

Solution Business Fitness: Measuring and Managing Across Business Logics

WEB APPENDIX

Web Appendix A: Literature on Single SBSCs

Table A1. Literature on Single SBSCs

Capabilities	Definition/description of the specific capabilities	Type of study
Author(s)		
Customer sensing and market learning		
Day 2002	Sensing and sense making	Conceptual
Definition of value propositions		
Ballantyne <i>et al.</i> , 2011	Creating reciprocal value propositions	Empirical, qualitative
Macdonald <i>et al.</i> , 2016	Improving customer's processes	Empirical, qualitative
Worm <i>et al.</i> 2017	Ensuring that firms market the right solutions offering	Empirical, quantitative
Earnings design and pricing		
Hinterhuber 2004	Quantifying the value of products to actual and potential customers	Conceptual
Bonnemeier <i>et al.</i> , 2010	Applying value-based revenue models	Empirical, qualitative
Raja <i>et al.</i> , (2020)	Customer identification and analysis, implementation of value-based pricing and selling, verification of value and learning	Empirical, qualitative
Selling and sales force management		
Ploetner 2008	Bringing together production and sales	Empirical, in-depth case studies
Adamson <i>et al.</i> 2012	Selling insights	Empirical, in-depth case studies
Terho <i>et al.</i> , 2012	Translating benefits into monetary terms based on an in-depth understanding of the customer's business model	Empirical, in-depth case studies
Uлага & Loveland 2014	Understanding of customer's business model, managing client expectations, developing of strong networking skills, making the intangible tangible	Empirical, qualitative
Worm <i>et al.</i> , 2017	Knowledge and skills of the sales force in identifying the appropriate decision makers and providing proficient justification for the solutions offering	Empirical, quantitative
Uлага & Kohli 2017	Salespersons' capability to reduce solution-specific uncertainties across the solution process	Conceptual
Sense-making and agenda construction		
Möller 2010	Framing and influencing emerging business fields	Conceptual
Service design		
Ploetner 2008	Ability to integrate the customer into the service-delivery process	Empirical, in-depth case studies
Tan <i>et al.</i> , 2010	Translation of the cost of ownership targets into deliverables, service knowledge management, life cycle cost analysis, identification of potential deterioration of the product over time	Empirical, in-depth case studies
Strategic learning		
Salonen <i>et al.</i> , 2018	Creation and distillation of strategic knowledge that improve a firm's ability to explore customers' readiness to adopt new types of solutions	Empirical, in-depth case study
Value auditing		
Macdonald <i>et al.</i> , 2016	Monitoring and optimizing of customer's value in use	Empirical, qualitative
Prohl & Kleinaltenkamp, 2020	Monitoring and enhancing customer's value in use	Empirical, qualitative

Table A2. Literature on Comprehensive Categorizations of SBSCs

Author(s)	Definition/description of the specific capabilities	Type of study
<i>Capabilities</i>		
Möller & Törrönen 2003		Conceptual
<i>Relational capabilities</i>	Working key-account management, qualified technological support personnel, ability to view things from the customer's perspective, organization-wide relational orientation, sharing of proprietary information, making propositions enhancing the customer's business processes, information systems integration	
<i>Networking</i>	Organization-wide network player orientation, mobilization and maintenance of multilevel and multifunctional contacts between several actors, working communications system supporting the maintenance of network relationships	
<i>Mastering the customer's business</i>	Understanding the business logic of the customer	
Brady <i>et al.</i> , 2005		Empirical, qualitative
<i>Systems integration capabilities</i>	Design and integrate systems composed of internally or externally developed hardware, software, and services	
<i>Operational service capabilities</i>	Maintain, operate, upgrade and renovate a product through its operational life cycle	
<i>Business consulting capabilities</i>	Provide customers with advice on how to develop business plans, design and build a system, and maintain and operate it	
<i>Financing capabilities</i>	Help customers purchase high-cost products and manage an installed base of capital assets	
Storbacka 2011		Empirical, qualitative / conceptual
<i>Commercialization</i>	Creating and selling solutions based on in-depth understanding of customer value creation	
<i>Industrialization</i>	Efficient development and deployment of solutions	
<i>Solution platform</i>	Overall management of the solution business	
Uлага & Reinartz 2011		Empirical, qualitative / conceptual
<i>Service-related data processing and interpretation</i>	Analyzing and interpreting product usage and customer process data from an installed base	
<i>Execution risk assessment and mitigation</i>	Evaluating uncertainty about whether contractually agreed-upon outcomes of hybrid offerings will be realized, and designing and implementing safeguarding mechanisms to meet performance commitments	
<i>Design-to-service</i>	Developing a hybrid offering such that its tangible and intangible elements interact synergistically to tap its full differentiation and/or cost reduction potential	
<i>Hybrid offering sales,</i>	Reaching key decision makers in the customer organization, coordinating key contacts in the customer and vendor firms, selling hybrid offering value through specific documentation and communication tools, and aligning the sales force with both the field organization and channel partners	
<i>Hybrid offering deployment</i>	Using flexible offering platforms that can standardize hybrid offering production and delivery processes while also safeguarding the ability to adapt to individual customers' needs	
Storbacka <i>et al.</i> , 2013		Empirical, qualitative / conceptual
<i>Customer embeddedness</i>	Targeting selected customers and becoming embedded in their processes to support the customers in their value creating process	
<i>Offering integratedness</i>	Integrating technical, business, and system elements into unbundlable solutions and aiming for performance-based earnings logic	
<i>Operational adaptiveness</i>	Adapting cost-effectively to the customers' processes using modular approach to own operational processes	
<i>Organizational networkedness</i>	Orchestrating a network of actors that provide various solution elements	

Table A2 (cont'd). Literature on Comprehensive Categorizations of SBSCs

Sjödín <i>et al.</i> , 2016		Empirical, quantitative (fsQCA)
<i>Service development capability</i>	Ability to develop new service offerings that create value for customers	
<i>Network management capability</i>	Ability to effectively manage network partners in the service delivery network and to share knowledge with them	
<i>Mass service customization capability</i>	Ability to efficiently offer a high volume of different product-services for global markets	
<i>Digitalization capability</i>	Ability to use smart and connected physical products and data analytics to facilitate development and delivery of service offerings	
Forkmann <i>et al.</i> , 2017		Empirical, qualitative (fsQCA)
<i>Internally facing customer service capabilities</i>	Customer's ability to use service offerings within their business processes	
<i>Externally facing supplier service capabilities</i>	Supplier's ability to understand customer requirements, sell to, and deploy service offerings at, the customer	
Huikkola & Kohtamäki 2017		Empirical, qualitative
<i>Fleet management</i>	Capacity to collect, analyze, and exploit installed base data	
<i>Technology development</i>	Ability to leverage customer understanding and in-house development (R&D) activities	
<i>Mergers and acquisitions (M&A)</i>	Ability to conduct successful corporate acquisitions	
<i>Value quantifying</i>	Capability to quantify and communicate customer value appropriately	
<i>Project management</i>	Ability to handle moments of truth and to keep the firm's value promises such as project delivery times	
<i>Supplier network management</i>	Ability to create, maintain and develop a firm's supplier network	
<i>Value co-creation</i>	Ability to address changing customer needs and requirements to co-produce offerings and to co-create value	

Table A3 (cont'd): Allocation of Single SBSCs Identified in Literature to Empirically Measured Capability Elements

Capabilities related to		Commercialization				Industrialization				Solution platform			
Author(s)	Capabilities	Value research (segment)	Value proposition (segment)	Value quantification (customer)	Value verification (customer)	Solution hierarchy	Solution configuration	Solution tools	Solution delivery	Strategy planning	Management system	Infrastructure support	Human resources management
Single SBSCs (cont'd)													
Uлага & Loveland 2014	Understanding of customer's business model, managing client expectations, developing of strong networking skills, making the intangible tangible	•	•	•			•						•
Macdonald <i>et al.</i> 2016	Improving customer's processes					•			•				
	Monitoring and optimizing customer's value in use				•				•				
Uлага & Kohli 2018	Salespersons' capability to reduce solution-specific uncertainties across the solution process			•							•		
Worm <i>et al.</i> 2017	Knowledge and skills of the sales force in identifying the appropriate decision makers and providing proficient justification for the solutions offering			•			•						•
	Ensuring that firms market the right solutions offering	•					•					•	
Salonen <i>et al.</i> 2018	Creation and distillation of strategic knowledge that improves a firm's ability to explore customers' readiness to adopt new types of solutions					•	•	•	•				
Prohl & Kleinaltenkamp 2020	Monitoring and enhancing customer's value in use			•	•				•		•		
Raja et al. (2020)	Customer identification and analysis, implementation of value-based pricing and selling, verification of value and learning			•	•						•		

Table A4: Allocation of SBSCs Mentioned in Comprehensive Categorizations of SBSCs to Empirically Measured Capability Elements

Capability related to		Commercialization				Industrialization				Solution platform			
Author(s)	Capabilities	Value research (segment)	Value proposition (segment)	Value quantification (customer)	Value verification (customer)	Solution hierarchy	Solution configuration	Solution tools	Solution delivery	Strategy planning	Management system	Infrastructure support	Human resources management
Capabilities mentioned in comprehensive categorizations of SBSCs													
Möller & Törrönen 2003	Relational capabilities										•	•	•
	Networking										•	•	•
	Mastering the customer's business	•	•	•			•						
Brady <i>et al.</i> 2005	Systems integration capabilities						•	•			•	•	
	Operational service capabilities								•			•	
	Business consulting capabilities	•	•	•	•							•	
	Financing capabilities										•		
Storbacka 2011	Commercialization	•	•	•	•								
	Industrialization					•	•	•	•				
	Solution platform									•	•	•	•
Ulaga & Reinartz 2011	Service-related data processing and interpretation				•				•			•	
	Execution risk assessment and mitigation								•	•	•		
	Design-to-service						•	•					
	Hybrid offering sales	•	•	•							•	•	•
	Hybrid offering deployment								•		•		

Table A4 (cont'd): Allocation of SBSCs Mentioned in Comprehensive Categorizations of SBSCs to Empirically Measured Capability Elements

Capability related to		Commercialization				Industrialization				Solution platform			
Author(s)	Capabilities	Value research (segment)	Value proposition (segment)	Value quantification (customer)	Value verification (customer)	Solution hierarchy	Solution configuration	Solution tools	Solution delivery	Strategy planning	Management system	Infrastructure support	Human resources management
Storbacka <i>et al.</i> , 2013	Customer embeddedness	•			•				•			•	•
	Offering integratedness		•	•			•	•					
	Operational adaptiveness		•	•			•		•		•	•	
	Organizational networkedness								•		•	•	•
Sjodin <i>et al.</i> , 2016	Service development capability		•										
	Network management capability										•	•	
	Mass service customization capability		•			•	•	•	•				
	Digitalization capability											•	
Forkmann <i>et al.</i> , 2017	Internally facing customer service capabilities					•	•	•	•				
	Externally facing supplier service capabilities	•	•	•	•								
Huikkola & Kohtamäki 2017	Fleet management										•	•	
	Technology development										•	•	
	Mergers and acquisitions (M&A)									•	•		
	Value quantifying			•									
	Project management										•	•	
	Supplier network management										•	•	
	Value co-creation						•		•				

Web Appendix B: Sample Characteristics and Measurement Model Evaluation for the SBF construct

Table B1: Measures for the SBF Composite Measure - Solution Platform

<i>3rd level</i>	<i>2nd level</i>	<i>1st level</i>	Item	Weight	lo 95% CI	hi 95% CI	Loading	VIF	
<i>SBF (composite measure)</i>	<i>Solution Platform</i>	<i>Strategy Planning</i>	Solution business vision and goals have been defined by the top management	.297	.234	.357	.726	1.465	
			The future financial impact (e.g. profitability, revenue) of solution business has been estimated to be significant			(excluded)			
			Focus markets and segments for solution business have been defined (e.g. customer groups, industries, geographical areas)	.127	.061	.191	.722	1.876	
			We have clearly defined segment strategies (specific business goals are set and followed up)	.245	.183	.314	.652	1.594	
			We have a solution portfolio management in place (which makes decisions on what solutions to develop, invest in, drop, launch, outsource etc.)	.293	.226	.358	.788	1.739	
			The total risks associated with different solution contracts in delivery phase are assessed regularly	.388	.320	.455	.778	1.511	
	<i>Management System</i>			Our organizational structure enables sales to work efficiently with other functions such as R&D, production, finance, marketing, customer service.	.398	.334	.462	.667	1.217
				The customer dimension is visible in our organizational structure (e.g. customer segments, key accounts)	.177	.107	.245	.515	1.204
				New roles (e.g. Solution Manager, Solution Architect or Solution Integration Engineer) have been established	.149	.076	.225	.595	1.412
				Metrics have been defined for measuring and managing solution business	.637	.571	.699	.871	1.488
	<i>Infrastructure Support</i>			We have specialized market/business intelligence people available to support sales with analyses (e.g. market shares, trend analysis, competitor info)	.273	.166	.384	.604	1.822
				We use databases for gathering (both from external and internal sources) business intelligence (regarding markets, customer segments and customers)	.036	-.077	.153	.569	1.924
				Customer/model contracts are available in a centralized library	.386	.292	.471	.727	1.295
				We provide legal support for contract negotiations both in the form of model contracts and in the form of centralized legal advice			(excluded)		
	<i>Human Resources</i>			A CRM system supporting solution sales is in active use across the organization	.622	.546	.697	.858	1.227
				We have defined skill profiles for all the roles that relate to solution sales	.451	.354	.551	.910	2.677
				Competencies needed in solution business have been identified	.309	.212	.401	.882	2.732
				We provide our people with systematic training to improve their consultative and value selling skills (general business management, financial analyses)	.088	.004	.171	.667	1.811
			HR strategy and competence development has been aligned with solution business goals and strategy	.325	.241	.412	.795	1.982	

Notes: Confidence intervals based on bootstrapping with 5,000 replications. Confidence intervals are bias corrected. The 95% confidence interval of indicators weight should not include zero or the outer loading should be higher than .5. The Variance Inflation Factor (VIF) should be lower than 5.

Table B2: Measures for the SBF Composite Measure - Industrialization

<i>3rd level</i>	<i>2nd level</i>	<i>1st level</i>	Item	Weight	lo 95% CI	hi 95% CI	Loading	VIF
<i>SBF (composite measure)</i>	<i>Industrialization</i>	<i>Solution Hierarchy</i>	Solution development is focused on customer's processes and financial drivers, not only on technological innovations	.430	.359	.496	.752	1.288
			Our solutions are structured in such a way that it is easy to apply them to the customers' needs	.478	.403	.548	.839	1.474
			We have a defined hierarchical solution structure (e.g. solutions are built out of standardized components)	.200	.124	.273	.648	1.575
			Our standardized solution components are coded in our ERP (Enterprise Resource Planning) / PDM (Product Data Management) system	.251	.181	.325	.584	1.418
	<i>Solution Configurations</i>		We have predefined solution configurations for different segments (that fits in with the value propositions)	.384	.322	.445	.773	1.384
			We price our solutions based on value to customers (not cost plus)	.274	.204	.342	.719	1.561
			We have clear guidelines for differentiating prices between customer segments/customers	.207	.141	.271	.701	1.596
			We have specified the performance level that our solution makes possible for our customers	.442	.383	.504	.814	1.410
	<i>Solution Tools</i>		There are contract models which support value based pricing of solutions (e.g. performance contracts)	.214	.146	.287	.743	1.744
			There is a systematic value based pricing discipline for solutions	.326	.238	.411	.853	2.216
			As a part of our value based pricing approach we also carry out business case analysis from the provider's point of view	.343	.264	.420	.821	1.855
			Our business control supports sales by providing updated standard costing data on solutions and individual solution components	.379	.314	.448	.740	1.294
	<i>Solution Delivery</i>		We have a well-defined communication process which enables us to provide necessary information to the customer during solution delivery	.489	.397	.581	.872	1.802
			We regularly monitor the delivery status and proactively plan corrective actions when delivery is at risk	.059	-.029	.157	.663	1.720
			Network partners' roles are clearly defined in contract models and templates	.262	.153	.365	.832	2.489
			Our interface and communication with partners is clearly defined	.367	.271	.468	.860	2.323

Notes: Confidence intervals based on bootstrapping with 5,000 replications. Confidence intervals are bias corrected. The 95% confidence interval of indicators weight should not include zero or the outer loading should be higher than .5. The Variance Inflation Factor (VIF) should be lower than 5.

Table B3: Measures for the SBF Composite Measure - Commercialization

<i>3rd level</i>	<i>2nd level</i>	<i>1st level</i>	Item	Weight	lo 95% CI	hi 95% CI	Loading	VIF
<i>SBF (composite measure)</i>	<i>Commercialization</i>	<i>Value Research (Segment)</i>	Regular planning with customers is carried out in order to map our solutions with their needs	.311	.240	.380	.749	1.574
			One of our goals is to initiate innovation together with selected customers	.053	-.013	.118	.527	1.413
			We have defined methods for how we research/study what is valuable for our customers	.195	.122	.268	.746	1.704
			Customer value is researched and quantified already in the early phases of solution development	.389	.315	.461	.819	1.699
			Lead customers (a good representative of your market segment, willing to work with you) are involved in idea creation and solution development	.038	-.040	.108	.651	1.794
			We have contract models for lead customer involvement in solution development	.328	.263	.399	.762	1.625
		<i>Value Proposition (Segment)</i>	Segment specific key value promises to the customers (value propositions) have been defined	.648	.579	.706	.846	1.144
			The role of sales & account management is to work proactively with our customers	.146	.054	.235	.501	1.619
			Sales & account management has an important role in identifying new growth opportunities in the market	.163	.075	.257	.484	1.605
		<i>Value Quantification (Customer)</i>	Our segment/product managers' campaign plans are developed together with sales management	.418	.341	.496	.716	1.198
			Our customer specific value propositions are unique and linked to critical business concerns of the customer	.315	.246	.377	.733	1.423
		<i>Value Verification (Customer)</i>	Our dialogue with the customers' decision makers covers their critical business issues and the financial value associated with them	.379	.317	.440	.797	1.519
			Common tools and approaches are implemented for quantifying customer value	.546	.491	.605	.855	1.357
			Our sales process secures accurate input to the order-delivery-process (specifications of solution promised to customer)	.189	.133	.250	.595	1.258
The value created to the customer is regularly verified	.478		.409	.539	.846	1.650		
True customer profitability is measured and followed up systematically	.218		.151	.288	.692	1.508		
References of solution delivery projects are shared through a case repository/case library system	.186		.123	.250	.646	1.528		
		New solutions (created for specific customers) are documented so that they can be sold to other customers	.307	.245	.363	.692	1.510	

Notes: Confidence intervals based on bootstrapping with 5,000 replications. Confidence intervals are bias corrected. The 95% confidence interval of indicators weight should not include zero or the outer loading should be higher than .5. The Variance Inflation Factor (VIF) should be lower than 5.

Table B4: Measures for the SBF Global Measure

	Item	Loading	AVE	Cronb. α	CR
SBF <i>(global reflective measure)</i>	Could you please give an overall score on how well solution sales works in your company/organizational unit	.885	.770	.851	.909
	Could you please give an overall score for your company's ability to commercialize solutions (our ability to understand our customers' needs, create solutions that solve these needs, and get paid according to the value that we generate)	.899			
	Could you please give an overall score for your company's ability to industrialize solutions (our ability to standardize and 'productize' the solution in such a way that it can be efficiently delivered)	.848			

Notes: The factor loading should be higher than .7. The average variance extracted AVE should be higher than .5. The internal consistency coefficient Cron. α should be higher than .7. The composite reliability CR should be higher than .7.

Table B5: Characteristics of Respondents and Firms

Characteristic	N	% of total	
<i>Business Logic of firm</i>	<i>Installed-base</i>	363	27%
	<i>Input-to-process</i>	265	20%
	<i>Situational-service</i>	470	35%
	<i>Continuous-service</i>	160	12%
	<i>Brand</i>	81	6%
<i>Job role of respondent</i>	<i>Sales mgmt</i>	524	39%
	<i>Operations mgmt</i>	151	11%
	<i>Product mgmt</i>	126	9%
	<i>Other (less than 100 obs. in category)</i>	528	39%
<i>Position of respondent</i>	<i>President</i>	46	3%
	<i>Vice President/Director</i>	506	38%
	<i>Manager</i>	596	45%
	<i>Other (less than 100 obs. in category)</i>	191	14%
<i>Tenure of respondent</i>	<i>0-1 years</i>	77	6%
	<i>2-5 years</i>	274	20%
	<i>5-9 years</i>	216	16%
	<i>Above 9 years</i>	772	58%
<i>Age of respondent</i>	<i>Under 40</i>	291	22%
	<i>40-49</i>	573	43%
	<i>50-59</i>	320	24%
	<i>60-</i>	73	5%
	<i>n.a.</i>	82	6%
<i>Country of respondent (working location)</i>	<i>Finland</i>	646	48%
	<i>Germany</i>	108	8%
	<i>Other (less than 100 obs. each)</i>	585	44%
<i>Survey year</i>	<i>2010</i>	466	35%
	<i>2011</i>	471	35%
	<i>2012</i>	201	15%
	<i>2013</i>	128	10%
	<i>2014</i>	73	5%

Table B6: Correlations of Latent Variables on Respondent Level (N = 1,339)

#	Construct	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	<i>Strategic Planning</i>	1.000																
2	<i>Management System</i>	.637	1.000															
3	<i>Infrastructure Support</i>	.459	.450	1.000														
4	<i>Human Ressources</i>	.625	.592	.494	1.000													
5	<i>Solution Hierarchy</i>	.490	.491	.417	.421	1.000												
6	<i>Solution Configurations</i>	.588	.519	.399	.496	.638	1.000											
7	<i>Solution Tools</i>	.552	.548	.487	.544	.544	.693	1.000										
8	<i>Solution Delivery</i>	.511	.501	.419	.467	.474	.460	.467	1.000									
9	<i>Value Research (Segment)</i>	.536	.502	.408	.472	.611	.584	.593	.415	1.000								
10	<i>Value Proposition (Segment)</i>	.480	.466	.391	.436	.545	.591	.517	.369	.538	1.000							
11	<i>Value Quantification (Customer)</i>	.578	.518	.414	.526	.565	.653	.655	.463	.653	.583	1.000						
12	<i>Value Verification (Customer)</i>	.576	.571	.473	.534	.555	.625	.694	.578	.562	.522	.625	1.000					
13	<i>Solution Platform</i>	.893	.829	.678	.807	.570	.636	.660	.598	.600	.550	.641	.676	1.000				
14	<i>Industrialization</i>	.664	.637	.533	.603	.787	.840	.849	.762	.675	.611	.722	.764	.765	1.000			
15	<i>Commercialization</i>	.664	.627	.514	.601	.679	.735	.757	.589	.810	.696	.846	.897	.755	.852	1.000		
16	<i>SBR (composite measure)</i>	.815	.757	.619	.737	.741	.790	.800	.718	.727	.625	.759	.805	.919	.943	.900	1.000	
17	<i>SBR (global measure)</i>	.566	.509	.408	.510	.523	.538	.530	.497	.513	.399	.515	.549	.630	.647	.617	.696	1.000

Table B7: Results for the Vanishing Tetrad Test

Tetrad	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Bias	CI Low	CI Up	Alpha adj.	z(1-alpha)	CI Low adj.	CI Up adj.	Vanishing Tetrad
SP													
1: SP1,SP3,SP4,SP5	0.206	0.205	0.052	3.977	0.000	-0.001	0.105	0.309	0.010	2.577	0.074	0.340	NO
2: SP1,SP3,SP5,SP4	0.074	0.074	0.053	1.383	0.167	0.000	-0.031	0.178	0.010	2.577	-0.064	0.211	YES
4: SP1,SP3,SP4,SP6	-0.055	-0.055	0.037	1.492	0.136	0.001	-0.128	0.017	0.010	2.577	-0.151	0.039	YES
6: SP1,SP4,SP6,SP3	-0.348	-0.347	0.058	5.957	0.000	0.001	-0.464	-0.235	0.010	2.577	-0.500	-0.199	NO
10: SP1,SP4,SP5,SP6	0.242	0.242	0.046	5.279	0.000	0.000	0.152	0.332	0.010	2.577	0.124	0.360	NO
MS													
1: MS1,MS2,MS3,MS4	0.622	0.621	0.073	8.497	0.000	-0.001	0.480	0.767	0.025	2.242	0.459	0.787	NO
2: MS1,MS2,MS4,MS3	0.569	0.569	0.075	7.569	0.000	-0.001	0.423	0.718	0.025	2.242	0.401	0.739	NO
IS													
1: IS1,IS2,IS3,IS5	0.609	0.609	0.082	7.426	0.000	-0.001	0.449	0.771	0.025	2.242	0.426	0.794	NO
2: IS1,IS2,IS5,IS3	0.601	0.600	0.080	7.537	0.000	-0.001	0.445	0.758	0.025	2.242	0.423	0.780	NO
HR													
1: HR1,HR2,HR3,HR4	0.800	0.798	0.073	11.012	0.000	-0.002	0.659	0.944	0.025	2.242	0.639	0.964	NO
2: HR1,HR2,HR4,HR3	0.773	0.772	0.073	10.580	0.000	-0.001	0.631	0.917	0.025	2.242	0.610	0.938	NO
SH													
1: SH1,SH2,SH3,SH4	0.577	0.577	0.061	9.501	0.000	-0.001	0.459	0.697	0.025	2.242	0.442	0.714	NO
2: SH1,SH2,SH4,SH3	0.573	0.572	0.065	8.884	0.000	-0.001	0.447	0.700	0.025	2.242	0.429	0.718	NO
SC													
1: SC1,SC2,SC3,SC4	-0.077	-0.077	0.049	1.580	0.114	-0.001	-0.171	0.019	0.025	2.242	-0.185	0.033	YES
2: SC1,SC2,SC4,SC3	-0.355	-0.355	0.066	5.417	0.000	0.000	-0.484	-0.227	0.025	2.242	-0.502	-0.208	NO
ST													
1: ST1,ST2,ST3,ST4	0.010	0.011	0.060	0.169	0.866	0.001	-0.108	0.127	0.025	2.242	-0.125	0.144	YES
2: ST1,ST2,ST4,ST3	0.030	0.032	0.068	0.442	0.659	0.002	-0.105	0.161	0.025	2.242	-0.124	0.180	YES
SD													
1: SD1,SD2,SD3,SD4	0.459	0.458	0.055	8.388	0.000	-0.001	0.353	0.568	0.025	2.242	0.338	0.583	NO
2: SD1,SD2,SD4,SD3	0.316	0.316	0.059	5.312	0.000	0.000	0.199	0.433	0.025	2.242	0.183	0.449	NO
VR													
1: VR1,VR2,VR3,VR4	0.145	0.145	0.048	2.990	0.003	0.000	0.050	0.240	0.006	2.774	0.010	0.279	NO
2: VR1,VR2,VR4,VR3	0.233	0.233	0.046	5.131	0.000	-0.001	0.145	0.323	0.006	2.774	0.108	0.361	NO
4: VR1,VR2,VR3,VR5	-0.195	-0.195	0.044	4.443	0.000	0.000	-0.281	-0.109	0.006	2.774	-0.317	-0.073	NO
6: VR1,VR3,VR5,VR2	0.219	0.219	0.047	4.679	0.000	-0.001	0.128	0.312	0.006	2.774	0.090	0.350	NO
7: VR1,VR2,VR3,VR6	-0.009	-0.008	0.047	0.185	0.853	0.001	-0.101	0.083	0.006	2.774	-0.139	0.121	YES
10: VR1,VR2,VR4,VR5	-0.034	-0.034	0.045	0.751	0.453	0.000	-0.121	0.054	0.006	2.774	-0.157	0.091	YES
16: VR1,VR2,VR5,VR6	0.125	0.125	0.047	2.671	0.008	0.000	0.034	0.218	0.006	2.774	-0.004	0.256	YES
22: VR1,VR3,VR4,VR6	0.093	0.092	0.043	2.159	0.031	-0.001	0.009	0.178	0.006	2.774	-0.026	0.213	YES
26: VR1,VR3,VR6,VR5	0.313	0.313	0.051	6.189	0.000	-0.001	0.215	0.413	0.006	2.774	0.174	0.455	NO
VP													
1: VP1,VP2,VP3,VP4	0.027	0.027	0.018	1.492	0.136	0.000	-0.008	0.063	0.025	2.242	-0.013	0.068	YES
2: VP1,VP2,VP4,VP3	-0.314	-0.314	0.049	6.431	0.000	0.000	-0.410	-0.218	0.025	2.242	-0.424	-0.205	NO
VV													
1: VV1,VV2,VV3,VV4	0.058	0.057	0.043	1.331	0.183	0.000	-0.027	0.143	0.010	2.577	-0.054	0.170	YES
2: VV1,VV2,VV4,VV3	-0.127	-0.128	0.062	2.046	0.041	0.000	-0.249	-0.005	0.010	2.577	-0.287	0.033	YES
4: VV1,VV2,VV3,VV5	0.012	0.012	0.046	0.264	0.792	0.000	-0.078	0.104	0.010	2.577	-0.107	0.132	YES
6: VV1,VV3,VV5,VV2	-0.190	-0.191	0.063	3.024	0.003	-0.001	-0.313	-0.066	0.010	2.577	-0.352	-0.028	NO
10: VV1,VV3,VV4,VV5	0.345	0.345	0.064	5.375	0.000	0.000	0.219	0.471	0.010	2.577	0.179	0.510	NO

Table B8: Correlation of Composite Scores to Test Compositional Invariance

Group	1-2	1-3	1-4	2-3	2-4	3-4
<i>Strategic Planning</i>	.981	.995	.983	.984	.992	.975
<i>Management System</i>	.997	.948*	.957*	.945	.967	.955
<i>Infrastructure Support</i>	.944*	.993	.966	.960	.972	.961
<i>Human Resources</i>	.985	.996	.986	.991	.984	.981
<i>Solution Hierarchy</i>	.986	.997	.994	.971	.982	.993
<i>Solution Configurations</i>	.991	.977	.994	.971	.979	.989
<i>Solution Tools</i>	.994	.996	.970	.984	.954	.989
<i>Solution Delivery</i>	.997	.955	.992	.960	.988	.961
<i>Value Research (Segment)</i>	.959*	.975	.956	.940	.943*	.967
<i>Value Proposition (Segment)</i>	.995	.988	.990	.974	.998	.972
<i>Value Quantification (Customer)</i>	.999	.989	.987	.983	.977	.991
<i>Value Verification (Customer)</i>	.974	.983	.952*	.962	.904*	.974
<i>Solution Platform</i>	.979	.904*	.943*	.891*	.943	.948
<i>Industrialization</i>	.986	.984	.968	.972	.973	.955
<i>Commercialization</i>	.973	.981	.964*	.953	.924*	.981
<i>SBF (composite)</i>	.944	.870*	.905*	.827*	.892*	.860*
<i>SBF (global)</i>	1.000	1.000	1.000	1.000	.999	1.000

Notes: 1: Scandinavia (N = 758) 2: Europe (excl. Scand.) (N = 231) 3: Australasia/ Middle East (N = 134) 4: North/Latin America (N = 195)

* composite correlation is smaller than 1 at a 95% confidence level (based on 1,000 permutations)

Table B9: Tests for Invariance of Structural Parameters

	Region				Region Differences					
	1 Scandinavia (N = 758)	2 Europe (excl. Scand.) (N = 231)	3 Australasia/ Middle East (N = 134)	4 North/Latin America (N = 195)	1-2	1-3	1-4	2-3	2-4	3-4
<i>Impact of Solution Business Fitness 1st level constructs on 2nd level constructs</i>										
<i>Strategic Planning</i> → <i>Solution Platform</i>	0.454*	0.594*	0.089	0.304*	-0.140	0.365*	0.150	0.505*	0.290*	-0.215
<i>Management System</i> → <i>Solution Platform</i>	0.302*	0.285*	0.300*	0.493*	0.017	0.003	-0.191	-0.015	-0.209	-0.194
<i>Infrastructure Support</i> → <i>Solution Platform</i>	0.278*	0.221*	0.093	0.124	0.057	0.185	0.154*	0.128	0.097	-0.031
<i>Human Resources</i> → <i>Solution Platform</i>	0.203*	0.078	0.628*	0.250*	0.125	-0.425*	-0.047	-0.550*	-0.172	0.378*
<i>Solution Hierarchy</i> → <i>Industrialization</i>	0.223*	0.301*	0.180	0.428*	-0.078	0.043	-0.205*	0.121	-0.127	-0.248
<i>Solution Configurations</i> → <i>Industrialization</i>	0.291*	0.215*	0.324*	0.239*	0.076	-0.033	0.052	-0.109	-0.024	0.085
<i>Solution Tools</i> → <i>Industrialization</i>	0.389*	0.366*	0.402*	0.176	0.023	-0.013	0.213*	-0.036	0.190	0.226
<i>Solution Delivery</i> → <i>Industrialization</i>	0.340*	0.337*	0.290*	0.384*	0.003	0.050	-0.044	0.048	-0.047	-0.094
<i>Value Research (Segment)</i> → <i>Commercialization</i>	0.265*	0.361*	0.288*	0.334*	-0.096	-0.023	-0.068	0.073	0.028	-0.045
<i>Value Proposition (Segment)</i> → <i>Commercialization</i>	0.122*	0.014	0.168	0.150*	0.109	-0.046	-0.028	-0.154	-0.136	0.018
<i>Value Quantification (Customer)</i> → <i>Commercialization</i>	0.322*	0.218*	0.170	0.231*	0.104	0.152	0.091	0.048	-0.013	-0.061
<i>Value Verification (Customer)</i> → <i>Commercialization</i>	0.481*	0.546*	0.527*	0.479*	-0.065	-0.046	0.002	0.018	0.067	0.048
<i>Impact of Solution Business Fitness 2nd level constructs on 3rd level construct</i>										
<i>Solution Platform</i> → <i>Solution Business Fitness</i>	0.524*	0.402*	0.502*	0.245*	0.122	0.022	0.279*	-0.100	0.158	0.257
<i>Industrialization</i> → <i>Solution Business Fitness</i>	0.390*	0.345*	0.135	0.736*	0.045	0.255	-0.346*	0.210	-0.391*	-0.601*
<i>Commercialization</i> → <i>Solution Business Fitness</i>	0.161*	0.308*	0.411*	0.053	-0.147	-0.250	0.108	-0.103	0.254	0.358
<i>Impact of Solution Business Fitness composite on Solution Business Fitness global measure</i>										
<i>SBF (composite)</i> → <i>SBF (global measure)</i>	0.698*	0.750*	0.838*	0.802*	-0.052	-0.139*	-0.103*	-0.087*	-0.052	0.036

Note:

* effect is significantly different from zero at a 95% confidence level. Bias corrected confidence intervals based on bootstrapping with 5,000 replications.

Web Appendix C: Relation between SBF Components and Firm Performance

Table C1: Means, Standard Deviations, and Correlations for Firm Performance Models with Same Period SBF Variables

#	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	<i>Profit</i>	1.000																		
2	<i>Firm Size</i>	.765	1.000																	
3	<i>Strategic Planning</i>	-.357	-.364	1.000																
4	<i>Management System</i>	-.390	-.356	.706	1.000															
5	<i>Infrastructure Support</i>	-.390	-.356	.706	1.000	1.000														
6	<i>Human Resources</i>	.161	.454	.388	.321	.321	1.000													
7	<i>Solution Hierarchy</i>	-.169	-.189	.760	.774	.774	.487	1.000												
8	<i>Solution Configurations</i>	-.102	.149	.491	.449	.449	.595	.340	1.000											
9	<i>Solution Tools</i>	-.288	-.167	.708	.640	.640	.443	.586	.820	1.000										
10	<i>Solution Delivery</i>	-.220	-.010	.454	.722	.722	.594	.668	.645	.772	1.000									
11	<i>Value Research (Segment)</i>	-.046	.112	.524	.483	.483	.601	.442	.555	.540	.547	1.000								
12	<i>Value Proposition (Segment)</i>	.071	.007	.498	.498	.498	.564	.500	.557	.597	.659	.407	1.000							
13	<i>Value Quantification (Customer)</i>	-.041	.124	.382	.353	.353	.691	.468	.611	.633	.624	.424	.544	1.000						
14	<i>Value Verification (Customer)</i>	-.223	-.163	.534	.641	.641	.436	.548	.556	.712	.776	.609	.781	.584	1.000					
15	<i>Solution Platform</i>	-.336	-.112	.504	.680	.680	.498	.489	.724	.716	.766	.630	.600	.530	.753	1.000				
16	<i>Industrialization</i>	-.245	-.143	.892	.841	.841	.662	.879	.619	.758	.730	.664	.632	.570	.672	.702	1.000			
17	<i>Commercialization</i>	-.187	.024	.635	.679	.679	.662	.608	.847	.885	.869	.813	.648	.643	.786	.824	.818	1.000		
18	<i>SBF (composite measure)</i>	-.227	-.101	.591	.692	.692	.576	.577	.737	.788	.827	.642	.824	.655	.911	.927	.770	.871	1.000	
19	<i>SBF (global measure)</i>	-.245	-.095	.797	.796	.796	.662	.755	.788	.869	.831	.768	.706	.621	.798	.837	.940	.956	.897	1.000
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Mean	5.499	7.584	-.117	-.079	-.079	.010	-.021	-.040	-.050	-.039	-.099	-.067	.081	-.094	-.092	-.082	-.077	-.089	-.095
	Std. Dev.	1.862	1.903	.448	.385	.385	.580	.364	.370	.349	.362	.392	.304	.287	.348	.371	.435	.384	.350	.407
	Min	.000	3.581	-1.236	-.909	-.909	-1.394	-.610	-.796	-.642	-.800	-1.008	-.633	-.441	-.729	-.937	-1.144	-1.010	-.832	-.970
	Max	9.593	11.439	.597	.500	.500	1.383	.762	.658	.688	.642	.523	.532	.675	.557	.377	.875	.541	.468	.616

Table C2: Means, Standard Deviations, and Correlations for Firm Performance Models with One Period Lagged SBF Variables

#	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	<i>Profit</i>	1.000																		
2	<i>Firm Size</i>	.931	1.000																	
3	<i>lagged Strategic Planning</i>	-.093	-.270	1.000																
4	<i>lagged Management System</i>	-.254	-.253	.355	1.000															
5	<i>lagged Infrastructure Support</i>	-.254	-.253	.355	1.000	1.000														
6	<i>lagged Human Ressources</i>	.729	.728	.332	.151	.151	1.000													
7	<i>lagged Solution Hierarchy</i>	-.268	-.373	.696	.749	.749	.254	1.000												
8	<i>lagged Solution Configurations</i>	.031	.088	.589	.500	.500	.559	.537	1.000											
9	<i>lagged Solution Tools</i>	-.265	-.278	.674	.558	.558	.287	.573	.857	1.000										
10	<i>lagged Solution Delivery</i>	-.146	-.064	.234	.796	.796	.320	.555	.760	.775	1.000									
11	<i>lagged Value Research (Segment)</i>	.053	.195	.415	.444	.444	.508	.304	.604	.556	.508	1.000								
12	<i>lagged Value Proposition (Segment)</i>	.264	.216	.646	.461	.461	.691	.587	.871	.778	.685	.516	1.000							
13	<i>lagged Value Quantification (Customer)</i>	.201	.274	.063	.124	.124	.539	.211	.570	.468	.515	.207	.599	1.000						
14	<i>lagged Value Verification (Customer)</i>	-.128	-.083	.479	.708	.708	.410	.652	.889	.878	.928	.523	.861	.596	1.000					
15	<i>lagged Solution Platform</i>	-.147	.003	.273	.675	.675	.361	.494	.864	.761	.928	.583	.715	.506	.935	1.000				
16	<i>lagged Industrialization</i>	-.009	-.099	.826	.751	.751	.534	.879	.762	.756	.653	.589	.811	.288	.777	.630	1.000			
17	<i>lagged Commercialization</i>	-.108	-.036	.555	.688	.688	.464	.580	.908	.912	.879	.776	.810	.467	.922	.898	.804	1.000		
18	<i>lagged SBF (composite measure)</i>	-.031	.048	.443	.635	.635	.499	.579	.936	.846	.909	.581	.873	.624	.982	.959	.744	.932	1.000	
19	<i>lagged SBF (global measure)</i>	-.077	-.071	.710	.739	.739	.507	.747	.909	.890	.823	.706	.869	.410	.920	.843	.930	.961	.914	1.000
	N	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Mean	5.271	7.227	-.059	-.027	-.027	.036	.015	-.125	-.047	-.021	.044	-.009	.111	.034	-.016	-.023	-.039	.002	-.039
	Std. Dev.	.934	1.313	.404	.389	.389	.424	.309	.322	.371	.336	.312	.286	.253	.371	.382	.357	.351	.372	.374
	Min	4.205	5.056	-.704	-.909	-.909	-.757	-.590	-.623	-.624	-.691	-.593	-.633	-.326	-.680	-.762	-.686	-.767	-.700	-.807
	Max	6.526	9.217	.486	.487	.487	.762	.511	.296	.649	.325	.523	.532	.447	.557	.377	.461	.483	.468	.478

Table C3: Relation between SBF Components and Firm Performance

Regression coefficients^a	(1)	(2)	(3)	(4)	(5)
<i>Strategic Planning</i>	.28**	.35*	.50***	.28**	.32***
<i>Management System</i>	.14**	.15	.28***	.12**	.10*
<i>Infrastructure Support</i>	.06	.08	.09	.12	.15*
<i>Human Resources</i>	.12*	.14	.19**	.13**	.16***
<i>Solution Hierarchy</i>	.06	.08	-.04	.21***	.23***
<i>Solution Configurations</i>	.16**	.22**	.18	.22	.29**
<i>Solution Tools</i>	.11**	.14	.18**	.16*	.17**
<i>Solution Delivery</i>	.16*	.22**	.18**	-.00	-.13
<i>Value Research (Segment)</i>	.18**	.21	.24*	.23***	.24***
<i>Value Proposition (Segment)</i>	.16**	.21*	.39***	.34***	.37***
<i>Value Quantification (Customer)</i>	.06	.06	-.03	.18***	.18***
<i>Value Verification (Customer)</i>	.07	.09	.11	.17***	.20***
<i>Solution Platform</i>	.15**	.19	.37***	.14**	.13**
<i>Industrialization</i>	.15***	.20**	.21**	.17	.27**
<i>Commercialization</i>	.09*	.11	.19*	.17***	.18***
<i>SBF (composite measure)</i>	.14**	.18	.25***	.16**	.20***
<i>SBF (global measure)</i>	.18**	.28*	.30**	.28***	.31***

Note: *** p < .01 ** p < .05 * p < .10

^a Dependent Variable in all models: *Profit*

(1) Multilevel Maximum Likelihood (N = 30)

(2) Fixed Effects OLS Regression (N = 30)

(3) Fixed Effects Quantile Regression (N = 30)

(4) Fixed Effects OLS Regression with lagged SBF component (N = 13)

(5) Fixed Effects Quantile Regression with lagged SBF component (N = 13)

Detailed information on each regression model is available upon request.

Web Appendix D: Illustrations of Different Business Logics

Table D1. Illustrations of Different Business Logics (based on Storbacka and Pennanen 2014)

<i>Business logic</i>	<i>Explanation</i>	<i>Example industries</i>	<i>Generic challenges (examples)</i>	<i>Generic objectives (examples)</i>
Installed-base	Providing investment products, thus creating an installed base at the customers	Machinery, IT	Long sales cycles Often truly global customer base & competition	After-sales services Integrated solutions
Input-to-process	Providing products and solutions that are utilized as input in the customers' process	Metal, pulp & paper, utility	Asset-heavy production Little offering differentiation, small margins	Economies of scale Capacity optimization Moving from bulk to tailored applications
Continuous-relationships	Producing and selling products and services that are characterized by long-term contracts	Banking, insurance, telecommunications, media	Low interest products/ services High customer acquisition costs Innovations copied fast	Customer loyalty Share of wallet Up-sales and cross-sales
Consumer-brands	Producing products for the consumer market that are sold through a channel	Fast-moving consumer goods, pharmaceuticals	Power compared to retail channel Consumer insight without direct consumer contact	Strong brands Product innovations
Situational-services	Providing project-based services, which fulfil customer's situation-driven needs	Professional services, rental services	Fixed & high-cost production capacity but fluctuating demand Economies of scale are limited	Utilization rate Continuous cash flows Industrialization of services

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