Integrated Performance Management: A Guide to Strategy Implementation

Strategic Information Systems Alignment

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Strategic Information Systems Alignment

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In general, IT (information technology) and IS (information systems) are considered important support functions in an organization. This is a domain that is well documented in the management literature. One of the main considerations is to demonstrate how IT and IS can contribute to strategy implementation, and thus increase the image of IT within the organization.

In this chapter, we start by outlining the strategic role of information and information systems. Then we focus on the concept of strategic IS alignment, which seeks to link business strategies to IT strategies. We will rely on a framework, presented by Henderson and Venkatraman (1993), which is considered one of the fundamental frameworks in this respect. In a next step, we will describe the necessary steps for strategic IS alignment. Finally, we will link strategic IS alignment to the maturity concept.

The Strategic Role of Information and Information Systems

Everybody agrees about the critical role of information and knowledge in our current (business) society. Knowledge is information that can be used in all types of managerial decision-making and action-taking. Most of the information and knowledge that an organization needs is drawn from inside (business processes, structure and culture) as well as from outside the organization (i.e., the competitive environment in which the organization operates). Collecting information about markets, market trends, competitors' actions, general economic trends and legislation is a critical step in every strategic analysis. Information systems that fail to provide access to internal or external sources of information and knowledge can diminish the performance of an organization.

Qualitative information is essential for the improvement of organizational performance and for the realization of strategic goals. The aim of strategic information systems management is to get the right information in the right context to the right person at the right time. O'Brien (1997) extends this basic insight into a more detailed description of what information quality should entail. He distinguishes three dimensions that, taken together, describe information quality: time, content and form.

In the *time* dimension, O'Brien points to the following elements:

- *Timeliness* (information should be provided when it is needed);
- *Currency* (information should be up to date when it is provided);
- *Frequency* (information should be provided as often as needed); and
- *Time period* (information can be provided about past, present and future time periods).

The *content* dimension amounts to:

- *Accuracy* (information should be free from errors, bias and noise);
- *Relevance* (information should be related to the information needs of a specific recipient for a specific situation);
- *Completeness* (all the information that is needed should be provided);
- *Conciseness* (only the information that is needed should be provided);
- *Scope* (information broad or narrow in scope); and

- *Performance* (information can reveal performance by measuring activities accomplished, progress made, etc.).

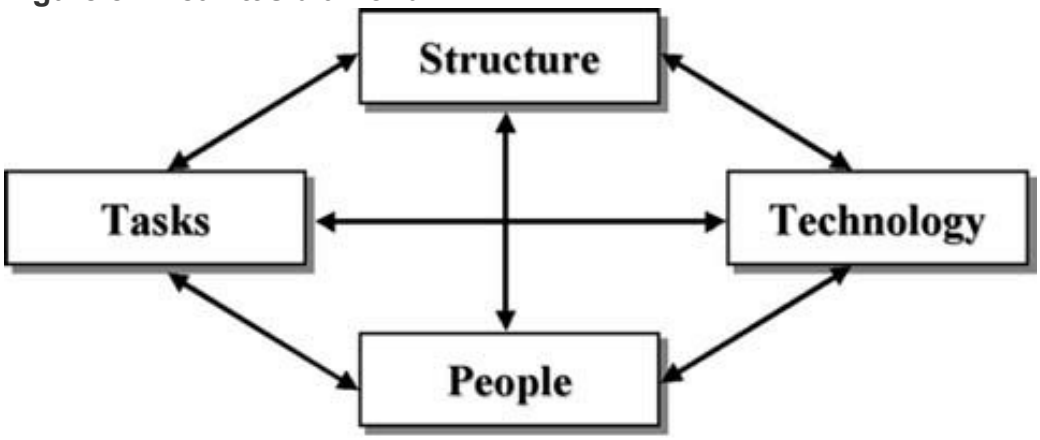
Finally, the *form* entails:

- *Clarity* (information should be provided in a form that is easy to understand);
- *Detail* (information can be provided in detailed or summary form);
- *Order* (information can be arranged in predetermined sequences);
- *Presentation and media* (information can be provided in the form of printed paper documents, videos or other media).

These basic principles concerning the quality of information and the role of strategic information systems management apply regardless of the technologies used in an organization. Even as we are witnessing an evolution from information technology (IT) towards information communication technology (ICT, or IT that makes use of modern telecommunication networks, such as the Internet or wireless communication networks), the basic definitions of information systems management still apply.

To understand the potential impact of ICT and IT on organizational performance, it is necessary to look at IT holistically (i.e., in relation to the organization and its processes) rather than to consider IT as a function separate from other organizational processes. Almost 40 years ago, Harold Leavitt (1965) emphasized that an organization's structure, the tasks or processes at hand, the people and its technology are intimately intertwined (see Figure 8.1).

Figure 8.1 Leavitt's diamond



Source: Leavitt (1965)

The message of Leavitt's diamond was simple. Every element of organizational life affects every other element. Change the technology and you change the tasks, which in turn causes changes in the organizational structure and in the workforce. Change the people and they will find new ways of performing tasks, which requires adjusting the technology.

Strategic Information Systems Alignment

When we consider the IT function more holistically, we see that it is necessary to improve the fit between the IT infrastructure and the IT processes and the strategy. This is called *Strategic Information Systems alignment.* Strategic IS alignment aims to develop a strategic consensus

about the strategic business and related IT priorities, the contribution of IT to the company strategy, and the impact of IT on the business operations and results. Strategic IS alignment amounts to linking an organization's IS plans with the business plans of distinct business units or product lines. By aligning these plans, information resources support business objectives, which is a necessary condition for effective strategic control and use of IT.

Henderson and Venkatraman (1993) have developed a strategic alignment model, based on two building blocks: strategic fit and functional integration. *Strategic fit* is about creating alignment between the external and internal environments. They also translate these general strategic principles to the IT domain: 'IT strategy should be articulated in terms of an external domain - how the firm is positioned in the IT marketplace - and an internal domain - how the Information Systems infrastructure should be configured and managed' (Henderson and Venkatraman, 1993: 474). According to the authors, the *position* of the organization *in the IT marketplace* involves three sets of choices:

- *Information technology scope:* those specific information technologies (e.g., electronic imaging, expert systems, robotics, networks) that support current business strategy initiatives or could shape new business strategy initiatives. (Note that this is analogous to business scope, which deals with choices pertaining to product-market offerings in the output market.)
- *Systemic competences:* those attributes of IT strategy (e.g., system reliability, cost-performance levels, etc.) that could contribute positively to the creation of new business strategies or the better support of existing business strategy. (Again, this is analogous to the concept of distinctive business competences, which deal with those attributes of strategy that contribute to a distinctive, comparative advantage of a firm over its competitors.)
- *IT governance:* the selection and use of mechanisms (e.g., joint ventures, joint R&D, etc.) for obtaining the required IT competences. (This is analogous to business governance, which involves make-versus-buy choices in business strategy.)

The internal IS domain must address three components:

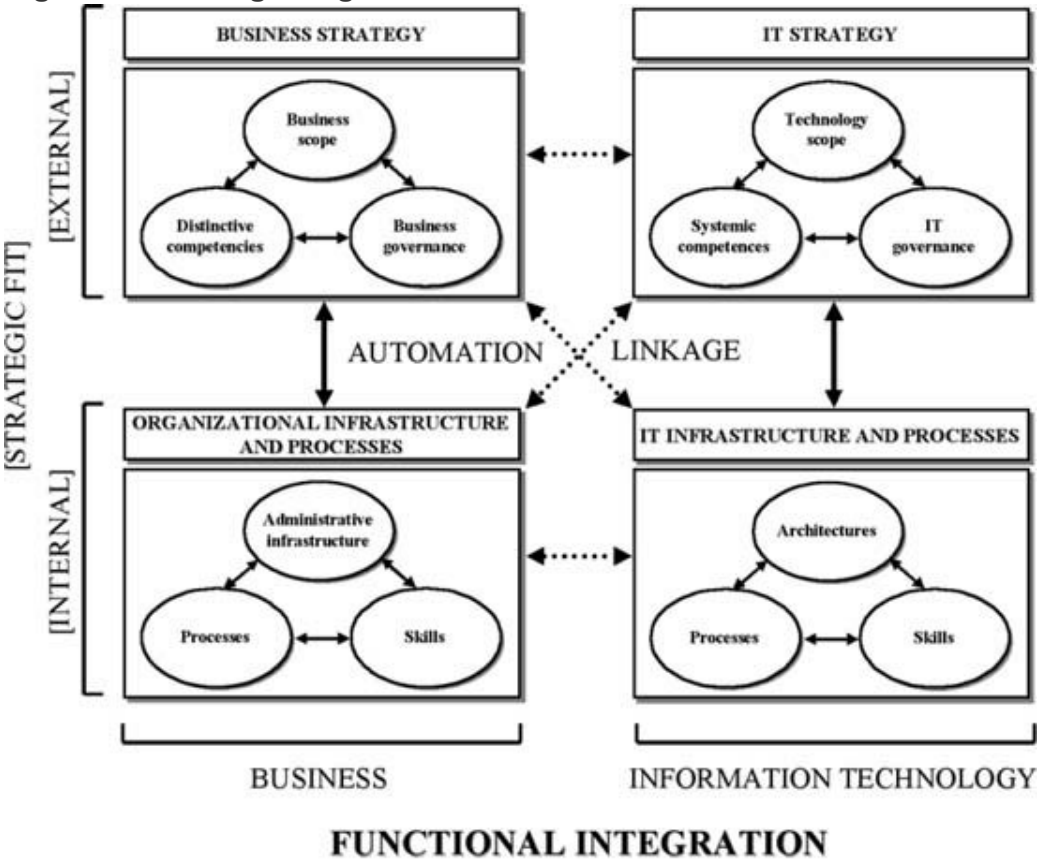
- *IS architecture:* the choices that define the portfolio of applications, the configurations of hardware and software, and communication and the data architecture that collectively define the technical infrastructure. (This is analogous to the choices within the internal business strategy arena to articulate the administrative structure of the firm dealing with roles, responsibilities and authority structures.)
- *IS processes:* those choices that define the work processes central to the operations of the IS infrastructure, such as systems development, maintenance, and monitoring and control systems. (This is analogous to the need for designing the business processes that support and shape the ability of the firm to execute business strategies.)
- *IS skills:* those choices pertaining to the acquisition, training and development of the knowledge and capabilities that individuals need to manage and operate the IS infrastructure effectively within the organization. (This is analogous to the skills needed to execute a given strategy.)

According to Henderson and Venkatraman (1993), managers think of IT strategy in terms of the latter three components, which reflect the internal orientation. When managers consider only the internal orientation, IT is often viewed as a 'cost of doing business' and is rarely seen as a strategic investment. If IT emerges as a critical enabler of business transformation with capabilities to deliver firm-level advantages, firms need to address the three external

components of IT strategy as well. Moreover, realizing a fit between the internal and external domains of IT is a key success factor for deriving benefits from IT investments.

Strategic fit is one element; *functional integration* is the second building block of the strategic alignment model. Functional integration means that the IT strategy is aligned with the business strategy. It considers how choices made in the IT domain impact - enhance or threaten - those made in the business domain, and vice versa (Figure 8.2).

Figure 8.2 Strategic alignment model



Source: Henderson and Venkatraman (1993: 476)

Henderson and Venkatraman (1993) have identified four different ways that strategic alignment can be achieved:

- *Strategy execution alignment perspective:* in this model, the business strategy is articulated and drives both organizational design choices and the design of the IS infrastructure. Top management formulates the strategy and the role of the IS management is to implement the strategy. The IS department is seen as a cost/service centre, and will be evaluated on how well it fulfils this function.
- *Technology transformation alignment perspective:* this model involves the assessment of implementing the chosen business strategy through appropriate IT strategy and the articulation of the required IS infrastructure and processes. Organizational design is not so much of a restriction and the organization seeks to identify the best possible IT competences through appropriate positioning in the IT marketplace. Since technology is crucial for the success of the company, top management should be technology visionary.

The role of the IS management can be defined as technology architect. The IS department will be evaluated on how well it fulfils the role of technology leader.

- *Competitive potential alignment perspective:* in this model, management explores how IT might enable new or enhanced business strategies with corresponding organizational implications. Here, the business strategy is adjusted because of emerging IT capabilities. Then the appropriate organizational adaptations are made. In this model, the role of top management is to be a business visionary and the role of the IS management is to be a catalyst in this whole transformation process. IT is considered to be a means of transforming the organization and to becoming a business leader.
- *Service level alignment perspective:* in this model, the focus is on how to build a world-class IS service organization. In this perspective, it is important to understand the external dimensions of IT strategy with the corresponding internal design of the IS infrastructure and processes. In this perspective, business strategy provides ideas for stimulating customer demand. According to Henderson and Venkatraman, this perspective is often viewed as necessary, but not sufficient, to ensure effective use of IT.

Henderson and Venkatraman's framework is interesting from a number of perspectives. It shows in a concrete way what strategic alignment means: it involves both strategic fit and functional integration. The framework is also useful because it points to different ways IT and IS can be approached when aligning them with the business strategy. The four different perspectives take various aspects of strategy formation into account (see also Chapter 6), identify various roles for top management and IS management, and suggest several performance criteria.

How to Create Strategic Information Systems Alignment?

Senior Management's Awareness of IT

The implementation of a model for strategic IS alignment (such as the one proposed by Henderson and Venkatraman) will remain hampered if the gap between *perceiving* the potential benefits of IT and *realizing* these benefits is not closed. Without awareness of the potential benefits, the subsequent necessary steps - evaluation - remain aimless.

Kaplan and Norton (2001) see the development of an understanding of the business strategy throughout the organization as a first step towards the creation of strategic awareness. Similarly, insight into the strategic role of IT is fundamental to the realization of IT benefits. (In this respect, Henderson and Venkatraman's framework is particularly useful.) The failure to think strategically about IT, together with senior management's failure to overcome their resistance to change, are interdependent causes of the so-called IT productivity paradox (i.e., investing more in IT does not improve productivity and often results in less satisfied users and customers). Also, the failure to see IT as a resource similar to time, money, equipment, labour and materials causes senior management to put too much stress on improving current inefficiencies instead of focusing on IT as a catalyst for change.

Reaching consensus about strategic priorities and IT's contribution to strategy is crucial. All too often, executives do not correctly recognize their firm's alignment perspective and the role IT can play in meeting business objectives. Dynamic change in the business environment is often followed by business strategy changes, but IT and senior management perceive these changes differently (Burn and Szeto, 2000). This leads to several misunderstandings concerning the operational role of IT within the company and misunderstandings concerning

the role IT can play as an enabler of competitive advantage in the external marketplace. These misunderstandings are exemplified in these typical viewpoints:

- CEOs most often wonder whether IT supports the strategic directions;
- The COO/CFO wonders whether the company's investment in IT is consistent with its business goals and related business operations;
- The Chief Intelligence Officer/IT manager wonders whether IT is aligned with the business, how this alignment can be improved, and whether the IS organization is well prepared to provide business solutions and to deal with accelerating business change.

From Perceiving to Realizing

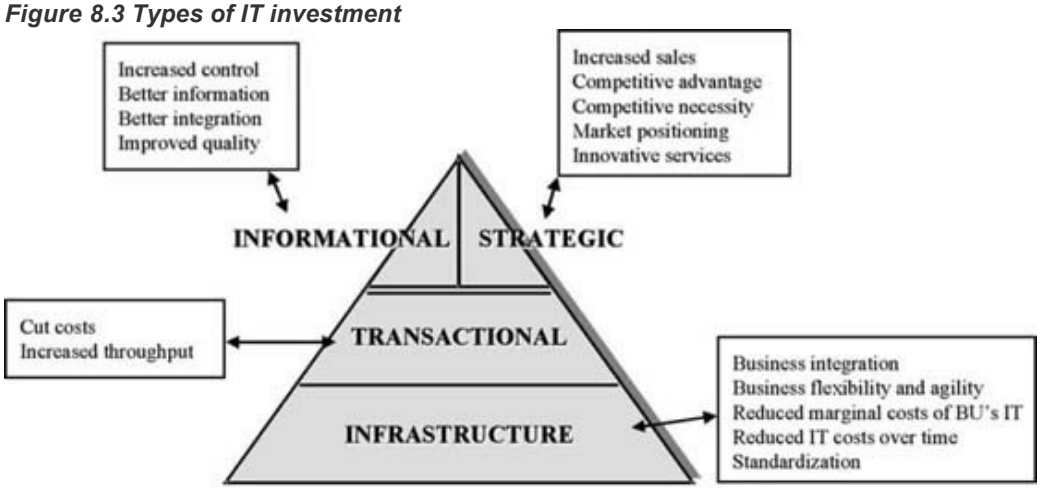
Strategic alignment helps general management to better *perceive* the potential business value of ICT. Strategic alignment helps in this process of envisioning that value, since it is a necessary cognitive prerequisite for the *realization* of the added value of IT. That is why some people argue for more top management involvement with IT projects (Earl and Feeny, 1994). Daily managerial practices are aimless without a strategic intent for IT. Tallon, Kraemer and Gurbaxani (2000) have gone as far as saying there is no direct effect of managerial practices on realized IT value, only an intermediary effect via the strategic intent for IT.

Tools for Creating Strategic Awareness

In the management literature, one finds several tools for increasing senior management's awareness of IT benefits. Three examples of such tools that we find particularly useful are: (1) Broadbent and Weill's typology of IT investments; (2) McFarlan's strategic grid; and (3) the CADIGA rule of thumb.

Peter Weill and Marianne Broadbent (1998) have looked at different types of IT investments and have developed an *investment pyramid.* This investment pyramid distinguishes four types of investment (infrastructural, transactional, informational and strategic) and helps senior management to position the types of IT implementation with their use and importance for the whole organization (see Figure 8.3).

Figure 8.3 Types of IT investment



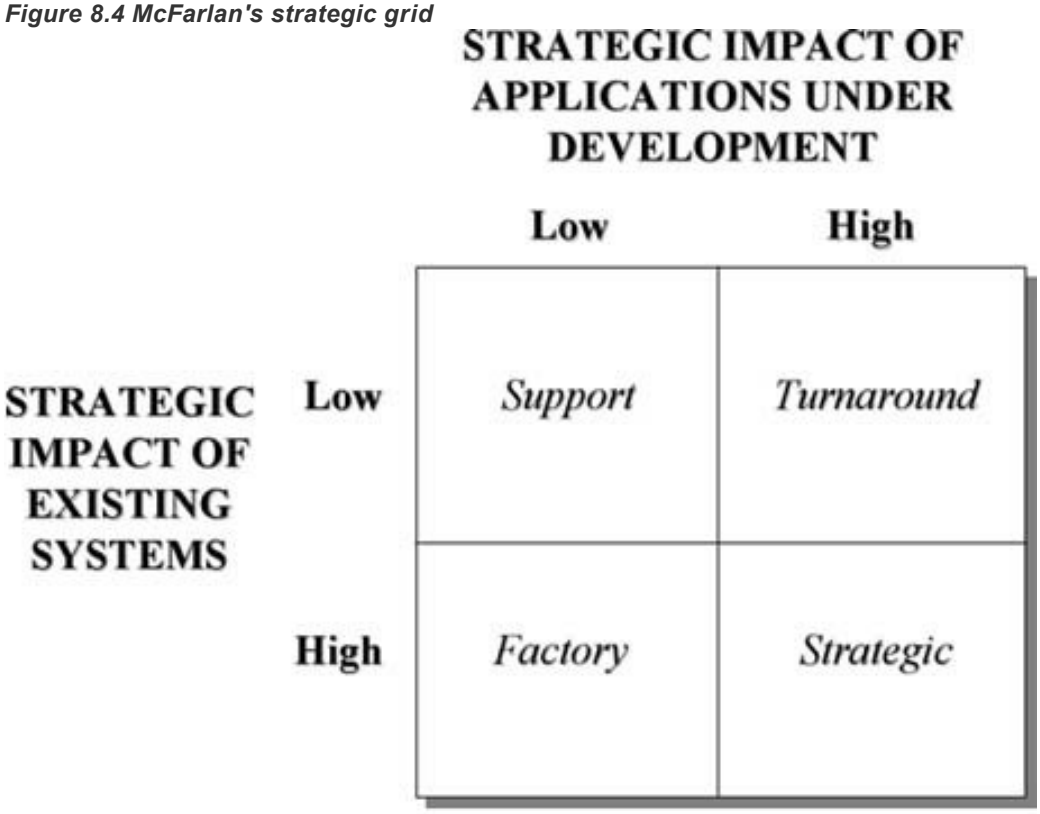
Source: Weill and Broadbent (1998: 52)

Senior management's awareness of IT can be improved by letting them categorize past and

current IT investments to analyse the proportion they take from the central budget (versus the business units' budgets), and to let them question to what extent the related strategic benefits have been or could be obtained.

McFarlan's (1984) *strategic grid* is a good tool for such an analysis. It addresses the following dimensions: (1) strategic impact of existing application systems and (2) strategic impact of applications under development (see Figure 8.4). Companies in the 'support' dimension use IT primarily for support activities, such as payroll processing and administration. Companies in the 'turnaround' dimension are not heavily dependent upon IT at present, but they may look to IT to improve their competitive posture in the market. In the 'factory' dimension, companies may use IT heavily for day-to-day operations, so that IT is viewed as largely strategic (because of the dependency of the organization's operations on mission- or operations-critical IT applications). The 'strategic' dimension companies are now and in the future heavily dependent upon IT for performance and day-to-day operations and for competitive advantage. McFarlan himself, while making this kind of analysis, preferred to talk about the management of the *ICT application portfolio approach.*

Figure 8.4 McFarlan's strategic grid



Source: McFarlan (1984: 100)

A third tool for increasing strategic awareness is the CADIGA rule of thumb. This model is an adaptation by Deschoolmeester and colleagues (1995, 2000) of Wiseman's (1985) ideas, and gives business management a list of motives for investing in IT. These motives are summarized in Table 8.1.

Table 8.1 CADIGA - an overview of motives for investing in IT

C *Cost reduction/Capital control*
Many companies implement an Enterprise Resource Programme (ERP) to obtain more productive procurement and production planning. This way, they can achieve smaller inventories of resources and finished products and also a more optimal use of production resources. Furthermore, through more efficient information processing, smaller teams of purchasers and production planners can do more work.

A *Alliances (Customers, suppliers, other companies, internal cooperation)*
Integration and cooperation between the functional domains via central databases or coordinated activities in an integrated process are made possible with the aid of ICT. In an extended enterprise, suppliers and customers can cooperate non-stop and in real-time thanks to the new ICT.

D *Differentiation from competition (quality, speed)*
Via Internet Web browsing, the customer can place his or her order and buy a custom-made product. Also, the cycle time between sales order and delivery can be drastically reduced. Websites where these facilities are available can differentiate one's company from competitors that still follow the traditional way of selling.

I *Information and knowledge/Innovation*
Having the right information brought to the right decision-maker at the right moment is an essential task of all information management. When wisdom and experience are added to information, one gets knowledge. He who creates and shares the most knowledge with the help if ICT, and has a mentality of learning and of sharing knowledge among personnel, will be a star player in the future.

G *Organizational support of growth*
With the help of ICT, companies can grow in size, in the number of business activities or on a geographic scale. Besides quantitative growth, this also entails qualitative growth, whereby information is more accessible when it is needed so that personnel can be more 'empowered'.

A *Agility and flexibility*
To improve awareness of the role of ICT for the organization, upper-level management has to be flexible enough to question itself on a regular basis regarding the relationship between potential and obtained results and the past or current and future ICT project portfolio.

Formulating IT Strategy: Management by Maxim

The exercise of awareness creation will prove futile if it is not followed by extensive and clear-cut communication towards all organizational internal and external participants about the role and objectives of the IT efforts. Therefore, clear-cut communication concerning the strategic core is required. Earl and Feeny (1994) propose that, before moving to the project management steps of *ex ante* and *ex post* evaluation, strategic orientation through the formulation of strategic *'business maxims'* is needed.

Broadbent and Weill (1997) have shown how these 'maxims' can form a blueprint for the formulation of business strategy. By outlining the strategic context through a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats), management can develop a series of short, sharp strategic statements - called business maxims, which are business guiding principles from which the IT guiding principles can be deduced. By communicating these 'frames' across all management layers, one can keep all the involved parties better informed about the strategic direction. Business maxims, which are very similar to the CADIGA rules of thumb, draw on a firm's mission or strategic statements and aim to articulate an agreed-upon position in a form that executives can readily understand and act on. IT maxims describe how a firm needs to connect, share and structure information and deploy IT across the organization (Table 8.2).

Table 8.2 Five categories of IT maxims

IT maxims	Examples
Expectations for IT investments in the firm	• We use IT to reduce costs through eliminating duplicated efforts. • Our IT spending must meet defined business needs and show clear cost savings . . .
Data access and use	• The usefulness of data must be recognized beyond the area immediately responsible for its capture. • Centralized information flow should allow all parts of the firm to spot trends quickly and use them to the firm's advantage . . .
Hardware and software resources	• We will migrate towards hardware and software resources that can process complex transactions globally. • We will move towards electronic processing of repetitive transactions . . .
Communications capabilities and services	• Our corporate network must provide access to a wide range of applications essential to the delivery of consistent customer service. • Our corporate network must be capable of carrying high bandwidth applications such as imaging and video-conferencing . . .
Architecture and standards approach	• We have a recommended IT architecture covering hardware, software and connectivity requirements. • We have agreed on firm-wide IT architecture covering data, hardware, software and communications . . .

Source: Broadbent and Weill (1997: 84)

Ex Ante evaluation

The phases of awareness and communication will usually be followed by the budgeting cycle, including the costs and benefits identified in the evaluation stage. In an ideal world, perfect care is given to making the cost-benefit of each IT effort explicit. The potential value of IT investments should be considered both in pre-project selection *(ex ante)* and post-investment evaluation. The clear *ex ante* formulation of goals - preferably in the format of a well thought-out business plan - will stimulate the process of, and key persons' involvement in, strategy formulation positively.

IT projects that are either mandatory (like the Euro-conversion projects) or clear-cut substitution projects do not fit easily into this cycle model. Such projects are treated as 'forced projects' because carrying them out is simply unavoidable. Of course, cost-conscious behaviour is appropriate here as well. In addition, IT projects that deal with technological obsolescence have another type of evaluation.

For other IT projects, formulating clear goals *ex ante* will have a positive impact on stakeholder value. In this context, a collection of basic criteria is proposed with which business can assess the feasibility of IT projects and the overall IT application portfolio. Information Economics provides a generalized framework for evaluating and comparing IT investments and projects by ranking - in addition to the financial ROI criterion - several value

and risk criteria of specific IT projects. For example, Parker and her colleagues (1989) proposed to combine information value and strategic value for the company and at the same time consider organizational and technological risks when doing (or not doing) an IT project. Table 8.3 summarizes Parker's main recommendations. This has been extended recently with a number of additional criteria that relate to the discussion of sustainable development (e.g., environmental and societal impacts) in Marilyn Parker's (1995) latest work.

Table 8.3 Parker et al.'s (1989) Information Economics

Measures	Explanation
Financial domain	
Return on Investment (ROI)	
Organizational domain	
Strategic match	The degree to which IS fits with the strategic goals of the firm.
Competitive advantage	The degree to which an investment can contribute to a stronger position in the market. Examples are changing the structure of the company or of a company's branch, improving the competitive position, and creating and using all strategic possibilities of IS.
Management information	The degree to which the (to be) implemented IS provides critical information to executive management concerning the core activities of the organization.
Competitive response	The degree to which not investing would be a risk and timely implementation would create an advantage over competitors.
Project or organizational risk	The degree to which the IS to be implemented is dependent on new competences. Some investments in IS can cause large organizational changes.
Technological domain	
Strategic IS architecture	The degree to which the proposed IS matches with the information plan and information architecture.
Definitional uncertainty	The degree to which the users' need for information can be fulfilled adequately.
Technological uncertainty	The degree to which IS demands new technical competences, new hardware, and/or new software.
IS infrastructure risk	The degree to which investments in IS demand more investment in the technical infrastructure, and the degree to which the IS department can support these efforts.

Source: Adapted from Parker and Benson (1989: 22–6)

Ex Post Evaluation

A *post*-implementation review as a form of impact analysis will help general management to assess the business value of IT. Similar to *ex ante* evaluation, tangible and intangible benefits should be taken into account.

A dual focus is needed on both business level strategies and functional level strategies. For example, on the business unit level, certain applications such as supply chain management software can have a positive potential value for the manufacturing department but a negative potential value for the sales department. Not considering multiple loci of potential value across different company departments leads to the failure of not being able to uncover heterogeneous valuation perspectives (Davern and Kauffman, 2000). This approach is usually rather qualitative, but for management it is quite accessible and understandable.

Next, evaluation at the functional level is possible with Kaplan and Norton's Balanced Scorecard (see also Chapter 3). The Balanced Scorecard can make progress in strategy explicit by assessing the impact of all sorts of organizational projects - in this case, more specifically, the IT project. For recent IT projects, one can evaluate aspects such as innovation and learning, process performance, customer satisfaction and financial results, while taking into account the various stakeholders. By doing so, top management recognizes that IT is only an ingredient - however important in many respects - beside other functional investments for 'improving' the business, such as marketing, R&D, production infrastructure renewal, quality management, etc. Furthermore, the Balanced Scorecard promotes the use of both financial and non-financial measures to monitor the progress of IT (and other) projects, providing a multidimensional approach to *ex post* evaluation.

Distribution of IT Efforts

IT efforts and investments should be allocated and distributed in a 'balanced' way across the whole organization. In the IS literature, there is growing consensus that a *federal IS organization* makes it possible to produce a good mix between (1) an internal central IT department and decentralized IT departments, and (2) key-users or IT specialist nodes provided all over the organization, and/or an external IS service provider. Here, a central issue is the appropriate allocation of IT resources and know-how over central parts of the organization and several business units (and their functional departments). Also, the mix between centralization and decentralization of managerial responsibilities and investment decisions regarding IT can enhance the move towards a federal IS organization. The federal organization aims to create higher internal and external stakeholder value, while at the same time creating a more satisfactory situation for management and the collaborators themselves.

When persons responsible for IT are more involved in the business strategy-making process, they will be inspired to offer strategic ideas and they will be more committed to the implementation of the strategic plans. More specifically, the move towards a federal IS organization is easier if the CIO (Chief Intelligence Officer) is a member of the (extended) executive committee. Inclusion of the CIO on the central director's team varies greatly across industries, as we found out in a Belgian survey of 80 companies (banking and insurance: already 43 per cent; manufacturing: only 21 per cent). Such a federal IS organization is characterized by:

- High-level and/or independent position of IT department in the organization chart.
- An IT steering committee (str-ICT-al, overall IT funding level, infrastructure investments, competitive issues solvable by IT);
- IT capable persons 'absorbed' within business lines or departments, and vice versa;
- An appropriate mix of internal (IT dept) versus external IS service provider;
- Appropriate centralization/decentralization of IT/IS competences and know-how.

The pros and cons of decentralization and centralization of the IT department are presented in Table 8.4. It is our firm belief that a balance between a centralized and decentralized position of IT within the organization is not only part of the alignment process, it is also an absolute requirement for the success of IT efforts and investments as observed by the various stakeholders.

Table 8.4 Pros and cons of decentralization and centralization as central governing principle

Decentralization		Centralization	
(IT organization oriented towards contribution to business strategy)		(IT organization being lowest cost service provider for integration of data and communications across (previously) unconnected activities)	
Pros	**Cons**	**Pros**	**Cons**
• Responsiveness to rapidly changing business requirements • Business awareness • Local control of priorities • Appropriateness of solutions • Local cost control	• Architectural diffusion • Redundant cost • No enterprise learning • Isolation of best practice	• Economies of scale • Uniform standards • Architectural control • Asset protection • Enterprise security	• Danger of isolation from users and business • User frustration • Communication costs • Enterprise communications • Integrated data management • Fairness in pricing

Strategic Information Systems Alignment and Maturity

Reaching strategic IS alignment is not an easy task and requires an organization to have reached a certain level of maturity. Jerry Luftman (2001) has proposed a methodology that enables companies to self-assess the maturity of their Business/IT strategic alignment. Luftman identified six elements of IT/Business alignment and five stages of maturity. This maturity framework is based on the *Capability Maturity Models*® (CMM®) of the Software Engineering Institute (SEI), a research and development centre sponsored by the US Department of Defense and operated by Carnegie Mellon University. By referring to the characteristics of five maturity levels within each of six strategic categories, Luftman contends that companies can generate numeric scores that reflect the maturity of their alignment. Evidently, few companies have already attained the highest maturity level (see Figure 8.5).

Figure 8.5 Luftman's five levels of IT/Business alignment

	LEVEL 1: Initial/*ad hoc* process	LEVEL 2: Committed process	LEVEL 3: Established focus process	LEVEL 4: Managed process	LEVEL 5: Optimized process
Communications	Business & IT lack understanding	Limited understanding	Good understanding	Bonding, unified	Informal, pervasive
Competency	Some technical measurements	Functional cost efficiency	Some cost effectiveness	Cost effective: some partner value	Extended to external partners
Governance	No formal process	Tactical at functional level; occasionally responsive	Relevant process across organization	Relevant process across organization	Integrated across organization, partners
Partnership	Conflict; IT is a cost of doing business	Process enabler; IT emerges as asset	Process driver; IT seen as asset	IT enables, drives business strategy	IT and business co-adaptive
Scope and architecture	Traditional (e.g., accounting e-mail)	Transaction (e.g., decision-support system)	Integrated across organization	Integrated with partners	Evolve with partners
Skills	IT takes risk, gets little reward; technical training	Differ across functional organizations	Emerging value service provider	Shared risk, rewards	Education/ careers/ rewards across organization

Source: Luftman (2001: 12)

Figure 8.5 can be seen as a rephrasing and updating of the classic Gibson and Nolan (1974; Nolan, 1979) view on the technological cycles of innovation and obsolescence. Their scheme laid the foundation for an organization to audit its current situation and to plan and control its IT efforts from initiation to maturity. It helped companies to introduce, implement and develop each wave of IT/IS technology.

COBIT (Control Objectives for Information and related Technology) is a similar framework developed by the Information Systems Audit and Control Foundation and the IT Governance Institute in the USA. The framework provides an answer to the question how to get IT under control such that it delivers the information the organization needs. COBIT has been developed as a generally applicable and accepted standard for good IT security and control practices that provides a reference framework for various types of user (management, IS audit, control and security practitioners). In this framework, IT processes are grouped into four major categories: (1) planning and organization of the IT activities; (2) acquisition and implementation of application software; technology infrastructure and IT procedures and systems; (3) delivery and support; and (4) monitoring of the IT processes (including IT quality assurance and audit). For each of these group of processes, COBIT provides a maturity model for control over IT processes. This gives managers an idea about where they are (eventually in comparison to a best-in-class in the industry), and how they should improve. COBIT also defines critical success factors, key goal indicators and key performance indicators for these different IT processes, and as such is one of the best developed performance management frameworks for the IT function today.

Conclusion

In this chapter, we have explored the concept of strategic IS alignment. The basic question is: What is the optimal fit between an organization's strategy and its IT and IS? We have presented Henderson and Venkatraman's framework, which gives us a very good overview of the various roles IT and IS can play, and what this means from an alignment perspective. Then, we have focused on the question: How to create strategic IS alignment? We have identified five major initiatives for achieving this:

- Augmenting the awareness of the senior management regarding the strategic opportunities made possible by IT;
- Formulating and communicating strategy by higher management - we referred to business maxims as a good tool in this process;
- *Ex ante* evaluation;
- Combining *ex ante* evaluation with *ex post* evaluation;
- Allocating and distributing IT efforts and investments in a 'balanced' way across the whole organization.

Finally, we have also pointed to the concept of maturity, a concept that we will tackle in greater detail in Part III.

- business strategy
- strategic information systems
- information systems
- strategic fit
- top management
- investment
- management roles

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