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Feature Article



SOA and the Core Competency Model: A Business Perspective for Realizing Competitive Advantages

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Abstract: How does the application of SOA translate into a competitive advantage for organizations? The ability to clearly and concisely respond to this question is a prerequisite to any investment in SOA. The core competency model provides a strategic framework from which a corporation can develop an SOA business strategy based on improved business focus and enhanced ability to leverage market-based economies of scale. Four key business concepts that underpin the strategic framework are presented in this article, along with a discussion of how SOA, coupled with business process outsourcing (BPO), provide a strategic opportunity for corporations to drive and leverage the emergence of the service-oriented market.

Introduction: A Business View of IT

While many IT professionals are quick to extol the strategic value of IT, the business world views things quite differently. Two notable publications (“IT Doesn’t Matter” [REF-1] and “The End of Corporate Computing” [REF-2]) revealed that most data centers operate at less than 35% capacity, and the average desktop capacity utilization is less than 5%. Further, many of the same IT-related functions and associated costs are replicated across IT-dependent organizations.

What this all boils down to is an acknowledgement of the fact that, on their own, the boxes, wires, operating systems, application software, and the facilities and people required to care and feed them, do not generally provide a strategic advantage. This is a prevailing business perspective, and one that is actually correct.

Traditional hardware and software alone are not enough to make an organization competitive. That is not to say they are unimportant. On the contrary, as any IT-dependent organization will tell you, they are critical. But critical is not strategic.

As a result, if you want a business audience to understand the strategic value of SOA, it is advisable to leave these issues out of the discussion. And while only the most myopic view of IT would limit its potential contribution to hardware and software components, it is nonetheless incumbent upon IT professionals to fill the void between “IT doesn’t matter” and “IT is of strategic value” with something meaningful. This is why the *business* of IT (and the *business* of SOA in particular) is so crucial. In this article, I hope to help fill this void by discussing SOA from a corporate strategy perspective.

SOA-Related Business Concepts

Understanding fundamental business concepts is a prerequisite to any meaningful discussion of the potential impact of service-oriented architectures on business strategy and organizational design. Let’s therefore summarize some key concepts associated with SOA:

1. *Corporations typically internalize core activities and externalize non-core activities.* There are two reasons for this. First, quality and efficiency tend to increase as an organization optimizes around a set of core competencies (business focus). Secondly, variable cost structures tend to be less expensive than fixed cost structures (economies of scale).
2. *Market exchanges incur transaction costs.* The costs associated with common exchanges (such as sourcing, negotiating, monitoring, dispute arbitration, and exit) offset partially or wholly the potential benefits of improved business focus and economies of scale.
3. *Market and product efficiencies reduce transaction costs.* These efficiencies enhance the ability of corporations to externalize non-core activities, thereby improving business focus and cost advantages through economies of scale.
4. *The digital market has improved market efficiencies largely through the application of information technology.* Product commoditization (the standardization of products and product interfaces) and efforts to enhance interoperability improve product efficiencies.

With these concepts, we can now probe deeper into the impact of service-orientation on business strategy and organizational design in terms of enhancing the ability of corporations to focus on core activities and the externalization of non-core activities.

We should be mindful that the core competency model is only one form of corporate strategy, albeit widely in use, and certainly not the only way service-orientation can deliver significant competitive advantage. Nevertheless, the ability to discuss service-oriented architecture in these terms is a significant leap forward in pursuit of bridging the gap between IT and business.

Organizational Processes

The corporation, at some level of abstraction, is a collection of inputs, processes and outputs, as illustrated in Figure 1. The core competency model has primarily focused on inputs and outputs. Consider the increasing prevalence of extended value chains in the manufacturing sector, for example.

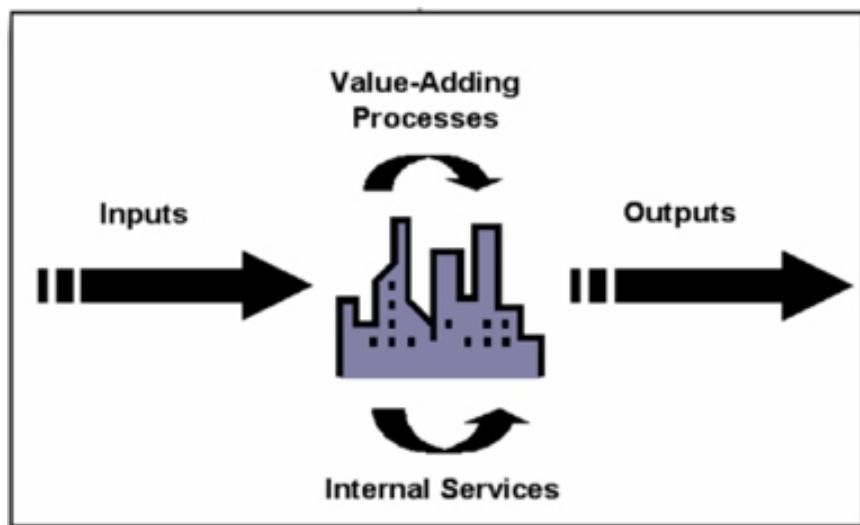


Figure 1: A simplified view of the corporation responding to inputs by providing outputs.

These value chains link the inputs and outputs of numerous corporations, each of which performs a highly specialized function. Collectively, these functions transform raw materials to consumer products. This shift from vertical integration (where a corporation internalizes the majority of functions required to develop, produce, and deliver a product to consumer markets) to horizontal integration (where a collection of corporations specialize within an extended value-chain) has been enabled by, and reflects improvements in, market and product efficiencies.

Without these improvements, the transaction costs associated with market exchanges would outweigh the benefits of increased business focus and economies of scale. As such, the degree of horizontal integration evident in a given market is a measure of market and product efficiencies. What is being exchanged between corporations at least in the

case of the manufacturing sector are inputs and outputs. The majority of internal processes remain deeply embedded within each corporation and are replicated across the value chain.

Apart from production processes directly associated with inputs and outputs, a corporation is also composed of numerous information intensive processes. These would include (but are not limited to) front-office activities (sales, marketing, customer relationship management), as well as back office activities (material, finance, human resource, procurement, and logistics management). The management attention and cost associated with caring, feeding, and coordinating these considerations is significant.

As a result, there is an opportunity to improve business focus and benefit from economies of scale by externalizing many of these “non value-adding processes.” Why then do the majority of these processes remain embedded within the corporation? One possible explanation is that the service sector in general is relatively young in comparison with the manufacturing sector.

More to the point however is the fact that the manufacturing sector has been heavily influenced by the application of engineering principles whereas the services sector has not. These principles are embedded in product design and production processes in the form of product and interface standards and modularization conventions. This has resulted in a significant degree of commoditization of inputs and outputs that, coupled with improved market efficiencies, has driven the shift to horizontally integrated manufacturing markets.

Service process and service product designs are, for the most part, developed by functional experts within the administrative services domain. Not surprisingly, the concepts of interoperability, interchangeability, modularity, decomposition, i.e. an engineered approach to service process and product design are not the primary interest of these functional-oriented communities. The resulting variation (and fragmentation of) service delivery processes makes it difficult for service products to be combined or decomposed (Figure 2).

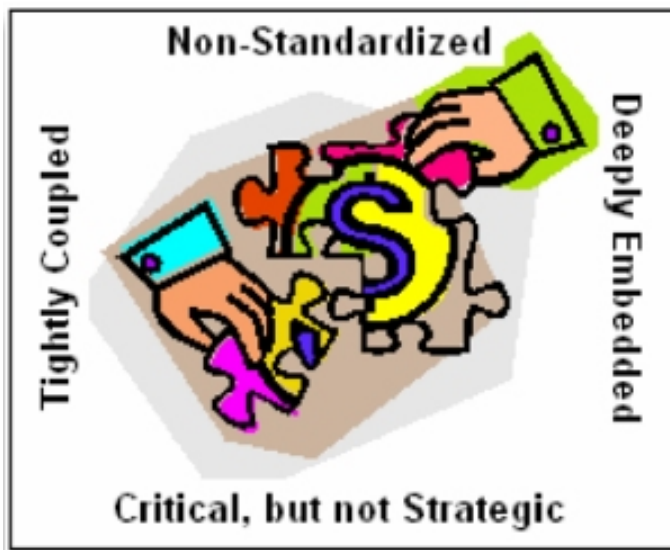


Figure 2: Non-core internal business processes.

For example:

- They often implement numerous functions across the organization in a web of activity that is not easily discerned or decoupled.
- They tend to produce numerous “process tentacles” in order to accommodate unique process exceptions.

In short, as standardization and interoperability are rarely among the process-level design objectives there is a lack of commoditization across administrative services and, as a result, transaction costs related to market exchanges remain high.

The point is, if we apply the logic behind the statement “IT doesn’t matter” broadly across the full spectrum of internal services, it becomes abundantly clear that there are many services, (in addition to the subset of IT-related services discussed earlier) which while critical, are not a source of competitive advantage.

IT-related services however, often tend to attract more attention because they seem to be *less embedded* or *tightly coupled* with the business of the organization (in large part due to the application of engineering principles and

convergence towards best practices in the industry). This is often construed as being indicative of their declining importance to the business. But the degree of "embeddedness," or "tightness of coupling" may have more to do with the way the underlying business processes are designed than the relative strategic value of the service.

Value Streams

Business process reengineering attempted to address process efficiency by leveraging accumulated technological capability within the emerging digital corporation. The objective was to produce cost/quality advantages through horizontal integration and streamlining of internal business functions to create efficient, client-focused *value streams* within the organization. The scope of the exercise however was intra-organizational and the boundaries of the organization were largely unaffected.

Reengineering efforts tended to produce tightly coupled processes that became increasingly hard-wired with the implementation of custom enterprise resource planning and management systems. The development of commercial ERP systems did little to change this, as the degree of customization and the instance variations that resulted across organizations were considerable. While in many cases cost/quality advantages have been achieved through process reengineering efforts and the implementation of ERP systems, the net effect has been a set of hard-wired, deeply embedded, tightly coupled business processes. Arguably, these processes were rarely directly connected to any value-adding core competency of the organization.

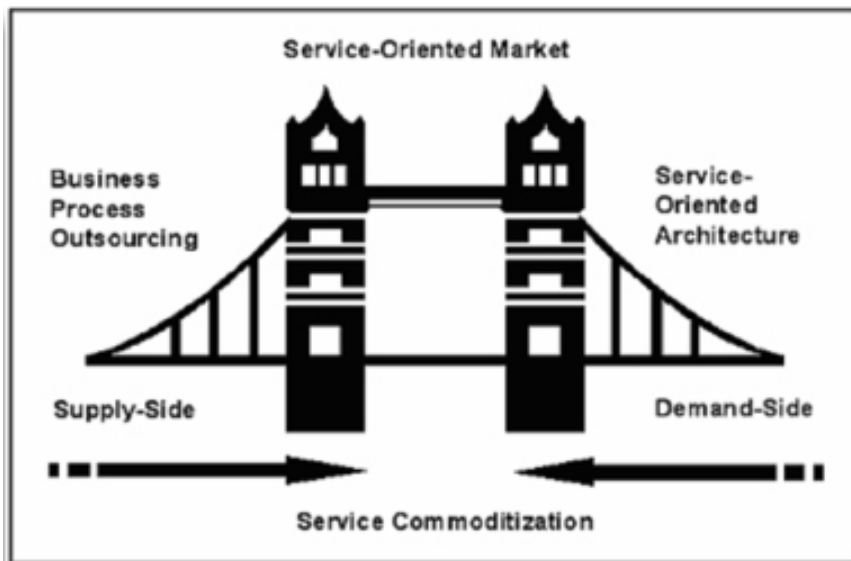


Figure 3: A market-centric view of SOA and BPO.

More recently, similar efforts have been focused on front-office activities with the introduction of customer relationship management systems. This time around, the focus has been on client-facing business processes. The net effect again is a tendency toward tightly coupled internal business process logic. While many client-facing processes may be too important to externalize even if they are not directly related to the value-adding core competency of the corporation, the prevalence of for example third-party call centers suggests that "many" does not mean "all".

It may appear as though this attempt to strategically position SOA in terms of improving business focus and leveraging market economies is beginning to sound like a lot of techno-garble for business process outsourcing (BPO). There is some truth to that in so much as the benefits delivered through BPO are much the same as those commonly ascribed to SOA. The overlap is in fact a good thing, as both BPO and SOA (keeping in mind that we are only discussing SOA from a core competency perspective this time around) are based on the same fundamental value proposition – competitive advantage

Understanding the Core Competency Model

For those of you new to the core competency model, here's an example. Consider two fictional corporations: Acme Belt Company and ABC Belt Company. Both companies manufacture belts for sale in the consumer market. The Acme production processes include the construction of the belt, its buckle, and its final assembly as a market-ready product.

ABC, on the other hand, purchases the belt and the buckle from Beaver Belt Supplies and Smith Buckle Manufacturing respectively, and then performs the final assembly for a market-ready product.

through improved focus and economies of scale. The difference is that BPO is supply-side focused and SOA is demand-side focused; however, each represents a complementary part of the same equation, as illustrated in Figure 3.

Despite a compelling value proposition, BPO market growth has been roughly 10% per year for the last 3 years. Adjusting for general growth in the economy, real growth in the BPO market has been in the high single digit range. Given that BPO and SOA are considered complementary, this rate of growth, while reasonable, is hardly representative of the disruptive shift in thinking often attributed to SOA.

The problem is that BPO is a case of market supply anticipating demand. While the benefits of BPO are very compelling, for the reasons we have discussed, they are quickly offset by the transaction costs associated with the market exchange. SOA promises to address this by commoditizing the demand side, thereby driving down the transaction costs.

The Unavoidable Shift to Service-Oriented

In the first article [REF-3] of this series, I stated that the emergence of the digital market is precipitating a shift in mindset from business processes to business services as the fundamental building block of the corporation. The shift towards service orientation in IT is evident in the many case studies on the implementation of service-oriented technology and applications within IT enterprises.

These studies often result in the extension of select object-oriented principles beyond traditional application boundaries. The scope of the exercise has largely remained intra-organizational, albeit with the potential for eventually leveraging the external application services. These efforts are certainly worthwhile, but it is only when the scope of the exercise is expanded beyond the boundaries of the enterprise that the implications of service-orientation from a business architecture perspective become clear.

While SOA initiatives are important in so much as they deliver benefits related to improved reuse of existing technology assets, they must be firmly rooted within an overarching market-centric business strategy. If they are not, we can expect significant variation between SOA implementations and a lack of attention directed toward the commoditization of internal business processes necessary to leverage the external service-oriented market.

Organizations that recognize the opportunity of the digital market and develop market-centric business strategies will both drive and leverage the emergence of the service-oriented market. Those that hurry toward service-oriented technology in the absence of such a strategy may be trading short-term gain for longer-term pain. A lack of alignment with market standards will constrain their ability to compete within and/or leverage the emerging service-oriented market.

Our discussion so far firmly positions SOA in the corporate strategy domain - a perspective that tends to resonate with a business audience. Below is a summary of the key points:

- The corporation is a set of inputs, processes, and outputs.

The cost structures and the unit costs for ACME and ABC are as follows:

ACME Belt Company	
Unit Sales	10,000 Units
<u>Variable Costs</u>	
Belt leather	10,000
Brass for Buckle	10,000
Assembly	5,000
Total	25,000
<u>Fixed Costs & Overhead</u>	
Depreciation Belt Machinery	25,000
Depreciation Buckle Machinery	25,000
Maintenance	5,000
Total	55,000
Total Cost:	\$80,000
Per Unit Cost:	\$8.00

ABC Belt Company	
Unit Sales	10,000 Units
<u>Variable Costs</u>	
Belts	30,000
Buckles	30,000
Assembly	5,000
Total	65,000
<u>Fixed Costs & Overhead</u>	
N/A	
Total Cost:	\$65,000
Per Unit Cost:	\$6.50

In the example above the *fixed cost structure* of the ACME Belt Company results in a higher per unit cost than the *variable cost structure* of the ABC Belt Company. The difference in unit cost is a source of competitive advantage for ABC. Why is ABC able to purchase belts and buckles at a cost that is lower than ACME can produce them for? The answer lies within the cost structures of Beaver Belt Supplies and Smith Buckle Manufacturing:

- In the manufacturing sector, many inputs and outputs have been commoditized (high product efficiency) through the application of engineering principles. This has resulted in a horizontally integrated market of specialized corporations performing value-added functions along a value-chain from raw materials to consumer product. The resulting market structure enhances the ability of corporations to focus on core business and leverage market economies.
- In the information services sector, inputs and outputs have not been commoditized to the same degree (low product efficiency), because service process and service product design do not typically ascribe to engineering principles. This translates into vertically integrated market structures with diffused business focus and limited economies of scale.
- Both the manufacturing and service sectors have information-intensive processes that remain locked within the corporation. Though arguably not part of the core business, these processes represent significant operational cost and management distraction.
- BPO and SOA are complementary disciplines that collectively enable the same fundamental value proposition: improved business focus and economies of scale. SOA promises to commoditize internal services that, coupled with BPO, drive the growth of the service-oriented market.
- Service-oriented architectures implemented in the absence of an overarching market-oriented business strategy and target business architecture run the risk of limiting the opportunities to leverage the emerging service-oriented market. This can inhibit the realization of competitive advantages through improved business focus and economies of scale.

Conclusion

The core competency model is but one form of business strategy and organizational design to which SOA can deliver strategic value. At the opposite end of the spectrum are differentiation-based strategies, which are in some sense the antithesis of the core-competency model. These strategies will be discussed in the next installment of this series.

References

- [REF-1] "IT Doesn't Matter", Nicholas G. Carr, Harvard Business Review, May 2003
- [REF-2] "The End of Corporate Computing", MIT Sloan Management Review, 2005
- [REF-3] "Implications of SOA on Business Strategy and Organizational Design", William Murray, The SOA Magazine, January 2007

Beaver Belt Supplies	
Unit Sales	40,000 Units
<u>Variable Costs</u>	
Belt leather	40,000
Total	40,000
<u>Fixed Costs & Overhead</u>	
Depreciation Belt Machinery	25,000
Maintenance	15,000
Total	40,000
Total Cost:	\$80,000
Per Unit Cost:	\$2.00

Smith Buckle Manufacturing	
Unit Sales	40,000 Units
<u>Variable Costs</u>	
Brass for Buckle	40,000
Total	40,000
<u>Fixed Costs & Overhead</u>	
Depreciation Buckle Machinery	25,000
Maintenance	15,000
Total	40,000
Total Cost:	\$80,000
Per Unit Cost:	\$2.00

Because both Beaver and Smith corporations produce belts and buckles for multiple customers in belt and belt-related industries, they have much higher unit sales. Accordingly, the per unit cost of production is lower (economies of scale). As a result, they are able to sell the belts and buckles to ABC Belt Company for a price of \$3.00 realizing a per unit profit of \$1.00. ABC is able to leverage the market-based economies of scale by externalizing the belt and buckle manufacturing, and focusing instead strictly on assembly. They now enjoy a significant cost advantage over ACME belt supply.

Equally important however, are the benefits that accrue from their ability to optimize internal processes around product assembly. For example, because ABC has implemented a just-in-time inventory system with Beaver and Smith, their turn-around time on customer orders is days instead of weeks. For ACME to achieve the same level of operational efficiency they would have to stockpile excess inventory of manufactured belts and buckles, incurring additional inventory carrying costs, thereby increasing per unit costs.

The example of ACME and ABC demonstrate the relative competitive advantage of the core competency model related to improved business focus and leveraging of market-based economies of scale.

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