

## **COMMERCIALIZATION OF SOLUTIONS: THE PROCESS AND NEEDED CAPABILITIES**

Kaj Storbacka  
Professor Marketing Strategy  
Hanken School of Economics  
kaj.storbacka@hanken.fi

### **Abstract**

The paper aims at generating a better understanding of the characteristics and determinants of effective solution business. In the paper we develop a framework and process for the commercialization of solutions, and identify organizational capabilities and management practices necessary for the effective management of the relational commercialization process. The developed framework integrates findings from several research streams with the empirical data collected in an abductive research process, involving ten firms with multi-national operations. The developed framework consist of a commercialization process with four phases (develop solutions, make value propositions, sell solution, and deliver solution) and two groups of cross-functionality issues (commercialization and solution platform). The framework identifies eight capability categories, and forty-eight capabilities and management practices pertinent to the effective management of solution business.

**Keywords:** Solution business, commercialization process, innovation capabilities, cross-functional coordination, co-creation.

***NB:** This paper is one output of a larger research process. A more comprehensive paper based on the research has been published in *Industrial Marketing Management*. Hence, this version is shortened, and focuses on the main findings.*

## INTRODUCTION

The importance of in-depth investigation into solution business and collaboration within and between firms has recently been acknowledged by academic commentary. Sawhney (2006) argues that, although the importance of solution business has been recognized in practice, “academic research [...] is woefully lacking (ibid, 378). Bolton (2006), furthermore, argues that a key area to focus on is ‘enterprise integration’ - “connecting and leveraging business processes that cut across traditional organizational silos” (ibid, px).

According to Tuli et al. (2007, p14) “selling solutions is a complex exercise that involves the consideration of conflicting requirements of multiple stakeholders in a customer organization and sales cycles lasting up to two years”. Solution business is characterized by longitudinal processes of collaboration that involve several functions of both the buying and the selling organization (Brady, Davies & Gann 2005; Davies 2004; Spekman & Carraway 2006; Tuli, Kohli & Bharadwaj 2007; Ulaga & Eggert 2006).

Several research streams investigate solutions: the *servitization* literature (e.g., Baines, Lightfoot, Benedettini & Kay 2009; Mathieu 2001), the *solution marketing and sales* literature (e.g., Anderson, Narus & van Rossum 2006; Spekman & Carraway 2006; Storbacka, Ryals, Davies & Nenonen 2009; Tuli et al. 2007), the *solution strategy and management* literature (e.g., Brady et al. 2005; Davies 2004; Galbraith 2002), and the *operations management oriented product/service systems* literature (e.g., Meier, Roy & Seliger 2010; Tan, Matzen, McAloone & Evans 2010). Although many researchers point to the need for cross-functional integration (Nordin & Kowalkowski 2010), little research has been directed at providing frameworks that help firms understand how they can design inclusive solution business models that illustrate the balance between the need to adapt to individual customers and the need for ‘industrialization’ of the delivery of the sold solution (Davies, Brady & Hobday 2006; Meier et al. 2010).

Solutions are defined in numerous ways (see Lay, Schroeter & Biege 2009; Nordin & Kowalkowski 2010; Windahl & Lakemond 2010). This research focuses on ‘integrated solutions’, defined by Storbacka (2011) as *longitudinal relational processes, during which a solution provider integrates goods, service and knowledge components into unique combinations that solve strategically important customer specific problems, and is compensated on the basis of the customer’s value-in-use*.

Offering integrated solutions requires organizational and capability changes as firms reposition themselves in the value chain (Galbraith 2002; Wise & Baumgartner 1999). Spekman & Carraway (2006) suggest that the transition towards collaborative solution selling requires a better understanding of new capabilities needed “without which any collaboration is apt to run into insurmountable obstacles” (ibid, p12). Brady et al. (2005) argue that firms that shift towards becoming providers of integrated solutions develop new capabilities, such as systems integration capabilities, operational service capabilities, business consulting capabilities and financing capabilities. With the exception of Möller & Törrönen (2003), there is little research that details and categorizes the capabilities and management practices pertinent to the effective management of a solution business.

This paper addresses the above identified gaps in literature by generating a better understanding of the characteristics and determinants of effective solution business. More precisely, *the purpose of the research is: (1) to develop a framework and process for the*

*commercialization of solutions, and (2) to identify organizational capabilities and management practices necessary for the effective management of the relational commercialization process.*

The paper is structured as follows. After this introduction, the research process and the used methods are described. Second, a broad description of the developed solution business framework is provided. Third, the identified capabilities and management practices are illustrated. Lastly the author discusses the implications and contribution of the research, future research opportunities and managerial implications.

## **RESEARCH PROCESS**

The research was carried out between September 2008 and April 2009, and involved a group of ten multi-nationally operating firms from different industries: mining and construction, forklift trucks, copper tubes, cargo handling systems, network infrastructure, electronic manufacturing services, digital printing, industrial machinery, shipbuilding, and mobile software solutions. The participating firms sell solutions, rather than pure goods or services, and have a keen interest in exploring the transformation from product sales to solution sales.

The nature of the research process was abductive, combining induction and deduction (Dubois & Gadde 2002). As verification is less important in systematic combining, the collected data is not used solely for triangulation. Instead the focus was on matching; defined by Dubois & Gadde (2002, p555) as “going back and forth between framework, data sources, and analysis”. The goal of the research was to match theory and reality in a nonlinear, path-dependent process of systematically combining empirical observations and insights from a continuous exposure to literature.

The research process consisted of three phases: (1) framework development, (2) explication of capabilities, and (3) interpretation. During the first phase, the researcher (1) reviewed a wide selection of marketing, sales, management and operations management literature pertinent to solution business; (2) conducted five expert interviews (lasting between 60 and 75 minutes) with senior managers representing firms that had successfully transformed from product to solution sales (two interviewees from the information technology industry, two from machine manufacturing industries and one from the telecommunications industry); and (3) conducted interviews separately with each of the participating case firms: all in all ten interviews of senior level executives or their direct reports, lasting between 80 and 105 minutes. The interviewees were senior managers with at least fifteen years of industry experience, and represent three different countries: Finland, Netherlands, and Switzerland.

The interviews followed a purposive sampling approach (e.g., Eisenhardt 1989; Wallendorf & Belk 1989; Patton 2002), where the content of each discussion was built on previous responses. This allowed for a gradually building of the framework as the interviews progress. After each set of interviews the data was categorized according to the data analysis process of Spiggle (1994) and Strauss & Corbin (1990), building on emerging previous categories.

In order to increase the trustworthiness of the research, full-day research workshops were held after each of the first two phases. The workshops, involving 23-32 representatives of the case firms, aimed at getting participants' comments to the framework. Hence, they worked as a form of ‘member check’ (Wallendorf & Belk 1989; Lincoln & Guba 1985), where researchers expose their findings to the scrutiny of informants. As all participants in the

research workshops were senior professionals with over ten years of industry experience in the subject area, and can be viewed as reflective practitioners (Schön 1983), we adopted a style where both the researchers and the informants are active participants in a social encounter, collaboratively constructing new knowledge (Holstein and Gubrium 1997).

After a briefing, the participants were divided into groups of five or six people and asked to relate their experience to the framework, to comment on the elements and categories, to reflect on the terms used, and to discuss the relationships and causality between the category. During the workshop, the researchers documented the group work results and consequent discussions, and collected written feedback and firm-specific examples of capabilities and management practices.

The trustworthiness of the research is assessed using criteria from interpretive research and grounded theory (Flint, Woodruff & Gardial 2002). Drawing on Lincoln & Guba (1985), Miles & Huberman (1994), Spiggle (1994), Strauss & Corbin (1990), Wallendorf & Belk (1989), focus is given to pre-understanding, credibility, transferability, dependability, conformability, integrity, understanding and utilization. The assessment results are elaborated in Table 1.

-----  
Place Table 1 about here  
-----

## COMMERCIALIZATION OF SOLUTIONS: A FRAMEWORK

Pawar, Beltagui & Riedel (2009) suggest that there are, from an operations point of view, three stages in designing solutions: defining value, designing value and delivering value. Kindström & Kowalkowski (2009) suggest a four step process: market sensing, development, sales, and delivery. Tuli et al. (2007) emphasize the role of post-deployment support. Drawing on this and the empirical data the solution process is categorized into four highly interconnected and iterative phases: *develop solutions* (combining customer insight and provider resources in order to create a solution portfolio), *make value propositions* (communicating about the available solutions in order to identify sales opportunities), *sell solution* (turning opportunities into orders by configuring customer specific solutions and quantifying value), *deliver solution* (delivering the solution and securing long-term value creation for customer and value capture for provider).

There is a major issue of cross-functionality in managing solution business (Arnett & Badrinarayanan 2005; Homburg, Workman & Jensen 2000; Narus & Anderson 1995; O’Leary-Kelly & Flores 2002; Olhager, Rudberg & Wikner 2001; Singh & Rhoads 1991; Storbacka, Polsa & Sääksjärvi 2011; Weitz & Bradford 1999). Storbacka et al. (2009) argue that in addition to the classical marketing and sales interface, solution selling has “really important cross-functionalities [...] with finance, manufacturing, supply, engineering, and servicing” (ibid., 903). One aspect of the cross-functional view relates to the organizational, managerial and strategic consequences of moving towards solution business (Davies, Brady & Hobday 2007; Foote, Galbraith, Hope & Miller 2001; Galbraith 2002; Pawar et al. 2009; Penttinen & Palmer 2007; Wise & Baumgartner 1999).

The cross-functional issues are clustered into two groups, labeled *commercialization* (issues related to the efficient development and deployment of solutions), and *solution platform* (issues related to the overall management of the provider, such as finance, human resources

and information technology). This grouping is similar to the idea of ‘front-end’, ‘back-end’, ‘top management’ categorizations (Foote et al. 2001; Pawar et al. 2009), and to the structuring of capabilities into innovation-based capabilities, marketing-based capabilities, and production-based capabilities (Ngo & O’Cass 2009).

*Commercialization* refers to a provider’s ability to understand the customers’ value creating processes (Payne, Storbacka & Frow 2008), create solutions that enable improved value creation for the customers; create demand for these solutions; sell the solutions to the individual customers and receive compensation based on the customer’s value-in-use. Commercialization of solutions involves activities related to market/customer-sensing and customer-linking (Day 1994); focuses on the co-creation of value and is both ‘inside-out’, (i.e. implements strategy in order to achieve agreed corporate goals), and ‘outside-in’, (i.e. identifies business and renewal opportunities by understanding the customer’s value-creating process, and influences the provider’s strategic process) (Gosselin & Heene 2003). The commercialization of solutions is performed at multiple (conceptual and managerial) levels and requires alignment of multiple functions of the provider. Commercialization requires a “long” process that starts long before the customer purchasing process, and ends after the delivery of the solution (Storbacka et al. 2009).

As a part of the commercialization process, providers need to build their ability to effectively produce and deliver solutions. Davies et al. (2006, p.44) argue that “repeatability is the measure of a company’s progress in providing integrated solutions”. A central ingredient in supporting repeatability is the design of business processes that have enough elements of uniformity (e.g. clearly identified inputs and outputs) to justify developing a general, ‘averaged’ process. The experiences from customer-specific solution projects need to be codified into manuals and business process so that they can be reused in subsequent situations.

The *solution platform* relates to creating the appropriate support for effective solution business: strategy, management systems, supporting infrastructure (e.g. information and communications technology, and human resources). Effective solution business requires investments into solution platform capabilities. These investments are directed towards business model elements that are not visible to customers. Hence, it may be difficult to build business cases in order to get the necessary resource allocations for building new capabilities. It has, however, been shown that sustainable competitive advantage in solution business is highly dependent on a solution business platform (Storbacka et al. 2011).

The framework in Figure 1 encompasses the above discussed aspects. The dimensions of the framework are the four phases of the solution process (develop solutions, make value propositions, sell solution, and deliver solution) and the two groups of cross-functionality (commercialization and solution platform).

-----  
Place Figure 1 about here  
-----

The solution process phases form four categories of capabilities and management practices, labeled capability categories. Furthermore, the solution platform is divided into an additional four capability categories: strategy planning, management system, infrastructure support, and human resources management. Each of the eight capability categories consist of a number of

capabilities or management practices, pertinent to the effective management of solution business.

There are two distinguishing attributes of the framework. First, the empirical research indicates that an important question for the participating firms is the standardization and systematic development of both components and solutions, in order to secure scalability, repeatability and quality of delivery (c.f., Davies et al 2006; Meier et al. 2010). This is visible in the framework as the first two process steps relate to the development of, and demand creation for all of the firm's solutions (plural, to indicate a solution portfolio view), whereas the last two process steps relate to the sales and delivery of a customer specific solution (singular).

Second, the framework draws attention to the importance of building a solution business platform, consisting of supporting capabilities that are not visible to customers. The successful implementation of solution business requires investments in the platform capabilities, all of which may take a considerable time to create. This indicates that a transformation of business practice in the direction of solutions business is likely to require a considerable amount of time.

The research identified thirty-nine capabilities and management practices pertinent to the effective management of solution business. A summary of these is shown in Table 2.

-----  
Place Table 2 about here  
-----

## DISCUSSION

This research responds to calls to improve firms' capability to co-create complex business solutions (Marketing Science Institute 2010), and to connect business processes that cut across traditional organizational silos (Bolton 2006). Furthermore, it also responds to a more general call for conceptual articles in marketing (Yadav 2010).

### Main contributions

The work contributes to the solution literature in three ways. First, solutions are defined as processes and not as combinations of various goods, services and knowledge elements. This is consistent with Tuli et al. (2007), who view solutions as relational processes. They, however, discuss this only in the context of the delivery of a single customer specific solution. This research, in contrast, highlights the processes needed to create repeatability and scalability of solutions (plural) and, furthermore, emphasizes the role of the solution platform capabilities as key determinants for sustainable success in solution business. This resonates with the reasoning of the service-dominant logic as proposed by Vargo & Lusch (2008). A solution provider does not create solutions that deliver value to customers, but rather engages in long term collaboration, and co-creates value *with* the customer. The developed framework exemplifies how firms can apply a service-dominant logic in an industrialized way.

Second, the framework emphasizes that firms need to focus not only on the marketing-sales interface, but more generally on the multi-faceted interfaces between all functions. Solution business is cross-functional in nature, and firms entering solutions business may, hence, need

to define totally new boundary spanning roles, spanning intra-firm and inter-firm functions. This resonates with the call for new types of professionals, often called ‘t-shaped’, as they have “deep problem solving skills in one discipline [...], as well as broad communication skills across many disciplines” (Spohrer & Maglio 2010, p184).

Third, the identification and explication of the thirty-nine capabilities and management practices, which was done by systematically combining extant literature on solution business and empirical observations, contributes to a more comprehensive understanding of the capability development needed for effective management of solution business. Furthermore, the assembly of the capabilities covering the whole process from innovation to delivery, and the various cross-functional interfaces, is significant, as it suggests a framework for firms to assess their capability gaps and thus to discuss resource allocations between functions. The detailed listing of the capabilities and management practices, provided in Table 2, acts as a reference list for firms entering solution business.

### **Further research opportunities**

The research process opens up avenues for further research. First, the research process indicates that there are differences between how solution business is configured and conducted in different industries. Nenonen & Storbacka (2010) identify five generic business logics in business-to-business firms: installed-base (investment products and related services, thus creating an installed base at the customer end); input-to-process (products and solutions that are utilized as input in the customers’ process); continuous relationships (products and services that are characterized by long-term contracts); consumer-brands (products for the consumer market that are sold through a channel); and situational services (project-based services, which fulfil customers’ situation-driven needs). An interesting avenue for research is a comparative analysis of how the solutions business models differ between firms applying different business logics.

Second, the capabilities and management practices identified can be used as measures in a quantitative study. The aim of such a study is to combine capability and practice measures with firm performance measures, in order to create more understanding of how solution business can support firm performance in various industries and/or business logics, and to evaluate which of the capabilities or management practices have the biggest impact on firm performance.

### **Managerial implications**

Firms wishing to assess their extant capability configurations and identify capability gaps can use the developed framework and the identified capabilities and management practices as a starting point. The interaction with the ten case firms indicated that there are particular areas where most firms experienced gaps. Many firms identified value quantification as their biggest capability gap. Firms need to develop their ability to quantify value in all phases of the commercialization process, both internally and externally, and need common tools and approaches for value based pricing. It is essential that value verification during solution delivery was seen to be as important as value quantification during the sales phase.

In order to sell solutions that are deliverable and profitable, a key development area is to create solution configuration and value-pricing tools. The standardization of the service components in solutions is an overriding theme. Standardization is the foundation for

repeatability, and this requires the creation of a hierarchical solution structure and the definition of digitalized basic sales items, codified into enterprise resource planning systems. Furthermore, solution business often entails performance-based, gain-share contracts in which the provider accepts more business risks. Crafting solution contracts is, therefore, a much more complicated and time-consuming effort than crafting product-based contracts. This may require centralized support for writing solution contracts.

A key practice in successful solution business management is the ability to collect, codify and share knowledge across the company – which is enabled by common data management tools and repositories. Finally, solution business usually involves the definition of new organizational roles, such as solution manager, solution architect, solution integration engineer, or strategic account executive. It is the responsibility of these roles is to span intra- and inter-firm boundaries between functions and organizational levels.

## REFERENCES

- Anderson, J. C., Narus, J.A., & van Rossum, W. (2006). Customer value propositions in business markets. *Harvard Business Review*, 84(3), 91-99.
- Arnett, B., & Badrinarayanan, V. (2005). Enhancing customer-needs-driven CRM strategies: core selling teams, knowledge management competence, and relationship marketing competence. *Journal of Personal Selling & Sales Management*, 25(4), 329-343.
- Baines, T., Lightfoot, H., Benedettini, O., & Kay, J.M. (2009). The servitization of manufacturing. A review of literature and reflection on future challenges. *Journal of Manufacturing Technology Management*, 20(5), 547-567.
- Bolton, R. (2006). Foreword. In R. F. Lusch, & S. L. Vargo (Eds.), *The service-dominant logic of marketing: dialog, debate and directions* (pp. ix–xi). Armonk, NY: ME Sharpe.
- Brady, T., Davies, A., & Gann D. (2005). Creating value by delivering integrated solutions. *International Journal of Project Management*, 23, 360-365.
- Davies, A. (2004). Moving base into high-value integrated solutions: a value stream approach. *Industrial and Corporate Change*, 13(5), 727-756.
- Davies, A., Brady, T., & Hobday, M. (2006). Charting a path toward integrated solutions. *MIT Sloan Management Review*, 47(3), 39-48.
- Davies, A., Brady, T., & Hobday, M. (2007). Organizing for solutions: systems sellers vs. systems integrator. *Industrial Marketing Management*, 36(2), 183-93.
- Day, G.S. (1994). The capabilities of market driven-organizations. *Journal of Marketing*, 58(10), 37-52.
- Dubois, A., & Gadde, L-E. (2002). Systematic combining: an abductive approach to case research. *Journal of Business Research*, 55(7), 553-560.
- Eisenhardt, K.M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-551.
- Foote, N.W., Galbraith, J. R., Hope, Q., & Miller, D. (2001). Making solutions the answer. *The McKinsey Quarterly*, 3, 84–93.
- Flint, D.J., Woodruff, R.B., & Gardial Fisher, S. (2002). Exploring the phenomenon of customers' desired value change in a business-to-business context. *Journal of Marketing*, (66), 102-117.
- Galbraith, J. R. (2002). Organizing to deliver solutions. *Organizational Dynamics*, 31, 194–207.
- Gosselin, D.P., & Heene, A. (2003). A competence-based analysis of account management: implications for a customer-focused organization. *Journal of Selling and Major Account Management*, 5(1), 11-31.
- Holstein, J. A., & Gubrium, J.F. (1997). Active interviewing. In Silverman, D. (Ed.), *qualitative research: theory, method and practice* (pp. 113–129). London, UK: Sage Publications.
- Homburg, C., Workman Jr. J.P., & Jensen O. (2000). Fundamental changes in marketing organization: The movement toward a customer-focused organizational structure. *Journal of the Academy of Marketing Science*, 28(4), 459-478.

- Kindström, D., & Kowalkowski, Christian. (2009). Development of industrial service offerings: a process framework. *Journal of Service Management*, 20(2), 156-172.
- Korkman, O., Storbacka, K., & Harald, B. (2010). Practices as markets: value co-creation in e-invoicing. *Australasian Marketing Journal*, 18, 236-247.
- Lay, G., Schroeter, M., & Biege, S. (2009). Service-based business concepts: A typology for business-to-business markets. *European Management Journal*, 27, 442-455.
- Lincoln, Y. S., & Guba, E.G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage Publications.
- Marketing Science Institute (2010). *MSI Research Priorities 2010-2012*, Boston, MA: Marketing Science Institute.
- Mathieu, V. (2001). Service strategies within the manufacturing sector: benefits, costs and partnership. *International Journal of Service Industry Management*, 12(5), 451-475.
- Meier, H., Roy, R., & Seliger, G. (2010). Industrial product-service systems - IPS<sup>2</sup>. *CIRP Annals –Manufacturing Technology*, (2010), doi:10.1016/j.cirp.2010.05.004.
- Miles, M.P., & Huberman, M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage Publications.
- Möller, K., & Törrönen, P. (2003). Business suppliers' value creation potential: a capability-based analysis. *Industrial Marketing Management*, 32, 109–118.
- Narus, J.A., & Anderson, J.C. (1995). Using teams to manage collaborative relationships in business markets. *Journal of Business-to-Business Marketing*, 2(3), 17-46.
- Nenonen, S., & Storbacka, K. (2010). Designing markets: on the co-authoring of meanings, management practices and framing conditions. In *Proceedings from the Forum on Markets and Marketing: Extending Service-Dominant Logic*, University of Cambridge, UK, September 23-26, 2010.
- Ngo, L.V., & O'Cass, A. (2009). Creating value offerings via operant resource-based capabilities. *Industrial Marketing Management*, 38, 45-59.
- Nordin, F., & Kowalkowski, C. (2010). Solutions offerings: a critical review and reconceptualisation. *Journal of Service Management*, 21(4), 441-459.
- O'Leary-Kelly, S.W., & Flores, B.E. (2002). The integration of manufacturing and marketing/sales decisions: impact on organizational performance. *Journal of Operations Management*, 20, 221–240.
- Olhager, J., Rudberg, M., & Wikner, J. (2001). Long-term capacity management: linking the perspectives from manufacturing strategy and sales and operations planning. *International Journal of Production Economics*, 69, 215-225.
- Patton, M.Q. (2002). *Qualitative research & evaluation methods*. Thousand Oaks, CA: Sage Publications.
- Pawar, K.S., Beltagui, A., & Riedel, J.C.K.H. (2009). The PSO triangle: designing product, service and organisation to create value. *International Journal of Operations & Production Management*, 29(5), 468-493.
- Payne, A., Storbacka, K., & Frow P. (2007). Managing the co-creation of value. *Journal of the Academy of Marketing Science*, 36(1), 83-96.

- Penttinen, E., & Palmer, J. (2007). Improving firm positioning through enhanced offerings and buyer–seller relationships. *Industrial Marketing Management*, 36, 552–64.
- Sawhney, M. (2006). Going beyond the product, defining, designing, and delivering customer solutions. In R. F. Lusch & S. L. Vargo (Eds.), *The service-dominant logic of marketing: dialog, debate and directions* (pp. 365–380). Armonk, NY: ME Sharpe.
- Schön, D. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.
- Singh, J., & Rhoads G.K. (1991). Boundary role ambiguity in marketing-oriented positions: a multidimensional, multifaceted operationalization. *Journal of Marketing Research*, 28(3), 328-338.
- Spekman, R.E., & Carraway, R. (2006). Making the transition to collaborative buyer–seller relationships: an emerging framework. *Industrial Marketing Management*, 35, 10 – 19.
- Spiggle, S. (1994). Analysis and interpretation of qualitative data in consumer research. *Journal of Consumer Research*, 21(3), 491-503.
- Spohrer, J.C., & Maglio, P.P. (2010). Towards a science of service systems: Value and symbols. In Maglio, P.P., Kieliszewski, C.A., & Spohrer, J.C. (Eds.), *Handbook of Service Science* (pp. 157-194), DOI: 10.1007/978-1-4419-1628-0\_9.
- Storbacka, K. (2011). A solution business model: Capabilities and management practices. *Industrial Marketing Management*, 40, 699-711.
- Storbacka, K., Polsa, P., & Sääksjärvi, M. (2011). Management practices in solution sales - a multi-level and cross-functional framework. *Journal of Personal Selling & Sales Management*, 31(1), 35-54.
- Storbacka, K., Ryals, L., & Davies, I.A., & Nenonen, S. (2009). The changing role of sales: viewing sales as a strategic, cross-functional process. *European Journal of Marketing*, 43(7/8), 890-906.
- Strauss, A., & Corbin J. (1990). *Basics of qualitative research, grounded theory procedure and techniques*. Newbury Park, CA: Sage Publications.
- Tan, A.R., Matzen, D., McAloone, T.C., & Evans, S. (2010). Strategies for designing and developing services for manufacturing firms. *CIRP Journal of Manufacturing Science and Technology*, (2010), doi:10.1016/j.cirpj.2010.01.001
- Tuli, K.R., Kohli, A.K., & Bharadwaj, S.G. (2007). Rethinking customer solutions: from product bundles to relational processes. *Journal of Marketing*, 71(3), 1–17.
- Uлага, W. (2003). Capturing value creation in business relationships: A customer perspective. *Industrial Marketing Management*, 32, 677-693.
- Uлага, W., & Eggert, A. (2006). Value-based differentiation in business relationships: gaining and sustaining key supplier status. *Journal of Marketing*, 70(1), 119-125.
- Vargo, S.L., & Lusch, R.F. (2008). Service-dominant logic: continuing the evolution. *Journal of the Academy of Marketing Science*, 36(1), 1-10.
- Wallendorf, M., & Belk, R.W. (1989). Assessing trustworthiness in naturalistic consumer research. In Hirschman, E. (Ed.), *Interpretive Consumer Research* (pp. 69-84). Provo, UT: Association for Consumer Research.
- Weitz, B.A. & Bradford, K.D. (1999). Personal selling and sales management: a relationship marketing perspective. *Journal of Academy of Marketing Science*, 27(2), 241-254.

- Windahl, C., & Lakemond, N. (2010). Integrated solutions from a service-centered perspective: Applicability and limitations in the capital goods industry. *Industrial Marketing Management*. doi:10.1016/j.indmarman.2010.03.001
- Wise, R., & Baumgartner, P. (1999). Go downstream: the new profit imperative in manufacturing. *Harvard Business Review*, 77(5), 133-141.
- Yadav, M.S. (2010). The Decline of Conceptual Articles and Implications for Knowledge Development. *Journal of Marketing*, 74 (1): 1-19.

**Table 2:** Trustworthiness of the research process

<b>Criteria</b>	<b>Method of addressing</b>
<b><i>Pre-understanding</i></b> Extent to which the researchers were familiar with the empirical phenomena.	<ul style="list-style-type: none"> <li>• The author has 15+ years of consulting experience in the field of sales management, solution business development.</li> <li>• Four extensive case studies reported in Storbacka et al. (2009), results of previous study on solution management practices published in Storbacka et al. (2011).</li> <li>• Five expert interviews were conducted.</li> </ul> <p><b>Result:</b> deep understanding of topics relevant for the empirical context, and pre-understanding that solution business models need to incorporate several dimensions: different levels of analysis, a process-oriented view, the balance between customization and repeatability, a cross-functional approach.</p>
<b><i>Credibility</i></b> (internal validity, authenticity) Extent to which the results appear to be acceptable representation of the data.	<ul style="list-style-type: none"> <li>• Eight months of continuous interaction with industry representatives resulting in sufficient member checks.</li> <li>• Continuous, iterative process to combine literature findings with interview findings and inputs from workshops.</li> <li>• Two full day workshops with 23-32 industry representatives from nine firms in different industries.</li> </ul> <p><b>Result:</b> the framework was altered collaboratively with firm representatives during the research process.</p>
<b><i>Transferability</i></b> (external validity, fittingness) Extent to which the findings can be applied to other contexts.	<ul style="list-style-type: none"> <li>• Ten multi-national firms representing ten different industries, and three different European nationalities were interviewed and participated in the workshops.</li> <li>• Use of purposeful sampling.</li> </ul> <p><b>Result:</b> findings can be transferred/generalized across several industries and to European and possibly global solution business models.</p>
<b><i>Dependability</i></b> (reliability, auditability) Extent to which there is consistency of explanations.	<ul style="list-style-type: none"> <li>• Workshops participants reflected on their current and previous experiences as individuals and as representatives of their firms.</li> <li>• Written feedback was collected during the workshops.</li> </ul> <p><b>Result:</b> consistency across participants' narratives and feedback.</p>
<b><i>Conformability</i></b> (objectivity) Extent to which interpretations are the result of the participants and the phenomenon as opposed to researcher biases.	<ul style="list-style-type: none"> <li>• A total of 32 representatives of the case firms gave feedback on the emergent results during two workshops.</li> <li>• Both the researchers and the informants were active participants and knowledge was constructed collaboratively.</li> <li>• Findings were presented to the participating firms and found useful.</li> </ul> <p><b>Result:</b> interpretations were altered, expanded and refined</p>
<b><i>Integrity</i></b> Extent to which interpretations are influenced by misinformation from participants.	<ul style="list-style-type: none"> <li>• Interviews were professional, friendly and anonymous.</li> <li>• Case firms participating in workshops were selected on a non-competitive basis in order to ensure openness.</li> <li>• Workshops were participative and dialogue centred; ensuring that all participants were able to express their views.</li> </ul> <p><b>Result:</b> participants were not trying to evade the issues being discussed.</p>
<b><i>Understanding</i></b> Extent to which participants buy into results as possible representations of their worlds.	<ul style="list-style-type: none"> <li>• Two workshops were held for participants to get feedback on findings.</li> <li>• The preliminary findings were presented in two academic conferences and used in executive education.</li> </ul> <p><b>Result:</b> colleagues and practitioners bought into the findings.</p>
<b><i>Utilization</i></b> (applicability, action orientation) Extent to which the findings are relevant for and can be used to benefit the participants.	<ul style="list-style-type: none"> <li>• Two workshops were held where the research findings were discussed together with practical recommendations.</li> <li>• Case firms have adapted new practices based on the research.</li> </ul> <p><b>Result:</b> participants benefited from the framework and conclusions of the research.</p>

**Table 2: Identified capabilities and management practices****Commercialization process**

<b>Develop Solutions</b>	<b>Create Demand</b>	<b>Sell Solution</b>	<b>Deliver Solution</b>
<ul style="list-style-type: none"> <li>• The firm uses value research methods to define what is valuable for customers.</li> <li>• Lead customers are involved in idea creation and solution development.</li> <li>• There are contract models for lead customer involvement.</li> <li>• Solution development is focused on customers' processes and financial drivers.</li> <li>• There is a hierarchical solution structure (e.g. standardized components defined).</li> </ul>	<ul style="list-style-type: none"> <li>• Segment specific value propositions have been defined.</li> <li>• The role of sales &amp; account management is to work proactively with customers already before they send out a RFQ.</li> <li>• The firm co-operates with industry associations to leverage its own visibility.</li> <li>• Solutions are priced based on value to customers (not cost plus).</li> <li>• There are guidelines for differentiating prices between segments/customers.</li> </ul>	<ul style="list-style-type: none"> <li>• Customer specific value propositions are linked to customers' business concerns.</li> <li>• Dedicated configuration tools are used to create customer-specific solutions.</li> <li>• Sales illustrates the value of the solution to the customer.</li> <li>• There is a systematic value based pricing discipline for solutions.</li> <li>• Identified risks are factored into the pricing of the solution.</li> </ul>	<ul style="list-style-type: none"> <li>• The sales process ensures accurate input to the order-delivery-process.</li> <li>• The value created to the customer is regularly verified.</li> <li>• True customer profitability is measured and followed up systematically.</li> <li>• New solutions (created for specific customers) are documented in such a way that they can be sold to other customers.</li> <li>• Network partners' roles are clearly defined in contract models and templates.</li> </ul>

**Solution platform**

<b>Strategy Planning</b>	<b>Management System</b>	<b>Infrastructure Support</b>	<b>Human Resources Management</b>
<ul style="list-style-type: none"> <li>• Solution business vision and goals have been defined by top management.</li> <li>• Focus markets for solution business are defined (e.g. customer groups, industries, geographical areas).</li> <li>• There are defined segment strategies (business goals are set and followed up).</li> <li>• Solution portfolio management is in place (what solutions to develop, invest in, drop, launch, outsource etc.).</li> </ul>	<ul style="list-style-type: none"> <li>• The organisational structure enables sales to work efficiently with other functions.</li> <li>• The customer dimension is visible in the organisational structure.</li> <li>• New roles (e.g. Solution Manager, Solution Architect or Solution Integration Engineer) have been established.</li> <li>• Metrics have been defined for measuring and managing solution business.</li> </ul>	<ul style="list-style-type: none"> <li>• There are specialized intelligence people available to support sales with analyses.</li> <li>• Knowledge repositories are used for gathering business intelligence.</li> <li>• There is a centralized tendering unit that provides support for making tenders</li> <li>• Legal support for contract negotiations is provided (model contracts and/or centralized legal advice).</li> <li>• Business control supports sales by with standard costing data on solutions and individual solution components.</li> <li>• A CRM system supporting solution sales is in active use across the organisation.</li> <li>• Solution delivery is managed in the ERP (Enterprise Resource Planning) system.</li> </ul>	<ul style="list-style-type: none"> <li>• There are defined skill profiles for all the roles that relate to solution sales.</li> <li>• Competencies needed in solution business have been identified.</li> <li>• The bonus scheme is aligned with company strategy.</li> <li>• Bonus schemes reward for cross-functional teamwork (i.e. participating in sales case development, product development).</li> </ul>

**Figure 1:** Commercialization of solutions: a framework