

Strategy Assessment and Decision based Implications for Integrated Product-Service-Suppliers

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Abstract

In order to provide effective Product-Service-Solutions, so-called Integrated Solutions, especially industrial SME face challenges regarding the selection of appropriate business models regarding their internal organisation. Contingency Theory claims that a good fit between structural, strategic and external factors is necessary for a company's success. The servitization strategy can be organised on a continuum of Individualisation and Standardisation. It is, therefore, vital to align business processes, organisational structure and leadership styles with the corresponding strategy. An assessment concept is presented which allows strategy identification as well as implementation guidelines for the organisational development of Integrated Solution Suppliers increasingly providing Product-Service-Solutions.

Keywords:

Service, Model, Process

1 INTRODUCTION

Many industrial companies have decided to enhance service offerings in order to complement their core products [1]. Reasons for this range from the need to establish single selling propositions by individualised offers to the offering of mass services in order to make core products profitable [2]. Industrial services recently account for a stronger growth in turnover than industrial goods do [3]. This is due to lower invest costs and the absence of warehousing. Integrated Solution Suppliers offer product-service bundles that are individual and enable the customer to solve problems or substitute lacking competencies [4].

Despite the strong will of offering services, especially for small and medium sized enterprises (SME), the definition of a business model for the providing company often poses many questions and challenges. These begin with a clear definition of a strategy and end with the successful implementation of a business model including the design of the inherent processes and leadership aspects. Well known principles from strategic and business research can be applied here.

Hereby, it is crucial to align the organisational structure and processes with the defined strategy, in order to guarantee a frictionless implementation. Leadership aspects such as management style and tools play a vital role in supporting the implementation and maintaining the achieved changes [5].

In order to identify the integrated service strategy, companies require to know the linkage between corporate goals and possible service strategies. Furthermore, they need to know how much effort it takes to conduct a strategic change from their current positioning to a future desired state. For this, a strategy assessment support is welcomed. Once the firms know what strategy they want

to follow, possible organisational actions need to be indicated.

2 THORETICAL BACKGROUND

2.1 Contingency Theory and Resource-Advantage Theory

The Contingency Theory claims that the best fit between the external environment, the internal strategy and the organisational orientation has to be achieved in order for a company to perform successfully. Mintzberg and other scientists underlined this theory by empirical studies [6].

Furthermore, concerning the organisational orientation, several further factors need to be considered, that enable a firm to establish an internally consistent organisation. This is described in the Resource-Advantage Theory of Competition, whereby the perception of a company should be such, that the customers value the resources as advantageous over other companies [7]. A superior relative customer value is achieved by resources that are difficult to imitate and accumulate. Several resources can be combined with each other in order to create such a superior value and therefore a competitive advantage. Neu and Brown recently define internal resources as Strategy, Processes, Structure, Human Resource as well as Measurement and Rewards [8]. More concrete success factors for integrated Product-Service-Solutions are described in the following.

2.2 Concept and Success Factor for Integrated Services

Especially for Customer Solutions, further success factors can be identified, which need to be considered when developing Product-Service-Solutions. Tuli et al. [4] found 4 core phases that are essential for a perceived customer solution. These phases result by means of depth interviews and imply a new process-centric view on

solutions rather than a product-centric view defining solutions as customised and integrated goods and services. The emphasis clearly lies on the interaction of companies and their long-term relationship. The first important phase is the **Requirements Definition** and emphasises the importance of the deep understanding of customers' needs that sometimes are not even easy to articulate. Close relational ties are needed in this discovery process and form the basis for the definition of future needs. **Customization and Integration** involve designing, modifying and selecting products to fit into a customer's environment. The concept of the customer's role as a co-creator of value becomes of importance here. Next, **Deployment** includes the delivery of products and their installation into a customer's environment. Additional modifications might be needed at this stage. The staff competencies regarding the direct interaction with customers are determining factors of the perceived solution quality. Lastly, **Postdeployment Support** encompasses deploying new products in response to evolving customer requirements but also the ongoing relationship and providing solutions for emerging problems with the obtained products are central.

All four phases must be performed well by the supplier in order for the customer to perceive the solution as high quality. In addition to this concept, success factors are identified, which concentrate on the company's organisation: contingent hierarchies, documentation emphasis, incentive externality, customer-interactor stability and process articulation.

2.3 The Continuum of Individualisation and Standardisation for Integrated Services

Porter [9] described two main strategies for achieving competitive advantages: cost-leadership and quality-leadership. The first mentioned aims at achieving economies of scale and therefore cost-reduction by mass production. Here lies close relation to Standardisation activities in order to render the underlying processes more efficient (see figure 1). The second strategy aims at a high degree of differentiation against competitors in form of single-selling-propositions. Especially product accompanying services propose promising potentials as they can provide individual problem solutions. This is referred to here as Individualisation.

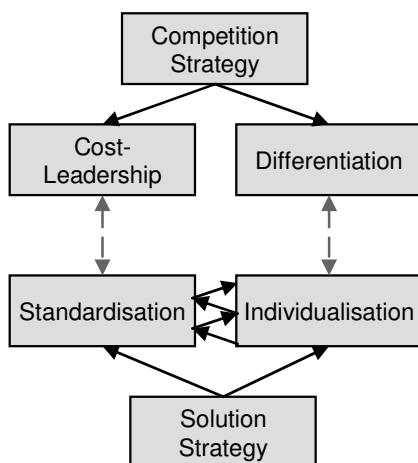


Figure 1: Solution-Strategy derived from 'traditional' Strategy.

Porter [9] claims that the decision for one of these strategies must be made to avoid being 'stuck in the middle'. Hybrid competition strategies imply switching from one strategy to the next at the right moment by which the dilemma is erased and competitors overtaken. This strategy, also known as 'Outpacing', requires a high sensitivity towards competition, product value and cost

effectiveness [10]. These theories are not new but companies following the novel trend of offering Product-Service-Solutions need indicators in order to decide which Solution Strategy to follow.

3 REQUIREMENTS FOR STRATEGY IDENTIFICATION AND ORGANISATIONAL IMPLICATION

Considering the Contingency Theory as well as the Outpacing approach, processes, organisational structures and leadership methods should differ between Individualisation and Standardisation in order to be consistent with the currently followed strategy. This means, if the Service Strategy implies Standardisation, then consistent orientations and standardisation methods should be implied on all organisational levels, Individualisation respectively (see figure 2).

For this purpose, the implications of Standardisation and Individualisation Strategies are explained in the following regarding the needs of Product-Service-Suppliers.

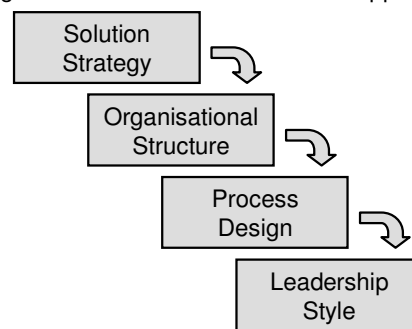


Figure 2: Organisational design aspects depending on focussed Solution Strategy.

3.1 Indicators for the Continuum of Standardisation and Individualisation

Individualisation and Standardisation can be seen as two endpoints of a continuum. This means, that companies can be located anywhere on this continuum between the two extremes. If a Product-Service-Supplier has elaborated solutions which can easily be produced in larger quantities for which there is a market, then he will tend to the direction of Standardisation. A Product-Service-Supplier might also want to develop specific problem solutions for individual customers for very complex conditions in order to raise customer satisfaction and loyalty. This supplier will tend to the direction of Individualisation. These strategies are similar to those articulated by Porter, but they focus less on the market than on the desired type of solution. Expert Interviews with three SME from the research project 'HyPro' generated the main goals for these two strategy types. These are listed as extracted criteria in table 1 should be the basis of a strategy assessment.

Standardisation	Individualisation
solution elaboration	specificity/individuality of solution
quantity of production	complexity of customer situation
market opportunity	need for high customer satisfaction and loyalty
profitability of core products (non-service)	competition for core products (non-service)

Table 1: Indicators for different Solution Strategies.

Furthermore, a differentiation between the current and a future strategic situation should be mapped, in order to estimate the effort of further strategy implementation.

The following implications are based on literature research on organisational, process and leadership issues.

3.2 Implications for the Organisational Structure

Following the idea of Standardisation and Individualisation of solutions, organisational structures need to reflect these strategies by consistent design. As Product-Service-Suppliers, so-called Solution Suppliers, are considered, the focus shall lie on the organisation of service units as they need to complement the existing manufacturing units in order to develop integrated Product-Service-Solutions. Important preconditions for Standardisation are efficient structures [11]. These are established by more or less independent business units. Regarding the development of services, service departments and service organisations offer high transparency of costs and profits as well as the opportunity to use incentive or working hour models. These are important fundamentals in order to achieve a higher degree of professionalism and also more rational processes [12]. With a high degree of Standardisation, also service offerings for external products can be made.

An important precondition for Individualisation are effective structures that guarantee flexibility in order to be able to react to specific customer requirements [12]. Such flexibility is achieved by project organisations and the flexible integration of experts from various departments across the organisation. These structures can also be established as secondary structures accompanying primary business units. The high involvement of experts corresponds to the concept of contingent hierarchies [8], meaning that customers can rely on the fact that the expert for their problem will also be the one to give advice and decide on measures to be taken. The basis for a good project organisation is a mutual interest of all involved actors, so that splinter groups are avoided and a collaborative working environment is realised [12]. If these conditions are fulfilled, then a strong integration of know-how across business units, necessary for individualised solutions, is achieved. Therefore, the Product-Service-Supplier's need for the criteria in table 2 should be the basis for the selection of organisational structures to support the chosen Solution Strategy.

Standardisation	Individualisation
cost and benefit transparency	know-how integration across units
rational processes	mutual interest and collaboration
incentive and working hours models	cross-selling potentials
service offering for external products	one-face-to-the-customer policy
failure avoidance / minimal risk-taking	flexibility

Table 2: Indicators for different organisational structures.

3.3 Implications for Core Processes

Concerning Standardisation efforts within processes of Product-Service-Suppliers, the greatest potentials lie within a well structured and transparent order processing. Therefore, means of process visualisation, such as Service Blueprints, are of great importance and have to indicate configuration points and sub-processes when needed. Also, key performance indicators that are able to monitor costs and lead times provide vital information for controlling mechanisms. A structured solutions portfolio is the basis for this as it allows a cost-based pricing of the final solutions.

Individualisation efforts focus on the collaborative development of the desired solution [13]. The collaboration lies not only between certain internal experts and units but also with the customer as a co-creator of value. Within the solution development, the transparency of the involved actors with their authorisations and function is more important than the detailed description of single steps within the process. Know-how exchange becomes a necessity and can therefore also be organised by key-accounts. Nonetheless, the definition of interfaces between all parties must be described along the four phases of integrated solutions, as described in section 2.2. The basis of individualised solutions here can also be provided by pre-arranged modular solutions. Indicators, that need to be considered here are listed in table 3 below.

Standardisation	Individualisation
emphasis on order processing	emphasis on solution development
availability of structured portfolio	intensity of interaction between experts
availability of clear process descriptions	intensity of interaction with customers
availability of key performance indicators	project focus outweighs product focus

Table 3: Indicators for different core process structures.

3.4 Implications for Leadership Approaches

Following the arguments of the former two sub-sections, two leadership styles can be indicated. one leadership style is needed for the monitoring and controlling of standardised processes as well as the use of incentives. This is given by the transactional leadership approach [14].

Individualisation requires flexible actions, a high degree of self-organisation of staff and visions able to commit employees to an overall vision and enhance joint efforts. This is what the transformative approach is aimed at.

The first approach, is based on transactions between leaders and followers. A desired set of actions and behaviour is negotiated and rewarded by the management. Incentives and rules are therefore the most common management techniques applied in the case of Standardisation. Deviations from the rules are followed by corrective actions.

The transformative approach relies on strong ideals, intellectual stimulation, individual consideration and inspirational motivation. Leaders able to provide all these aspects are often described as charismatic and act as role models for their employees. They do not so much tell their staff what and how to do something but coach them to set the right priorities, see issues from different aspects and make the right decisions for the group or project goals. Resulting indicators for adequate leadership styles are listed in table 4.

Standardisation	Individualisation
clear goals and transparent requirements	ideals and visions to identify staff with
monitoring of deviations and corrective actions	consideration of individual challenges and goals
transparent incentives to motivate and commit them to the tasks	inspiration and stimulation by coaching for new ideas

Table 4: Indicators for different leadership styles.

3.5 Appraisal of Solution Strategy and Implications

Within this section, the end-points of the continuum of Individualisation and Standardisation have been considered to make clear where emphasis can lie with respect to a chosen Solution Strategy, i.e. Product-Service-Strategy. Nevertheless, it must be evident that nuances and mixtures lay between the two end points of this continuum and need to be considered with care.

Furthermore, regarding a chosen strategy, implication guidelines can be articulated but with respect to the heterogeneity of organisations, they can not be seen as total measures of action but rather points of advice and reflection.

Nonetheless, an assessment tool is aimed at, which is able to support in identifying Solution-Strategy and which consequently has a function to feed back corresponding and consistent advisory comments.

4 OUTLOOK ON DESIGN OF SOLUTION STRATEGY ASSESSMENT TOOL

In the following, the basic requirements for the Solution Strategy Assessment Tool are defined and an outlook on its design will be given. This tool represents a decision support model which allows an indication on which organisational measures are appropriate for the chosen Solution Strategy. The requirements follow the contents of section three and are complemented with requirements for the resulting data analysis. From these, specifications for the design are derived.

4.1 Assessment Tool Requirements

First, as mentioned in section 3.1, the current position of Solution-Supplier on the strategy continuum should be assessable (strategic status quo).

Second, a future set of goals should be assessable and allocated to a future position on the strategy continuum (absolute strategic goal).

Third, the difference from current and future position on the strategy continuum should be determined to indicate the need of action (relative strategic goal).

Fourth, all indicators in section three should be included in either the current or the future state analysis by the formulation of questions/items (content validity).

Fifth, an algorithm on absolute and relative strategic goal should allow the systematic selection of strategic organisational guidelines (declarative validity) - without numerical values resulting on the middle of the continuum.

Sixth, the advisory guidelines should include under which circumstances they pose possible risks. For example, an independent service department poses too high initial and coordination efforts, if the percentage of employees does not exceed 10 %.

Seventh, the feedback of possible advisory actions should be in immediate timely relation to the completion of items in the assessment.

4.2 Resulting Assessment Tool Specifications

From the above listed requirements, concrete specifications can be derived to fulfil them.

First, the formulated items and their appraisal, by rating of importance or degree of consent, must be allocated to an underlying scale depicting the continuum of Individualisation and Standardisation.

Second, the scale should prohibit the achievement of numerical values in the middle of the continuum but pose a forced choice appraisal. A 6-point scale, e.g., would be suitable and understandable.

Third, resulting from second, arithmetic means with a .5 ending should be avoided in order to clearly select appropriate strategic guidelines and measures.

Fourth, a condition based feedback should be enabled, so that possible risks for certain measures can be indicated.

5 OUTLOOK ON FURTHER USE OF THE MODEL

The categories for the organisational implementation of the desired strategy can also be used for a direct reconciliation with customer requirements. According to Porter, real competitive advantages can only be achieved if the customer perceives an offered solution as superior to one offered by a competitor [9]. So far, the methodology has been based on internal strategic deliberations. In order to validate the derived strategic implications for organisational development, customer requirements ought to be reflected.

Next, criteria for organisational performance of Integrated-Solution-Suppliers needs to be determined according to the findings of section 3. Focussing on the solution strategy of **Individualisation** and Tuli's success factors [4], following criteria can exemplarily be derived:

- know-how availability across business units, especially service and production units
- degree of interaction across business units, especially service and production units
- role transparency and authorities of all parties, especially for customer experts
- degree of documentation for solution development, especially process visualisation
- degree of documentation of effective and ineffective experiences, esp. lessons learnt
- degree of incentives across business units, especially sales, engineering and production
- duration of customer interaction/relationship, especially with key-accounts
- degree of goal commitment achieved by charismatic leadership
- degree of leaders' support for self-organisation.

Alternatively, for the strategy of **Standardisation**, the criteria for organisational performance can be exemplarily defined respective the findings in section:

- amount of errors within order processing,
- lead-time for order processing,
- formalisation of order processing,
- quality of processed order,
- transparency of job descriptions,
- transparency of organisation chart,
- transparency of interfaces between divisions,
- transparency of target agreements,
- transparency of performance indicators and respective controlling.

The perceived quality criteria can then be prioritised and weighted according to the importance of the requirements for the customer. The corporate skills of Integrated Solution Suppliers are also assessed regarding their degree of realisation in corporate activities. Here, following the chosen strategy, supported by the assessment tool, the criteria for individualised or standardised solutions are selected. Then, in expert workshops, with key-account managers e.g., the impact of corporate skills on the fulfilment of customer requirements in the sense of perceived service quality

can be assessed by correlations, similar to the Quality Function Deployment method [15].

From the resulting impact, visualised in a scatter plot with a portfolio, the experts can see which requirements are satisfied with solid competences and therefore pose a **competitive advantage**. This occurs when solutions of Integrated Suppliers are mature and also perceived as superior by the customer. **Unstable customer advantages** are achieved by requirements perceived as fulfilled by the customer but where the competences in the organisation have not reached a maturity to always guarantee this fulfilment. The solution here would be to establish needed competences by further organisational development and change management. **Corporate advantages** are achieved when competences are implemented in corporate activities, though are not of much help, if they are not seen as such in the eyes of the customer. Customer communication and marketing are needed in order to enhance these benefits for customer solutions. The least favourable case occurs when neither competences are up to scratch nor customers requirements are fulfilled and therefore mean a **competitive disadvantage**. In this case companies have two options: either neglect of this business field or massive build-up of the lacking corporate skills requiring professional change management.

6 SUMMARY

In the introduction, the importance of enhanced product accompanying services was noted. In order to render Product-Service-Solutions successful, organisations need strategy conform organisational measures for the achievement of resource and competitive advantages. This is described by the Contingency and Resource-Advantage Theory. The emphasis of this paper lies on the consistent orientation of organisational structure, processes and leadership. The determining factor for this is the identification of the Solution Strategy on the continuum between Standardisation and Individualisation, which is derived from Porters Competition Theory and adapted to the Customer Solution Process by Tuli. It must be noted, that Tuli's approach lies closer to the Individualisation strategy and is closer to the common definition of Integrated-Product-Service-Suppliers as mentioned in section 1. In section 3, the main indicators for Individualisation and Standardisation are listed as well as the corresponding implications for structure, process and leadership style. In accordance with the Outpacing theory, these implications are not 'black-and-white' rules but are seen as organisational advice and companies can oscillate between them regarding which strategic orientation they currently need to follow. In section 4, requirements and specifications are derived in order to use the insights of the former sections for the conception and design of an assessment tool that enables Product-Service-Suppliers to base their strategic decisions on appraisals and minimise risk of failure by indication of appropriate measures and the risks again therein. Further research will be conducted on the validation of the assessment tool to be developed. Also, the use of the developed criteria within a competitive advantage assessment including service quality dimensions remains to be implemented and validated.

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