ARE “SOLUTIONS“ THE RIGHT WAY TO COMPETE?

Some thoughts on strategy, organization and value for engineering and manufacturing companies

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A real solution integrates and customizes products and services in such a way, as to solve a specific problem for a customer <u>and</u> create more value than the sum of its parts. Whether or not it is the right competitive approach depends on a company's strength in the market, how well it knows its customers and to what extent it is willing to invest in the necessary capabilities and see through the required operational and organizational changes to compete in a different way. To be successful solutions based strategies must be aggressive strategies intended to beat the competition not defensive strategies to compensate for product weakness. By their nature products and solutions businesses tend to drag companies in opposing directions, so sustaining both approaches at business unit level is very hard. Managers are better advised to decide on one direction to follow. The companies that perform worse are those who in reality are product makers, but have cost structures associated with solution providers.

The concept of competing through "solutions" has been around for at least 30 years. Numerous "tier 1" manufacturers / OEMs (power, plant and process machinery, aircraft and engines, earth moving equipment) created solutions businesses to better target vertical markets, particular customer segments and/or large strategic accounts. For example industrial automation companies created customer facing "systems" business units, which integrated various products and an automation system into a vertical market solution. The pursuit of solutions strategies is important because it has significantly affected the way companies try to create (additional) value, allocate resources or make investment decisions and has often been used to justify large acquisitions. So a closer look is warranted.

It has not been all smooth sailing. In the case of "systems" businesses, it was often the case that high product margins, arising, for example, from strong market positions and premium pricing were negated by low systems margins[1]. So even though, over time, many claims were made about the positive impact of solutions strategies on profitability, customer retention, and competitive advantage, the evidence on the ground is fairly thin. More recently OEMs have incorporated services into solutions offerings as a way to differentiate or repulse competitive attacks from manufacturers with lower cost bases, mainly from emerging markets. It is thought that as (service-based) solutions place greater demands on processes (logistics systems and networks, business processes, project and risk management, pricing), they are more difficult for competitors to emulate, providing competitive advantage and a means for defending market positions. Another reason has been to "lock-in" customers over longer time periods, generating and sustaining more stable revenues at higher margins. In both cases, the evidence of

[1] In systems business margin depends of course also on internal transfer pricing, as systems business units integrate products they "buy" from product units. Nevertheless if returns are low problems may be indicated

success of such strategies is unclear[2]. Undoubtedly some companies have been highly successful, others however less so, which is indicated by the fact that numerous companies at some point or other exit solutions businesses they had deemed very promising to begin with.

To varying degrees, for market reasons, most companies now self-report some sort of solutions offering, however a generally accepted definition of the concept remains elusive. It seems though that a solution is considered to be a bundle of products and/or services that in combination purports to solve a customer's "problem". Some industries and markets have "naturally" exhibited stronger trends towards solutions than others, mainly driven by demands of large or very large customers (and the associated industry structure and economics) with substantial buying power –requiring large investments by suppliers- examples being the defense or infrastructure (power, rail transport, roads) industries. This has usually been followed by industry consolidation as suppliers merged to form organizations capable of delivering significant scope (usually along a customer's supply chain) of technology, products, services and financing over long time periods.

For example, in the large power business many managers understood solutions to mean an expansion of product scope, so as to be able to offer turn-key power plant *solutions*: Therefore in the 1980s and '90s large steam turbine

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[2] For example, after complaints by airlines the European Commission has recently launched an anti-competitive investigation into the practice of bundling products with after sales services by aircraft and engine manufacturers. What vendors tout as a value increasing solution, customers appear to perceive as monopolistic price gouging (Financial Times, Oct 14th 2015, Lucrative aircraft maintenance market scrutinized)

manufacturers acquired boiler makers and balance of plant companies to be able to cover the whole steam (and later gas and steam combined) cycle. They often complemented this with a power transmission and distribution business covering the full electrical cycle (from fuel to socket) – largely because of the structure of the market and the nature of customers (mostly large monopolistic utilities, covering both generation and transmission and distribution) –in spite of the fact that all underlying technologies and necessary competences were quite different. Typical examples of such strategies were Siemens, ABB or Alstom. However it is not at all clear that this strategy was more successful than, say, the one of GE which concentrated on dominating a relatively narrow product range (gas turbines) with the additional help of significant and high value service content. In fact GE's (comparable) profitability has been consistently higher throughout, whereas its major competitors were often plagued by technology, quality and project problems while their profitability suffered.

The example of the power industry shows that simple expansion in scope of supply –even to match customers' vertical integration- is not necessarily a winning strategy. In fact it is not obviously a solutions strategy at all –because to make economic and business sense a solution requires *tight integration* of the elements it consists of. In fact it should be self-evident that if these elements are not tightly integrated so that *the total creates more value than the sum of its parts* there is hardly point to the solution at all and customers can rationally prefer to buy the elements individually. Once the commercial/technical logic of a "solution" is breached each element is subject to normal product competition or even commoditization with the associated margin pressure.

Furthermore, as the purpose of the solution is to solve a specific problem and as customers have problems often unique to their particular circumstances, solutions need to be (highly) customized – though of course there are often cases where customized solutions have eventually become fairly standard (though usually complex) offerings, applicable to a wider range of customers. *Solutions therefore require both the ability to tightly integrate products and/or services so as to add value in excess of the sum of the individual products or services* *and* *the ability to customize and place the offering in a way that the customer's problem is solved according to metrics compatible with the outcome the customer is trying to achieve and therefore defined by the customer's objectives.* Given that solutions usually need substantial investment in technical, operational, commercial, sales or managerial capabilities and / or organizational re-alignment of processes and assumption of additional risks (all of which translate into upfront investment and higher overhead), it seems safe to assume that failure to achieve the solution requirements results in insufficient gross margin increases (reflecting insufficiently higher value added – as perceived by customers) to cover the overhead increases and therefore in reduced profits or even losses.

To succeed in solutions business it is therefore essential for managers to grasp the nature of customer demands[3], basis of

[3] *A common problem is that the nature of customer demand is misunderstood and solutions are offered to customers who actually prefer (rationally) to buy discrete products or services foregoing the "higher" value of the solution (as perceived by the supplier). Whether a*

competition and successful value propositions, whether these be commercial or technical in nature. A proposed solution can only create additional value if it performs better, costs less or is better aligned to the customer's specific situation and requirements than could be achieved by acquiring individual elements. This means effectively that the aspiring solution provider must be either a technical or commercial leader in at least one (the "core"), preferably more of the solution elements and must know customers better than product or other competitors. It can be therefore concluded that *solutions strategies must be aggressive competitive strategies and must be pursued from a position of strength*. Solution strategies as defensive strategies (from positions of technical or commercial weakness or as a remedy for weakness in product business) usually end in failure. Companies with such weaknesses are better advised to specifically remedy the weaknesses before pursuing solutions strategies. Even in the case of IBM, a widely cited solutions transformation case study, the strategy was executed from positions of dominant strength in mainframes, software and know-how –not from a position of weakness, though it is true that IBM's market was coming under threat from disruptive innovations, such as the mini-computer and distributed computing systems.

Managers contemplating solutions strategies must also understand how to calculate total economic impact of proposed solution on the customer's operation and price

solution has a higher value for a customer depends on a customer's specific circumstances. A good customer segmentation is therefore necessary, otherwise market potential can be overestimated.

according to additional value created. This is not a trivial endeavor. It requires utilizing technical and commercial experts, working closely and intimately with customers to understand their business drivers, base lines and improvement potential as well as risks. This necessitates a trust-based, non-transactional relationship with customers over longer time periods, which even today is not usually the norm.

In the same vain as product based solutions, product-service solutions require a significant degree of integration to create winning value propositions. Rolls Royce's "power-by-the hour" concept, where a customer essentially buys jet-engine flying time and insights on how to optimize the flying process is a case in point. The customer pays for an outcome (optimized flying hours) which requires not only tightly integrated products and services, but also tightly integrated operational processes and insights from specific technical and operational data to avoid disruptions, downtime or sub-optimized performance –which the supplier has a big incentive to avoid.

In contrast selling typical after-market or even higher value asset management services with a product does not usually constitute a solution, mainly because the services are specific to the product or asset class, but not the specific product / customer combination. In most cases customers can (and do) buy services from third parties to reduce costs, often to the frustration of vendors of high end (expensive) products who try to add services and sell on the basis of lifecycle cost rather than price[4].

As in the case of IBM, Rolls Royce deployed its solutions business model to expand market share not to defend a product weakness. Conceptually similar (though not identical) solutions strategy examples –driven by customers- can be found in the automotive industry since the late 1990's when some car manufacturers, for cost reasons, reduced their vertical integration and transformed their supply chain into "managed services" operations by outsourcing parts of it, such as the body-welding shop, paint shop or the chassis assembly line, to large suppliers (e.g. Eisenmann or Dürr). The suppliers would own/operate the shops and receive payment by unit produced. The car manufacturers extended the concept to other parts of the supply chain as well, requiring higher tier suppliers to deliver a broad product-service scope and manage the delivery chain of lower tiered sub-suppliers, often competitors, down to simple components such as fasteners. Suppliers that benefited were those that achieved strong commercial and business process integration (procurement, contract and site management, fulfillment, billing, maintenance services, quality control) so that they were able to reduce total cost for the customer sufficiently while allowing for an increase in their own margins. It should be noted that outcomes were achieved not only through intensive or high quality services,

[4] Obviously if a product is better (e.g. fewer failures over the lifecycle) it should be able to be sold on its own merits on the basis of lifecycle cost or total cost of ownership (including lower opportunity cost of downtimes). Adding services should be seen as optional extra rather than part of a solution, as the customer could buy the services from a third party possibly at a lower price (even if the vendor can argue that its services are better than others).

but also through modifications to product characteristics to make them more "amenable" to the services, as they were being designed –with a view of achieving required outcomes for a specific customer (integration and customization).

So solutions are not defined, at least in a competitive sense (as many managers think) as an expanded scope of product that if put together can deliver a bigger product or acquire more of a customer's spend[5]. A solution emerges if something has a higher value *because* it is procured/delivered as a whole and not in parts, in other words something that cannot be disaggregated without losing substantial value.

It is quite clear therefore that many companies touting "solutions" are not in effect offering solutions but less integrated product and/or product-service bundles. This might be a good marketing tactic. On the other hand it might be a genuine misconception in the design of offerings[6] accompanied by high "solutions-type" overhead which has no possibility of being recouped through higher margins. This discrepancy is one of the major risks facing aspiring solutions providers. The other is implementation risk: either failing to correctly identify

[5] Of course an expanded product portfolio might make business sense. However the basis of competition will be different

[6] Failings in the design of offerings might be due to failure to appreciate the need for tight integration and customization or failure to understand what needs to be integrated and customized, in turn mainly due to insufficient understanding of the customer's business and its requirements as well as the particular circumstances of customers, their thinking, constraints, objectives and success factors, what, in fact, makes them "tick".

necessary changes in organization, processes or capabilities or executing them badly[7].

For companies organized to develop, manufacture and sell products, transitioning to solutions requires significant changes –not only in formal structures, processes and sales approaches, but most importantly in mindset and organizational focus from general markets – the default positioning for selling products- to specific customers. In other words the organization should ask itself not “how many uses or applications for a product” (a product-centric question), but rather “through what combination of products/services is this particular customer’s problem most optimally resolved”.

The change in the central question and therefore in the way a company defines itself and approaches its business should change business priorities and objectives and cascade through KPIs and metrics from top management down to sales and operations: From product portfolios to customers, from product margins to customer or contract margins and from metrics such as number of new products, percentage of revenue from new products or inventory turn-over rates to customer share within verticals, customer retention, contract extension or resource utilization rates.

The necessary different mindset to support new processes and approaches, including different success metrics and incentives, can best be developed and sustained by organizationally separating the solutions business from the product or

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[7] Another implementation risk may be failure in selling based on economic impact, which is essential for a successful “solutions” strategy. That however is another story.

(standard) service business. Depending on the size of the solutions business that is to be pursued, on where and how the product/service elements of the solutions are to be sourced and on the degree of integration and customization (and therefore the additional knowhow) required, companies may decide to create customer facing units[8] with own resources or, alternatively, organizational overlays with resources seconded from product or service business units. In each case there are significant trade-offs and side effects, which need to be understood, addressed and managed well.

The creation of solutions business units is not a sufficient condition for the success of a solutions business. Often however the absence of the solutions unit or a high degree of subordination to a product or service unit (e.g. in the case of organizational overlays) does signify a lack of a deeper understanding of what it takes to succeed and/or a lack of commitment.

On the other hand however, customer facing, resource owning solution business units in product companies are far from a panacea and can often create significant problems of their own, in particular development of silo and quasi-adversarial mentalities between product (or service) and solutions units where communication or cooperation between the units is not only insufficient, but is even suppressed. The disconnect leads often to problems that damage competitiveness (higher transaction costs, costs of inter-organizational friction, resource and effort duplication, insufficient or inefficient knowledge

[8]some companies go even further and create fully separate entities outside of the existing structure, even under a different brand

transfer, misunderstandings of requirements or of necessary technology development direction, different readings of market or competitive environment, lack of coordination or competitive positioning in sales, customer confusion and reputational damage).

However problems of internal competition -often a significant issue in large organizations- are not only a result of silo mentalities, but a problem arising out of the very different nature or products and solutions businesses which tend to pull a company simultaneously in different directions.

For example, a large bearings manufacturer developed a solution offering based on equipment performance management (to reduce bearing stress) and corresponding (reduced) lifecycle costs. While this approach may be interesting for some customers, many others, treat bearings as quasi-commodities and buy them through reverse auctions –no frills attached- to drive down prices. What is the appropriate vendor response in this situation? In general product units rationally price for market penetration and share, given sufficient margin and competitor price levels. Solution businesses need to price so as to achieve entry and an optimized result with the customer across the total solution and solution duration.

So in this case pricing the solution sufficiently low, making it more attractive than the individual products/services (underpricing integration and customization engineering), would probably mean not only effectively accepting, but even reinforcing commoditization and defeating the purpose of the solution.

On the other hand participating in reverse auctions with (very) low priced products would also defeat the purpose of the solution, as it would signal that the solution has limited added value –or at least that a price reduction can substitute for the solution.

In this case the better answer from the solutions unit perspective is not to participate at all in such price based reverse auctions, however from the product unit perspective it might not be affordable (if costs are volume driven) to lose access to possibly significant market volumes. As a company the bearings manufacturer faces a dilemma.

To this type of problem other problems may be added, for example should solution units be forced to source product elements exclusively from the sister product units (if available) or should they be free to source from external competing suppliers if there is an advantage (cost or performance) for themselves or the customer. Or how to solve the problem that with the creation of solution units, product units often get disconnected from a large part of their market and their ability to influence sales, growth or competitiveness is reduced.

Dealing with these issues is notoriously hard and key to understanding why most companies entering solution businesses (up to three out of four by some counts) fail to achieve desired revenue and margin objectives. While the transition needs to be meticulously thought through and planned, in most cases it happens without sufficient understanding of what is required nor of the implications and is rather based on semi-intuitive management preferences. Some top managements take an off-hands approach allowing the different products and solutions units to negotiate the operating, transaction and decision framework with each other. While this may sometimes achieve better adjustments, it usually will not, as outcomes depend more on relative power structures and pursuit of own narrow interests than on how to achieve overall optimized results[9]. Other managements devise rules and/or incentives (e.g. through the bonus system) to impose or induce the desired collaborative behavior and reduce or eliminate internal competition. It is difficult however to make rules that make sense to all those affected and almost always they can be gamed or simply not followed.

Such organizational set-ups are not implemented in a vacuum, but their performance and ability to channel resources towards objectives depends also on the personalities and behaviors of managers operating within the framework. Assertive managers for example, might aggressively and energetically pursue business objectives, but often end up turning their organizations into silos. Managers who support extensive collaboration and exchange of information might encourage institutional learning and development, but often end up in paralysis by analysis dead-ends or avoid decisions through endless rounds of meetings to reach the maximum possible consensus.

It is of course the job of top management to solve the product – solutions organizational framework problem. And what should be becoming quite clear is that this is often a binary decision: Companies may decide to be solution providers -

[9] The outcomes therefore may be inward focus, internal friction, higher overhead, customer neglect, reputational damage and reduced competitiveness among other things

integrating products and services (regardless of vendor) to solve specific customer problems or they may decide to be product or service vendors competing on value added through product and service features, process quality and costs. Few companies can be successful in both businesses simultaneously –at least at the level of strategic business units (SBUs)- though of course this does not mean that solution providers do not develop the necessary technologies to provide solutions or that product/service providers do not package products and services together for differentiation or other purposes.

This is less "radical" than it sounds. For example, IBM decided on a solutions path many years ago and shed most of its non-core product portfolio, though not its ability to develop crucial technology. Entire industries such as defense, aerospace, rail transportation or telecom infrastructure may also be moving in this direction and increasing digitization may make it easier to do so overall. On the other hand in industries where integration is not as crucial, companies my make rational choices to remain foremost product makers and compete accordingly. Most likely market leaders in either (clear cut) category will perform strongly, while companies stuck between categories, i.e. those who cannot decide whether they want primarily to solve problems or make products will perform less well (relative of course to their respective markets). Worse of all perform those companies who are in essence product manufacturers, but have cost structures associated with solution providers. Their managements should quickly decide what they want to be.