge technologies.
- To cultivate and channel IC through professional development, training and IT networking.
- To capitalize and leverage by adding value through faster recycling of knowledge and increased commercialized transfer of skills and applied experience.

According to Skandia value is created through the interaction of Customer Capital, Organizational Capital (what Stewart calls Structural Capital), and Human Capital.

In order to measure the value creation potential of IC Skandia developed a ‘future-oriented business planning model’ called Skandia Navigator.

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<sup>121</sup> SEK 100 equal US \$10.728 (27<sup>th</sup> August 2000)

<sup>122</sup> Edvinsson (1997): p. 367

<sup>123</sup> Edvinsson (1997): p. 368

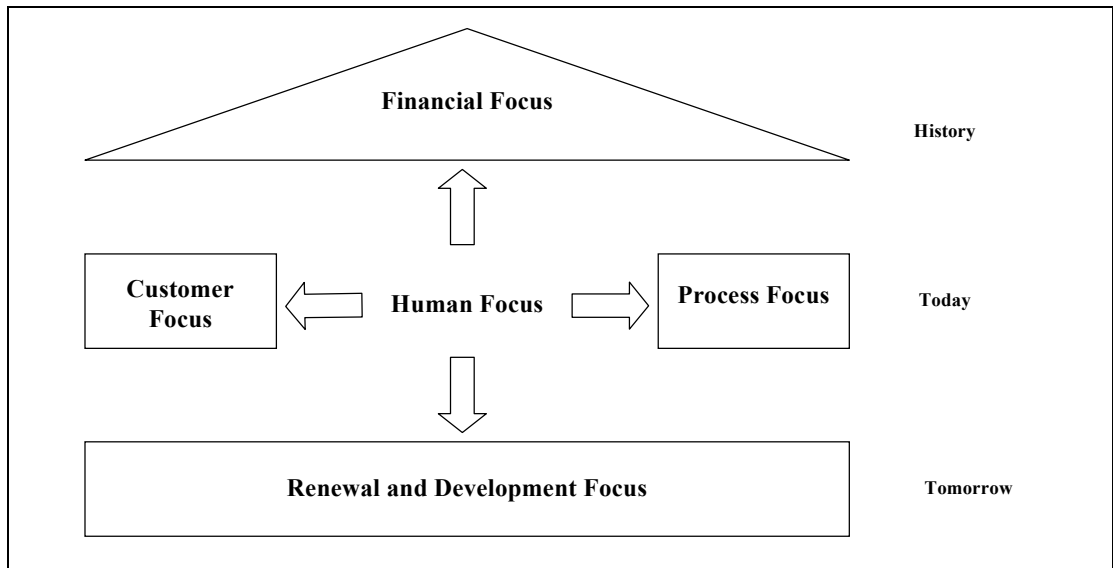


Figure 3-V - Skandia's Navigator<sup>124</sup>

The Navigator can be seen as an individualized scorecard adjusted to the specific needs of the company. Skandia describes the Navigator as a house: the attic atop is the Financial Focus with the balance sheet measuring where the company was at a specific point in time. The walls of the house represent the present company activities measuring Customer Focus and Process Focus. Moving down further one comes to the fundament of the house, the Renewal and Development Focus addressing factors like training and R&D as well as the future competitive environment. In the center of the house lies the Human Focus. It touches all other IC regions and it is the only active force in the organization. The purpose of the Navigator is to support financial measures of the past by measuring present indicators like customer focus and process focus and future value creation potential of renewal and development focus. In recent times the Navigator has also been used for performance appraisal. The Navigator is backed by a computer based information system called Dolphin and a list of indicators: the IC Index.<sup>125</sup> The IC Index aggregates various IC measures in order to show the dynamic development of IC over time. Furthermore, Skandia has built a research facilities called Skandia Future Centers (SFC) in exquisite locations like on the island of Vaxholm in Stockholm's archipelago. The primary idea of the SFCs is to bring heterogeneous groups of people together in order to discover emerging trends. Skandia defines the objective of the SFCs as follows: "The goal is to identify

<sup>124</sup> Edvinsson/Malone (1997): p. 68

<sup>125</sup> Roos/Reos/Dragonetti/Edvinsson (1997): pp. 78

such trends as soon as possible, in order to ensure that Skandia adapts to and hedges itself against the future.”<sup>126</sup>

Chapters 2 and 3 described the transition from the industrial era to a new digitalized, knowledge and service oriented society. The most distinguishing aspect of the information age is the dominance of IC. Businesses have to turn themselves into learning organizations as well as find new ways to measure performance in order to prosper in a new strategic environment.<sup>127</sup>

The BSC concept that is going to be presented in Chapter 4 is an approach that integrates a new strategic management system fostering continuous learning as well as new ways to evaluate the performance of companies.

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<sup>126</sup> Roos/Reos/Dragonetti/Edvinsson (1997): p. 121

<sup>127</sup> Bontis (1998): p. 64

## 4 Performance Measurement with the Balanced Scorecard

Chapters 2 and 3 outlined the changing business environment with its need for new strategies and the call for a new performance measurement system. Performance measurement can be defined as systematic evaluation of company performance by integrating qualitative and quantitative data into a number based system of key business ratios.<sup>128</sup> In the first issue of the Harvard Business Review (HBR) in 1992 accounting Professor Robert Kaplan and consultant David Norton published the results of a research study on innovative performance measurement systems in US companies under the title ‘The Balanced Scorecard – Measures That Drive Performance’.<sup>129</sup> The research project outlined the fact that companies used measurement systems that contained other measures than the traditional financial ones. Kaplan/Norton identified four distinct perspectives that were frequently used:<sup>130</sup>

1. Financial perspective
2. Internal Business Process perspective
3. Learning and Growth perspective
4. Customer perspective

They named this system Balanced Scorecard (BSC) in order to emphasize “the balance provided between short- and long-term objectives, between lagging and leading indicators, and between external and internal performance perspectives”.<sup>131</sup>

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<sup>128</sup> Fleischauer (1998): p. 1

<sup>129</sup> Kaplan/Borton (1992): pp. 71

<sup>130</sup> Kaplan/Norton (1992): p. 72

<sup>131</sup> Kaplan/Norton (1996): p. VIII

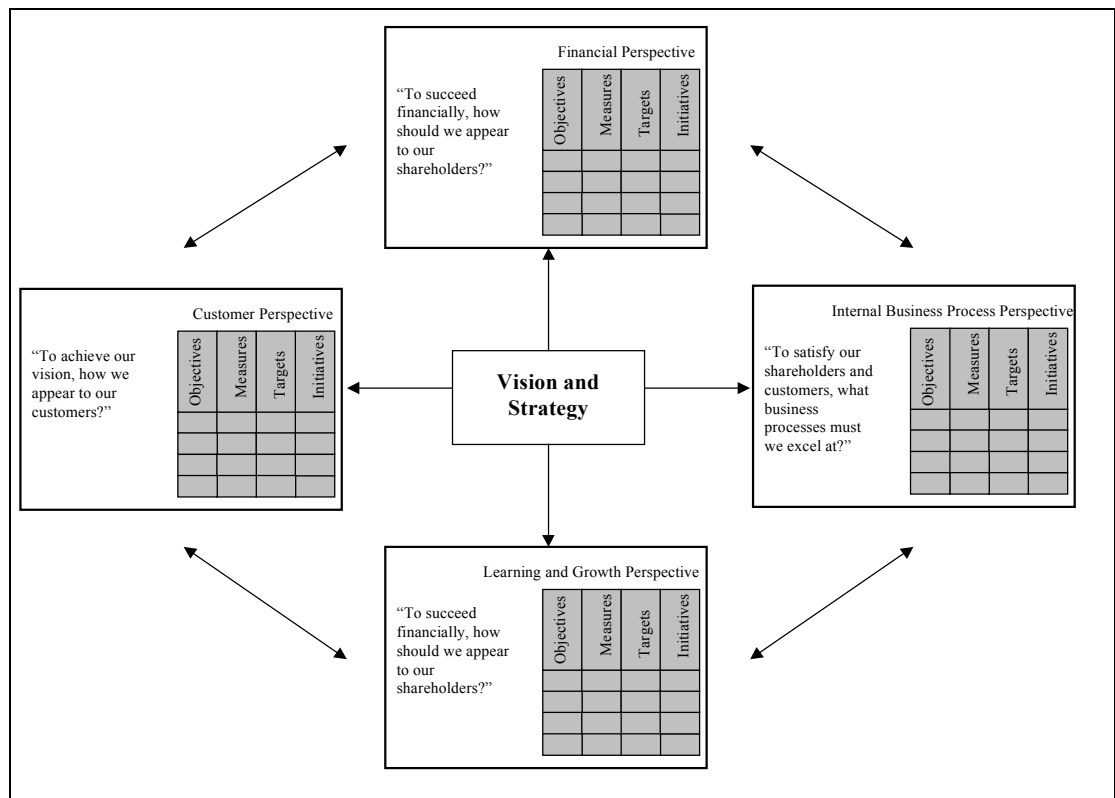


Figure 4-I - The Balanced Scorecard<sup>132</sup>

The study was extended and two more articles ‘Putting the Balanced Scorecard to Work’<sup>133</sup> in 1993 and ‘Using the Balanced Scorecard as a Strategic Management System’<sup>134</sup> in 1996 about the results of the project were published before in the end of 1996 the book ‘The Balanced Scorecard – Translating Strategy into Action’ appeared. The main idea of the BSC is based on the assumption that non-financial data can deliver information about the future development of a business before it becomes financially visible.

It is intended to show that the BSC is a holistic concept for strategic performance measurement. Based on each company’s individual vision and strategy, measures<sup>135</sup> across the four different perspectives are agreed upon. Hence, the introduction of a BSC is a top-down process beginning with the definition of the vision and strategy by top-management. These are then translated into measures for each SBU containing outcome measures (lagging indicators) as well as drivers of future performance (leading indicators).<sup>136</sup> “The Balanced Scorecard is about empowering

<sup>132</sup> Kaplan/Norton (1996): p. 9

<sup>133</sup> Kaplan/Norton (1993): pp. 134

<sup>134</sup> Kaplan/Norton (1996): pp. 75

<sup>135</sup> Measures are described as “compact descriptions of observations, summarized in numbers or words”. They can concern a particular subject, such as the profitability of a company.

Olve/Roy/Wetter (1999): p. 123

<sup>136</sup> Kaplan/Norton (1996): p. 10



people throughout the organization, enabling them to focus on what they should be doing to contribute to the corporate vision.”<sup>137</sup>

In this chapter the four perspectives of the BSC are going to be presented in detail in order to show the individual contribution of each perspective to the concept. Furthermore, the relevance of the BSC as a strategic management system that goes beyond mere performance measurement will be outlined. Finally, a critical look at the BSC will be taken.

#### ***4.1 Financial Perspective***

As information age competition is technology and customer driven rather than product focused, critics have proposed to entirely abandon financial measures to evaluate performance.<sup>138</sup> Their reasoning is based on the idea that improvement in operations such as customer satisfaction, superior quality, or shorter cycle time will automatically lead to an improvement in financial results. But in many companies operational progress fails to be reflected in the bottom-line for various reasons.<sup>139</sup> The most obvious is the fact that businesses cannot shift the cost for these improvements to the customer. Furthermore, quality improvement programs and shorter cycle times might create excess capacity which cannot be sold in case demand is flat or declining. Hence, “the financial objectives serve as the focus for the objectives and measures in all the other scorecard perspectives”.<sup>140</sup>

But financial targets vary across the different stages of the business life cycle of every SBU. Businesses in the early stage of their life cycle (growth stage) need considerable financial resources in order to extend sales and market share. As they operate with negative cash flows and low return-on-capital-employed (ROCE), appropriate measures to evaluate SBU performance are percentage growth rates in sales or revenues.<sup>141</sup> Businesses in the sustain stage of the cycle are following the goal of maintaining and eventually growing market share. A sound return on every dollar invested is expected at this stage so financial measures will be addressing profitability such as EVA, ROI, and ROCE. Reaching the harvest stage a business unit does not require significant investments anymore. The main emphasis at this

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<sup>137</sup> Hoffecker/Goldenberg (1994): p. 8

<sup>138</sup> Kaplan/Norton (1996): p. 32

<sup>139</sup> Kaplan/Norton (1996): p. 32

<sup>140</sup> Kaplan/Norton (1996): p. 47

<sup>141</sup> Kaplan/Norton (1996): p. 48

stage is on short-term payback of any expense made, measured through cash flows or reduction of working capital.<sup>142</sup>

This differentiation becomes especially relevant in information age businesses that are currently facing a long growth stage period requiring high investments as addressed in Chapter 2 and 3.

In addition to the financial measures at different stages of a business life cycle Kaplan/Norton have identified three different kinds of financial objectives that influence business strategy:<sup>143</sup>

1. Revenue growth and mix: increase goods and services range in order to expand the customer target group.
2. Cost reduction/productivity improvement: lower direct and indirect costs and use resources beyond the frontiers of each business unit.
3. Assets utilization/investment strategy: lower working capital for a given business, increase utilization of fixed asset base and sell off assets that do not provide adequate returns.

Jürgen Weber and Utz Schäffer from Germany's 'Wissenschaftliche Hochschule für Unternehmensführung' in Koblenz stress the double role of the financial perspective: on the one hand the definition of the financial goals of the strategy and on the other hand the reflection of improvements in the other three perspectives.<sup>144</sup> Shareholder-value related measures like ROCE or Cash Flow remain as the ultimate measures supported through measures from the other three perspectives.<sup>145</sup> Therefore, Olve, Roy, and Wetter plead to rename the financial perspective to financial and shareholder perspective in order to put an emphasis on the ownership aspect to performance measurement. Owners might have more detailed goals than just the maximization of returns such as social or environmental contributions to the community or in case of a corporate holding structure the synergy potential of market expansion and cross-selling possibilities between different affiliates.<sup>146</sup> The essence of this paragraph is that financial measures are still relevant as they reflect what "the company's strategy implementation and execution are contributing to bottom-line improvement".<sup>147</sup>

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<sup>142</sup> Kaplan/Norton (1996): p. 49

<sup>143</sup> Kaplan/Norton (1996): p. 51

<sup>144</sup> Weber/Schäffer (1999): p. 4 and 7

<sup>145</sup> Horváth/Kaufmann (1998): p. 39

<sup>146</sup> Olve/Roy/Wetter (1999): p. 60

<sup>147</sup> Kaplan/Norton (1992): p. 77

## 4.2 Customer Perspective

Industrial age companies were generally acting upon the idea that a good product was easy to sell because of its features, be it quality, price or design, so resources were directed towards internal capabilities in order to improve these features. The customer as the most obvious source of value to a business (being the one paying the bills, see Chapter 3.3.3<sup>148</sup>) was long neglected. This perception actually shifted in the end of the industrial era but in the information age a customer focus gains more relevance than ever before due to the influence of the internet and new communication technologies that shift a significant part of the bargaining power to the buyer (see Appendix 1). In addition to the customer target group it is essential to identify a specific market segment to concentrate on where the BSC is used as a means to specify the customer objectives in that very segment.<sup>149</sup> According to classical marketing theory the core measures of the customer perspective can be divided into five groups:

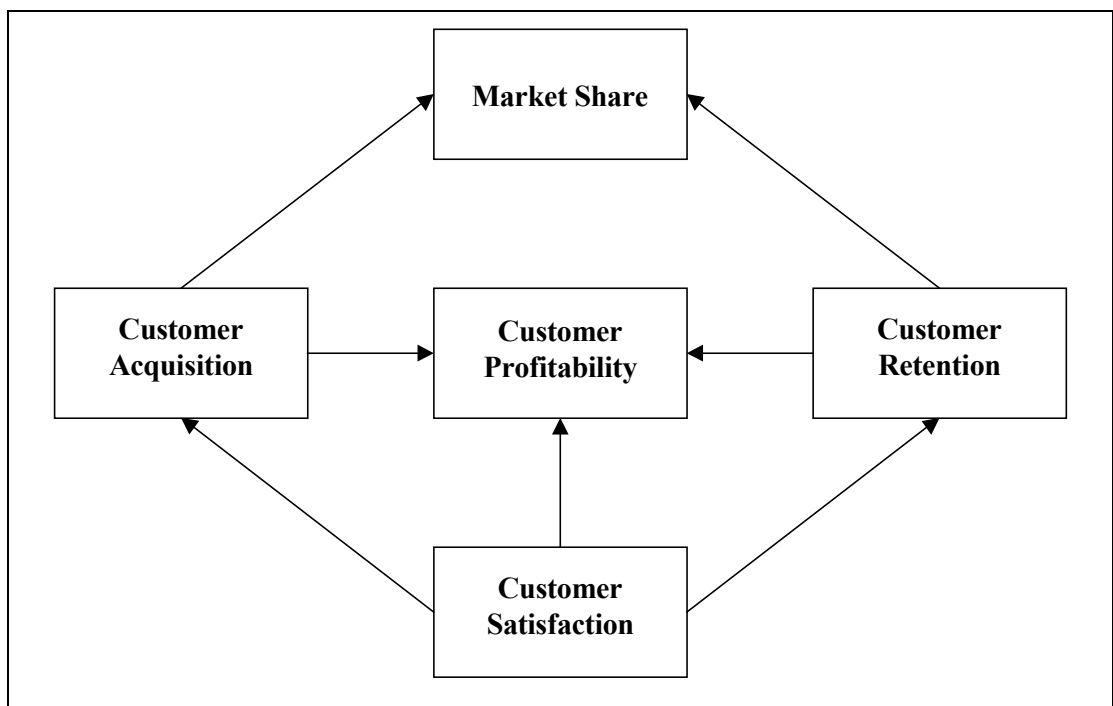


Figure 4-II - Core Measures of the Customer Perspective<sup>150</sup>

But the measures addressed are lagging indicators meaning that problems occurring in the initiatives taken to increase market share or customer satisfaction are not becoming visible unless it is impossible to affect the result. Moreover, the core

<sup>148</sup> Stewart (1999): p. 143

<sup>149</sup> Kaplan/Norton (1996): p. 64

<sup>150</sup> Kaplan/Norton (1996): p. 68; Kotler/Armstrong (1994): pp. 14-15 and pp. 551

measures do not provide a recipe for the front-line employees how to achieve the intended result. In order to bridge this gap it is necessary to measure the customer value propositions (CVP), i.e. the performance drivers of the customer perspective. The CVP can be defined as the image that businesses provide by selling their products and services. CVPs can be grouped into:<sup>151</sup>

- Product/services attributes: measured, e.g. through price or quality.
- Customer relationship: measured by delivery or response time and measuring partnerships through levels of electronic data interchange or shared designs.
- Image and reputation: measured by repeated sales and customer feedback.

Olve et al. even go as far as to call the customer perspective “the heart of the scorecard”.<sup>152</sup> In the short as well as in the long run businesses need to create an added value to their customers in order to generate revenue. The most cost efficient processes and production methods will not guarantee the future survival of a company if the products and services are not purchased by the customer.

### ***4.3 Internal Business Process Perspective***

After choosing the objectives for the Financial and Customer Perspectives the company develops the measures for the Internal Business Process Perspective. This part of the scorecard helps managers to steer a business towards the achievement of shareholder and customer goals. Traditional performance measurement focused on “controlling and improving existing responsibility centers and departments”<sup>153</sup> while the BSC concept helps the company to identify entirely new processes in order to achieve customer and shareholder value. Nowadays, every company improves quality, shortens cycle time, and modernizes design but it is the challenge of every business to continuously reinvent processes to gain a competitive advantage in the marketplace. Kaplan/Norton give an example where an engineering company had a low ROCE (one of their declared financial measures) due to clients delaying payments by more than a hundred days. All measure undertaken to shorten the collection process of accounts receivable did not deliver a satisfying result. When managers linked the scorecard objective ‘improved ROCE’ to an Internal Business

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<sup>151</sup> Kaplan/Norton (1996): p. 73

<sup>152</sup> Olve/Roy/Wetter (1999): p. 61

<sup>153</sup> Kaplan/Norton (1996): p. 93

Process measure called ‘collect-end-of-project-payments-faster’<sup>154</sup> it became evident that the problem did not lie in the accounts receivable department. The clients did not need more reminders of the invoice or were unaware of deadlines but in their point of view the project conducted was not yet completed. Hence, the whole problem was a misunderstanding between the project managers and the client representative. The outcome was an improved communication between the project leaders and the client which lead to a higher customer satisfaction and an increased ROCE.

A generic value chain model can be used to identify objectives across different stages of the internal business process perspective.

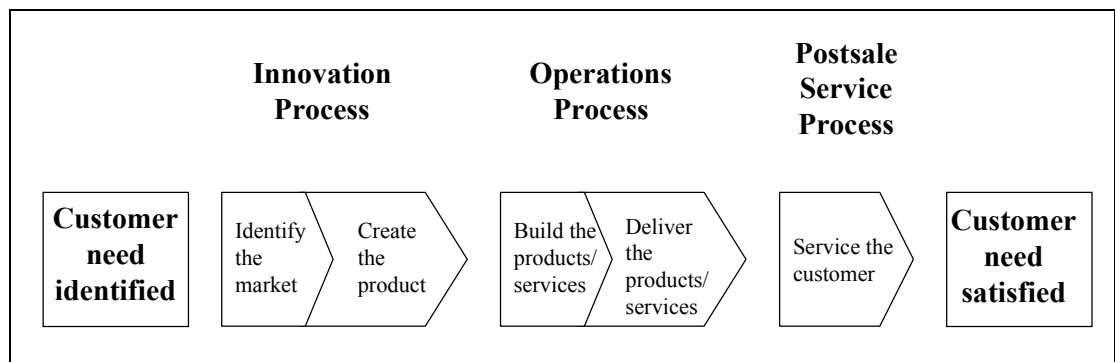


Figure 4-III – The Internal Business Process Perspective’s Generic Value Chain<sup>155</sup>

The value chain consists of three parts: the innovation process, the operation process and the post-sale service process. Recently, the innovation process gained relevance as information age businesses like software companies are facing long and costly research and development cycles. Examples of measures for the innovation process are:<sup>156</sup>

- Percentage of sales from new products.
- R&D time and time to market vs. competitors.
- Break even time (BET).<sup>157</sup>

The second part of the internal business perspective is the operations process measured by costs such as labor or machine efficiency or purchasing prices. However, the wave of total quality management processes lead to add non-financial measures such as quality or cycle time. The final part of the value chain is the post-

<sup>154</sup> Kaplan/Norton (1996): p. 51

<sup>155</sup> Kaplan/Norton (1996): p. 96

<sup>156</sup> Kaplan/Norton (1996): pp. 100

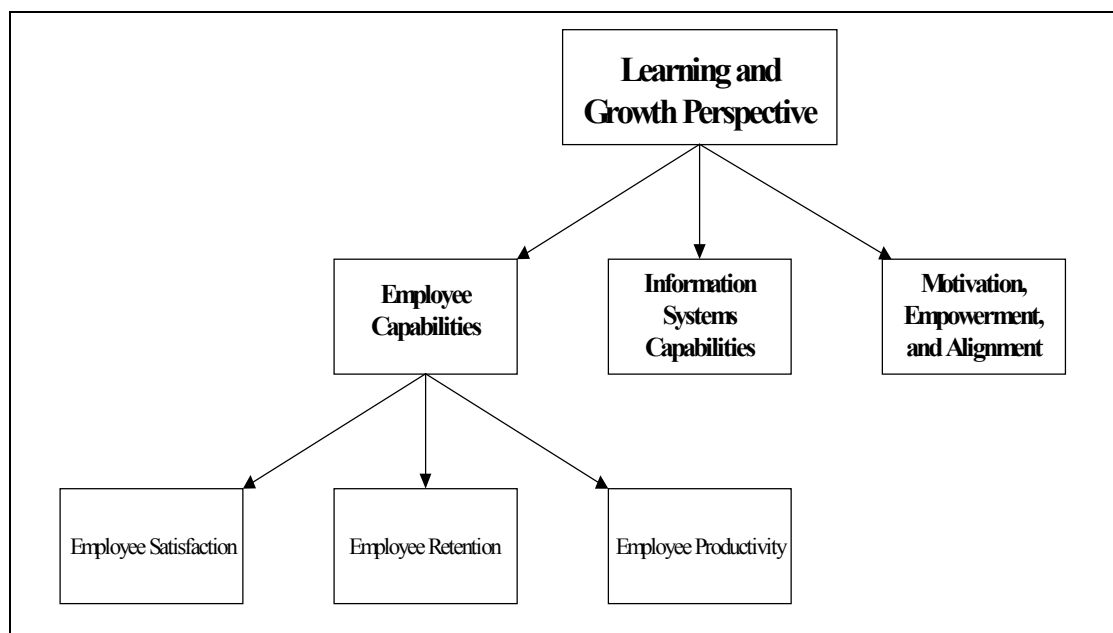
<sup>157</sup> Break even time is a metric introduced by Hewlett Packard. It measures the time from the beginning of an R&D processes until the product has been marketed and generated enough revenue to pay back the initial investment. BET incorporates three elements in one measure, i.e. costs of the R&D process, it stresses profitability across the whole process, and it is denominated by time which leads to a quicker introduction of new products to the market (Kaplan/Norton (1996): p. 102).

sale service containing activities like repair, warranties, and payment processes measured through time (response time to failures), quality, or cost metrics.

But it is not the sole idea of the BSC to identify new ways of measuring performance. Companies have a variety of internal measures that are directed towards processes improvement, e.g. DIN ISO 9000 certificates provide a sound structure of measures to observe quality. In this case the BSC serves as a decision tool to select the right existing measures and link them to the other three perspectives.

#### ***4.4 Learning and Growth Perspective***

In Chapter 2 an emphasis was placed on the generation and management of IC. The Learning and Growth Perspective of the BSC provides the infrastructure for IC from an organizational perspective. Investments in people and systems do not connect with the goals of short-term financial performance so other measures for investments into the future survival of the business have to be found. The three categories of the Learning and Growth Perspective are being described as follows:



**Figure 4-IV - The Learning and Growth Perspective**

As knowledge was identified as the scarce resource and employees are the main source of corporate knowledge it becomes particularly important to emphasize the management and measurement of employee capabilities. There are three core measures for employee capabilities, i.e. employee satisfaction, employee retention and employee productivity. The most important measure in this triad is employee

satisfaction measured through decision involvement, performance appraisal, or access to information. Employee retention is the category where employee satisfaction is directly reflected measured by employee turnover in percent. Considering the fact that investments in IC usually pay off in the long run it is necessary to keep employee turnover within the aspired limits. Finally, employee productivity can be measured through revenue generated per employee.<sup>158</sup>

The second column of the Learning and Growth Perspective is information systems capabilities. The underlying idea here is that employees need access to information about customers, business processes and financial consequences of their decisions on a just-in-time basis. Lotus Notes and other groupware applications allow for an immediate access to data. Possible measures are percentage of front-line employees with customer contact who have online access to information.

Motivation, empowerment, and alignment serves as the third column of the Learning and Growth Perspective. It is intended to measure how companies handle employee suggestions for improvement (measured through cost savings, reduced defect rates, or shortening delivery time) and how objectives of each individual employee and teams are aligned with the corporate strategy.

#### ***4.5 The BSC as a Strategic Management System***

After the description of how to construct a BSC this paragraph is intended to show why the BSC is not just another management fad but a concept to translate a company's vision and strategy into a measurement system.<sup>159</sup> With the BSC it is possible to create a shared understanding about the future path of the business. "Despite the intentions of those at the top, lofty statements about becoming 'best in class', 'the number one supplier' or 'an empowered organization' don't translate easily into operational terms that provide useful guides to action at the local level."<sup>160</sup> The BSC helps top management to break strategy down to the SBU and further down to the individual employee. Through this process individual objectives of the employees are aligned with the overall corporate strategy.

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<sup>158</sup> The problem of having a ratio like revenue per employee as an objective is that a better result can be achieved in two ways: the first is to increase the nominator without increasing the denominator, in this case revenues would be increased. The second possibility is to decrease the denominator, i.e. downsizing which might lead to short-term improvements but can be harmful for future growth and motivation. Kaplan/Norton (1996): p. 131

<sup>159</sup> Kaplan/Norton (1996): p. 147

<sup>160</sup> Kaplan/Norton (1996): pp. 75-76

#### 4.5.1 Cause-and-Effect Relationships

“A strategy is a set of hypotheses about cause and effect. The measurement system should make the relationships (hypotheses) among objectives (and measures) in the various perspectives explicit so that they can be managed and validated.”<sup>161</sup>

Measures across all four perspective have to be focused on achieving a specific goal. Kaplan/Norton exemplify the chain of cause-and-effect relationships as follows:<sup>162</sup>

A given SBU has established ROCE as a measure for the financial perspective. A high ROCE is driven by customer loyalty which is in turn affected by on-time delivery (OTD) which customers perceive as a value-added service. Thus, customer loyalty and OTD are included into the BSC as measures for the customer perspective. Now, it is necessary to link the customer perspective to the internal business perspective. Possible factors that influence OTD are quality and cycle time which are then included into the scorecard. Finally, the question remains how quality can be improved and how cycle time can be reduced from the learning and growth perspective. A proposed scorecard measure here is employee skills.

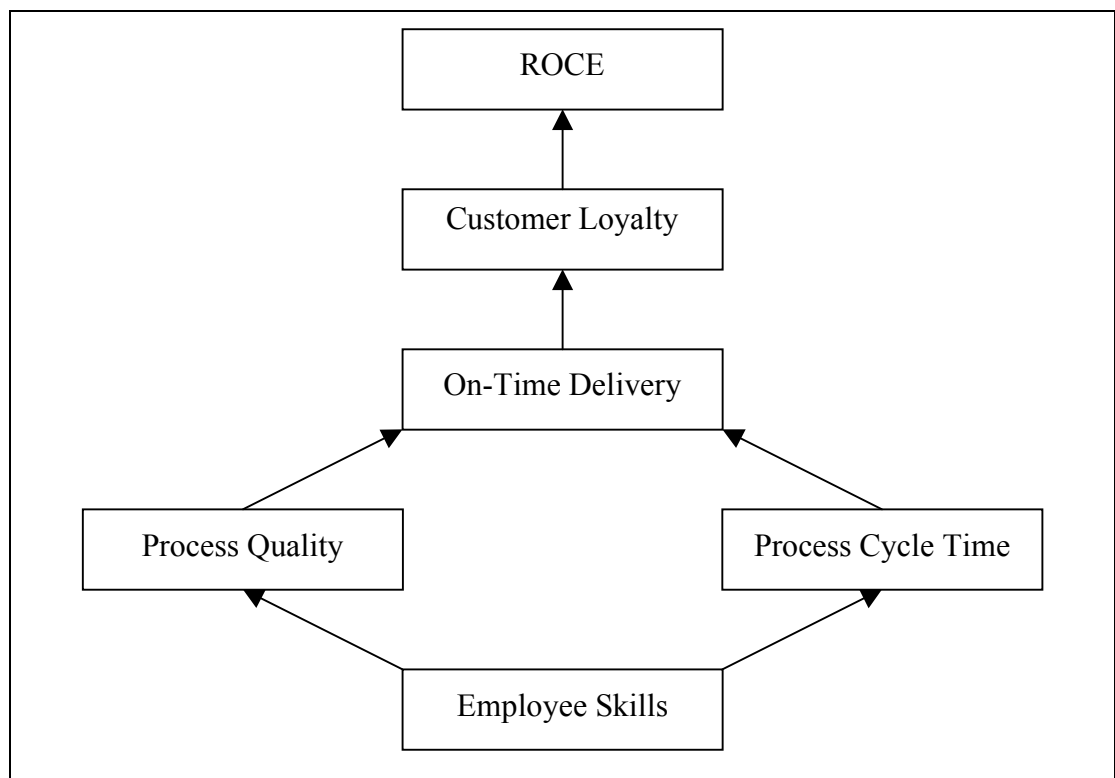


Figure 4-V – Cause-and-Effect-Relationships<sup>163</sup>

<sup>161</sup> Kaplan/Norton (1996): p. 30

<sup>162</sup> Kaplan/Norton (1996): p. 31

<sup>163</sup> Kaplan/Norton (1996): p. 31



Another important issue about the BSC is the processes and the discussions that lead to the agreement on a set of measures and link them through the a.m. set of cause-and-effect relationships.<sup>164</sup> The construction of the scorecard is an evolutionary process which ideally involves top management and a project team from all hierarchical levels of the company. With view to the importance of cause-and-effect relationships, all researchers stress that it does not lead to a satisfying result to have a middle manager from the controlling department write down a couple of measures. The BSC is used to identify certain outcome measures (lagging indicators) and performance drivers (leading indicators). The process of constructing the scorecard helps the business to establish the perfect mix between these measures as outcome measures communicate the goals to be achieved and show whether operational improvements can be translated into long-term competitive advantages. Usually, these outcome measures are accepted industry standards which will not differ substantially from other companies operating in that specific field. Performance drivers in turn are unique for each SBU and show how outcomes are achieved. These leading indicators show how organizations differ from each other with respect to their future earning potential.<sup>165</sup> They are reflected in short-term operational improvements but fail to show whether these lead to a successful implementation of the strategy. Furthermore, performance drivers provide management with a feed-forward, i.e. they enable the company to initiate strategic change before the bottom-line is affected.<sup>166</sup>

#### **4.5.2 Implementing a Balanced Scorecard**

Industrial age companies were characterized by implementing strategies through command and control.<sup>167</sup> Employees were instructed with respect to their specific job and the strategy was communicated (if at all) only selectively. With the growing sophistication of employees, top-management needs to communicate the big picture through all hierarchies of a business. The following paragraph outlines how the BSC can be used as a tool to implement and control strategy.

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<sup>164</sup> Olve/Roy/Wetter (1999): p. 122

<sup>165</sup> Norton/Kappler (2000): p. 17

<sup>166</sup> Horváth/Kaufmann (1998): p. 42

<sup>167</sup> Kaplan/Norton (1996): p. 198

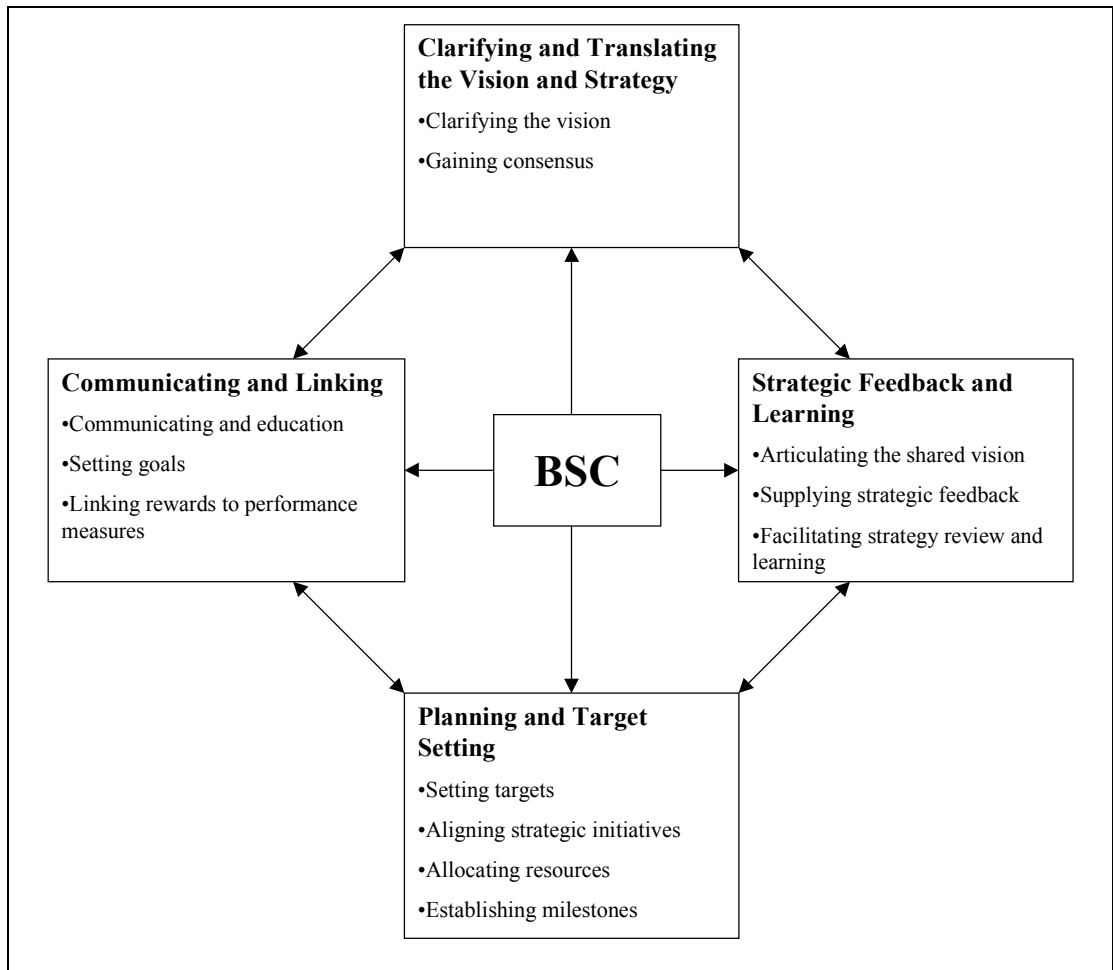


Figure 4-VI - The BSC as a Strategic Framework for Action<sup>168</sup>

Strategy implementation can be grouped in three steps:

1. Clarifying and translating vision and strategy.
2. Communicating and linking.
3. Planning and target setting.

The fourth step serves as a controlling instrument:

4. Strategic feedback and learning.

The implementation process is an iterative process involving inter-disciplinary teams in order to gain consensus about the objectives chosen for each perspective. It is necessary to limit the number of measures to four to seven differentiators, i.e. measures that provide the company with a competitive advantage in the market.<sup>169</sup> Having only sixteen to twenty eight measures allows for a concentration on the most important aspects as well as it helps to avoid information overload.

<sup>168</sup> Kaplan/Norton (1996): p. 11

<sup>169</sup> It does not make sense for a grocery store chain to include hygiene as a measure into their BSC as it is a necessary factor but not something that substantially differentiates them from competition. Horváth/Kaufmann (1998): p. 46

#### **4.5.2.1 Clarifying and Translating Vision and Strategy**

The BSC implementation process needs to be steered by top-management. The first step is to gain consensus about the mission and vision of the company. Thereafter, top-management, in cooperation with the BSC project team, can formulate the strategy and clarify the role of the BSC within the company. Attention has to be paid that it is feasible to execute the strategy, that the strategy is linked to SBU goals, that the cost of implementation is not subject to short-term budgets, and that feedback is not tactical (i.e. focused on short-term performance) but strategic.<sup>170</sup> These are the factors that, according to the original BSC methodology, are essential to create the basis for organizational change. The BSC is a management and not only a measurement system. Kaplan/Norton emphasize that the measurement system is “a powerful motivational and evaluation tool”<sup>171</sup> but should only serve as a concept to support the overall goal: “the creation of a strategic management system that helps executives implement and gain feedback about their strategy.”<sup>172</sup> Here it has to be mentioned that the BSC can be applied at different organizational levels. In a highly differentiated conglomerate it is more efficient to create a BSC for each business while a holding BSC serves clearly structured corporations. Recently, the BSC has also gained relevance in public companies as investor relations departments found themselves confronted with analysts starting to address the BSC model.<sup>173</sup>

#### **4.5.2.2 Communicating and Linking**

For a BSC to achieve maximum impetus the vision and strategy have to be communicated throughout the whole company. The a.m. alignment of individual goals with the corporate strategy is necessary to reach a shared vision and a common direction.<sup>174</sup> Once more it is necessary to remember that the implementation of the BSC is an evolutionary process and has to be phased in over three steps.

1. Communication and education programs: an internal marketing campaign has to “win the hearts and minds of the people”.<sup>175</sup> Technological infrastructure such as Lotus Notes can serve as an additional opportunity to gain commitment about BSC objectives.<sup>176</sup> Also external parties can be informed about the BSC. In Chapter 3 the Skandia Navigator is described

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<sup>170</sup> Kaplan/Norton (1996): p. 196

<sup>171</sup> Kaplan/Norton (1996): p. 272

<sup>172</sup> Kaplan/Norton (1996): p. 272

<sup>173</sup> Horváth/Kaufmann (1998): p. 41

<sup>174</sup> Kaplan/Norton (1996): p. 200

<sup>175</sup> Kaplan/Norton (1996): p. 202

<sup>176</sup> Kaplan/Norton (1996): p. 206

where a company voluntarily discloses scorecard objectives and measures to the public.

2. Goal-setting programs: team and personal goals have to be linked to scorecard objectives.
3. Reward system linkage: performance appraisal is linked to the achievement of scorecard objectives. With respect to the changing dynamics in the information age, companies have to find the right mix of extrinsic and intrinsic motivation to gain internal support for the BSC.<sup>177</sup>

Considering the growing importance of IC with its changing economics and its high mobility, the communication phase of a BSC implementation is the most crucial step because people will simply leave the company when they do not feel treated with the right care concerning organizational change.

#### ***4.5.2.3 Planning and Target Setting***

After defining the personal and SBU goals a business has to bring financial and physical resources into alignment with the strategy. This phase has four steps in order to use the BSC “in an integrated long-range strategic planning and operational budgeting process”:<sup>178</sup>

1. Setting of stretch goals: Here the BSC represents a sound concept as performance measures are related across the four perspectives.
2. Identification of strategic initiatives: This step helps managers to decide whether existing initiatives (e.g. total quality management programs (TQM)) will help to achieve BSC objectives or whether totally new initiatives (e.g. reengineering) are needed.
3. Identification of critical cross-business initiatives: The purpose of this step is the identification of synergy potential with other SBUs such as knowledge sharing, cost sharing for marketing efforts, or sharing of physical resources in order to reach economies of scale.<sup>179</sup>
4. Linking annual resources allocation and budgeting: Traditional budgeting methods like zero-base budgeting<sup>180</sup> treat the budgeting process separately from the strategic planning process. The BSC helps to link “short-term targets for financial measures such as sales, operating expenses, gross

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<sup>177</sup> Bühner/Akitürk (2000): pp. 45

<sup>178</sup> Kaplan/Norton (1996): p. 224

<sup>179</sup> Kaplan/Norton (1996): p. 244

<sup>180</sup> Bergeron (1979): pp. 5

margins, general and administrative expenses, operating margin, net profit, cash flow and ROI to the long-term strategic path”.<sup>181</sup>

Nowadays, a variety of initiatives for strategic change are implemented. Most of them, initiated by academics or consulting companies, promise the basis for a competitive edge in the market. These change programs often lead to disappointing results as managers find it difficult to link these initiatives to the achievement of their strategic goals. It is the purpose of the planning and target setting process of the BSC to set priorities and allocate existing resources to the long-term strategic objectives.

#### **4.5.2.4 Strategic Feedback and Learning**

Historically, control systems were designed to fit industrial age competition. Strategic initiatives were launched by top-management and directed to the allocation of resources. Executives had a clear vision of where the business was heading and objectives were not changed along the way. A single-loop feedback process was designed to recognize every deviation from the planned result as a defect but never questioned whether the planned result was still a desirable one.<sup>182</sup> But the dynamics of the information age call for a more flexible feedback process that takes the dynamics of a constantly changing business environment into account. The BSC concept represents a form of double-loop feedback fostering strategic change if necessary.<sup>183</sup> Double-loop feedback or learning constantly reflects whether underlying assumptions about a company’s future path are still valid. Effective strategic learning consists of three parts:<sup>184</sup>

1. Shared strategic framework: As mentioned before the vision has to be communicated efficiently and shows how individual objectives contribute to the whole strategy.
2. Strategic feedback: “A strategic feedback system should be designed to test, validate, and modify the hypotheses embedded in a business unit strategy.”<sup>185</sup> The system is used to test the validity of cause-and-effect relationships, i.e. it shows whether correlations exist between the performance drivers and associated outcome measures chosen.

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<sup>181</sup> “If the target-setting process of the long range plan is conducted appropriately, the short-term budgeting process simply involves translating the first year of five-year plan into operational budgets for strategic objectives and measures in the four scorecard perspectives.” Kaplan/Norton (1996): p. 248

<sup>182</sup> Kaplan/Norton (1996): p. 251

<sup>183</sup> Kaplan/Norton (1993): p. 142

<sup>184</sup> Kaplan/Norton (1996): p. 252

<sup>185</sup> Kaplan/Norton (1996): p. 254

3. Team problem solving: Team orientation is one of the most crucial aspects of the BSC. Cross-functional teams are formed in order to discuss customer requirements (historically a function of the marketing department). This form of dialogue can lead to an efficient double-loop learning process supported through technological progress. “Groupware technologies like Lotus Notes permit a defined group of people to work continually on topics of shared interests and responsibility. Some executive groups have begun to embrace this technology-based approach to management.”<sup>186</sup>

The innovative aspect of this part of the BSC is the platform it provides for organizational learning, especially at the executive level. The measurement part of the BSC helps to translate visions that formerly remained too complex and nebulous too understand for all employees into data. Furthermore, the BSC intends to create a climate within an organization that fosters organizational learning through a constructive handling of failures as ‘productive mistakes’.<sup>187</sup>

#### ***4.6 A Critical Look at the Balanced Scorecard***

A major part of the criticism on the BSC is based on the assumption that the BSC is:

- a) nothing more than another controlling tool or system of key business ratios.
- b) a framework provided by academics that does not leave room for interpretation and customizing to each company’s specific needs.

Especially controlling professors criticize the current BSC euphoria as a time consuming and costly task that keeps controllers from concentrating on their daily business. The heavy involvement of management consultants from outside the organization appears to be a proof that a BSC introduction is used as a source for revenue generation for professional service companies.<sup>188</sup> But neither the involvement of large parts of the controlling department is a prerequisite of a BSC introduction nor is there a need for immediate action on the controller’s side. Moreover, it is explicitly stated that the BSC is not a mere controlling instrument and that implementation should involve a task force from all parts of the organization in order to make the corporate vision and strategy transparent throughout a company.

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<sup>186</sup> Kaplan/Norton (1996): p. 267

<sup>187</sup> Dimmeler/Sauer (2000): p. 42

<sup>188</sup> Klingebiehl (1999): p. 123

The reasoning that controllers feel pressured as possible competitors already use a BSC might be a valid one but it is important to take up to six months time to outline the framework of the scorecard. Finally, the claim that the focus on the BSC was initiated by consultancies is only partly true as every kind of organizational change nowadays involves the help of external consultants.

The second line of reasoning that the BSC does not leave room for interpretation is invalidated by Kaplan/Norton themselves. They emphasize that the four perspectives of the scorecard “should be considered a template not a straitjacket”.<sup>189</sup> There is no empirical evidence that four perspectives are sufficient. Each company has to identify the perspectives needed for its specific competitive environment. A narrow interpretation of Kaplan/Norton’s BSC concept facilitates comparisons between companies and therefore the implementation but companies have to take into account that a BSC implementation is a process unique for each organization.<sup>190</sup> Therefore, it is not wise to adopt the BSC as described in management literature but customize it to a company’s requirements as the implementation phase is a costly and time-consuming process.<sup>191</sup> Moreover, the iterative process of defining the measures across the different perspectives is as valuable as the resulting scorecard itself and helps to gain commitment from employees throughout the organization. Horváth/Kaufmann stress the main benefits of the BSC as follows:<sup>192</sup>

- The BSC leads to a reduction of complexity as the number of measures is limited.
- The BSC helps to translate the overall corporate strategy into operational measures.
- The BSC fosters the identification of cause-and-effect relationships that link measures across the four perspectives to shareholder value related measures.

The BSC is not replacing existing management information systems or key business ratio systems. With respect to competitiveness in the information age the BSC helps to reduce data overload and creates a commitment among all employees of an organization.<sup>193</sup>

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<sup>189</sup> Kaplan/Norton (1996): p. 34

<sup>190</sup> Weber/Schäffer (1999): p. 13

<sup>191</sup> Weber (1998): p. 3

<sup>192</sup> Horváth/Kaufmann (1998): p. 48

<sup>193</sup> Weber/Schäffer (1998):p. 3

So far experiences with BSC implementations in the corporate environment are positive. A survey conducted among fifty German companies yielded that 50% of the companies were extremely satisfied, 40% were satisfied and only 10% were not satisfied with the result of a BSC introduction.<sup>194</sup> Reasons for the implementation of a corporate BSC were:

- Strategy implementation (75%).
- Improvement of the existing controlling system (75%).
- Creation of a shared understanding of a corporate vision (63%).
- Linkage of individual employee objectives to corporate strategy (56%).
- Establishment of a corporate performance measurement (47%).

Nevertheless, all companies surveyed, stressed the necessity to tailor the BSC concept, as described by Kaplan/Norton, to their specific needs. Negative experiences occurred when organizations did not refer to the assistance of external consultants and when the whole definition and implementation process did not involve cross-functional project teams. A similar study conducted by Bain & Company produced the result that 50% of all bigger companies worldwide already use a BSC while Gartner Group estimates that 40% of the Fortune 1000 will have implemented a BSC by the end of the year 2000.<sup>195</sup> Renaissance Worldwide, the former consulting company of David Norton, conducted a research study among 101 companies in 1996, whether employees and management had a clear picture of a company's vision and strategy. The alarming result proved that only 71% of the senior executives, 40% of the operating managers, and 3% (!) of the general employees had clearly understood the corporate vision. A second survey showed that the understanding of the corporate vision and strategy rose significantly with the implementation of the BSC (at Mobil Oil strategic awareness rose of all employees rose from 35% in 1993 to over 80% in 1998).<sup>196</sup>

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<sup>194</sup> N.n. (2000): p. 22 (Handelsblatt)

<sup>195</sup> Norton/Kappler (2000): p. 17

<sup>196</sup> Norton/Kappler (2000): p. 17



## 5 Enabling the Balanced Scorecard

The previous chapter described the BSC as a system for strategic performance measurement. But the BSC only provides a framework for an organization to express its vision and strategy “in concrete terms of goals and measures”.<sup>197</sup> The challenge every organization is experiencing is the creation of a system that “both collects relevant information and communicates this information to employees and partners”.<sup>198</sup> In other words companies have to build up an infrastructure as an enabler to make the strategic management system operational.

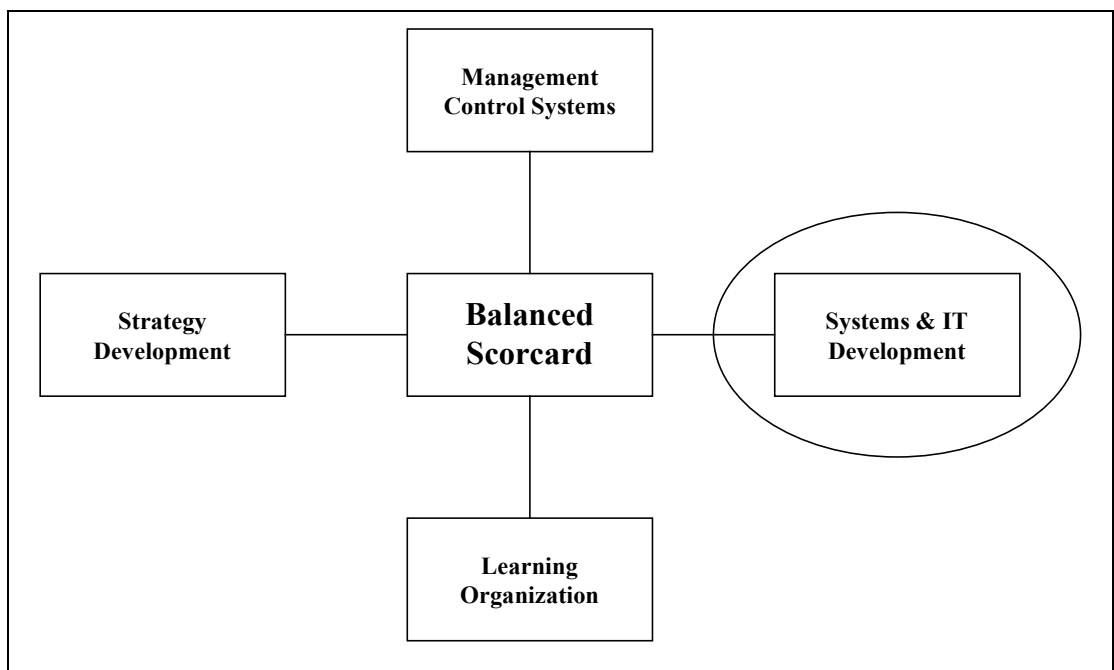


Figure 5-I - Systems and IT Development Focus of the BSC<sup>199</sup>

Nowadays it is pretty obvious to make extensive use of IT to create this enabling infrastructure in order to support a BSC. One of the main obstacles of reaching alignment of individual goals with corporate strategy is the fact that employees do not have the same level of access to information across an organization. Furthermore, different levels of computer literacy cause problems in communicating with the entire staff of an organization. Hence, information has to be:<sup>200</sup>

- Presented in a way that is easily understandable to everyone, i.e. presented in numbers, figures, graphs etc.

<sup>197</sup> Olve/Roy/Wetter (1999): p. 236

<sup>198</sup> Olve/Roy/Wetter (1999): p. 236

<sup>199</sup> Olve/Roy/Wetter (1999): p. 230

<sup>200</sup> Olve/Roy/Wetter (1999): p. 236

- Presented in a user friendly way, i.e. it should be compatible with existing IT systems such as MS Windows 95, 98 or 2000.
- Easy to access for all employees.
- Collected and measured in a cost-efficient manner.

These prerequisites are the basis for an efficient BSC implementation. “Of course a company’s vision and its strategic aims are vital to its future survival, but unless they are communicated to all levels of the organization, it will be difficult to bring about the changes which are desired and required for a company to stay competitive.”<sup>201</sup>

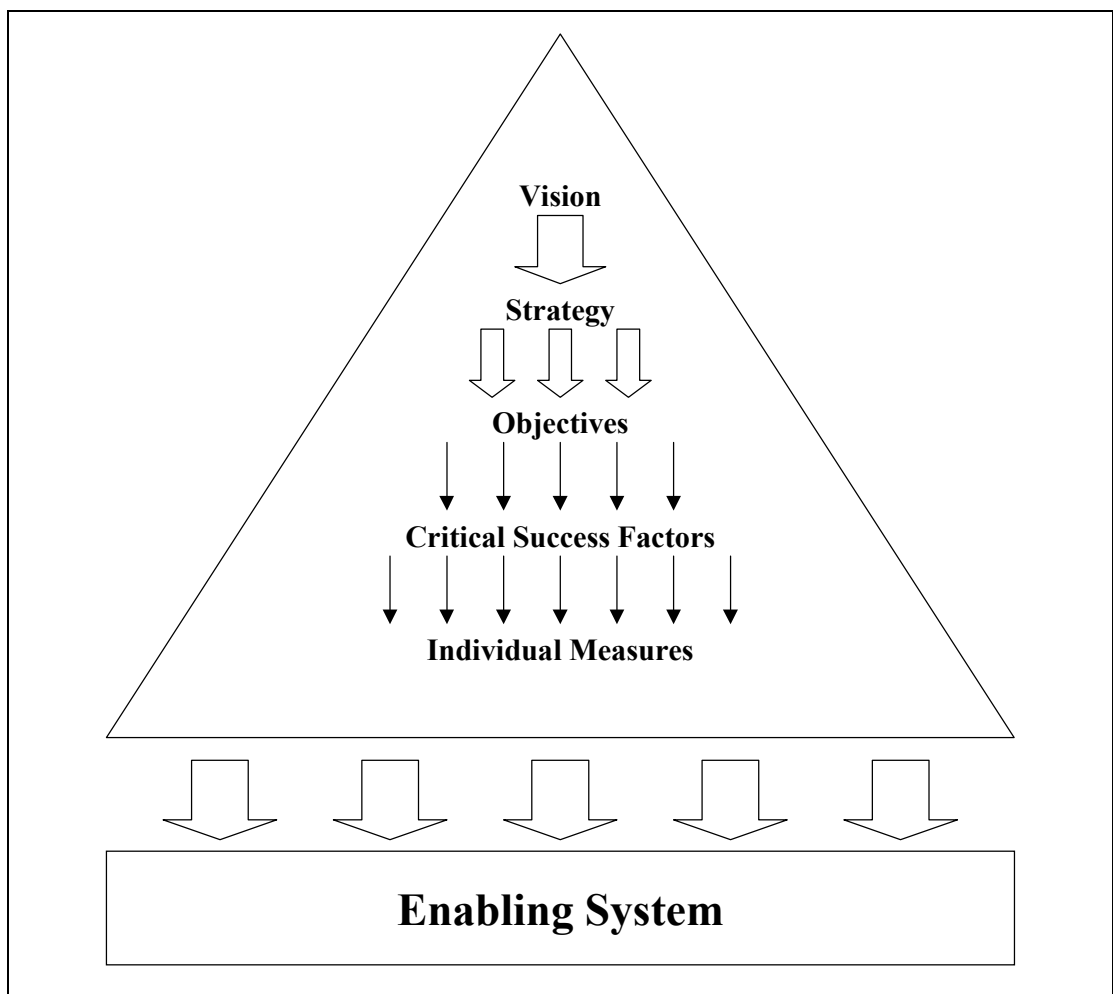


Figure 5-II - Enabling the BSC<sup>202</sup>

Figure 5-II shows how the BSC is used in a top-down approach to link the corporate vision to individual goals. Particularly, large and geographically diversified companies need an information system to make the BSC work. The following paragraphs’ purpose is to show how a BSC can be supported by an IT infrastructure.

<sup>201</sup> Olve/Roy/Wetter (1999): p. 39

<sup>202</sup> Shinder/McDowell (1999): p. 2

The strategic and technical requirements for an automated scorecard solution will be outlined. Additionally, automated software solutions for BSCs will be introduced.

The second part of this chapter will deal with the product family of NetFicient. At first sight, NetFicient, a groupware-based intranet solution, does not seem to be the ideal choice of application to support a BSC. However, its strengths as a communication and knowledge sharing medium can be helpful when introducing a BSC to an organization. Therefore, the way will be examined how different features of NetFicient can be used to contribute to a BSC process.

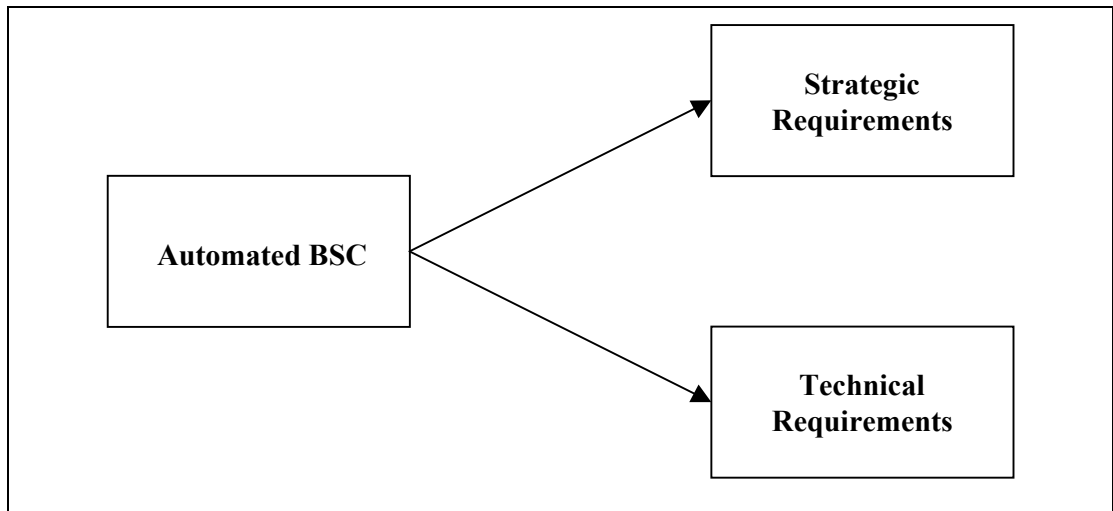
### ***5.1 Requirements for an Automated Balanced Scorecard***

The first generation of BSCs was largely based on paper or self-made software applications which failed to harmonize with the computer systems already existing in the organization. As mentioned before a substantial part of an company's IC is tied up in computer systems (Structural Capital). In order to make maximum use of existing IT investment it is important to involve existing back-end systems into the BSC solution. "Currently available Balanced Scorecard products do not scale beyond the workgroup or department, and cannot offer a comprehensive company-wide view of information."<sup>203</sup> There are two apparent reasons for this:

1. Current applications fail to incorporate the BSC methodology as described by Kaplan/Norton. So far, BSC were implemented by consulting companies which were able to create a significant expertise in this area. Software companies do not have the skills and knowledge necessary to guarantee a the successful implementation of a strategic management system.
2. Up to now, no appropriate solution has been developed from a technical point of view. Global companies like DaimlerChrysler (450,000 employees) or Deutsche Bank (93,000 employees) need a solution supporting an individual scorecard for each employee, usually across various client-server platforms. Hence, an automated BSC solution needs to fulfill the subsequent requirements strategically as well as technically.

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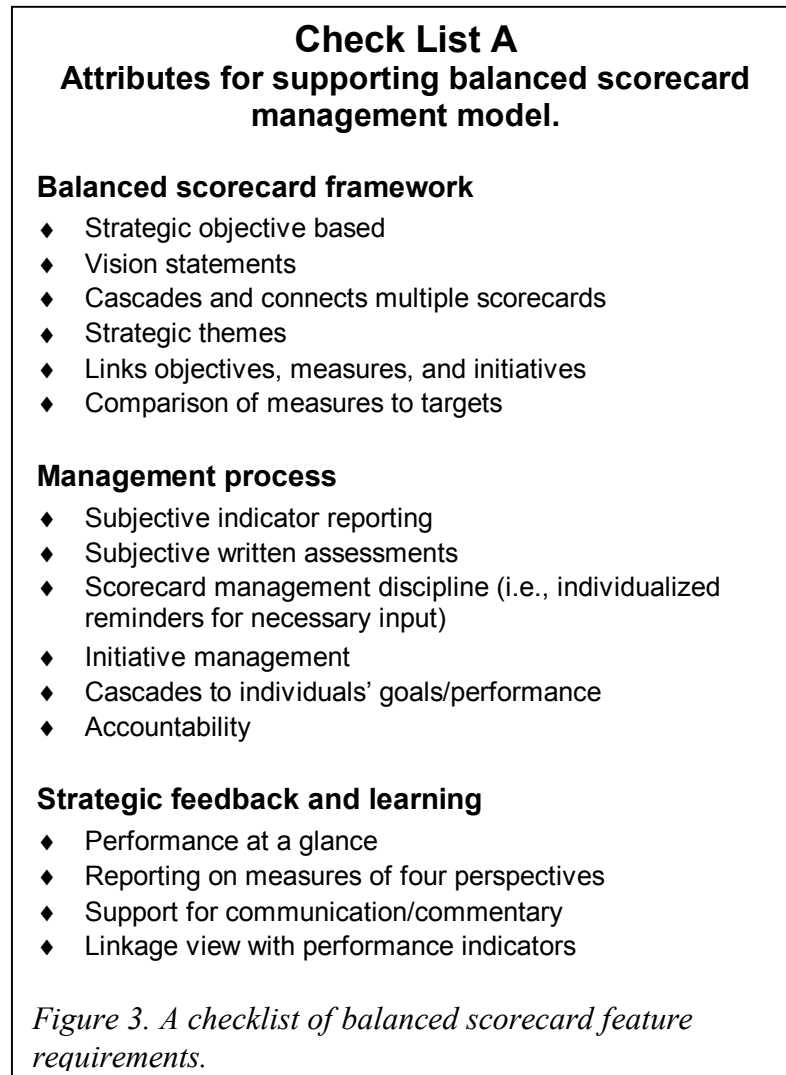
<sup>203</sup> N.n. (1998): p. 9 (Gentia Software plc.)



**Figure 5-III - Requirements for an Automated BSC**

### **5.1.1 Strategic Requirements**

Current BSC solutions place an emphasis on the visualization of some key indicators. However, it is crucial to find a solution that supports the whole BSC framework. As mentioned in Chapter 4 the scorecard measures are as important as the process to define them as well as the cause-and-effect relationships linking them. Hence, a mere presentation of some key indicators fails to grasp the complexity of the whole BSC concept. The following attributes should be considered when deciding on a solution for an automated BSC.



**Figure 5-IV - Strategic Requirements<sup>204</sup>**

By considering the enlisted attributes an organization ensures that an automated BSC solution is implemented in accordance with the methodology described by Kaplan/Norton.

### **5.1.2 Technical Requirements**

An automated BSC solution has to fully deploy the whole BSC methodology. “Key technical features must deliver the functionality to communicate feedback and enable performance measurement and management – across all levels off a distributed organizational structure.”<sup>205</sup> In the following paragraphs the technical features necessary for an automated BSC are briefly described:

*1. The automated BSC has to be easy to use:*

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<sup>204</sup> N.n. (1998): p. 10 (Gentia Software plc.)

<sup>205</sup> N.n. (1998): p. 11 (Gentia Software plc.)

The implemented solution should have a Windows 95, 98, or 2000-based user interface to enable all employees to access the system without extensive training. In order to facilitate the creation and modification of individual scorecards for each employee, the solution implemented should be using wizard technology. An automated scorecard is likely to be easier to use if it was a packaged solution providing all necessary features in one application.

*2. The solution must support quantitative and qualitative analysis:*

An automated BSC must be able to conduct analyses of quantitative data in multiple dimensions. On-Line Analytical Processing (OLAP) makes it possible for the users to access performance data from their desktops. Through OLAP it is feasible to analyze and visualize cause-and-effect relationships among the measures. However, the main part of BSC-related information is qualitative, i.e. text-based. Hence, an automated scorecard needs to be capable of tracking text-based information as well. Furthermore, text plays an important role when clarifying the numbers of the quantitative analysis to front-line employees.

*3. Centralized administration is important for security and privacy reasons:*

Kaplan/Norton quote the CEO of one of the companies they have been advising on a BSC implementation as follows:

“In the past, if you had lost my strategic planning document on an airplane and a competitor found it, I would have been angry but I would have gotten over it. In reality, it wouldn’t have been that big a loss. Or if I had left my monthly operating review and a competitor would have obtained a copy, I would have been upset, but, again, it wouldn’t have been that big a deal. This Balanced Scorecard, however, communicates my strategy so well that a competitor seeing this would be able to block the strategy and cause it to become ineffective.”<sup>206</sup>

A centralized administration supervises who should have access to which information. It is essential to have state-of-the-art security features in order to guarantee that only privileged users have access to the information they are entitled to read. Access to the scorecards at the individual level should be kept private.

*4. A BSC solution has to be deployed company-wide:*

Individual scorecards at all hierarchical levels of an organization have to be linked across geographical destinations as well as heterogeneous client-server platforms. Furthermore, the solution should support standard web technologies such as Java or

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<sup>206</sup> Kaplan/Norton (1996): p. 148

HTML. However, the most critical point of implementing an automated BSC solution is the fact it has to act in accordance with existing IT solutions. Enterprise Resource Planning (ERP) systems such as SAP, Peoplesoft, or Baan as well as On-line Transaction Processing should be used as a primary source of data collection as they are the back-end systems that run the daily business operations. Furthermore, a BSC should be compatible with data warehouses and data marts in order to extract quantitative data from them.

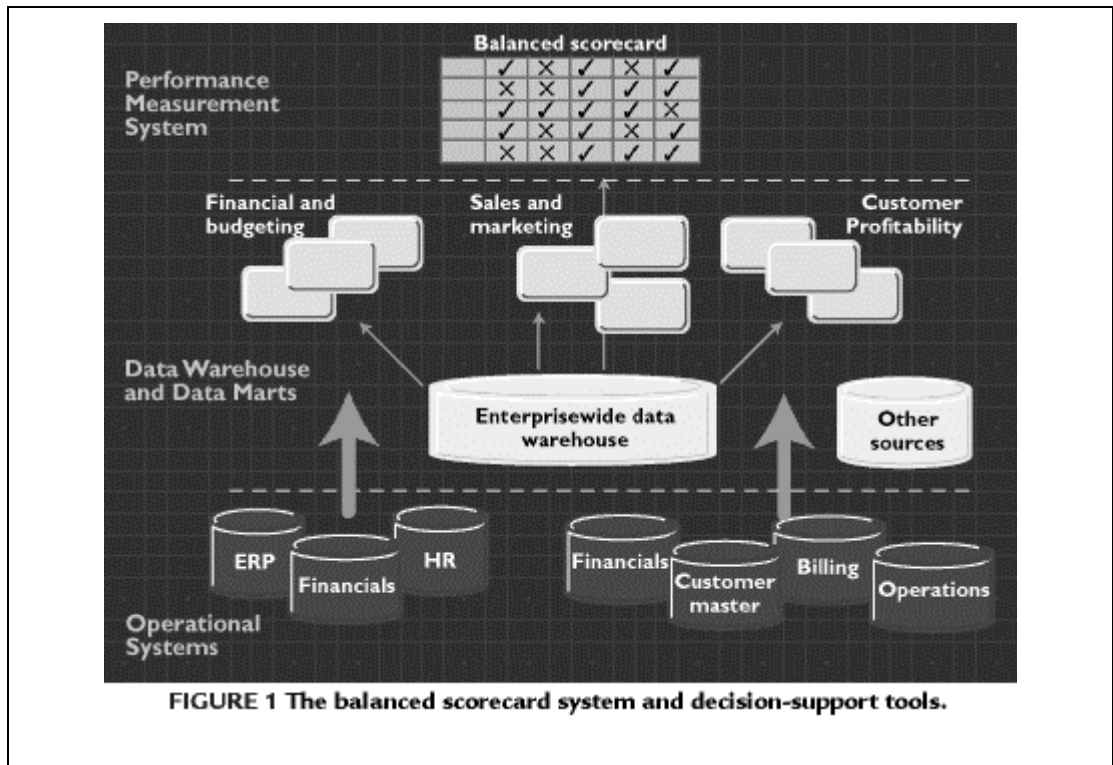


Figure 5-V - Connecting the BSC to Existing Back-End Systems<sup>207</sup>

Existing IT systems tie up significant investments and as the BSC does not lay claim to invent a measurement system from the very beginning it is desirable to combine existing technologies with the BSC solution to “provide a cohesive framework for monitoring and managing business performance at all levels of the organization”.<sup>208</sup> So far, several software companies have started to create software solutions for automated BSCs. The following screenshot shows the approach of Gentia Software Plc., a company which closely cooperates with Renaissance Worldwide.<sup>209</sup>

<sup>207</sup> Kanani (1998): p. 2

<sup>208</sup> N.n. (1998): p. 14 (Gentia Software plc.)

<sup>209</sup> N.n. www.rens.com

Figure 5-VI - Gentia's Automated BSC Solution<sup>210</sup>

The screenshot shows the corporate scorecard of Telco, an imaginative company operating in the telecommunications industry. The company's portfolio contains the following business units: Wireline Services, Emerging Technologies, Internet Solutions and Wireless Technologies. Currently, the overall corporate scorecard is visible on the screen. By clicking on the button to the right the scorecards for the business units can be opened.

In the spreadsheet covering the main part of the screen, a matrix is showing the corporate and SBU scorecards horizontally and the four perspectives with the underlying objectives vertically. Each field contains an indicator providing the user with an instant overview of the overall strategic performance: the tick represents good performance, the rhomb shows acceptable performance while the cross indicates bad performance. Each field of the matrix has underlying information. E.g. by clicking on 'Corporate' or one of the divisions a window with the respective mission will open. The same passes for the perspectives with their specific objectives, i.e. by clicking on them a window with the definition and measures will open. By changing the view from Perspective to Theme, the categories of Financial, Customer, Internal and Learning and Growth change into two strategies: Expand New Markets and Optimize Core Business. The underlying objectives are the critical success factors identified for achieving the two strategies. The themes/strategies are being assessed through the same indicators as the perspectives. By clicking on the

<sup>210</sup> N.n. (2000): Gentia Presentation



indicators, a linkage diagram will open and show the cause-and-effect relationships between the different measures.

Finally, the user can change from measure to initiative where all the initiatives are enlisted the company intends to take to improve performance. On the left side of the screen an internal reminder mail system is visible. It assists the user with managing his or her tasks concerning the BSC. Some of the mail is automatically generated by the system.

As an supplementary service Gentia has integrated a Customer Relationship Management (CRM) application into its automated BSC.

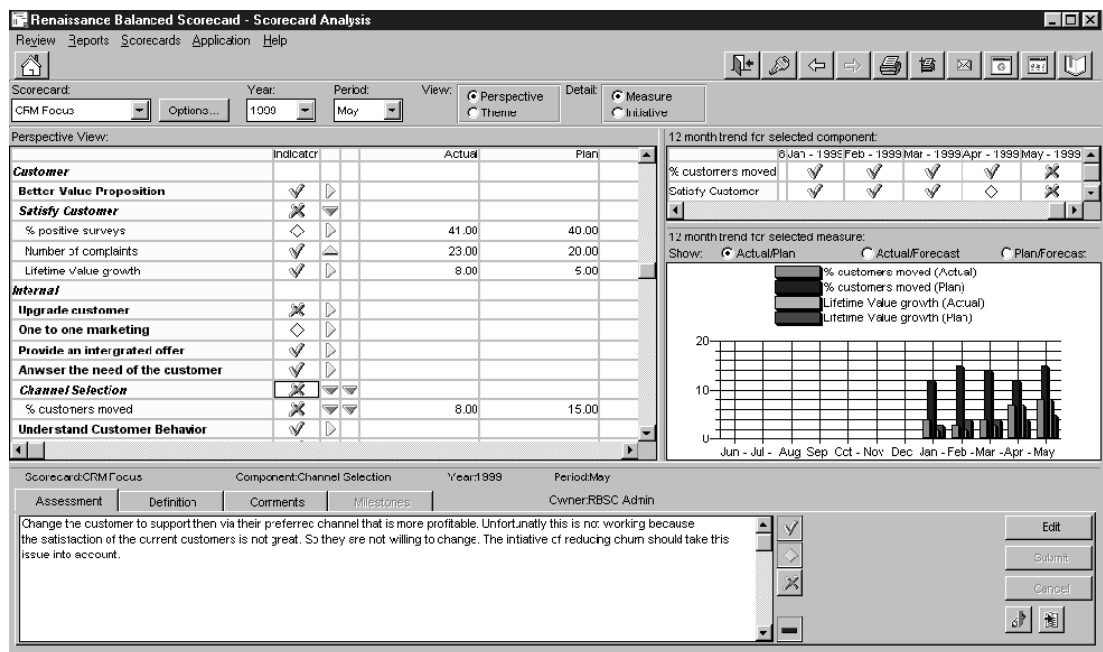


Figure 5-VII - Gentia's Supplementary CRM Application<sup>211</sup>

The CRM Focus Scorecard has five perspectives: Financial (satisfy financial business objectives), Customer (satisfy the customer), Internal (the internal processes to satisfy the customer and satisfy shareholders). New are Systems and Organization as two perspectives aimed at developing the CRM approach. By clicking on the indicator in the spreadsheet and choosing Assessment, Definition, Comments, or Milestones the user can retrieve supplementary information from the system about the indicator. On the right side of the screen it is possible to do trend projections and visualize them through diagrams.

Additionally, the CRM Focus Scorecard has three strategies which become visible by changing from perspective to theme. They are ways how to achieve the mission of optimizing profitability. The indicators demonstrate the assessment how the

<sup>211</sup> N.n. (2000): Gentia Presentation

organization is accomplishing this mission. In this case, Acquisition is doing very well, Growth could be better and the goal of Retaining Customers is not achieved. By clicking on the indicators, again linkage diagrams will appear showing the underlying cause-and-effect relationships.

Gentia claims to offer the only BSC software solution that is able to scale to the entire organization as well as support the methodology of the BSC as described by Kaplan/Norton.<sup>212</sup> But this claim does not hold true anymore. By now, several companies such as SAS Institute, CorVu Corp. or Everest Software Corp. offer computer-based BSC solutions to meet the growing demand for business performance management software.<sup>213</sup> Especially SAS Institute a company with 6.500 employees in 55 countries, specializing in the standardizing and computerizing of daily business operations has developed a BSC solution that is in no way inferior to Gentia's.<sup>214</sup> However, Gentia through its cooperation with Renaissance Worldwide, was the first company to combine the strategic expertise of a management consultancy with its own skills and knowledge as a software developing company.

### **5.1.3 A Critical Look at Automated Balanced Scorecard Solutions**

At first glance automated BSC solutions like Gentia's seem to be the perfect way to reach alignment between strategic management and performance measurement. But organizations have to carefully analyze their specific situation before deciding which solution should be implemented. By taking a look at the advantages and drawbacks of computerized scorecards it is intended to identify some of the risks related to this decision.

Basically, all the arguments listed above count as advantages of an automated BSC, i.e. the incorporation of the methodology as described by Kaplan/Norton, the ease of use and the compatibility to existing IT systems. Furthermore, it is possible to upgrade or extend the solution in case of a potential acquisition or merger. The possibility to easily collect and aggregate information can be used for external communication, e.g. public and investor relations. Finally, prompt access to important information helps an organization to place an emphasis on IC and thereby create a basis for future success in the marketplace.

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<sup>212</sup> N.n. (1998): p. 15 (Gentia Software plc.)

<sup>213</sup> Madden (1998): p. 1

<sup>214</sup> N.n. (2000): [www.sas.com](http://www.sas.com)

The drawbacks of an automated BSC are in some cases less obvious. As described in Chapter 4 the process of defining the scorecard is as valuable as the daily work with it. By automating the whole solution there is an immediate threat that top management (the mental sponsors of the BSC) might regard the whole BSC as nothing more than a software program. Especially when software companies like Gentia start to offer off-the-shelf solutions instead of customized software, a BSC implementation might become a project solely conducted by the IT department and paying little respect to IC related factors.<sup>215</sup> In this case the whole project would lose support from top management as well as front-line employees.

Another important issue is the dependency on the application itself. Linking all existing systems will make the company vulnerable as a computer breakdown will cause total standstill of operations. Furthermore, a growing complexity on the technical side will make the computer system susceptible to technical failures.

An automated BSC is also questionable for security reasons. Even corporate servers with state of the art decryption technologies are repeatedly subject to attacks from hackers and as mentioned in Chapter 5.1.2. a competitor getting insight into an organization's BSC will be capable of blocking its competitive strategy.

Finally, attention has to be paid to cost aspects. Implementing an automated BSC such as the Gentia solution will involve considerable costs such as:

- Cost for the software.
- Cost for implementing the solution, i.e. Gentia consultants will be needed.
- Personnel resources on the company side, i.e. people need to be trained.
- Cost for linking the solution to existing systems.

As the BSC concept is fairly new, there is little empirical evidence with the BSC as a management and measurement tool. In case perception about performance management and measurement changes, the implemented solution might become obsolete and represent significant sunk cost for the organization.

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<sup>215</sup> N.n. (1998): p. 17 (Gentia Software plc.)

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>• BSC methodology is supported</li> <li>• Easy to use.</li> <li>• Incorporates existing IT solutions</li> <li>• Possibility of upgrading.</li> <li>• Possibility of extension in case of M &amp; A activities.</li> <li>• Quick access to information (no time lags as all systems are linked).</li> <li>• Fosters IC creation.</li> <li>• Positive image of using state-of-the-art software solutions.</li> </ul>	<ul style="list-style-type: none"> <li>• Risk of looking at the BSC as another software and thereby losing the IC impact.</li> <li>• Risk of concentrating on implementation and not definition of BSC.</li> <li>• Costly solution.</li> <li>• ROI not guaranteed as there is little empirical evidence about work with the BSC yet (changes in the business environment might call for a totally new way of measuring performance).</li> <li>• Dependency on the application when conducting daily business.</li> <li>• Technical complexity might foster technical problems.</li> <li>• Can only be used in Measurement and Feedback Phase.</li> </ul>

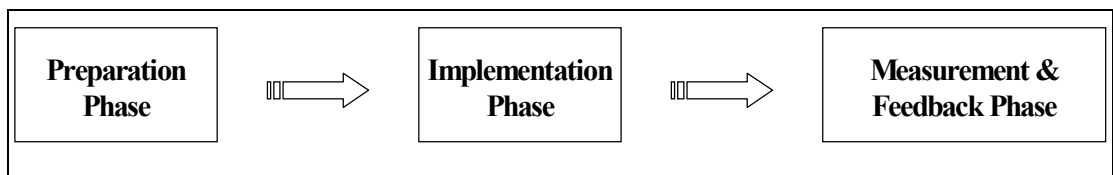
**Table 5-I - Pros and Cons of Automated BSCs**

In the second part of Chapter Five the focus will be on the product family of NetFicient. In contrast to the automated BSC solutions, NetFicient is an application that places an emphasis on easy communication within organizations rather than technical complexity.

## **5.2 NetFicient**

NetFicient is an inter- and intranet application based on the Intranet and Groupware Software Lotus Notes/Domino whose server operates as the publishing and application platform. On the client side NetFicient supports web browsers such as Netscape Navigator or MS Explorer as well as Lotus Notes. NetFicient was developed by the global IT practice of Deutsche Bank AG, Lotus Development GmbH and the Groupware Competence Center of the University of Paderborn. Ralf

Loos, a consultant with Deutsche Bank, responsible for the NetFicient family points out the core capability of NetFicient as the structured presentation of data as well as the collection and aggregation of data from corporate databases such as Oracle and SAP.<sup>216</sup> The NetFicient product family consists of several applications such as Power Publishing, eTeams, eTalk, NetFicient Knowledge, eSurvey, NetFicient Project, and NewsEngine. It is intended to briefly describe the functions of these applications and show how they can be used in a BSC process. For that purpose the BSC process was divided into three phases: Preparation Phase, Implementation Phase, and Measurement and Feedback Phase. In the Preparation Phase cross-functional project teams are formed in order to formulate the BSC. During the second phase, the Implementation Phase, the scorecard is introduced to the organization in order to reach strategic alignment through all levels of the organization. The third phase labeled Measurement and Feedback Phase contains the day-to-day work with the BSC.



**Figure 5-VIII - Three Phases of the BSC Process<sup>217</sup>**

PowerPublishing is the main application of the NetFicient product family. It enables employees throughout an organization to publish information on the inter- and intranet without the knowledge of HTML programming. Six layout templates allow for an homogenous picture of all information published. Search engines are supported and an easy navigation, buttressing current web browsers and software make it possible for every employee with access to a computer, to use the corporate intranet as a platform to exchange information. An integrated publishing workflow guarantees coherence and quality of all information presented. Three types of users have different responsibilities regarding NetFicient:

1. Webmasters are responsible for the technical administration of the websites and relational databases.
2. Content Providers or Authors publish information and are responsible to continuously up-date information or file old data. As layout and content are

<sup>216</sup> Ralf Loos, Interview 17<sup>th</sup> July 2000

<sup>217</sup> This distinction has been made by the author in order to examine how NetFicient can be used to support a BSC process.

strictly separated Authors can concentrate on the content of the information they publish.

3. Web Editors are accountable for content and layout. It is their task to guarantee a certain standard of quality of all information published.

A BSC process can be facilitated through PowerPublishing in all three phases. In the Preparation Phase the BSC project team can use PowerPublishing to inform the entire workforce of an organization in order to gain commitment for the whole BSC project. The project team members will take the role of Content Providers feeding the system with relevant information while an external consultant (or someone else with BSC experience) supporting the BSC process, could take the role of the Web Editor monitoring the information for relevance. The second phase or Implementation Phase of a BSC process can be reinforced by PowerPublishing through informing employees about timelines and levels of implementation. It is important to have a simple means of communication for a BSC project team to stay in contact with all other employees of an organization who are not actively involved in the implementation process. As all members of an organization are supposed to work with the BSC after it has been introduced, it is important to provide them with all necessary information concerning the BSC project. The Web Editor will prevent an overload of information as well as under-information which could lead to a confusion among employees and executives. In the worst case this confusion could cause the whole BSC project to fail if employees do not see a possibility to bring their personal goals into alignment with corporate vision and strategy.

In the Measurement and Feedback Phase PowerPublishing can be used to direct changes if necessary. Strategic changes can be steered by targeted communication with the whole workforce of an organization. The responsible Web Editor in this phase will be an employee who is responsible for BSC issues, preferably from middle management as he needs to critically review whether front-line employees will understand the relevance of the information published. PowerPublishing has additional features such as Newspanel, Archive, Feedback, and Homepage. Especially the feedback function can be used to maintain a continuous level of mutual communication in order to make the corporate strategy operational and measurable.

### 5.2.1 NetFicient Add-Ons

Additional features of NetFicient are eTeams, Pinboard, Info-Base, Container and FAQs (Frequently Asked Questions). They are services that bridge the gaps caused by space and time between customers, employees, or project teams.

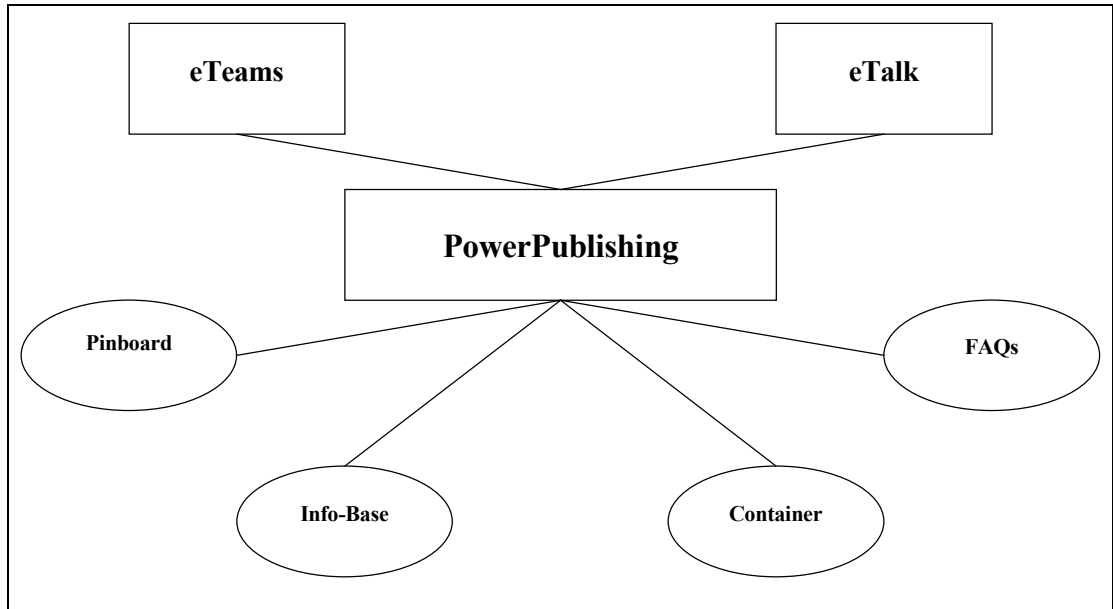


Figure 5-IX - Net Ficient Add-Ons<sup>218</sup>

Especially eTeams and eTalk can be helpful tools to support a BSC process in the Preparation Phase as well as in the Implementation Phase. eTeams is an application facilitating virtual meetings. Structured communication and coordination is supported through individual categorizing, the possibility to ad-hoc communication, and status reports. Particularly, global companies that are to a great extent geographically and culturally diversified can benefit from eTeams because it creates a virtual platform for knowledge exchange among project team members. eTeams is not supposed to replace physical meetings of the project team members but it can help to save time and money when quick reaction is required. Moreover, it can enhance the continuous learning process between the BSC meetings in the Measurement and Feedback Phase as executives can use eTeams to review and discuss performance.<sup>219</sup>

eTalk can serve as the basis for structured discussions, necessary in all three phases of a BSC process. This electronic platform for knowledge exchange can be vital for reaching strategic alignment of corporate vision and strategy when formulating the

<sup>218</sup> N.n. (NetFicient Brochure)

<sup>219</sup> Kaplan/Norton (1996): p. 268

scorecard objectives. All employees can contribute to the solution of specific problems which are then put up for discussion by a moderator.

### **5.2.2 NetFicient Knowledge**

As pointed out in Chapter 2 and 3 knowledge-based resources are the key for future competitiveness. NetFicient Knowledge is a complex KM application that can help an organization to extract and structure the knowledge of a group of people and make it available to other members of an organization. However, the key drivers of every IT solution to KM are the people who are willing to share their knowledge. NetFicient Knowledge can support an organization to turn Human Capital (e.g. knowledge) into Structural Capital (see Chapter 3.3.2) i.e. tacit knowledge can be made explicit by storing it in a knowledge database. A BSC project team can utilize NetFicient Knowledge on the one hand to search for specific knowledge when it is needed and on the other hand when knowledge about a specific thing has to be made accessible to other members of the organization. The different applications of NetFicient Knowledge are:

*Discovery* is a search engine that facilitates the seeking for knowledge within an organization through categorized sitemaps and easy navigation. As a BSC makes use of existing systems in an organization *Discovery* can help the project team to track information about existing measurement or TQM systems and the people responsible for them.

*Expertise* can be regarded as a virtual knowledge broker. Expert knowledge becomes transparent and a BSC project team can benefit from this function when there is a need to consult specialists in certain areas.

*Collaboration* is a virtual community platform. Target-group specific information can be published and there is the possibility for the reader to give immediate feedback. During a BSC project *Collaboration* can be used in several ways. In the Preparation Phase and Implementation Phase the project team can establish different communities, e.g. to define measures across the four perspectives. Employees can actively contribute to the definition of the final four to seven scorecard measures in each perspective by giving feedback on the information. In the Measurement and Feedback Phase a BSC community can be set up which will facilitate the process of providing information about the daily work with the BSC as well as contributing to continuously review the strategic intents of the company.



*Quality* is a function that measures and values the relevance of information within a company's databases. Editors guarantee the administrative work in order to establish a company-specific taxonomy with synonyms and equivalents in different languages. Furthermore, the collection of information with long-term relevance is managed. *Quality* is particularly useful to support the work of cross-functional team in global companies. Editors supervise the published information and guarantee for its quality and relevance.

*Organization* is a function that makes it possible to publish information personalized as well as organization-wide. Documents can be distributed via push-oriented workflows as well as created via pull-oriented document request workflows.

Discussing KM technologies one thing has to be kept in mind:

“Vast amounts of computerized processing may take place on data without substantial human intervention. Knowledge technologies, however, are more likely to be employed in an iterative and interactive manner by their users. Therefore, the roles of people in knowledge technologies are integral to their success.”<sup>220</sup>

NetFicient combines the advantages of Lotus Notes (“Notes excels at database management, discussion-group creation and management, and replication of databases for remote disconnected use in the field”<sup>221</sup>) and the WWW (“The web is ideal for publishing information across multiple types of computer platforms, for multimedia databases, and for knowledge that is linked to other knowledge through hypertext links.”<sup>222</sup>). The fact that NetFicient is easy to handle can be regarded as an incentive to share knowledge as members of an organization can focus on content rather than on layout. However, one has to take into consideration that IT can foster knowledge creation but the act of knowledge creation itself “remains largely an act of individuals or groups and their brains”.<sup>223</sup>

### **5.2.3 eSurvey and NetFicient Project**

Human Capital (e.g. knowledge, expertise) and Customer Capital were identified as the two building blocks of IC that cannot be owned by the company. eSurvey is an application to conduct virtual opinion polls, thereby providing the possibility to involve customers and employees into decision making. eSurvey supports the

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<sup>220</sup> Davenport/Prusak (1998): p. 129

<sup>221</sup> Davenport/Prusak (1998): p. 131

<sup>222</sup> Davenport/Prusak (1998): p. 131

<sup>223</sup> Davenport/Prusak (1998): p. 142

creation and filing of questionnaires as well as the safe mailing of answered questionnaires. During the evaluation process eSurvey can be connected via an interface to statistics software like SPSS.

A BSC process can be reinforced through eSurvey in the Preparation Phase and in the Measurement and Feedback Phase. A survey among employees can initiate a BSC process in order to clarify whether the corporate vision and strategy are transparent and understandable. Furthermore, it is promising to involve all employees into the definition of the scorecard measures. For the measures of the Customer Perspective it can be helpful to conduct surveys about what customers value and how existing business relationships can be improved.

In the Measurement and Feedback Phase surveys can be used to continuously review the corporate vision and strategy. Regular opinion polls will function as leading indicators for changes e.g., in employee morale or customer satisfaction.

As the whole BSC process can be regarded as an approach to increase an organization's IC, eSurvey is a useful platform to collect information about employees and customer perceptions, there providing the company with a means to turn Customer Capital and Human Capital into Structural Capital.

NetFicient Project is a multiple application for project management. A whole BSC project can be planned and executed with NetFicient Project. During Preparation and Implementation Phase the coordination of the project team can be accomplished. Responsibilities are being distributed and all steps during the process can be documented.

#### **5.2.4 A Critical Look at NetFicient to Support a Balanced Scorecard**

In comparison with technically sophisticated BSC solutions like Gentia's or SAS' the advantages of using NetFicient as a basis for a BSC implementation are less obvious. Bearing in mind, the core capabilities of NetFicient as a tool for collection and presentation of data, the lack of technical complexity can be an advantage, especially when involving employees with less advanced computer skills into a BSC process. Through the six layout templates employees can actively contribute to the definition of a BSC by publishing their findings on the corporate intranet.

Less technically sophisticated solutions also have the benefit that it is easier for the user to focus on the BSC concept and its methodology rather than on the software application. Using NetFicient, the application clearly is a supplementary tool that can as well be used beyond a BSC. Returning to the IC concept in Chapter 3 (Figure 3.3)

NetFicient has its strengths in the Preparation and Implementation Phase while an automated solution such as Gentia’s has its strengths in the Measurement and Feedback Phase where NetFicient can only be used to facilitate the feedback process. A further limitation of NetFicient concerning a BSC is its lacking technical complexity. Technically more sophisticated solutions have an advantage to present relevant information across the four perspectives of the scorecard. A BSC desktop will enable a skilled user to extract required information from the system with all underlying implications, i.e. cause-and-effect relationships and the possibility to do projections into the future. In other words: in the Measurement and Feedback Phase the possibilities to employ NetFicient are limited as it is problematic to get immediate information about underlying cause-and-effect relationships.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>• Easy to use trough layout templates.</li> <li>• Focus is on BSC and not on software.</li> <li>• Possibility to use beyond BSC related tasks such as KM, CRM, etc.</li> <li>• Focus on whole IC concept rather than only on measurement stream.<sup>224</sup></li> <li>• Possibility to have employees with limited IT skills participate in the BSC process.</li> <li>• Can still be used when there is a call to change performance measurement.</li> <li>• Low dependency on system.</li> <li>• Possibility to use NetFicient across all three phases of the BSC process.</li> </ul>	<ul style="list-style-type: none"> <li>• Other solutions are technically more sophisticated.</li> <li>• Less transparent with presenting information across the four perspectives.</li> <li>• Limited capability of turning data into information.</li> <li>• Limited possibilities to utilize NetFicient in the Measurement and Feedback Phase.</li> </ul>

**Table 5-II - Pros and Cons of using NetFicient in a BSC Process**

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<sup>224</sup> see Figure 3-I

### **5.3 Conclusion**

While an automated BSC solution such as Gentia's is limited to the daily work with the BSC, i.e. to the Measurement and Feedback Phase, NetFicient can be employed across the whole BSC process. As an application whose strength clearly lies in the communication and presentation of information, NetFicient is more likely to comply with the BSC methodology as described by Kaplan/Norton than a fully computerized solution. Although, companies like Gentia claim to offer solutions that operate in accordance with the initial BSC model, the final product to be sold is still a software program. As described in Chapter Four the BSC is not a mere performance measurement tool but a strategic management approach. Using NetFicient as a basis for introducing a BSC, will place an emphasis on mutual communication when defining the scorecard. Furthermore, it is hard to believe that the process of establishing vision, objectives, and measures will play the main role in the BSC process when organizations are able to buy a BSC as a software package. The more complex a technical BSC solution gets the more likely will top-management withdraw from the act of introducing the BSC. This in turn will lead to problems when aligning individual objectives with the corporate vision and strategy.

It is difficult to give a recommendation on whether an organization should pursue a packaged software solution such as the Gentia or SAS software or use a groupware based solution like NetFicient. The advantages of NetFicient are to be found in the possibilities to utilize the variety of applications of the NetFicient product family across the whole BSC process from agreeing on a corporate vision and strategy to conducting daily business with the implemented scorecard. Automated solutions, on the other hand have their strengths in the Measurement and Feedback Phase of the process. Combining existing software programs with a BSC desktop will provide companies with a possibility to substantially improve existing measurement techniques. A feasible recommendation would be to use NetFicient during a test phase, i.e. during the whole Preparation and Implementation Phase as well as the beginning of the Measurement and Feedback Phase. When the concept proves to be an improvement of the management process a company can consider introducing a customized BSC solution. Bearing in mind the complexity of the whole BSC process, off-the-shelf solutions do not represent an adequate alternative as a basis for a new strategic performance management and measurement system. In the following

table the results are summarized which software application can be used to support the different phases of a BSC process.

	<b>Preparation Phase</b>	<b>Implementation Phase</b>	<b>Measurement and Feedback Phase</b>
<b>Power Publishing</b>	<b>X</b>	<b>X</b>	<b>X</b>
Homepage			
Newspanel		<b>X</b>	<b>X</b>
Archive	<b>X</b>	<b>X</b>	<b>X</b>
Feedback	<b>X</b>		<b>X</b>
<b>eTeams</b>	<b>X</b>	<b>X</b>	
<b>eTalks</b>	<b>X</b>		
<b>Knowledge Management</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>NetFicient Project</b>	<b>X</b>		
<b>eSurvey</b>	<b>X</b>		<b>X</b>
<b>Automated BSC (Gentia, SAS, etc.)</b>			<b>X</b>

**Table 5-III – Summary of how to Exploit the Solutions Mentioned in a BSC Process**

## 6 Outlook

“Profound change in the competitive environment has produced a Cambrian explosion of new organizational forms, institutional relationships, and value-creating possibilities.”<sup>225</sup> This research paper is about change. Change with respect to organizational forms, vanishing importance of physical assets, changing perception about value creation with the resulting demand for new ways to measure business performance, and most of all the call for new strategies. In other words the thesis is dealing with the transformation from the ‘old’ to the ‘new’ economy. But what is the phenomenon about this particular change? What is becoming different? Ways of conducting business have always been subject to changes, e.g. after the industrial revolution or after the invention of the telephone. The striking thing about changes nowadays, is the speed they are happening in. When the underlying idea of this paper evolved, nine months ago, the ‘new’ economy ‘hype’ was in full progress. Countless internet bookshops or virtual auctioneers were ‘swamped’ with venture capital just for copying an already existing business idea and eventually brought public. Nine months later this enthusiasm has calmed down a bit. Although, substantially backed by venture capital and partnerships with reputable ‘old’ economy companies boo.com, a Swedish-English premium brand online clothes retailer was the first prominent ‘dot.com’ enterprise to announce bankruptcy. Others followed or entered alliances with former competitors (e.g. virtual auctioneers QXL and Ricardo.de) or ‘brick and mortar’ companies. Philip Evans and Thomas Wurster, two consultants from the Boston Consulting Group and authors of the bestseller ‘Blown to Bits’ compare the first generation of eCommerce to the settlement era of the Wild West.<sup>226</sup> The only things that counted for dot.coms were speed and growth which was obviously remunerated by the stock markets. But this development did not last very long. The second generation of eCommerce businesses is composed of established ‘dot.coms’ as well as ‘old’ economy corporations using the internet, e.g. as a sales channel, a marketing and communication instrument, or a logistics platform.<sup>227</sup> The quest for value creation characterizes the second generation of eCommerce ventures. The thesis attempts to provide the reader with a general idea how changes in the business environment influence the strategic decisions of companies. The BSC is a

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<sup>225</sup> Hamel (1998): p. 7

<sup>226</sup> Evans/Wurster (2000): p. 82

<sup>227</sup> Evans/Wurster (2000): p. 82

framework that can aid organizations in anticipating changes and reacting to them immediately. Globalization, complex company structures, and the quest for shareholder value call for a new management approach that aligns a company's vision and strategy with the operational goals on the personal level. The BSC will help organizations to measure performance from the IC perspective, i.e. a BSC will foster IC creation while still paying respect to the overall goal of a sound financial performance with view to shareholder value creation.

So far, it is difficult to provide a complete evaluation of the BSC framework since the concept is fairly new. Little empirical evidence can be presented because companies have not yet been conducting their daily business with the BSC over longer periods of time as most scorecards were implemented in the second half of the 1990s. However, first experiences show that the results of BSC implementations "have been nothing short of phenomenal".<sup>228</sup> Companies report considerable increases in growth and revenue as well as great successes in reaching strategic alignment across global organizations. Positive experiences like these and the need for flexible strategic management systems will increase the utilization of BSCs. Automating the BSC will create significant possibilities to optimize existing IT investments and will allow for more transparency regarding the consequences of individual actions with respect to the corporate strategy. However, reducing the BSC to a software application cannot create the desired results because the mutual communication between employees and top-management in the preparation process as well as during the implementation will be neglected. Moreover, it will be a combination of IT and traditional communication practices that will allow for a maximum impact of a BSC process.

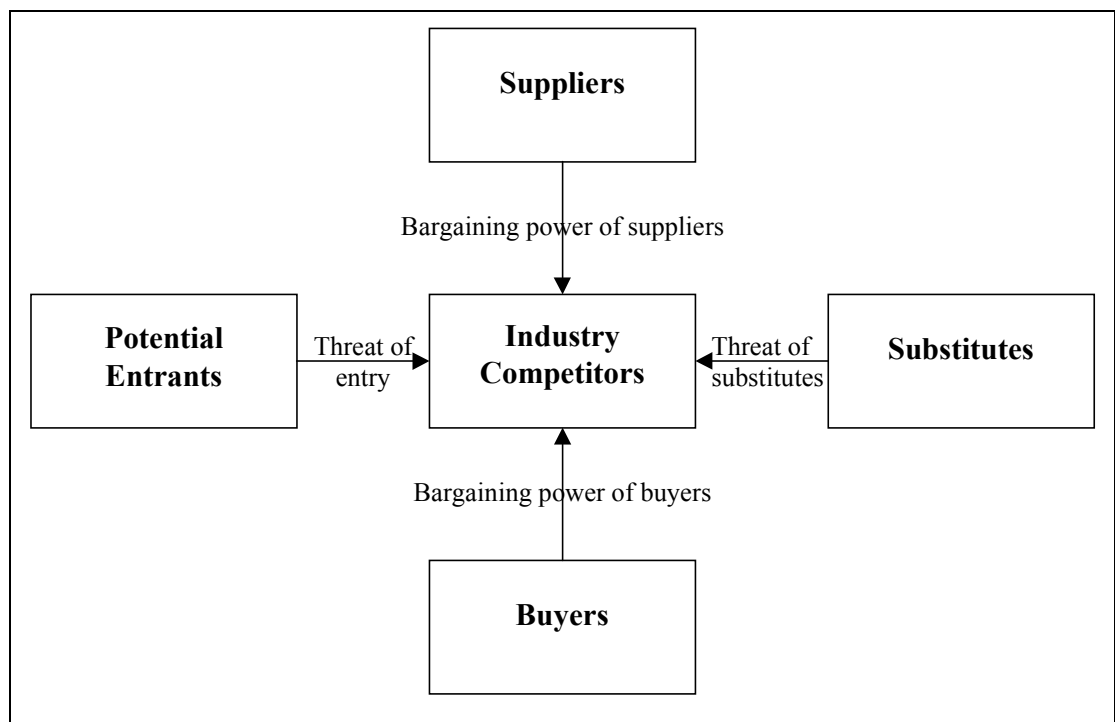
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<sup>228</sup> N.n. (1998): p. 14 (Gentia Software plc.)

## Appendix

### *A-1 The Structural Analysis of Industries – Porter’s Five Forces*

According to Harvard Business School professor Michael E. Porter the issue about competitive strategy is linking a company to its external environment, i.e. the industry or industries a company is operating in. Competition in the specific industry is driven by five forces.



Appendix - Figure 1 – Forces Driving Industry Competition<sup>229</sup>

“The collective strength of these forces determines the ultimate profit potential in the industry where profit potential is measured in terms of long run return on invested capital.”<sup>230</sup>

The following list is meant to give examples for the five forces with their underlying economics. As most examples are self-explanatory only few are explained in detail:

#### **A-1.1 Threat of Entry:**

- Barriers to entry: The economics potential entrants to an industry are confronted with.

<sup>229</sup> Porter (1980): p. 4

<sup>230</sup> Porter (1980): p. 3



- Economies of scale: Unit costs of a product go down as absolute number of products increases.
- Product differentiation: Customer loyalty caused by brand names.
- Capital requirements: R&D, production facilities.
- Switching costs: One-time costs for a buyer that switches from one supplier to another.
- Access to distribution channels: Logistics
- Cost disadvantages independent of scale: Patents, shop locations, government subsidies, etc.
- Government policy: Red tape barriers.
- Entry deterring price: If the prices in an industry is high enough to compensate for the costs potential entrants face to enter an industry, entry will take place.
- Properties of entry barriers: Patents.
- Experience as an entry barrier: The learning curve itself does not guarantee for an entry barrier. It is important that these experiences are proprietary through patents etc.

#### **A-1.2 Intensity of rivalry among existing competitors**

- Numerous or equally balanced competitors.
- Slow industry growth.
- High fixed or storage costs.
- Lack of differentiation or switching costs.
- Capacity augmented in large increments: Industries dictated by economies of scale often require the addition of large amounts of capacity. This can lead to substantial overcapacities.
- Diverse competitors.
- High strategic stakes: Companies intending to establish a presence in markets for prestige reasons may not respect the underlying economics which in turn will lead to fierce rivalry.
- High exit barriers: Labor agreements, government restrictions, specialized assets.
- Shifting rivalry: Shifting rivalry can be caused by changes in industry growth, M&A activities, etc.

### **A-1.3 Pressure from substitute products**

Substitutes limit the profit potential in an industry as customers will not accept higher prices after a specific price level is reached. It is essential for companies, especially in the consumer goods sector to identify these price ceilings.

### **A-1.4 Bargaining power of buyers**

Depending on the size and strength groups of buyers can force an industry to lower its prices. Buyer groups are powerful in the following situations:

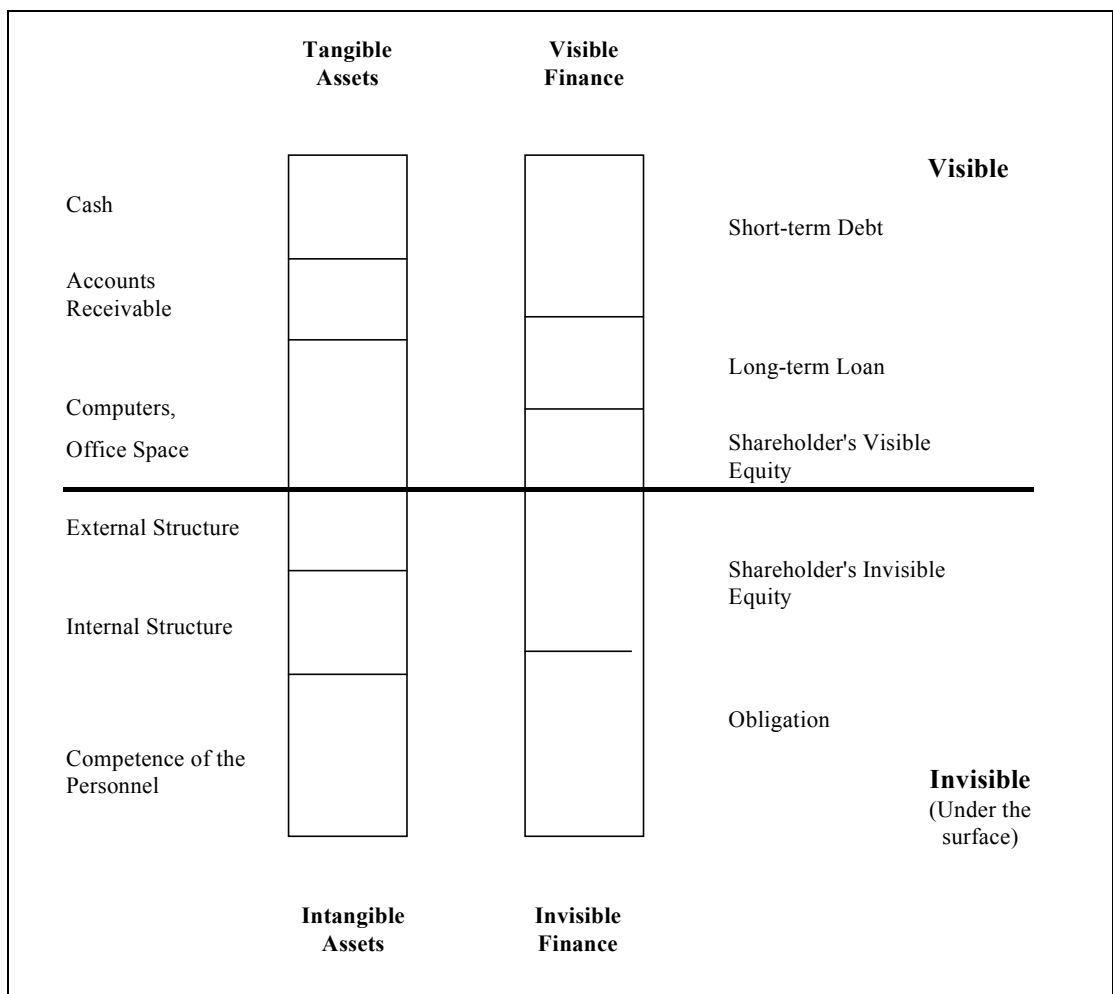
- Buyers are purchasing large volumes relatively to seller sales.
- The products purchased represent the lion's share of the products purchased.
- The purchased products are standardized or undifferentiated.
- Industry profits are low.
- The product purchased plays an insignificant role in the buyer's production process.
- The buyer has complete information.

### **A-1.5 Bargaining power of suppliers**

- The industry is dominated by a limited number of companies and it is more concentrated than the industry it sells to.
  - The supplier does not have to compete with substitute products sold to the industry.
  - The purchasing industry only plays a secondary role in the supplier's customer group.
  - In the production process of the purchaser, the product plays an important role.
  - The supplier's product is subject to switching cost through differentiation.
- Suppliers can credibly threaten the industry with forward integration.

**A-2 Sveiby’s Balance Sheet of Intangible Assets**

According to Karl Erik Sveiby there are three different types of intangible assets in an organization: employee competence, internal structure, and external structure. Especially in the information age organization employee competence is the core asset. It is characterized by the ability to create tangible and intangible assets. The internal structure of an organization comprises patents, concepts, corporate culture, and computer systems while the external structure contains customer and supplier relationships as well as patents, trademarks, and image.



**Appendix - Figure 2 – Sveiby’s Intangible Balance Sheet<sup>231</sup>**

The underlying idea of Sveiby’s balance sheet of intangible assets is that intangible assets have a significant influence on the financing of a knowledge organization. Traditional financing (the upper, visible part of the balance sheet in the figure) usually consists of equity, short-term and long-term debt. Sveiby points out that

<sup>231</sup> Sveiby (1997): p. 12

knowledge organizations have to rely on self-financing as financial institutions usually are reluctant to lend money for investments in intangible assets. Thus, knowledge organizations finance their growth with invisible equity defined by Sveiby as the difference between book value and market value.

Edvinsson/Malone choose a similar approach to define IC. For them “IC is a debt issue, not an asset issue”<sup>232</sup> because it is borrowed from stakeholders such as employees, customers, suppliers, etc. The counterbalance to this debt is goodwill in their approach. But goodwill is a “trash item that is deducted as quickly as possible”<sup>233</sup> which decreases the value of the balance sheet. This “antithesis of the idea of corporate value growing its future” lead Skandia to rethink its current measurement system as it failed to bring the company’s hidden values to the surface.<sup>234</sup>

<b>Intellectual Property</b>	<b>Assets</b>	<b>Debt Equity</b>	<b>Official Balance Sheet</b>
	<ul style="list-style-type: none"> <li>•Goodwill</li> <li>•Technology</li> <li>•Competence</li> </ul>	Intellectual Capital	<b>Hidden Values</b>

Appendix - Figure 3 – IC – Balance Sheet<sup>235</sup>

<sup>232</sup> Edvinsson/Malone (1997): p. 43

<sup>233</sup> Edvinsson/Malone (1997): p. 44

<sup>234</sup> Edvinsson/Malone (1997): p. 44

<sup>235</sup> Edvinsson/Malone (1997): p. 43

### ***A-3 Intellectual Capital Measures***

#### **A-3.1 Financial Perspective**

As addressed in Chapter Four the financial perspective serves as a feedback whether the indicators are chosen correctly. An indicator that fails to be reflected in the balance sheet “measures nothing of value and should be purged”.<sup>236</sup> Possible measures for the Financial Perspective are:<sup>237</sup>

1. EVA (\$)
2. ROCE (\$)
3. EPS (\$)
4. Net Income (\$)
5. Operating margin (\$)
6. Total assets (\$)
7. Total assets/employee (\$)
8. Revenue/total assets (%)
9. Profits/total assets (\$)
10. Revenues resulting from new business operations (\$)
11. Profits resulting from new business operations (\$)
12. Revenues/employee (\$)
13. Customer time/employee attendance (%)
14. Profits per employee (\$)
15. Lost business revenues compared to market average (%)
16. Revenues from new customers/total revenues (%)
17. Market value (\$)
18. Return on net asset value (%)
19. Return on net assets resulting from new business operations (\$)
20. Value added/employee (\$)
21. Value added/IT employee (\$)
22. Investments in IT (\$)
23. Value added/customer (\$)

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<sup>236</sup> Edvinsson/Malone (1997): p. 76

<sup>237</sup> Edvinsson/Malone (1997): p. 151; Kanani (2000): p. 9; Manas (1999): p. 4

### **A-3.2 Customer Perspective**

The Customer Perspective represents the source of revenue creation in an organization. Growing sophistication of customers call for the need to mass-customize to specific customer needs. Hence, new measures for the Customer Perspective are:<sup>238</sup>

1. Market share (%)
2. Number of customers (no.)
3. Annual sales/customer (\$)
4. Customers lost (no.)
5. Sales from new products (%)
6. Sales from proprietary products (%)
7. Time to market (no.)
8. Telephone or electronic accessibility (%)
9. Average duration of customer relationship (no.)
10. Average customer size (\$)
11. Customer rating (%)
12. Customer visits to company (no.)
13. Days spent visiting customers
14. Customers/employees (no.)
15. Front-line employees (no.)
16. Front-line management (no.)
17. Average time from customer contact to sales response (no.)
18. Ration of front-line contacts to sales closed (%)
19. Satisfied customer index (%)
20. Rate of repeat customers (%)
21. Share of key accounts' purchases (%)
22. Points of sale (no.)
23. IT investments (\$)
24. IT investment/service and support per customer (\$)
25. Number of internal IT customers (no.)
26. Number of external IT customers (no.)
27. Number of contracts/IT-employee (no.)
28. Customer IT literacy (%)

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<sup>238</sup> Edvinsson/Malone (1997): p. 98; Kanani (2000): p. 9; Manas (1999): p. 5

- 29. Support expense/customer (\$)
- 30. Support expense/customer/year (\$)
- 31. Service expense/customer/contact (\$)

### **A-3.3 Internal Business Process Perspective**

The Internal Business Process Perspective is internally supporting the overall enterprise value creation. Here a strong focus is on technology as it is the infrastructure of for most internal processes. Proposed measures are:<sup>239</sup>

1. Administrative expense/total revenues (no.)
2. Cost for administrative error/management revenues (%)
3. Processing time, outpayments (no.)
4. Cycle time (no.)
5. Cost reduction (\$)
6. Unit cost (\$)
7. Yield rate (no.)
8. Safety (no. of accidents)
9. Contracts filed without error (no.)
10. PCs/employee (no.)
11. Laptops/employee (no.)
12. IT expense/employee (\$)
13. Administrative expense/employee (\$)
14. IT expense/administrative expense (\$)
15. IT capacity (CPU and DASD) (no.)
16. Change in IT inventory (\$)
17. Corporate quality goal (no.)
18. Corporate performance/quality goal (%)
19. Discontinued IT inventory/IT inventory (%)
20. Orphan IT inventory/IT inventory (%)
21. IT capacity/employee (no.)
22. IT performance/employee (no.)

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<sup>239</sup> Edvinsson/Malone (1997): p. 152; Kanani (2000): p. 9; Manas (1999): p. 4



### **A-3.4 Learning and Growth Perspective**

The Learning and Growth Perspective is the area where the ground stones for future opportunities are laid. Proposed measures here are:<sup>240</sup>

1. Competence development expense/employee (\$)
2. Employee empowerment index (\$)
3. Renewal expense/customer (\$)
4. Renewal expense/product line or service (\$)
5. Share of “Method and Technology Hours” (%)
6. Share of training hours (%)
7. Share of development hours (%)
8. R&D expense/administrative expense (%)
9. Intrapreneurial employees/total staff (%)
10. Time to establish a new foreign office (no.)
11. IT expense/administrative expense (%)
12. Training expense/employee (\$)
13. Training expense/administrative expense (%)
14. Business development expense/administrative expense (%)
15. Share of employees under age 40 (%)
16. IT development expense/IT expense (%)
17. IT expenses on training/IT expense (%)
18. R&D/ total resources (%)
19. Revenue from new services (%)
20. Shared knowledge on knowledge databases (no.)
21. New product introduction vs. competition (no.)
22. Percent of products that equal 80% sales (%)
23. Employee satisfaction (%)

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<sup>240</sup> Edvinsson/Malone (1997): p. 152; Kanani (2000): p. 9; Manas (1999): p. 4

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Paderborn, den 29. August 2000

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