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Organizing and Configuring the IT Function

57.1 Introduction

How to organize and configure the internal information technology (IT) function* has been a critical issue since the beginning of enterprise computing. One of the most important challenges in IT organization design is selecting the extent to which IT decision-making and IT resources (including the IT workforce) are centralized (Brown and Magill 1994). The key rationale for centralization is to leverage economies of scale; the underlying rationale for decentralization is to ensure local responsiveness to internal and external customers (Sambamurthy and Zmud 1999; Agarwal and Sambamurthy 2002; Weill and Ross 2004).

Over the past decades, IT organizations have oscillated between centralized and decentralized forms (Peak and Azadmanesh 1997; Evaristo et al. 2005). In the beginning of enterprise data processing, mainframe computers and magnetic tape devices were commonly organized in central data centers. After the late 1980s and the vast growth of distributed computing (Von Simson 1990), client-server and firm-wide enterprise resource planning applications led to IT recentralizations (Brown 2003; McAdam and Galloway 2005). Many firms further consolidated large parts of their IT infrastructure and application operations into independent shared services organizations (Evaristo et al. 2005). These serve several lines of business to gain further economies of scale advantages as well as to improve the quality of overall IT service delivery through introducing standard IT practices (Schulz et al. 2009). While recent IT reference frameworks—such as ITIL, ISO/IEC 20000, CMMI, and COBIT—provide some guidance for designing the IT function and internal processes (Pardo 2010; Marrone and Kolbe 2011), this chapter takes an enterprise-level perspective.

* The terms information systems (IS) and information technology (IT) are both used in the literature to describe the IS/IT organization and IS/IT function. In this chapter we will use the term “IT” when referring to an organizational unit performing all or some of the IT functions within an enterprise.
In this chapter we present four IT organization archetypes that differ based on the centralization versus decentralization of both (1) IT decision rights and (2) allocated IT resources. We describe these archetypes based on four additional design dimensions: (1) coordination mechanisms, (2) financial autonomy, (3) sourcing arrangements, and (4) IT-related capabilities and skills. Being mindful that in the past the form of organizing the IT function has been heavily dependent on technological development. We predict that recent technology trends, such as cloud computing and the consumerization of IT, are likely to affect IT organization designs of the near future.

57.2 Six Dimensions of IT Organization Configurations

Organizations (profit as well as non-profit) typically consist of multiple units that may represent different functions or departments, lines of business, markets, or geographies (Daft 2009). We use the term “IT organization” to refer to the collectivity of human resources that perform IT-related tasks, such as planning, building, and operating IT applications and their underlying computer and communications infrastructures, as well as their relationships, practices, norms, and capabilities. This definition does not restrict the notion of an IT organization to the existence of a single organizational unit (i.e., “the IT department”). Rather, it offers the possibility to assume different design options for different IT units, depending on the needs and capabilities of the business unit(s) being supported. We also propose that six important dimensions distinguish an IT organizational design, as described later.*

57.2.1 Allocation of IT Decision Rights

According to IT governance theory, decisions on IT can be made in a more centralized or decentralized fashion (Brown and Grant 2005). In a corporate setting, centralization typically refers to allocating decision-making at the corporate level, while decentralization refers to decision authority at the divisional level or even lower organizational levels (Brown and Magill 1994). A simple scheme includes two primary decision areas: IT applications and IT infrastructure operations. A widely adopted pattern in which infrastructure decisions are centralized, but business application decisions are primarily made by the divisions, has been commonly termed a federated or federal model (Sambamurthy and Zmud 1999). More recently, Weill and Ross (2004, p. 6) proposed a five-part classification scheme that distinguishes decisions about business application needs, IT investment and prioritization, IT architecture, IT infrastructure strategies, as well as overall IT principles, with different patterns associated with different business priorities. Defining accountability and the sharing of decision rights between the two extreme poles of centralization and decentralization is commonly seen as a key challenge. However, some studies have demonstrated that companies with well-balanced IT decision rights exhibit better business–IT alignment and thus ultimately achieve superior firm performance (Weill and Ross 2004, p. 202). An IT reference framework such as COBIT can be used to apply overarching accountability schemes to the design of decision rights on the activity and role level.

57.2.2 Allocation of IT Resources

The second dimension captures the structural aspects of the IT organization, i.e., the position and location of the IT human and technology resources within the wider enterprise. Although some prior literature has implied that IT decision rights and IT resources reside together in an organization—we argue that these two dimensions should be considered separately (Boynton et al. 1992; Brown and Grant 2005). For example, IT decisions may be made in a decentralized manner by business units, while

* As the focus of this chapter is on organization structure, we refrain from an in-depth discussion of IT processes. However, we will make reference to process-based IT reference frameworks where suitable (see also Chapter 59 in this Volume).
IT resources operate under either divisional or corporate IT authority. Similarly, IT staff may be allocated to a line organization, but these IT resources implement services under centralized authority.

IT resource allocations have also been categorized as either IT demand or IT supply resources (Thiadens 2005, Mark and Rau 2006). That is, divisional IT units may plan for and formulate the IT resource demand for IT services at a division or business unit level, although a central IT unit (or an external supplier) may have responsibility for actually “supplying” the IT services to meet the specific business demand. Demand activities for IT operations, for example, include monitoring the delivery of IT services and issuing requests for minor changes to the infrastructure. Demand activities for IT application development include business process analysis, requirements definition, and user acceptance testing, as well as overall IT project management and steering. Although the focus of reference frameworks such as ITIL and COBIT is standardizable IT processes for IT supply units, they can provide some guidance also for designing demand-sided IT activities. For example, ITIL defines a dedicated demand management process as a responsibility of a demand manager (reporting to an IT unit).

In practice, the degree of centralization of IT resources differs widely under different IT organization archetypes (Hitt and Brynjolfsson 1997). In highly decentralized IT organizations divisional IT units also accomplish IT supply tasks, while in very centralized IT organizations corporate IT groups also manage much of the IT demand. The distribution of resources has overall been found to reflect the extent to which companies pursue economies of scale, versus enabling local responsiveness through the allocation of resources (Brown and Magill 1994).

The first two dimensions of our framework—allocation of IT decision rights and allocation of IT resources—form the axes for the $2 \times 2$ matrix in Figure 57.1. In addition to the centralized and

![FIGURE 57.1 IT organization archetypes.](image-url)
decentralized polar extremes, two other IT organization archetypes are defined. In the shared services model, IT decision rights are highly decentralized, but the IT resources that perform IT tasks are highly centralized. In the corporate coordinator model, the IT resources are highly decentralized or outsourced, but a central office holds a higher degree of IT decision rights. Four additional design dimensions for characterizing these archetypes are described later.

57.2.3 Coordination Mechanisms
The mechanisms for coordinating IT tasks across multiple organizational units—e.g., corporate functions, business units or divisions, and/or corporate and divisional IT groups—are an important complementary design dimension to the formal allocation of decision rights and resources (Brown 1999). They can be viewed as an overlay of the structural organization, which enables horizontal, not just vertical, information sharing (Daft 2009, p. 95). In general, the more complex and dispersed allocations of decisions and resources are, the more sophisticated coordination mechanisms need to be to effectively coordinate and integrate across the different parties involved in decision-making and execution (Peterson et al. 2000). Three categories of coordination mechanisms have been emphasized in the literature: structural mechanisms, procedural mechanisms, and relational mechanisms (Van Grembergen 2004, p. 20).

*Structural mechanisms* include “standing” groups or committees (in contrast to temporary teams or task forces), and formal roles that link across different organizational units. Widely used standing groups for IT governance decisions are, for example, IT steering committees with key business representation and IT management councils (Brown 1999). Formal liaison roles for IT demand management have also been implemented in many organizations within both business and IT units, e.g., account managers and business analysts reporting to IT units, as well as divisional information officers, business process owners, and key users residing in business units. Specific examples of tasks for such committees and liaison roles are now also part of common IT reference frameworks.

*Procedural mechanisms* are the specified rules and standard practices for decision-making and alignment between business and IT units (Peterson et al. 2000). Processes that span business and IT units include the IT strategy process, the IT budgeting and investment review process, project controlling processes, system change request and service level management procedures, etc. Naturally, both formal roles and standing groups are highly involved in effectuating procedural mechanisms. Common reference frameworks typically define a number of processes that involve these roles and groups—e.g., ITIL’s demand management and service level management processes.

*Relational mechanisms* characterize those practices that aim to link stakeholders in different organizational entities informally (i.e., outside of their role description or formal responsibility). Common approaches are communities of practice, key user networks, physical co-location, temporary job rotations, or simply interdepartmental events. While IT reference frameworks largely neglect the less “formalizable” relational mechanisms, academic researchers have emphasized the importance of informal mechanisms as a necessary complement to formal mechanisms (Brown 1999; Chan 2002). For example, relational mechanisms are apt to facilitate knowledge sharing and mutual understanding among different stakeholder groups (Peterson et al. 2000).

57.2.4 Financial Autonomy
The strategic management and accounting literature differentiates between different forms of financial autonomy for divisional units, such as cost, break-even, profit, and investment center types (Anthony and Govindarajan 2007, p. 247). Applied to (corporate and divisional) IT units, the type of center not only has important implications for internal chargeback arrangements between business and IT but also determines the degree of financial and managerial autonomy of an IT unit (Venkatraman 1997).
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Reference frameworks such as ITIL and COBIT generally acknowledge the importance of this organizational design dimension, but provide minimal design guidance.

In a cost center type, the IT unit is led by budget goals and is thus exclusively accounting for the costs of delivering internal IT services. Chargeback mechanisms are typically not in place (thus creating a possible incentive for business managers to underfund their units).

The break-even center defines service-based chargebacks based on the actual costs for delivering IT services. Thus, being a mixture between cost and profit centers, the goal of this center type is to close break-even. Since IT costs (e.g., for personnel, hardware, software) are often not directly accrued to an IT service, more complex cost and activity accounting schemes need to be established than in a cost center type. Such cost models often approximate the actually incurred IT cost, combining direct and indirect costs (Ryan and Raducha-Grace 2009).

Profit centers have greater financial autonomy inasmuch as their management carries responsibility for costs and (internal or external) revenues for IT services. Costs are charged to the customers on a more competitive basis, often oriented toward market-based transfer prices. However, in practice, business units are often obligated to contract with an internal IT profit center, so the degree of market competitiveness with external IT service providers is limited.

Investment centers extend profit center responsibilities to include accountability for the investment of accrued capital, so that this type of IT unit can be viewed as an independent company within the company. In large corporations, both profit and investment centers are commonly constituted in separate legal entities, subsidiary to the parent company.

57.2.5 Sourcing Arrangements

IT decision-makers continuously face the question about which tasks can be better and more efficiently performed by an external party. The IS literature provides a large body of literature with relevant considerations related to IT outsourcing (see Lacity et al. 2009 and Chapter 60 of this volume for an overview). Outsourcing arrangements can be differentiated regarding the coordination mode with an external provider—e.g., selected contractual obligations (“arms-length” relationships) for cost efficiency, versus long-term relational partnerships (“embedded”) for strengthening IT resources and technological flexibility (Lee et al. 2004). Notably, in recent years, the focus has shifted from long-term, comprehensive IT outsourcing arrangements and purely economic considerations to contracts that also target quality, flexibility, and innovation goals (e.g., Whitley and Willcocks 2011). Recent literature also emphasizes the need for in-house capabilities for governing the different kinds of outsourcing relationships effectively (e.g., Willcocks and Griffiths 2010). One model of nine IS capabilities for modern IT organizations, for example, includes four capabilities that are directly related to managing outsourcing providers: informed buying, contract facilitation, monitoring, and vendor development (Feeny and Willcocks 1998).

While both ITIL and COBIT describe some processes and activities related to managing third-party services, from an enterprise design standpoint, the crucial concern is the locus of outsourcing governance, i.e., whether sourcing capabilities are allocated at the business level, the central, or the divisional IT side (Agarwal and Sambamurthy 2002). IT outsourcing decisions can also result in a change in decision rights for that particular IT function, including decentralizing more such rights to business units (Brown 2003). For example, in situations where resources for IT demand already reside in business units or divisional IT groups, this organizational configuration increases the outsourcing readiness of these units and thus the likelihood that an outsourcing relationship will be governed directly by the division. This may as well create more pressure on central IT units to compete with external providers—especially when business units are not obliged to contract internally. Financially autonomous IT supply units that are organized as subsidiary to their parent corporations (i.e., captive IT centers) can therefore also be viewed as transitional structural arrangements prior to outsourcing IT supply to an external party (Kreutter and Stadtmann 2009). In such situations, building appropriate demand-side IT capabilities may become a strategic priority (Feeny and Willcocks 1998).
57.2.6 Capabilities and Skills

We define a capability as the application of knowledge, competencies, and skills residing in human resources, to accomplish given organizational goals (Peppard and Ward 2004). Our second dimension, allocation of IT resources, refers to the structural assignment of human resources within the organization, whereas this dimension focuses on the aggregate proficiencies that IT human resources within an enterprise need to have. The IS literature has proposed different categories of capabilities in IT organizations. In addition to the nine-capability framework of Feeny and Willcocks (1998), a common typology derived from marketing research distinguishes between inside-out, outside-in, and spanning capabilities (Wade and Hulland 2004).*

Inside-out refers to capabilities that are internally focused, such as IT infrastructure, IT development, and (more generally) cost-effective IT operations—here referred to earlier as IT supply capabilities. Outside-in and spanning capabilities are externally oriented, placing an emphasis on requirements and customer relationships, including IT planning and change management, IT/business partnerships, market responsiveness, and external relationship management. These capabilities are likely to be aligned closely with business units and here we characterize them as IT demand capabilities.

Some more fine-grained competency and skill categories can be found in both the academic and the practitioner literature, including a framework of 36 skills in 5 categories (Zwieg et al. 2006), skills related to roles in ITIL and CMM capabilities, as well as in frameworks such as the Skills Framework for the Information Age promoted by industry groups within the United Kingdom (SFIA 2012).† With the increasing pressure of IT organizations to compete on the product and labor markets, the development of appropriate IT demand and IT supply competencies becomes a more important imperative. A wide range of IT human resource practices, such as recruitment, training, and retention, and proactive career development can guide IT organizations to achieve this goal (Luftman 2011).

Table 57.1 summarizes the seminal literature that has motivated our inclusion of each of the six design dimensions.

57.3 IT Organization Archetypes

In Figure 57.1 we presented the four basic archetypes of IT organization configurations that are based on the first two dimensions described earlier: the distribution of IT decision rights and IT resources. In the following, we describe these archetypes in more detail, including their characteristics on the other four dimensions, their occurrence in practice, their strengths, as well as some common challenges.

57.3.1 Centralized Model

In a centralized model, most IT decision rights are allocated to the corporate level and IT resources are reporting to a central IT unit subordinate to corporate control while serving multiple business units. An IT steering or advisory committee has been recognized as an important coordination mechanism for ensuring business leader input into IT decision-making (Brown 2003; Huang et al. 2009). Under this model, the IT function is typically operated as a cost- or break-even center with simple chargeback arrangements. For example, in a corporate setting, a combination of global and business unit–related

* Although Wade and Hulland (2004) refer to these as categories for resources, their definition of resources as “assets and capabilities that are available and useful in detecting and responding to market opportunities or threats” is congruent with the notion of capabilities used in this paper.
† The SFIA Foundation is a not-for-profit organization that exists to own, promote, develop and maintain the Skills Framework for the Information Age. The members of The Foundation are UK Industry bodies in the field of IT: BCS (The British Computer Society), e-skills UK (e-skills UK Sector Skills Council Ltd), The IET (The Institution of Engineering and Technology), IMIS (The Institute for the Management of Information Systems), and itSMF (IT Service Management Forum).
IT budgets may be managed together with project-level and person-day based internal pricing. External contractors are typically governed by the corporate IT unit. Therefore, central IT resources not only need to be equipped with IT supply capabilities but also with sufficient IT demand capabilities to identify business needs and translate these into successful delivery by internal resources and external partners (as applicable).

Centralized models were the primary type of IT organization during the early era of mainframe computing and into the late 1980s when relational databases had arisen, however, networking was still limited (Peak and Azadmanesh 1997). A second wave of centralization also occurred in the mid-1990s as large firms initially implemented complex enterprise system packages (Brown 2003; McAdam and Galloway 2005). Today, centralized IT functions are also still the predominant model for small- and medium-sized businesses (Huang et al. 2009). Strengths of this model relate to an inherently high degree of standardization and corresponding efficiency through the sharing of IT resources and an underlying IT architecture across all divisions. Common challenges are business responsiveness and often a (perceived) lack of business contribution, that is, the IT organization may appear to act as a “black box” from a divisional perspective. Many centralized models have experienced improvements in IT responsiveness by enhancing both formal and informal coordination mechanisms, e.g., by introducing dedicated liaison roles and cross-functional IT meetings (Brown 1999; Huang et al. 2009).

### 57.3.2 Decentralized Model

In a decentralized model, business units make IT decisions (divisional or lower level) and are also responsible for managing IT resources. In the pure decentralized model, a central IT unit does not exist, which means that today it can be viewed as an almost “anarchic” configuration, with no or little coordination on a corporate level (Weill and Ross 2004, p. 58). In small divisions, coordination can even be achieved via informal, relational mechanisms; costs may not be accrued as a separate IT budget; and chargeback arrangements may not be implemented. If decentralized models make use of external suppliers/contractors, potentially for selected IT sourcing or project resources, these are typically governed outside of corporate control.

The decentralized model became more common after the expansion of mini-computers in the late 1970s, when most of the information processing took place in closed (proprietary) systems managed

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**TABLE 57.1** Design Dimensions and Primary Literature Sources

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<thead>
<tr>
<th>Dimension</th>
<th>Key Design Questions</th>
<th>Selected Literature</th>
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<tbody>
<tr>
<td>1. Allocation of decision rights</td>
<td>Which decision rights are allocated to business units, corporate, and IT stakeholders?</td>
<td>Brown and Magill (1994); Sambamurthy and Zmud (1999); Weill and Ross (2004); Brown and Grant (2005)</td>
</tr>
<tr>
<td>2. Allocation of resources</td>
<td>Which degree of centralization is appropriate? What is the split between IT demand and supply resources?</td>
<td>Boynton et al. (1992); Hitt and Brynjolfsson (1997); Thiadens (2005); Mark and Rau (2006); Daft (2009)</td>
</tr>
<tr>
<td>3. Coordination mechanisms</td>
<td>Which integration mechanisms (structural, procedural, relational) are implemented?</td>
<td>Brown (1999); Peterson et al. (2000); Chan (2002); Van Grembergen (2004)</td>
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<tr>
<td>4. Financial autonomy</td>
<td>Which degree of autonomy is appropriate for IT units? Which center type is implemented (cost, break-even, profit, investment center)?</td>
<td>Venkatraman (1997); Anthony and Govindarajan (2007); Ryan and Raducha-Grace (2009)</td>
</tr>
<tr>
<td>5. Sourcing arrangements</td>
<td>Which degree of external sourcing is appropriate? Which organizational units govern external relationships?</td>
<td>Agarwal and Sambamurthy (2002); Lee et al. (2004); Lacity et al. (2009); Willcocks and Griffiths (2010); Whitley and Willcocks (2011)</td>
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<tr>
<td>6. Capabilities and skills</td>
<td>Which capabilities are needed for IT demand and IT supply? How are these developed within the organization?</td>
<td>Feeny and Willcocks (1998); Peppard and Ward (2004); Wade and Hulland (2004); Zwieg et al. (2006); Luftman (2011)</td>
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Local IT experts (Peak and Azadmanesh 1997). The rapid growth of desktop computing and more modern distributed computing architectures also facilitated more decentralization (Von Simson 1990). The disadvantages of this model as a “pure” model lie in the cultivation of silo structures and a lack of IT cost transparency. Similar downsides relate to the commonly undesirable phenomenon of “shadow IT,” i.e., the existence of ad hoc IT solutions built, used, and managed by the business without central involvement or approval (Radan 2005). However, decentralized configurations can still be appropriate in cases where a strategic independence of a certain business division is desired, which may even include divestment-readiness (Leimeister et al. 2012). This model can also be appropriate for business functions where high innovation through IT and autonomous IT use are a strategic imperative, for example, in the research and development departments in a technology-intensive industry.

57.3.3 Shared Services Model

In the shared services model depicted in Figure 57.1, the IT resources are highly centralized, while the IT decision rights are primarily located at the division level. That is, divisions share the usage of centralized resources to capture advantages associated with a centralized model—including economies of scale and scope and IT architecture planning—without giving up major decision rights to a corporate IT unit. The business divisions typically also participate in steering committees and other decision-making bodies—such as cross-divisional IT boards responsible for IT architecture, IT application prioritizations, and infrastructure management—to set priorities for all of the divisions using the centralized IT resources. Shared services units are financially more autonomous than a purely centralized model and are responsible for their own results (Schulz et al. 2009). IT organizations that transition to this model therefore often need to devote significant efforts to productize their IT services on a competitive cost basis, so that they can retrieve their costs with chargebacks to their business customers (Ryan and Raducha-Grace 2009). External service providers may also be contracted for, and governed by, the shared services unit, especially for infrastructure services. However, depending on their size and maturity—and policies of the overall organization—business divisions may also have sufficient IT demand capabilities (and authorization) to independently contract out to external parties and thus circumvent the shared services unit.

Some of the early roots for this model can be seen in the writings by Von Simson (1990) and others in the 1990s, when organizations sought to better balance the advantages of a centralized model with those of a decentralized model with hybrid approaches. One hybrid approach was to create a federal model with IT application rights and resources residing within the divisions or business units, but IT operations (rights and resources) in a corporate IT unit. In contrast, in a “pure” shared services model, IT decision rights are at the division level, but IT (both application and infrastructure operations) resources are centralized. The global implementation of enterprise systems beginning in the late 1990s, which required both centralized application maintenance and process-based customizations, has been one of the catalysts for a wider acceptance of the pure shared services model (Brown 2003).

In many corporations today, shared services have therefore become a dominant model to organize and deliver IT as well as other enterprise support functions (e.g., accounting, physical facilities management), which are therefore sometimes co-located with IT (Schulz et al. 2009). Companies thereby aim to combine the benefits of centralization (economies of scale and scope) for IT applications and operations, with the benefits of outsourcing (e.g., customer focus, quality orientation, and increased variable versus fixed costs at the division level)—without sharing the potential drawbacks of outsourcing to an external supplier (e.g., supplier sustainability, loss of internal know-how, regulatory compliance, and data security concerns, etc.).

Sometimes this model is also seen as an opportunity to generate additional business, or as a strategic step before entirely outsourcing IT operations. Until the mid 2000s, many major corporations set up such IT subsidiaries with the primary goal of generating external revenues during a time of tremendous IT expansion in developed countries—a strategic trend that from today’s perspective, with few
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exceptions, can be counted as a failure (Kreutter and Stadtmann 2009). Reasons for why many of these “captive” players could not sustainably hold ground in an external market include the changing capability requirements for internally versus externally competing service providers, and the rise of mature IT outsourcing firms that utilize cheaper labor.

Some of the inherent challenges of this model also relate to the lengthier channels of communication from business demand to IT supply units (delivery), which may need to be coordinated across multiple division (and country) boundaries. For this reason, sophisticated governance mechanisms, including service level agreements by business units, as well as strong demand-side IT capabilities, are required in order to implement this model successfully (Peterson et al. 2000; Van Grembergen 2004).

57.3.4 Corporate Coordinator Model

In the corporate coordinator model, IT-related tasks are performed externally or by divisional resources (i.e., by divisional IT units or non-IT business users themselves), while a central IT authority (office of the CIO, or in some cases a CTO*) governs through IT decision rights and aligns the IT resource investments with an overall IT architecture strategy. In the “pure” form, the office of the CIO is empowered to develop and enforce standards and monitor adherence via the CIO’s direct report to corporate management, but does not possess dedicated resources to provide IT supply. Corporate IT standards differ in extent and range, from the usage of certain technology platform and application standards to guidelines for risk management and security controls. The reliance on committees and other coordination mechanisms to balance corporate and cross-functional priorities is similar to the shared services model. However, in a corporate coordinator model, these governance bodies are under the CIO, who has greater decision-making rights. For example, large IT development projects and sourcing arrangements to be managed at the division level may require pre-approval from the CIO.

External providers are contracted centrally by the office of the CIO or by divisional IT groups, depending if the service being sourced has firm-wide impacts (e.g., infrastructures and communication) or only divisional impacts (e.g., consultants and IT specialists in a project context). The CIO office acts as the mediator of external IT services, which are charged back to the divisions based on the costs of provision. Financial autonomy of the internal, divisional IT units is generally low, costs are accrued to divisional IT cost centers that are consolidated in divisional budgets, and no chargebacks take place at the division level. However, global cost transparency is warranted through oversight by the CIO and a global portfolio of divisional and corporate IT projects. For IT supplier steering and internal as well as external coordination, the central CIO office needs to develop strong demand capabilities (e.g., IT planning and change management, market responsiveness, and external relationship management). IT supply typically takes place through external suppliers or through divisional IT resources (as applicable).

The corporate coordinator model in its pure form is appropriate for several particular contexts, of which we highlight three. First, establishing a CIO office is often used strategically as a first step to advance from very decentralized configurations to more centralized governance and transparency, before actually centralizing resources, consolidating infrastructures, and achieving global scale. Second, for some business models that are based on replication (i.e., different entities with low data integration needs, but similar business processes), a coordinator model is the appropriate choice, due to its ability to leverage standardization potentials and economies of scale in IT sourcing, without integrating IT architectures (Ross et al. 2006, p. 35). Examples for such business models are diversified conglomerates as well as franchise companies.

Finally, the CIO office as a mediator of external IT services enables the ongoing IT outsourcing and industrialization trend. That is, the more (diverse) services are procured from the external market, the

* The Chief Technology Officer (CTO) role has evolved from research and development (R&D) management positions in technology-based industries and has recently also attracted more attention as a point of strategic responsibility for long-term goals and guidelines for the use of information technology within organizations (Hunter 2011).
The key challenge of the corporate coordinator model is its difficulty in effectively implementing centralized IT governance to leverage economies of scale and standardization via negotiations across division heads. This may explain why this archetype—as a model for the entire IT organization—is still uncommon today in practice.

The four IT organization archetypes and their key characteristics are summarized in Table 57.2.

<table>
<thead>
<tr>
<th>TABLE 57.2 Key Characteristics of Four IT Organization Archetypes</th>
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<tbody>
<tr>
<td><strong>IT decision rights allocation</strong></td>
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<td>IT resource allocation</td>
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<td>Coordination mechanisms (structural)</td>
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<tr>
<td>Financial autonomy</td>
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<td>Sourcing arrangements</td>
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<td>Capabilities and skills</td>
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<td>Strengths</td>
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<td>Common challenges</td>
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* ESP, external service provider.

higher is the need for expert buyers to steer and manage these providers in order to achieve the desired benefits (e.g., costs, flexibility, and innovation goals). Thus, establishing a corporate coordinator model can be a viable alternative to building the distributed and costly demand capabilities in the business divisions—as required for the shared services model.

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57.4 Assessing the Business and Technology Contingencies

Past research has proposed traditional business drivers such as a firm’s competitive strategy and structure as influencing the “choice” of the archetype of an IT organization (Agarwal and Sambamurthy 2002; Brown and Grant 2005). For example, more globalized firms seeking responsiveness to local markets are likely to decentralize some IT rights and responsibilities, while smaller firms striving for economies of
scale are likely to centralize their IT decision rights and resources (Sambamurthy and Zmud 1999; Weill and Ross 2004; Huang et al. 2009). However, more recent literature also emphasizes the complementarities between organizational and technological architectures (Tiwana and Konsynski 2010).

We conjecture that recent technology trends such as cloud computing and IT consumerization are likely to affect the IT organization models for both the IT demand and the supply sides. More specifically, cloud computing and the Internet-based delivery of applications and components as a service will further push the border of what is “core” and what is “commodity” across enterprise application landscapes (Bento and Bento 2011). Thus, on the application level, business units are more likely to manage their own cloud applications in a more decentralized fashion and thus circumvent centralized investment procedures (Winkler et al. 2011). At the backend, fewer IT resources will be needed for the operating infrastructure. However, managing the technological architecture and integrating cloud-based services with internal and external infrastructures will pose increasingly important challenges and the need for new capabilities.

Consumerization of IT superimposes the cloud wave. Employees with increasing IT skills and access to sophisticated client devices for personal use expect to find IT tools in their workplace that they already use in their home environments (Bernnat et al. 2010). As an answer to these new expectations, some companies have created policies for allowing employees to bring their own devices, such as smartphones and tablet PCs, into the work environment and integrate them. This represents a paradigm shift inasmuch as employees are subsidized for using their own hardware and applications. Data security and other related risks need to be diligently addressed by enforcing appropriate firm-wide guidelines.

These and other technology trends suggest greater decentralization of IT responsibilities and more hybrid IT governance designs in the future. More application as well as infrastructure decision rights (e.g., on mobile device use) will shift to tech savvy business users, while IT operations responsibilities are increasingly shared between internal and external suppliers. Managing the diverging ecosystem of user IT demand and entire supply chains of IT service provision will be one of the key IT governance challenges in the future (McDonald 2007). Enterprise-level organizational models that enable a better integration and coordination across users, IT units, and multiple suppliers will need to be developed, which we expect to be reflected in future versions of standard IT reference models (Pardo 2010; Marrone and Kolbe 2011).*

### 57.5 Further Research Opportunities

Beyond the technology contingencies, other perspectives also appear particularly fruitful for investigating the changing shape of contemporary IT organizational configurations. First, industry-specific approaches have largely been neglected in the past. Organizations in the public sector, for example, national and local governments as well as non-profits in health care and other industries, hold different principles for creating public versus private value, which may also call for different principles of IT governance (Weill and Ross 2004, pp. 185–214; Sethibe et al. 2007). Second, given the increasing dispersion of IT value creation across organizational ecosystems, the understanding of “organizational configurations” needs to be broadened to span entire IT value networks (Leimeister et al. 2010; Iyer and Henderson 2012). This also implies that the extensive, yet separate, literature strands on governance of (internal) IT functions and governance of (external) outsourcing relationships need to be united under a common frame. Third, such governance arrangements may significantly vary depending on the kind of IT subfunctions considered. Various authors have begun to investigate IT organization and governance phenomena regarding certain subdomains, such as governance in system development projects (Tiwana 2009), application governance (Winkler et al. 2011), data governance (Khatri and Brown 2010), and infrastructure sourcing governance (Xue et al. 2011). Taking such modular views and aligning these with overall (networked) governance schemes appear a promising

* For example, in its 2011 version ITIL has introduced additional strategic processes and liaison roles to address increasing coordination needs, such as a service strategy manager, a business relationship manager, and a demand manager.
field for future researchers. Finally, having argued that organizational configuration is a dynamic phenomenon influenced by business and technology developments, we conclude that more longitudinal research is needed to study IT organization design phenomena.

In this chapter we conjecture that implementing more characteristics of a corporate coordinator model—i.e., moving operational IT delivery to external specialists while focusing on the alignment of internal standards and decentralized provisioning of specialist resources—may become a viable path for many CIOs to address the design issues related to the IT organization dimensions discussed here. This also implies that the CIO role will continue to evolve from an “inside-out” IT supply manager to an empowered coordinator, who leverages capabilities of the entire IT value network from the outside-in—a role that has also been termed as a chief business technology strategist (Carter et al. 2011). Future researchers may build on our enterprise-level view of four archetypes of IT organizations and their dimensions, as well as assess in-depth the impact of emerging IT trends on IT organizations in different, dynamic business and industry contexts.

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