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The revitalization of service orientation: a business services model

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Abstract

Purpose – Due to the convergence of rapid business developments and digitization challenges, service orientation is back on the research agenda as a concept to improve firms' business services. Yet, little is known about the type of determinants that are relevant and to what degree they affect a firm's service-oriented strategy.

Design/methodology/approach – Building on structural equation modeling (SEM) and a unique data set of 131 international firms from different continents, the authors identify and analyze the key determinants in the context of a firm's service-oriented strategy.

Findings – The findings show that in order to cater for changes, organizations have to manage and adapt the coherence of the determinants' business services, business processes and knowledge sharing continuously. Moreover, the results show that a service-oriented strategy is not only influenced by business services as such, but business services mediate the relationships between business processes, governance and process-aware information systems to a service-oriented strategy.

Research limitations/implications – A limitation is imposed by the limited sample size and the unbalanced response of participants (executive management). In future research, a more extensive survey among a broader group of participants will help the authors to develop their model further in order to generalize the results, as well as more finely grained research related to geography and size might be pursued. Future empirical research is necessary to identify and test the relationships between other constructs and study their effect on a firm's service-oriented strategy.

Practical implications – On a practical level, the authors postulate that an organization's executive management should pay attention to invest in an organizational entity (department) that manages business services continuously. This organizational entity has to ensure that related processes and knowledge sharing are in place to establish and maintain a service-oriented strategy.

Originality/value – This research contributes to service-oriented literature by operationalizing the implementation of an organization's service-oriented strategy. The authors' insights go beyond the findings of Aier *et al.* (2011). The authors found that a service-oriented strategy influences service-oriented project success positively. The authors extended these findings, based on a unique data set, by studying business services and influencing determinants (i.e. business processes, governance, PAIS and knowledge sharing) within the context of service orientation. The renewed attention to the concept of service orientation provides insights into critical determinants that influence the implementation of a service-oriented strategy.

Keywords Governance, Organizational readiness, Business services, Business processes, Process-aware information systems, Service orientation

Paper type Research paper

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1. Introduction

Between 2005 and 2009, researchers paid ample attention to service orientation to improve internal business services by building these out of readily available building blocks (e.g. Cherbakov *et al.*, 2005; Janssen and Joha, 2008; Aier *et al.*, 2011). By adopting a service-oriented strategy, organizations create internal business services that are modular, accessible and interoperable (Fremantle *et al.*, 2002) and utilize the possibility to reuse existing components of internal services in business processes (Demirkan *et al.*, 2007). As a result, organizations are potentially more responsive to changing business circumstances (Umar, 2005). The focus of this paper is not on business-to-end-user services, whether these end users are consumers or other businesses, but on business services that are used to support organizations' internal business processes, for example, Finance and Accounting (F&A), Human Resources (HR), Procurement or IT services. Research interest to study the concept of service orientation, for example, service architectures and reuse of existing components as, for instance, offered by shared service centers, decreased after 2009, as the concepts of adaptability and agility were considered to be a serious alternative to respond to changes (Conboy, 2009). Due to the convergence of rapid business developments and digitization challenges, organizations nowadays again seek various approaches, which puts service orientation back in the limelight to achieve organizational responsiveness (Deloitte GBS, 2018; KPMG Insights, 2019). Market research shows, for instance, that the 2021 market size of global Finance and Accounting business services will grow up to $30.4*bn*, while the compound annual growth rate (CAGR) for F&A business services is 6% (HfS: F&A market size and forecast 2017–2021).

From an academic perspective, the review of Holmlund *et al.* (2016) of business and management literature related to service orientation underpins the call for more research on business service implementation and usage contexts. The authors argue that management, leadership and decision-making in organizations that rely on business services and which are engaged in the transition toward service-based approaches face many challenges for managers that researchers could tap into (p. 2460). In a similar vein, Buhl and Weinhardt (2009) argue that we have to advance service-orientation research internationally and as such contribute to organizations' business models to perform flexibly and smoothly.

Literature, as will be discussed in more detail, shows that service orientation and internal business services have been extensively researched, specifically by making use of literature reviews, case studies and quantitative research (see Table 1). However, few studies in the field of business services studied, based on quantitative empirical data, (1) what type of determinants, such as transparency of business process, maturity of an organization, level of knowledge sharing or use of information systems, are relevant in relation to an organization's service-oriented strategy and subsequently (2) to what degree they affect the implementation of such a service-oriented strategy. We define a service-oriented strategy as the deliberate choice of a firm to base their business strategy on clear choices with regard to how business services are internally addressed and enabled within the organization. Consequently, if organizations are unaware of influencing determinants, this may result in management decisions that lead to barriers that affect the implementation of a service-oriented strategy. We argue that a theory-based research is required to identify and analyze how and to what degree key determinants explain an organization's service-oriented strategy. Therefore, the leading research question in this paper is:

RQ1. How and to what degree do the key determinants that can be influenced by organizations' management affect a service-oriented strategy with a focus on organization's business services?

In this paper, we aim to address this research question by proposing and validating a conceptual model explaining the service orientation of an organization and by examining the

Constructs	Source	Type of Research	Key attributes
Service orientation	Homburg *et al.* (2002)	Empirical research	Business strategy, Performance outcomes
	Czarnitzki and Spielkamp (2003)	Literature review	Business services, Innovation, Knowledge
	Lytle and Timmerman (2006)	Empirical research (quantitative method)	Organizational performance, Employee commitment, Product performance
	Yoon *et al.* (2007)	Empirical research (quantitative method)	Business performance, Service value, Employee satisfaction
	Janssen and Joha (2008)	Literature review, case study	Strategy, Organizational redesign, Processes, Transformation
	Teng and Barrows, 2009	Literature review	Employee, Management and organization
	Murray *et al.* (2009)	Literature review	Sourcing strategy, Knowledge, Capabilities, Performance
	Gebauer *et al.* (2010)	Empirical research (quantitative method)	Service strategies, Organizational designs, Performance
	Aier *et al.* (2011)	Empirical research (quantitative method)	Service strategy, Organization and culture, Communication, Projects, Success
Business services	Esteves and Pastor (2001)	Literature review	Information Systems, Life cycle, Business processes
	Fremantle *et al.* (2002)	Literature review	Web services, Information systems, Integration
	Cherbakov *et al.* (2005)	Literature review, case study	Componentization, Value net, Information systems
	Schroth (2007)	Literature review	Web services, Information systems
	Demirkan *et al.* (2008)	Literature review	Customer perspective, Economics, Information Technology strategy
	Van Van der Aalst (2012)	Literature review	Business processes, Process-aware information systems
	Wynstra *et al.* (2015)	Literature review	Governance, Capabilities, Contracting, Management
	Alreemy *et al.*, (2016)	Literature review	Information Systems, Governance, Success factors
	Holmlund *et al.* (2016)	Literature review	Financial issues, Management, Decision-making

Table 1. Overview of service-oriented and business services research

relationship between various determinants and the organization's service-orientation strategy. This paper is organized as follow. First, our theoretical background addresses the concepts of service orientation and business services. Based on these insights, a research model is proposed, and we develop research hypotheses. The research methodology is presented in Section 3, and next, the data analysis and results are addressed in Section 4. Discussions and the conclusion are presented in Section 5 and 6, respectively.

2. Theoretical background

We identify determinants of a service-oriented strategy by conducting a systematic literature review in an open way and not based on predefined expectations on which concepts to study in order to explain a service-oriented strategy. Publications on the concepts of service orientation and business services, both from a technical, that is, information systems and an organizational perspective, were identified through searches making use of three search engines, namely: Scopus, Web of Science and Google Scholar selecting publications from 2000

to 2018. Search terms that were used, either separately or in combination, include service orientation, business services, organization, strategy, management, transition, implementation and determinants. Publications include a broad variety of academic publications, such as: Journal of Business Research, Information and Organization, Journal of Services Marketing, Journal of Services Management, Communications of the ACM, Digital Information Management, Business Process Management Journal and Journal of Operations Management. The selection was based on two criteria. First, publications were selected that include at least one search term in the title, abstract or keywords. Second, to ensure reliability of the data collection, only reviewed journals, book chapters and conference proceedings with more than 50 citations were selected. In order to look for recent insights we also searched for relevant conference papers, where the citation criteria were less relevant, but contained new proposed perspectives as derived from the abstract.

As we aim at assessing business services from an organizational perspective, we excluded computing and modeling views.

Based on analysis of selected key publications, we find five generally considered determinants of which three correspond to both a service-orientation strategy and business services, namely business processes, governance, process-aware information systems. Two determinants correspond to a service-orientation strategy specifically, organizational readiness and knowledge sharing. Next, we elaborate on the service orientation and business services concepts and the five determinants in more detail.

2.1 Service orientation

Literature on service orientation shows two main perspectives, namely technical and organizational. Cherbakov *et al.* (2005), for instance, used an information system view to study service orientation and described this concept as a set of cooperating business services that are loosely coupled and supported by applications that span organizations and multiple information systems. Today, organizations invest in business environments that are enabled by technical solutions and, as such, opportunities arise to provide business value in service relationships (Arsanjani, 2002). This results in an emerging service-oriented way of thinking, which leverages technology in a response to cater for changing circumstances (Demirkan *et al.*, 2008). By adopting service orientation, web services are created that are modular, accessible and interoperable (Fremantle *et al.*, 2002), which allows organizations to redesign business processes by reusing and combining existing (web) services.

We argue that the second perspective on service orientation, for example, an organizational view, is required to study a firm's service-oriented strategy, as business services are enabled within an organization. Service orientation has been conceptualized at the organizational level, where the emphasis is on the extent to which an organization is internally service-oriented (Homburg *et al.*, 2002; Eichengreen and Gupta, 2012). Despite the multitudes of publications on service orientation, the management side of the effects of implementing a service-orientation approach tends to receive less attention. Lytle and Timmerman (2006) define service orientation as "an organization-wide embracement of a basic set of relatively enduring organizational policies, practices, and procedures intended to support and reward service-giving behaviors that create and deliver service excellence (p. 136)." This is in line with our definition of service-oriented strategy as the deliberate choice of an organization to base their business strategy on clear choices with regard to how business services are internally addressed and enabled in an organization.

Organizations that want to focus on service orientation have to deal with change. *Organizational readiness* helps to decrease the degree of risk associated with the implementation of a service-oriented strategy (Armenakis and Bedeian, 1999). When organizational readiness for change is high, literature shows that organizational members are

more willing to invest in the change effort, which contributes to a more successful change implementation (Armenakis and Harris, 2002). Importantly, a service-oriented strategy is influenced by the ability and willingness of managers and employees of an organization to *share knowledge* on a day-to-day basis (Orlikowski, 2002). Applying knowledge sharing may encounter certain challenges, in particular when teams are faced with geographical and time-zone differences (Kotlarsky and Oshri, 2005).

2.2 Business services

Previous studies show that an organization's service-oriented strategy is influenced by the availability and need for their business services (Murray *et al.*, 2009; Wynstra *et al.*, 2015; Holmlund *et al.*, 2016). Wirtz *et al.* (2015) argue that business services consist of a variety of services (e.g. legal, accountancy, product and end-user service design, research and development and (information) technology support). To improve effectiveness, organizations decompose their enterprise and corresponding business services into smaller autonomous business components that may interact with other business components. The decomposition of organizations makes complexity manageable and, as such, business services can be integrated and/or disintegrated.

Applying a service-orientation approach, *business processes* are managed across an organization that requires breaking down siloed business processes into modular independent services (Demirkan *et al.*, 2008) that support dynamic processes. Considering dynamic processes, each subsequent process step may be based on the full or partial results of previous steps. Consequently, dynamic processes increase a firm's organizational responsiveness to cater for market changes. Next, to support business services, *process-aware information systems (PAISs)* must be loosely coupled to create dynamic business processes (Janssen, 2008) and, therefore, form a prerequisite to enable strategic decision-making. Tightly coupled business services and PAIS, on the other hand, may hinder the degree of service-oriented effectiveness. Due to the evolution of PAIS (e.g. web services, architectures, application, practices) and of corresponding business processes, Alreemy *et al.* (2016) state that appropriate *governance* is essential to achieve organizational success.

2.3 Development of hypotheses

Our literature review shows three generally considered determinants that correspond to a service-oriented strategy directly. First, the way in which *business services* are established influences the implementation of an organization's service-oriented strategy. Wirtz *et al.* (2015) define business services as services that "consist of a variety of knowledge-intensive and creative professional services (e.g., legal, accountancy, market research, consulting, design, and research and development), IT and technology-intensive services" (p. 569). Cherbakov *et al.* (2005) argue that in order to become more agile, organizations have to focus on their core competences and reorganize business tasks. As such, an enterprise transforms into a collection of autonomous business services that may interact with each other. Organizations may modularize business services into business components to manage complexity (Arsanjani, 2002). In doing so, they are able to integrate and disintegrate existing business components. Consequently, organizations are able to create an internal business ecosystem that consists of a federation of collaborating knowledge-intensive business services. We argue that organizations implement a service-oriented strategy that takes modularized business services into account across functional domains and geographical scope. As such, business services can be managed to respond to rapidly changing business environments. Therefore:

H1. The more business services are integrated, the easier (or more effective) a service-oriented strategy will be implemented.

Second, in applying a service-oriented strategy, *organizational readiness* becomes essential. Literature postulates that to adapt to an organizational change effectively, which corresponds to implementing a service-oriented strategy, organizations have to prepare internally to cater for the change (Armenakis and Bedeian, 1999). Holt *et al.* (2007) define organizational readiness as "a comprehensive attitude that is influenced simultaneously by the content, the process, the context, and the individuals involved" (p. 235). Organizational readiness is supported by the way in which processes are formalized (Ein-Dor and Segev, 1978), degree of committed top management (Abdolvand *et al.*, 2008) and level of IT readiness (Bassellier and Benbasat, 2004). Organizational readiness relates to an organization's implementation management capability that strives to effectively transition a service-oriented strategy and corresponding business services (Luo *et al.*, 2012). Therefore:

H2. The higher the organizational readiness, the easier (or more effective) a service-oriented strategy will be implemented.

Knowledge sharing has become an important component in developing an organization's business strategy (Wang and Hou, 2015; Zhang, 2018). Lee (2001) defines knowledge sharing "as activities of transferring or disseminating knowledge from one person, group or organization to another" (p. 324). Importantly, the way how knowledge can be shared is considered to be a major management issue as knowledge includes both tacit and explicit knowledge. Implementing a service-oriented strategy is complex and inherently incomplete because organizations have to deal with uncertainty. As such, knowledge sharing can be seen as a mechanism to overcome uncertainty. Hence, organizations should invest in building knowledge sharing mechanisms to support the exchange of information (Rai *et al.*, 2012). Therefore:

H3. The more knowledge is being shared, the easier (or more effective) a service-oriented strategy will be implemented.

Based on our literature review we find three determinants that correspond to both a service-oriented strategy and business services. In an effort to adapt to changing circumstances, organizations deconstruct their *business processes* into modular independent services that makes it easier to focus on their core capabilities (Bharadwaj *et al.*, 2013; Demirkan *et al.*, 2008). Baldwin and Clark (1997) define modularization as a strategy for organizing complex products and processes efficiently. A modular system is composed of modules that are designed independently but still function as an integrated whole (p. 86), making use of a common architecture. Modularization requires a dynamic orchestration of business processes that is in contrast with processes that are designed from a predefined static sequence, in which process steps must be completed before starting a new process. According to Van der Aalst (2012), the choreography of services is essential to create business process flexibility and, as such, modularized business services that can be managed in various configurations are a precondition. We argue that organizations that have modularized business processes, and reassess these modularized processes on a regular basis, can implement a service oriented strategy more effectively. Therefore:

H4. If business processes are modularized, then an organization's service-oriented strategy will be implemented more effectively.

H4a. Modularized business processes positively influence integrated business services.

However, these hypotheses assume all business services as being equal, as such, the functional scale and geographical scope might mediate this relation; therefore, we posit the next more detailed hypothesis.

H4b. The relationship between modularized business processes and implementation of a service-oriented strategy is mediated by the nature of business services.

Alreemy *et al.* (2016) argue that *governance* supports business services by means of providing clear organizational guidelines in addressing who (organizational department or team) is responsible for managing these services. Aier *et al.* (2011) define service-orientation governance as "the organizational responsibilities for managing the service landscape" (p. 93). Since service orientation fundamentally breaks with traditional fragmented or monolithic systems in supporting business services, Weill and Ross (2004) argue that organizations have to promote a culture of willingness to embrace such a change. Bieberstein *et al.* (2005) state that senior management is in the position to encourage willingness and enforce strict governance of service-orientation practices. Therefore, existing intensive governance practices need to be in place in order to enable an organization to apply business services effectively over functional domains and geographical areas. Therefore:

H5. If governance is more strictly applied, then an organization's service-oriented strategy will be implemented more effectively.

H5a. If governance is more strictly applied, the better business services are integrated.

H5b. The relationship between governance and implementation of a service-oriented strategy is mediated by an organization's integrated business services.

As the scope of enterprises has grown dramatically, business services are often supported by different business processes that are increasingly integrated with each other. This implies that PAISs are interconnected as applications increasingly need to work together (Izza, 2009; Van der Aalst *et al.*, 2007). Van der Aalst defines PAIS as a system that "support the operations of an organization based on models of both the organization and the processes involved" (2007, p 6). Originally, to support their business processes, organizations often used customized software. To cater for changing circumstances rapidly, organizations focused on standardization to create agility. Consequently, more generic software was developed, such as Workflow Management (WFM) systems, Business Process Management (BPM) systems and Enterprise Resource Planning (ERP) systems. In practice, PAIS supports business processes such as finance and accounting, procurement and Human Resource (HR). As such, PAIS provides flexibility to support business processes and the adaptation of modular business services (Fremantle *et al.*, 2002). To support modular business services, PAIS must be interoperable to reuse existing services and assemble them into new business services, which is key to enterprise integration. Consequently, by applying interoperability principle over different functionalities and geographical areas, enterprises are able to decrease the degree of business services complexity. In doing so, business services can be more easily adjusted to respond to endogenous developments (Overby *et al.*, 2006). Therefore:

H6. The more PAISs are interoperable, the more effective a service-oriented strategy will be.

H6a. The more PAISs are interoperable, the better business services are integrated.

H6b. The relationship between PAISs interoperability and implementation of a service-oriented strategy is mediated by an organization's integrated business services.

Figure 1 shows the research proposed conceptual model and summarizes the path relationships. The theoretical model posits that service-oriented strategy is affected directly by business processes, governance and PAIS, but can be mediated by the domain of the business services as well. Furthermore, we propose that organizational readiness and knowledge sharing positively influence an organization's service-oriented strategy.

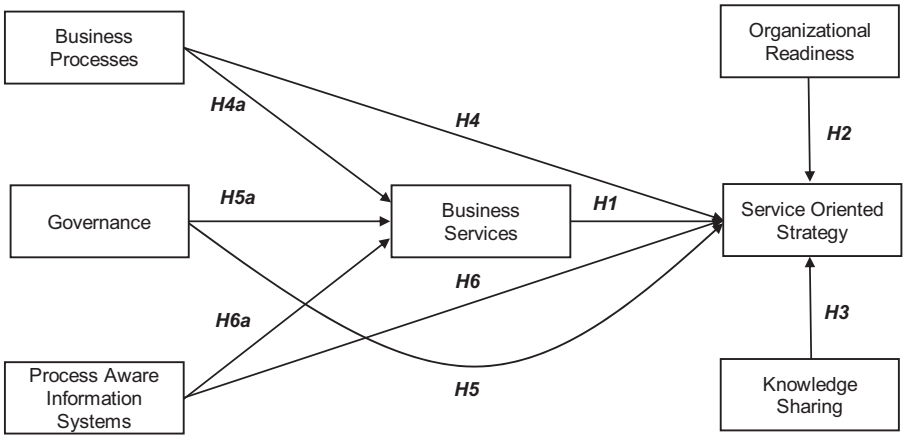

Figure 1.
Research model

3. Research methodology

To find and identify the relationships among the constructs, the data set was analyzed using structural equation modeling (SEM) techniques through partial least squares (PLS), which focuses on the analysis of variance (Hair *et al.*, 2011, p. 139; Hair *et al.*, 2016), using SmartPLS (Ringle *et al.*, 2005). PLS-SEM is an appropriate approach when situations are encountered, like sample size is small and predictive accuracy (Wong, 2011). Because our study is based on a rather small sample size and the predictive accuracy is paramount, we used PLS.

3.1 Measurement model

To ensure the reliability of the measurement and to have a comprehensive list of measures, we performed an extensive literature review. We selected all survey items for each construct from previously validated measures. When necessary, minor modifications were made (items reworded) to fit the specific context of the research. In total 31 items were included in the final analysis, see Table A1. Literature revealed that three main criteria influence a service-oriented strategy: (1) the degree of maturity (Welke *et al.*, 2011), (2) the size of a firm (Aier *et al.*, 2011) and (3) geography (Ciarli *et al.*, 2012). Therefore, we included the size of the global organizations (small = < 10,000 and large > 10,000 employees) and location of the firm (1 = North and South America, 2 = Europe and Asia Pacific and Africa) in our study as control variables to further investigate if the path relationships are affected by the size and the locations of the organizations.

3.2 Sample and data collection

As our population exists of organizations that implemented a service-oriented strategy, we used those three criteria mentioned earlier to select appropriate organizations. This decision is justified in the following manners. First, organizations that have some degree of experience in managing business services are more likely to implement a service-oriented strategy. Second, we may assume that the size of an organization has an effect on the degree in which a service-oriented strategy is implemented. We assume that organizations have to have a certain volume, as indicated by the number of employees to make an effective service-oriented strategy relevant (the bottom line is 500 ft). Relatively small organizations (i.e. less than or equal to 10,000 ft) are expected to experience less difficulties to implement a service-oriented strategy compared to large organizations (more than 100,000 ft) that have to take multiple departments and stakeholders into account. Third, the geographical location in

which an organization operates may influence the complexity to implement a service-oriented strategy due to differences in intrafirm relationships.

To select appropriate organizations, first, we selected organizations with an experience of minimum three years in establishing a service-oriented strategy. Second, we selected global organizations with sizes in two categories, namely: small organizations (= < 10.000 ft) and large organizations (>10.000 ft), in a wide variety of industries (see Table A2) in both the profit and nonprofit domains. Third, we selected organizations from five (5) different geographies (e.g. North and South America, Europe, Asia Pacific and Africa), spanning 21 countries. For the final data collection, two respondent profiles were defined. Only participants that matched these profiles were asked to complete the survey. The first profile dealt with the managers, for example, director, vice president – at an executive level who were actively involved in implementing and managing business services organizations. The second profile dealt with the senior managers who were involved in managing shared service centers and retained organizations. We have selected data from organizations in ten different industries that satisfy all of these criteria and that were willing to participate. We collected data on organizations' strategic business directions as implemented in a service-oriented strategy. As confidential and sensitive information is concerned, we anonymized the organizations. All organizations had been engaged in implementing a service-oriented strategy.

To answer our research question "*how and to what degree do the key determinants that can be influenced by organizations' management, affect a service-oriented strategy with a focus on organization's business services?*" we collected data based on a paper-based questionnaire, administered in face-to-face meetings, which addresses seven constructs. It came with a short cover letter that explained the purpose of the study. The questionnaire was developed in English and was refined during a pretest to improve the clarity of the questions and completed by 15 respondents that represented both scientists and practitioners. We distributed 267 invitations in total and the final sample contained 131 useable responses for the further analysis (response rate 49%). Analysis of the nonresponsiveness shows three explanations. The first group of participants responded that they are associated with another target group than defined in our survey. The second group of participants refused to fill out the survey as they were not primarily involved in implementing a service-oriented strategy. The third group of respondents indicated that they had insufficient time. As the data was collected on a global level during face-to-face meetings, the rich data set is quite unique, representing a population of internationally operating organizations in diverse industries. An overview of the number of selected organizations per industry and industry details is shown in Table A2.

4. Data analysis and results

Consistent with prior research, we analyzed the research model in two stages (Gefen and Straub, 2005): (1) measurement model assessment and (2) structural model assessment. All of the indicators are reflective as they are highly correlated and interchangeable. To assess the reliability and validity, the outer loadings, composite reliability, average variance extracted (AVE) and its square root should be examined (Hair *et al.*, 2012). Hulland (1999) argued that the values of outer loadings should be 0.70, in this paper all indicators, expect for one item (BusSer_3), were loaded significantly on their respective constructs with primary loadings more than 0.70, see Table 2. Moreover, it is important to establish the reliability and validity of the latent variables to ensure that the collected data fits the research model.

4.1 Validity and reliability

Since we measure variables on self-reported data with regard to both the dependent variable and independent variables, common method bias (CMB) is a potential issue

Table 2. Descriptive statistics, internal consistency and reliability of items

Construct	Items	Factor loadings	Mean	Std. dev	*t*-statistic	α	CR[b]	AVE[a]
SO strategy	SOS_1	0.701	3.11	0.97	10.220	0.812	0.869	0.572
	SOS_2	0.780	2.73	0.82	6.540			
	SOS_3	0.814	3.18	0.79	25.139			
	SOS_4	0.799	3.23	0.89	12.131			
	SOS_5	0.732	3.45	1.02	15.195			
Organizational readiness	OrgRead_1	0.878	4.93	1.18	4.395	0.877	0.915	0.730
	OrgRead_2	0.861	3.82	1.13	4.526			
	OrgRead_3	0.873	3.95	1.09	4.693			
	OrgRead_4	0.8.03	4.11	0.99	4.661			
Knowledge sharing	KSH_1	0.698	2.46	0.81	6.423	0.835	0.877	0.505
	KSH_2	0.729	2.59	0.77	4.710			
	KSH_3	0.717	3.51	0.99	14.722			
	KSH_4	0.742	2.98	1.21	13.710			
	KSH_5	0.743	3.11	0.98	12.982			
	KSH_6	0.761	3.02	0.87	21.730			
	KSH_7	0.719	2.89	0.91	18.757			
Business services	BusSer_1	0.812	3.48	1.04	18.402	0.712	0.755	0.633
	BusSer_2	0.892	3.39	1.08	34.810			
Business processes	BusPro_1	0.807	2.66	0.99	12.240	0.802	0.857	0.612
	BusPro_2	0.722	2.79	1.05	10.503			
	BusPro_3	0.775	2.49	1.01	22.374			
	BusPro_4	0.709	2.62	1.66	12.661			
	BusPro_5	0.776	2.33	1.07	22.791			
	BusPro_6	0.925	3.03	1.04	12.608			
Governance	Govern_1	0.768	2.97	1.29	40.199	0.734	0.833	0.555
	Govern_2	0.765	2.83	0.86	22.215			
	Govern_3	0.753	2.97	0.98	17.343			
	Govern_4	0.699	3.23	1.11	19.033			
PAIS	IS_1	0.700	2.72	0.63	3.005	0.732	0.762	0.621
	IS_2	0.933	2.58	1.08	8.361			
	IS_3	0.705	2.31	1.18	3.204			

(Podsakoff *et al.*, 2003). To assess whether a CMB is a problem, two different approaches were used to test CMB issues. In the first approach, the Harman's single-factor test (Podsakoff *et al.*, 2003) resulted in seven factors explaining 69.37% of the variance. The test results show no single factor with a significant ($p < 0.05$) loading for all items. We added an unmeasured latent method factor and all items were loaded on both their theoretical constructs and the method factor and show an adequate model fit (Bagozzi and Yi, 1988). All item loadings on the common method factor were much lower than the loadings on their respective constructs. Moreover, we found that there were no qualitatively differences for all path coefficients after introducing the method factor. Thus, we concluded that CMB is not likely to be an issue. Second, we used the common latent factor (CLF) that is a preferred approach over Harman's one-factor test (MacKenzie and Podsakoff, 2012). We use the Chi-square difference test between the unconstrained model and a model where all of the paths are constrained to zero. The CLF test did not show any paths affected by the CMB. As we use reflective measures, we do not need to assess the multicollinearity.

Moreover, after assessing the path coefficient for the inner model, we assess the outer model by examining the *t*-statistics values. As shown in Table 2, all of the *t*-statistics values are higher than 1.96. Thus, we can conclude that the outer model loadings are highly significant. Although Cronbach's alpha (α) tends to provide a conservative measurement in

PLS-SEM, it is often used to measure internal consistency reliability. To address this issue, some researchers (Bagozzi and Yi, 1988; Hair *et al.*, 2012) have recommended to use the composite reliability (CR) as a replacement, which should be 0.70. Table 2 shows high levels of internal consistency and reliability and demonstrates the Cronbach alpha values and CR values among all seven reflective latent variables, with a lowest value of 0.755 for CR and 0.712 for Cronbach's alpha (α). For convergent validity, the AVE for each latent variable was examined and recommended value is 0.50 or higher (Bagozzi and Yi, 1988). Table 2 shows that all of the AVE values are greater (the lowest value is 0.555) than the acceptable threshold, so we can conclude that the convergent validity is confirmed.

Discriminant validity guarantees the uniqueness of a measuring construct and indicates that the phenomenon of interest is not captured in other latent variables within the research model (Henseler *et al.*, 2015). Fornell and Larcker (1981) suggest using the square root of AVE in each latent variable to examine and establish discriminant validity and stated the value should be higher than other correlation values among the latent variables. To do so, the square root of AVE is calculated and written in bold on the diagonal in Table 3.

This paper, in addition to the Fornell–Larcker criterion and the assessment of cross-loadings, employs a second test for the discriminant validity, that is, the heterotrait–monotrait ratio of correlations (HTMT). HTMT is an alternative to the conventional (Fornell–Larcker) assessment for reliably detecting the lack of discriminant validity. Some researchers, such as Rönkkö and Evermann (2013) and Henseler *et al.* (2015), demonstrated that the Fornell–Larcker criterion and the assessment of the cross-loadings are insufficiently sensitive to detect discriminant validity problems and perform poorly in PLS. HTMT as a criterion, which involves comparing it to a predefined threshold levels 0.85 (Kline, 2011) or 0.90 (Teo *et al.*, 2008), can be used to assess discriminant validity. Table 4 shows that the constructs are clearly unrelated, complying with the HTMT criterion of 0.85, since all correlations are below this threshold.

4.2 Structural model analysis

To test the hypotheses and examine the strength and the significance of relationships between constructs in the proposed research model, we employed SEM. SmartPLS can generate *t*-statistics for significance testing of both the inner and outer model by making use of a bootstrapping, which results in an approximation of the normality of data. We took a large number of subsamples (5.000) from the original sample with replacement to give bootstrap standard errors. This procedure, in turn, provides approximate *t*-values for

Construct	Business services	PAIS	Governance	Knowledge sharing	Org. readiness	Business processes	SO strategy
Business services	*0.708*						
PAIS	0.345	*0.796*					
Governance	0.557	0.298	*0.722*				
Knowledge sharing	0.537	0.327	0.461	*0.710*			
Organizational readiness	0.364	0.407	0.312	0.435	*0.854*		
Business processes	0.617	0.433	0.513	0.549	0.514	*0.756*	
SO strategy	0.626	0.362	0.462	0.642	0.438	0.658	*0.745*

Note(s): The square root of AVE is calculated and written in bold on the diagonal

Table 3. Fornell–Larcker criterion analysis for checking discriminant validity

significance testing of the structural path. Using a two-tailed t-test with a significance level of 5%, the path coefficient will be significant if the t-statistics is larger than 1.96. We tested the structural model and the PLS path modeling estimation (see Figure 2). The explained variance is (R^2 = 0.56) for the service-oriented strategy. This means that the three latent variables (organizational readiness, knowledge sharing and business services) explain nearly 56% of the variance in service-oriented strategy. Moreover, business processes, governance and PAISs together explained 52% of the variance of business services.

The PLS-SEM analysis shows that the path relationship between business services and service-oriented strategy is significant ($\beta = 0.20$, $t = 1.995$, $p < 0.05$), which supports H1. The path relationship between organizational readiness and service-oriented strategy is not significant, rejecting H2. The path relationship between knowledge sharing and service-oriented strategy is significant ($\beta = 0.21$, $t = 1.998$, $p < 0.05$). Therefore, H3 is also supported by the model.

The SEM results also show that business processes significantly affect the service-oriented strategy ($\beta = 0.65$, $t = 6.964$, $p < 0.001$), followed by the effect of business processes on business services ($\beta = 0.45$, $t = 5.131$, $p < 0.001$), confirming that H4 and H4a are both supported by the model. The SEM results show that governance has no significant direct

Table 4. Heterotrait–monotrait ratio (HTMT) results (implementation of service-oriented strategy)

Construct	Business services	PAIS	Governance	Knowledge sharing	Org. readiness	Business processes	SO strategy
Business services							
PAIS	0.569						
Governance	0.819	0.536					
Knowledge sharing	0.647	0.551	0.667				
Organizational readiness	0.424	0.658	0.422	0.532			
Business processes	0.729	0.736	0.744	0.650	0.593		
SO strategy	0.806	0.633	0.680	0.817	0.534	0.861	

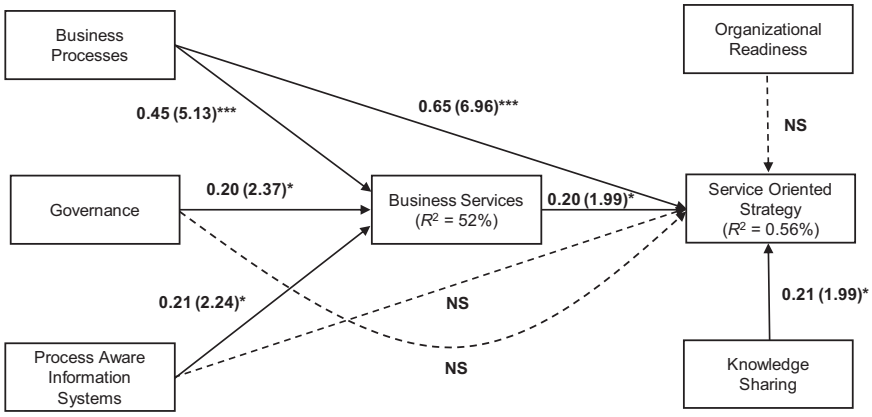

Figure 2. Conceptual model results

Note(s): *p-value < 0.05; **p-value < 0.01; ***p-value < 0.001

relationship with service-oriented strategy, thus H5 is not confirmed by the model, but the relationship between governance and business services ($\beta = 0.20$, $t = 2.372$, $p < 0.5$) is significant, which supports H5a. Finally, the SEM analysis shows that the relationship between PAIS and service-oriented strategy is not significant and, therefore, H6 is rejected. However, there is a significant relationship between PAIS and business services ($\beta = 0.21$, $t = 2.241$, $p < 0.05$), thus H6a is supported. We may conclude that business services, business processes and knowledge sharing are strong predictors of a service-oriented strategy.

4.3 Mediation effect

With regard to the mediating role of business services between three independent variables (i.e. business processes, governance and PAIS to service-oriented strategy), the following observations were noted. As we found no total indirect effect between business processes, governance and PAIS and service-oriented strategy, the mediation test results show that business services fully mediate these path relationships. The specific indirect effect value between business processes → business services → service-oriented strategy is ($\beta = 0.18$, $t = 1.981$, $p < 0.05$). Thus, H4b is supported. The specific indirect effect value between governance → business services → service-oriented strategy is ($\beta = 0.14$, $t = 2.323$, $p < 0.05$) and for PAIS → business services → service-oriented strategy is ($\beta = 0.11$, $t = 3.112$, $p < 0.01$). In other words, both H5a and H6a are supported by the model.

4.4 Moderation effect

When using organizations' size [small = < 10,000 and large > 10,000] and geographies [group 1 = North and South America, group 2 = Europe, Asia Pacific and Africa] as control variables, our analysis revealed some more interesting insights. For large organizations, which are located in Europe, Asia Pacific and Africa, the path between governance and business services is not significant. In contrast, this path is significant for small organizations ($\beta = 0.26$, $t = 2.34$, $p < 0.05$) that are located in North and South America ($\beta = 0.23$, $t = 2.04$, $p < 0.05$). It is also found that the path between PAIS and business services is only significant for large organizations located ($\beta = 0.30$, $t = 2.26$, $p < 0.01$) in Europe, Asia Pacific and Africa ($\beta = 0.33$, $t = 1.98$, $p < 0.05$).

The moderation test results also show that for organizations located in the Europe, Asia Pacific and Africa, the path between business processes and business services is not significant, but it is significant for other groups. Interestingly, we found that the path between governance and service-oriented strategy is only significant for organizations located in Europe, Asia Pacific and Africa ($\beta = 0.31$, $t = 2.86$, $p < 0.001$). This path is not significant for the other groups. Moreover, the SEM analysis shows that excluding control variables does not change the relationship, as this path is still not significant. This is consistent with the rejection of H2. The results of the moderating effects are shown in Table 5. The data reveals that size and geography of the organizations have moderating effects on some of the relationships studied.

5. Discussion

The findings of this study demonstrate that, based on their direct relationships, business services, business processes and knowledge sharing are perceived to be critical determinants in implementing an organization's service-oriented strategy. Importantly, when business services are adapted due to changing business needs, business processes have to be adjusted too. Vice versa, as a result of the degree of intertwined business processes and business services (Cherbakov *et al.*, 2005), the latter has to be adapted too. So an organizational view is utmost important and the decomposition of enterprises with a focus on internal services and

Table 5. Multigroup analysis results

Path relationships	All	Size (small)	Size (large)	North and south America	Europe, Asia Pacific and Africa)
Business processes – service-oriented strategy	0.65 (6.96) ***	0.57 (5.76) ***	0.57 (3.48) ***	0.75 (5.68) ***	0.29 (2.07) *
Business processes – business services	0.45 (5.13) ***	0.36 (3.41) ***	0.51 (3.85) ***	0.58 (5.99) ***	0.04 (0.28) NS
Governance – service-oriented strategy	0.12 (1.47) NS	0.12 (1.21) NS	0.10 (0.74) NS	0.07 (0.63) NS	0.31 (2.86) ***
Governance – business services	0.20 (2.37) *	0.26 (2.42) *	0.06 (0.51) NS	0.23 (2.03) *	0.18 (1.46) NS
PAIS – service-oriented strategy	−0.15 (1.21) NS	−0.01 (0.06) NS	−0.04 (0.16) NS	−0.15 (1.11) NS	0.14 (0.86) NS
PAIS – business services	0.21 (2.41) *	0.25 (0.98) NS	0.30 (2.26) **	0.10 (0.81) NS	0.33 (1.98) *
Business services – service-oriented strategy	0.20 (1.99) *	0.12 (3.11) **	0.34 (2.37) **	0.20 (3.06) **	0.30 (2.39) **
Organizational readiness – service-oriented strategy	−0.03 (0.43) NS	0.06 (0.51) NS	−0.07 (0.62) NS	−0.02 (0.17) NS	−0.02 (0.18) NS
Knowledge sharing – service-oriented strategy	0.21 (1.98) *	0.16 (2.95) ***	0.14 (2.61) ***	0.12 (4.43) ***	0.19 (4.38) ***
Explained variance	SOE (56%)	SOE (54%)	SOE (58%)	SOE (60%)	SOE (52%)
Explained variance	B-Services (52%)	B-Services (45%)	B-Services (63%)	B-Services (64%)	B-Services (21%)

service delivery is core, as was already argued by Menor and Roth (2007) and Versteeg and Bouwman (2006) a decade ago. A clear management strategy on the decomposition of the enterprise to reduce complexity needs attention, as well as the process to facilitate such a change. Next, organizations have to possess the necessary knowledge sharing mechanisms to support business services and business processes (Van Van der Aalst, 2012) in order to be able to implement a service-oriented strategy.

Moreover, we did not find evidence that governance and PAIS directly affect a service-oriented strategy. An explanation may be found in the research of Aier *et al.* (2011) in which governance and architecture and service design are perceived as indirect factors that influence service-oriented project success. This finding is confirmed in our research, as we found that business services functionality scale and scope fully mediate the relationships between business processes, governance and PAIS to a service-oriented strategy. Our research did not find a direct relationship between organizational readiness and a service-oriented strategy, which is in contrast with the research conducted by Verdú and Gómez-Gras (2009). These authors demonstrate that organizations that are most sensitive to the demands of the environment (superior organizational responsiveness) show better results to achieve managerial flexibility. In our study we did not include environmental focus in our research design, as we consider this to be a more strategy-related foci.

Literature on organizational readiness shows that there is no consensus about which dimensions constitute organizational readiness (e.g. size of an organization, type of business process integration, scope of readiness) (Martin *et al.*, 2008). Additional research is necessary to create more insights in the concept of organizational readiness beyond simple maturity-focused approaches (see for instance Becker *et al.*, 2009). Our findings demonstrate that business services, business processes, governance and PAIS are affected by the moderating effect of organizations' size and geographical scale. Karmarkar (2004) argues that business processes have to be closely synchronized with business services and carefully managed, taking the geographical location of services into account. Moreover, we find that the relationship between governance and business services is affected by the geographical location of an organization. Ojala and Tyrväinen (2007) find that small organizations that use business services favor a low geographical distance as governance agreements are easier to deal with. With regard to the relationship between PAIS and business services, we find that the organizations' size (small organizations) and the organizations' location (Europe, Asia Pacific and Africa) moderate this relationship. A study of Lacity *et al.* (2017) on information systems shows that a firm's size does not have an effect on business services and related sourcing outcomes. In this study organizations are rather large (>10.000 ft) and it might be interesting to focus in future research on smaller international operating organizations (from 1.000 up to 10.000 ft). With regard to geographical scope, Prikladnicki and Audy (2012) find evidence that cultural distance (as implied by geographical differences between continents) is experienced as a major challenge that affects a firm's business performance. Nevertheless, research into the moderating effects of size and specifically geography needs more attention. Clearly there are different patterns between organizations that operate in the Americas and other parts of the world. The degree to which geography affects the research constructs is not clear and requires more research as well as theoretical grounding, beyond the conceptualization of Hofstede (1998).

Our study has important implications for research. Our results partially support the proposed research model and constitute a start for further theory formation. The renewed attention to the concept of service orientation provides insights into critical determinants that influence the implementation of a service-oriented strategy. We argue that in order to cater for changes, organizations have to manage and adapt the coherence of the determinants' business services, business processes and knowledge sharing continuously. Hence, these determinants can be perceived as a firm's dynamic capability. Teece *et al.* (1997) argued that

organizations require dynamic resources to manage and organize both content and processes to achieve sustainability. This dynamic capability is needed to implement and sustain a service-oriented approach. Our research also contributes to practitioners and, specifically, organizations' management. In regard to our initial research question, our results suggest that leadership has to manage the interplay between business processes, governance and PAIS to support business services effectively.

On a practical level, we postulate that an organization's executive management should pay attention to invest in an organizational entity (department) that manages business services continuously. This organizational entity has to ensure that related processes and knowledge sharing are in place to establish and maintain a service-oriented strategy.

6. Conclusion and limitations

To the best of our knowledge, this paper is the first analysis of determinants that influence the implementation of an organization's service-oriented strategy. Based on related research in the field of business services, within the context of service orientation, we theoretically developed and empirically evaluated and validated a research model. The model is aimed at explaining critical determinants based on unique data. Our research contributes to service-oriented literature by operationalizing the implementation of an organization's service-oriented strategy. Our insights go beyond the findings of Aier *et al.* (2011). The authors found that a service-oriented strategy influences service-oriented project success positively. We extended these findings, based on a unique data set, by studying business services and influencing determinants (i.e. business processes, governance, PAIS and knowledge sharing) within the context of service orientation. We argue that a fit between these key determinants is paramount to achieve and sustain a service-oriented strategy. Consequently, organizations' leadership has to manage the coherence between these determinants and adapt them if necessary. By conducting this study we respond to the call of Holmlund *et al.* (2016) for more research on management and leadership challenges in business services companies during the transition to service orientation (p. 2460). This study sheds light on the revitalization of the service-orientation concept that is seen as a strategic instrument for organizations' organizational responsiveness. A limitation is imposed by the limited sample size and the unbalanced response of participants (executive management). In future research, a more extensive survey among a broader group of participants will help us to develop our model further in order to generalize the results, as well as more finely grained research related to geography and size might be pursued. Future empirical research is necessary to identify and test the relationships between other constructs and study their effect on a firm's service-oriented strategy.

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Appendix

Construct	Items
Business processes	BusPro_1: Global Process Management
	BusPro_2: Service Management Integration
	BusPro_3: Process Owner Responsibilities
	BusPro_4: Process Accountability
	BusPro_5: Improvement Strategy
	BusPro_6: Process Standardization
Governance	Govern_1: Overall Governance
	Govern_2: Service Delivery Channel Governance
	Govern_3: Cross-Channel Integration – Collaboration Forums
	Govern_4: Cross-Channel – Service Agreements
Process-aware information systems	IS_1: Automation
	IS_2: IT/Business Process Integration
	IS_3: IT Innovation
Business services	BusSer_1: Functional scale
	BusSer_2: Business Unit and Geographical scope
Organizational readiness	OrgRead_1: Case for Change
	OrgRead_2: Readiness
	OrgRead_3: Resistance and Buy in
	OrgRead_4: Competing Priorities
	KSH_1: Global Workforce Planning
Knowledge sharing	KSH_2: Employer of Choice Strategy
	KSH_3: Skills Matrix
	KSH_4: Learning and Development
	KSH_5: Career Development
	KSH_6: Staff Retention
	KSH_7: Culture
SO strategy	SOS_1: Integration of business services in overall Business Strategy
	SOS_2: Investment Strategy
	SOS_3: Value Drivers
	SOS_4: Transformation Agenda
	SOS_5: Executive Commitment

Table A1. List of survey items

Table A2. Overview of the selected organizations

Sector	Number of firms	Size of the firm varies between	SOE responsibility	SOE number of employees* varies between	Start of the SOE varies between	SOE geography	Type of business services	Type of PAIS	Number of PAIS instances varies between	Type of business processes* *
Manufacturing and Logistics	18	1,001 to 50,000	CFO, Director, Manager	101 to 1,000	2003 to 2014	North America, South America, Europe, Asia Pacific, Middle East	Finance and Accounting, HR, Supply Chain, IT, Procurement	Oracle, SAP	1 to 4	Centralized, Regional, Global
Construction and Building	11	1,001 to 10,000	Director, Senior Manager, Head of Shared Services	101 to 500	2009 to 2011	North America, South America	Finance and Accounting, HR, IT	SAP	3	Centralized, Multifunctional
Energy and Utilities	19	10,001 to 100,000	Senior Vice President, Director, Manager	1,001 to 5,000	2000 to 2014	North America, South America, Europe, Asia Pacific, Middle East, Africa	Finance and Accounting, HR, Supply Chain, IT, Procurement, Data Analytics	Oracle, SAP	1 to >10	Centralized, Regional, Global, Multifunctional
Facility, Food and Beverage	10	10,001 to 250,000	Vice President, Director, Manager	101 to 10,000	2002 to 2014	North America, South America, Europe, Asia Pacific, Middle East, Africa	Finance and Accounting, HR, Supply Chain, IT, Data Analytics	Oracle, SAP	1 to 5	Decentralized, Centralized, Regional, Global, Multifunctional

(*continued*)

Table A2.

Sector	Number of firms	Size of the firm varies between	SOE responsibility	SOE number of employees* varies between	Start of the SOE varies between	SOE geography	Type of business services	Type of PAIS	Number of PAIS instances varies between	Type of business processes* *
Hospitality and Professional Services	12	1,001 tot 10,000	Senior Vice President, Director, Manager	1,001 to 1,000	2001 to 2013	North America, South America, Europe, Asia Pacific	Finance and Accounting, HR, Supply Chain, IT, Procurement	Oracle, SAP	1 to >10	Centralized, Regional, Global
Financial Services	11	501 to 100,000	Senior Vice President, Vice President, Director	101 to 5,000	2000 to 2010	North America, South America, Europe, Asia Pacific, Middle East, Africa	Finance and Accounting, HR, Supply Chain, IT, Procurement	SAP	1 to >10	Centralized, Regional, Global, Multifunctional
Technology and Telecom	9	20,001 to 250,000	Vice President, Director	101 to 10,000	2000 to 2013	North America, South America, Europe, Asia Pacific, Middle East, Africa	Finance and Accounting, HR, Supply Chain, IT, Procurement, Data Analytics	Oracle, SAP	1 to 3	Decentralized, Regional, Global
Public and Education	12	1,001 to 250,000	Vice President, Director	101 to 10,000	2007 to 2014	North America, South America, Europe	Finance and Accounting, HR, Supply Chain, IT, Procurement, Data Analytics	Oracle, SAP	1 to 10	Centralized, Regional, Global

(*continued*)

Table A2.

Sector	Number of firms	Size of the firm varies between	SOE responsibility	SOE number of employees* varies between	Start of the SOE varies between	SOE geography	Type of business services	Type of PAIS	Number of PAIS instances varies between	Type of business processes* *
Pharma	16	10,001 to 250,000	Senior Vice President, Vice President, Director	101 to 10,000	1999 to 2014	North America, South America, Europe, Asia Pacific, Middle East, Africa	Finance and Accounting, HR, Supply Chain, IT, Procurement, Data Analytics	Oracle, SAP	1 to >10	Centralized, Regional, Global, Multifunctional
Diversified conglomerates	13	1,001 to 250,000	Senior Vice President, Vice President, Director	101 to 1,000	1993 to 2013	North America, South America, Europe, Asia Pacific	Finance and Accounting, HR, Supply Chain, IT, Procurement	Oracle, SAP	1 to >10	Decentralized, Centralized, Regional

Note(s): * Service-oriented enterprise (SOE) number of employees
Dedicated number of employees that are responsible for managing business services
* *Business processes
Decentralized (domestic): processes that support business services, which are performed by a business unit on their own behalf
Centralized (domestic): processes that support business services, which are consolidated and owned by a centralized entity, business units are customers
Regional (international): processes that support business services, which are consolidated by means of a regional entity, business units are customers
Global (international): processes that support business services, which are consolidated by means of a global entity, business units are customers
Multi-functional: processes across multiple business services (end-to-end), which are consolidated by means of a global entity, business units are customers