

2004

# A Strategy Modelling Technique for Financial Services

Bernd Heinrich

*University of Augsburg*, bernd.heinrich@wiwi.uni-augsburg.de

Robert Winter

*University of St. Gallen*, robert.winter@unisg.ch

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## Recommended Citation

Heinrich, Bernd and Winter, Robert, "A Strategy Modelling Technique for Financial Services" (2004). *ECIS 2004 Proceedings*. 63.  
<http://aisel.aisnet.org/ecis2004/63>

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# A STRATEGY MODELLING TECHNIQUE FOR FINANCIAL SERVICES

Heinrich, Bernd, Department of Information Systems, University of Augsburg,  
Universitätsstr. 16, D-86135 Augsburg, Germany, Bernd.Heinrich@wiwi.uni-augsburg.de

Winter, Robert, Institute of Information Management, University of St. Gallen, Müller-  
Friedberg-Strasse 8, CH9000 St. Gallen, Switzerland, Robert.Winter@unisg.ch

## Abstract

*Strategy planning processes often suffer from a lack of conceptual models that can be used to represent business strategies in a structured and standardized form. If natural language is replaced by an at least semi-formal model, the completeness, consistency, and clarity of strategy descriptions can be drastically improved. A strategy modelling technique is proposed that is based on an analysis of modelling requirements, a discussion of related work and a critical analysis of generic approaches to strategic planning. The proposed conceptual model is used to derive a generic strategy description framework. An industry specific extension for retail banking and application experience from using the proposed modelling technique in Swiss retail banks is summarized.*

*Keywords: Strategic Planning, Financial Services, Conceptual Modelling, Business Engineering.*

# 1 INTRODUCTION

Since the beginning of the 1990ies, financial services are subject to a rapid and massive transformation. Sophistication of communications systems and deregulation of the financial sector led not only to more flexibility in sourcing and bundling financial services, but also to the advent of direct, electronic access and distribution channels that allow for new forms of disintermediation and re-intermediation. As a consequence, we see a large-scale shift from large, monolithic organizations which cover most, if not all, financial products, distribution channels, and customer segments towards smaller, value network components which are focused either on a specific production process (e.g. payments processing) or on a specific customer process (e.g. planning for retirement) (Winter 2002). In general, value networks allow for a greater variety of strategies and business models (Weill and Vitale 2001). Moreover, business models have to be adapted more frequently due to increased market dynamics and due to changes induced by accelerating technical innovations (e.g. in the field of mobile commerce).

“Today, business model and strategy are among the most sloppily used terms in business; they are often stretched to mean everything – and end up meaning nothing.” (Magretta 2002) Strategies as well as business models are usually developed informally and documented as well as communicated mostly by means of natural language. If both the range of strategies and business models is extended and the speed of their alteration is increased, the missing formalism of their development methodology as well as the current means of documentation and communication are considered as being increasingly problematic.

Business Engineering as a discipline is aimed to provide methods and models which support all phases of the cooperative construction of men-machine systems in business. Methods and models should cover business strategy development, business process development and information systems development (Winter 2001). Similar to the support of business process (re)design by appropriate conceptual process models and the support of information systems development by appropriate conceptual data models and functional models, strategic planning could be significantly improved if strategies and business models were developed, maintained, documented and communicated using appropriate conceptual models.

In academia and much more in companies, the utilization of the term ‘model’ in conjunction with conceptual modelling is often ambiguous: ‘model’ is sometimes used to designate a modelling method or modelling rules (e.g. entity relationship model), but also sometimes used to designate the result of the modelling process (e.g. business model). Formally we should designate the modelling method as ‘model’ and its results as ‘schema’. However, since the term ‘business model’ is widely used in academia as well as by practitioners, we maintain this term. We therefore designate the result of strategic planning as (conceptual) ‘strategy model’ and, according to the method engineering approach (Brinkkemper and Lyytinen and Welke 1996), the modelling method as ‘technique’. Techniques are characterized by a certain notation for representing their results, by a certain set of rules governing the modelling process, and by an underlying information model that maintains the consistency of all model components.

This paper proposes a technique and thus a support for the specification of strategies whose most important component is a conceptual model for strategies. The generic technique is adapted to the retail banking industry, and experience from its application to networked financial services is summarized.

In Section 2, requirements for a strategy modelling technique are specified. These requirements have been elicited from senior managers during several workshops and been complemented by widely accepted general modelling principles.

Existing 'business model' proposals to strategy specification are discussed in Section 3. The discussion of existing approaches leads to a set of specification dimensions and appropriate scales. The resulting conceptual model for strategies is described in Section 4. Since a complete model would comprise eleven dimensions and therefore would not be suitable for communication purposes, we suggest to split it up into an external, market oriented view and an internal, resource oriented view. Representing the outside-in (market oriented view) and the inside-out (resource oriented view) approach, both views are complementary and should not be seen as isolated models. Thus, the model aims to describe the dimensions as well as their relations in order to achieve intra-corporate transparency and to enable consistency checks. Managers from different departments are supported in discussing and coordinating their views on a firm's internal and external activities in light of competition. Together the dimensions capture all specifications considered to be necessary for supporting a model-based strategic planning process.

The application of the proposed technique in strategic planning processes of retail banks is described in Section 5. The proposed technique has been used to elicit strategic changes from senior managers and to specify new role(s) of business unit(s) within a financial services value network.

The concluding Section 6 comprises a discussion of the proposed technique with regard to the requirements specified in Section 2. The role of the proposed technique in the strategic planning process is outlined, tool support is discussed, and future research issues in the area of strategy modelling are identified.

## 2 REQUIREMENTS FOR STRATEGY MODELLING

The most important strategic roles in a value network are introduced in Section 2.1. As a foundation for discussing related work, the terms 'strategy', 'business model' and 'strategy making' are defined in Section 2.2. In Paragraph 2.3, senior managers' requirements for strategy modelling are presented. Section 2.4 summarizes requirements for a strategy modelling technique derived from the preceding analysis as well as from general, commonly accepted quality criteria for models.

### 2.1 Roles in a value network

Like other modelling frameworks in the information systems field such as ARIS (Scheer 2000) or the Zachman framework (Zachman 1999), Business Engineering differentiates between (Winter 2001): a modelling level where specifications about the strategy are made, a modelling level where specifications about business processes are made, and a modelling level where specifications about applications and it-infrastructure are made.

On the strategy level, the positioning of a company within its business sector as well as the value flows and organizational goals / success factors are specified. Customer process analyses, market analyses and analyses of technology potentials (and restrictions) are considered to be the most important inputs to strategic planning. From the business architecture, the business model and the strategy model, important information like the intended positioning in the value chain, basic service specifications, key performance indicators, assignments of services to customer segments and distribution channels, and of course aggregate organizational structure and responsibilities are forwarded to the business process development level.

In an increasing number of industries, a certain high-level typology of strategic roles has emerged: While **service integrators** support complex end-consumer processes by aggregating reusable as well as specific service components, **shared service providers** are specializing on mass production of standardized service components that are reusable for different service integrators as well as for service providers. In contrast to shared service providers, **exclusive service providers** are specializing on highly customized, unique service components that are produced exclusively to one or very few business customers (Winter 2001). In the financial services sector, private banking units and some

portals are good examples for the ‘service integrator’ role, while banking ‘factories’ (e.g. transaction banks) are examples for the ‘shared service provider’ role, and a broad range of specialists realize the ‘exclusive service provider’ role (e.g. investment funds management, product development, or risk management units) (Winter 2002).

Due to their high attractiveness for the companies participating in the competence centre, our research is focused on the ‘service integrator’ role. The final Section will discuss whether the findings are applicable to the other strategic roles in business networks.

For service integrators, the most important activities are marketing, sales and customer service. The most important success factor is the ability to create and maintain sustainable relations with customers. Since most service components are sourced from various markets instead being produced internally, another important success factor is networkability.

## 2.2 Strategy, business model and strategic planning

While a **strategy** can be interpreted as a “pattern of actions or decisions (planned or emerging) that explain how a firm achieves and maintains competitive advantage”, a **business model** is a “blueprint of how a firm relates to external stakeholders and how it transacts with them” (Zott and Amit 2003). Based on Zott and Amit (2003), the differences between the more general concept ‘strategy’ and the more specific concept ‘business model’ are summarized by table 1.

	<b>Strategy</b>	<b>Business Model</b>
<b>Main Questions Addressed</b>	How to position firm against rivals? What businesses to be in, i.e., what products or services to offer? What customer segments to target? What resources and capabilities (e.g. technologies) to use? When to enter the market and how to enter it? How to compete, i.e. what kind of product market positioning approach to adopt (cost leadership and/or differentiation)?	How to do business? Who are the parties that can be brought together to exploit a business opportunity, and how can they be linked to the focal firm to enable transactions? What information or goods are exchanged among the parties, and what resources and capabilities are needed to enable the exchanges? How are the transactions between the parties controlled, and what are the incentives for the parties?
<b>Focus</b>	Internally/externally oriented: focus on firm’s activities and actions in light of competition	Externally oriented: focus on firm’s transactions with others
<b>Value Logic</b>	Value appropriation logic: creating and preserving a competitive advantage, capturing more value than rivals	Value creation logic: enhancing total value created (i.e. value created for all business model participants) by exploiting business opportunities
<b>Performance Measure(s)</b>	Value captured by firm (e.g. measured by RoA, RoS, Tobin’s q, market value of firm, market value of equity)	Total value created

Table 1. ‘Strategy’ vs. ‘business model’

Both concepts imply important specifications that have to be created (and altered) by strategy planning processes and that are used to derive tactical decisions, process specifications, etc.

These specifications can be interpreted as (Heinrich 2000): long-term, (relatively) stable **properties of a company or business unit** that may act independently on a market at a certain **point in time** with regard to **certain dimensions that represent value proposition, potentials, resources, and markets**.

The respective company / business unit should be able to influence these properties at least indirectly. 'Acting independently on a market' means that the respective company / business unit is able to compete on a market and has extensive powers for decision making, planning, and managerial control.

Business strategy planning intends to change the strategic positioning of a company or business unit by certain actions. Hence strategy planning can be interpreted as the process of specifying or modifying dimensions and properties of the proposed conceptual model.

For representing a desired conceptual model for  $t_1$  that is based on a current conceptual model in  $t_0$  ( $t_1 > t_0$ ) and certain actions, it is necessary to include not only current conceptual model properties and strategic actions, but also intentions and beliefs of senior managers.

**Strategic planning** intends to change the strategic positioning of a company or business unit by certain actions (Al-Laham 1997, Mintzberg 2003). It must be based on existing corporate goals and policies. Hence this process, often referred to as 'corporate development', is the one that creates or alters the above specifications.

### 2.3 Requirements for strategy modelling

Methodical and conceptual requirements for strategy modelling have been elicited, discussed and consolidated in several workshops with senior bank managers. The following properties of techniques for strategy modelling were considered as most important:

- **Structured specification:** Most companies are pursuing more than one business strategy at a time. In the simplest case, these strategies are consistent and arranged hierarchically. A modelling technique must reflect the non-monolithic, maybe even inconsistent nature of business strategies by supporting multiple strategy models and by providing means for refinement and consistency checking of strategy specifications.
- **Standardization:** Not only the results of strategy modelling are usually incompatible if done by different companies. Even within the same company, often different techniques are deployed that lead to incompatible results. If business networking is considered to be essential, compatible business meta models must be used. Hence strategy modelling must be standardized across companies and within a company to a reasonable degree.
- **Completeness:** Many business strategies comprise only a subset of possible aspects because they are oriented towards specific projects or initiatives (Kirsch 1997). As a consequence, aspects that are not affected by the respective project or initiative remain unspecified although these aspects might be important for other purposes (e.g. compatibility or stability checks). The strategy modelling technique should comprise all aspects including those that are not relevant for a specific project or initiative.
- **Clarity:** Business strategies are usually represented by natural language texts without an underlying, precise specification of terms and concepts. An informal, unstructured representation prevents business strategies and business models from being translatable, comparable, checkable or otherwise being processed by (or stored in) software systems. As a consequence, all underlying terms and concepts need to be clarified and documented.
- **(In-)Consistency:** In addition to specifications that can be standardized and formalized, informal ideas and expectations of senior managers are also considered to be important components of business strategies. In contrast to other strategy specification components, these 'unstructured, informal add-ons' should be allowed to be inconsistent even within a business unit.

It is necessary to complement these specific requirements by a widely accepted set of general modelling quality requirements such as GoM II (Becker 1995, Schütte 1998, Becker and Rosemann and Uthmann 2000). Based on a comprehensive discussion of GoM II by Heinrich (2000), these general rules can be adapted to the development of a strategy modelling technique as follows:

- **Conceptualization:** In order to allow for strategy comparison and generalization (e.g. identification of business model types), the modelling technique should be independent of specific strategy types

(for strategy types see Bleicher 1999) and independent of strategy implementation details. This requirement is based on the ‘construction adequacy and comparability’ GoM II principle.

- **Clarity:** The represented business strategy as well as the used terms and concepts must be intelligible and plausible. In particular, no unnecessary abstractions and generalizations should be used. This requirement is based on the ‘clarity’ GoM II principle.
- **Reusability by subsequent development phases:** The results of strategy modelling should be reusable in subsequent development phases, e.g. for deriving specifications for a customer relationship management project. This requirement is based on the ‘construction adequacy’ GoM II principle.
- **Avoidance of redundancies:** Following the ‘minimality’ GoM II principle, multiple representations of a concept or aspect should be avoided. Since strategy specifications are to be used to discuss and revise possibly inconsistent perceptions, selected derived or dependent aspects / concepts should be represented to allow for consistency checks.

### 3 APPROACHES TO BUSINESS MODEL SPECIFICATION

Based on chapter 2, related publications that specifically refer to business models are discussed (for general approaches to strategic planning which have implications for conceptual modelling see Heinrich (2000)).

Schwaninger’s (1989) ‘business system’ comprises dimensions and relationships intended to support the identification of business units. Customer problems / requirements, problem solution technologies, products, distribution channels and customer segments are arranged in a circle which allows for representing not only these dimensions, but also binary relationships between them. In contrast to our definition, dimensions are included that cannot be significantly influenced by the respective company (e.g. competition). As a consequence, analysis and design are mixed up in the resulting model.

As a component of IBM’s Enterprise Solutions Structure (ESS) project that aims at a comprehensive architecture for business, processes, and information systems, McDavid (1999) proposed ‘business concepts’ to specify the most important constituents of business systems. In this approach, relationships between business concepts represent dependencies. Although the process of identifying business concepts and their relationships is not documented in detail, relationship analysis is instrumental in analyzing dependencies among business model dimensions.

Being probably the most widely diffused approach, Timmers’ (1998 & 2000) ‘business models’ were proposed to conceptualize business practices in (mainly B2B) electronic markets. Timmers (1998) defines business model as “architecture for the product, service and information flows, including a description of the various business actors, their roles, the potential benefits and the sources of revenues”. The primary focus is on market view and economic foundation of business activities. Based on his business model, Timmers analyzes value added networks. Based on ‘interaction patterns’ and simulated intermediation as well as disintermediation, this analysis is intended to identify novel business models. A resulting typology of eleven types of business models is described verbally but does not in all cases cover all aspects of the proposed business model structure. In contrast to our definition, market and valuation properties that cannot be directly influenced and that are closely interlinked, dominate the business model. Moreover, Timmers’ approach is only partially formalized.

Afuah and Tucci (2001), Amit and Zott (2001), Weill and Vitale (2001) and Hedman and Kalling (2003) also suggest approaches to describe business models. These proposals focus primarily on e-business, i.e. they specify components of different (real) e-business models and discuss their particular interaction with third parties (e.g. customers or suppliers). In particular the model proposed by Hedman and Kalling is interesting because it considers a ‘market level’ as well as a ‘resource and organisational level’. The ‘market level’ includes e.g. Michael Porter’s Five Forces. The ‘resource and organisational level’ comprises human, physical and organizational resources which can be represented e.g. by means of value chains.

In summary, existing approaches to business model specification provide important features like specification dimensions or dependencies between specifications. No approach, however, covers value proposition, potentials, resources, and markets at the same time and is sufficiently formalized to support a systematic strategy modelling process.

## 4 CONCEPTUAL STRATEGY MODEL

We now consolidate the results of the discussion in Section 3 into a conceptual model which is aimed to represent all (relatively) robust properties of a company or business unit that may act independently on a market at a certain point in time with regard to certain dimensions that represent value proposition, potentials, resources, and markets. Such a model would then incorporate ‘strategy’ as well as ‘business model’ aspects and supports strategic planning.

The model construction process is following the ‘system oriented problem solving cycle’ (Haberfellner et al. 1999): Components of the regarded system and their relationships are specified from different perspectives to capture as much semantics as possible. The basic model design guidelines can be summarized as follows:

- Strategic properties of a company or business unit can be grouped into a market oriented, ‘external’ cluster and a resource oriented, ‘internal’ cluster (q.v. Hedman and Kalling 2003).
- To represent consistency requirements within a strategy, constraints have to be formalized. Particularly, the consistency of marketing strategy and capabilities must be represented by appropriate constraints.
- Whenever possible, allowed properties should be represented by restricting values for certain dimensions to a specific domain. The use of dimensions and domains not only simplifies construction and communication of strategy models, but also simplifies further analyses like strategy classification and strategy comparison.

In Sections 4.1 and 4.2, the external and the internal view of the conceptual model are derived, respectively. Notations for representing strategy models are presented in Section 4.3.

### 4.1 ‘External view’ of the strategy model

The external view of the strategy model corresponds to the ‘market based view’ (see Meffert 1983 and 1985, Müller-Merbach 1984, Porter (1998)), focusing on the ‘selling’ side of a company or business unit. If modelled as a system, constituents of the selling side can be derived by asking which customer processes and segments are supported at which locations / regions by which products and services at which prices, which distribution channels are used, which time frames are relevant, etc.. The following compilation is summarized from Heinrich (2000).

The **regional** dimension represents the spatial properties of markets. It ranges is from very ‘local’ (e.g. sales areas for insurance brokers) to countries, currency or language regions and world areas (e.g. EMEA or Americas) to worldwide (e.g. global customers).

The **validity & business unit** dimensions represent the point in time (or time period where the business model is considered to stay unchanged) where the business had, has or will have the properties and the entity (business unit or company) which it represents, respectively.

Since the research focuses on ‘service integrator’ role in value networks (cf. Section 2.1), **customers** (end consumers) are the most important party. Relations to customers comprise product / service transfers, funds transfers and information flows. These relations can be differentiated into ‘what’-type relations (products / services, contracting, communications) and a ‘how’-type relation (distribution) (Meffert 1998).

Product / service transfers relate customers to ‘core’ products / services. In contrast to elementary products / services, **‘core’ products / services** are derived from the analysis of customer processes





must exist ( $m=1$ ) and whether only one of these relationships ( $n=1$ ) or several of these relationships ( $n=*$ ) may / must exist for every object of the respective type participating in the relationship.

The entire model is valid for a certain validity period and a certain business unit (or company). For every validity period and every business unit, several strategy models may exist (e.g. as-is vs. to-be). The central specification dimensions of the external view are services (and / or products), sales channels and customer contacts. Together with their relationships, these specification dimensions represent the marketing strategy (including multi-channel strategy). This core specification is complemented by aggregation policy (i.e. bundling products and / or services) and customer segmentation policy. Core products are assigned to service (and / or product) aggregates, thereby creating the foundation of pricing policy, communication policy and brand design. Customer segments reflect not only valuation and / or propensity properties, but usually also refer to regional properties.

#### 4.2 'Internal view' of the strategy model

In contrast to the specifications of the external view of the strategy model that reflect marketing strategy, the internal view of the strategy model represents sources, characteristics and effects of capabilities. It corresponds to the 'resource based view' on strategic planning (Wernerfelt 1984, Hamel and Prahalad 1990 & 1994, Barney 1991, Hamel 1994), focusing on the 'production' side of a company or business unit. If modelled as a system, constituents of the production side can be derived by asking which competencies are exploited to team up with which partners in which way.

The **validity** and **business unit** dimensions are equal to those of the external view. The two central concepts of the internal view are **competencies** and the **value chain**. While competencies can be specified by relevant resources and relevant impacts, the value chain can be specified by the degree of integration of partners, the degree of coordination of (sales) channels and the degree of (spatial) decentralization (Heinrich 2000).

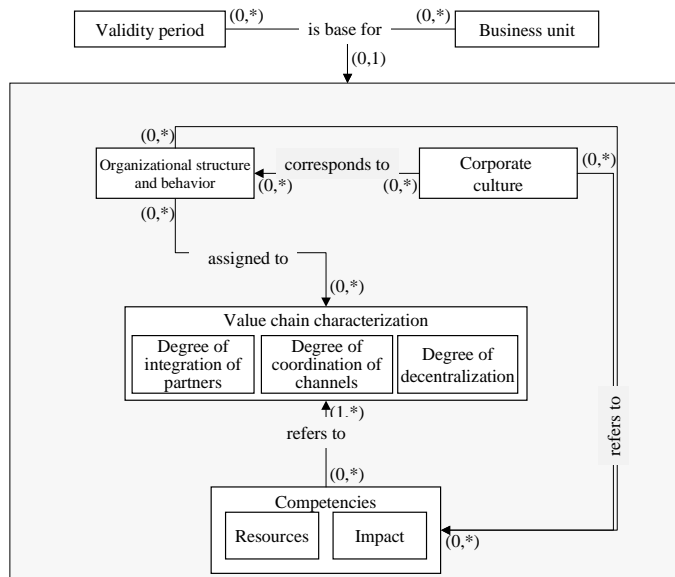


Figure 2. Conceptual model of the internal view

We do not represent specific value-creating activities because this would either impede the easy communication of strategies (if activities were modelled in too much detail) or would be too superficial (if activities were modelled too abstract). It is not possible to identify one 'right' level of detail for modelling activities when taking into account the multitude of applications and users of a strategy specification.

In addition to competencies and value chain, **organizational structure** and, relating it to competencies, **corporate culture** are considered to be important dimensions of the model that have to be included in the internal view. Similar to brand design or communication policy, for all three relationship types, it is essential to identify generic types in order to create a usable scale for the respective strategy model dimensions.

The internal view of the proposed conceptual strategy model is illustrated by Figure 2. The same notation is used as in Figure 1. Again, the entire model is valid for a certain validity period and a certain business unit (or company). For every validity period and every business unit, several strategy models may exist. The central specification dimensions of the internal view are competencies and the value chain. Together with their relationships, these specification dimensions represent resources of the business unit. This core specification is complemented by organizational structure and corporate culture.

#### 4.3 Notation for representing the strategy model

The conceptual models proposed in Sections 4.1 and 4.2 are intensional ('generic') representations of strategies. To support the creation of extensional representations of an actual strategy, typical values of the proposed model dimensions have to be provided, i.e. the conceptual model has to be complemented by specific domains.

In our experience, the definition of appropriate scales / domains is dependent from the industry sector. E.g., the dimension 'core products / services' would comprise values like 'financing', 'invest & save', 'value transfer', 'retirement', 'insurance', 'law & tax services' and 'other services' in retail banking, while totally different values would be needed not only in totally different sectors like mechanical engineering, but even in related sectors like private banking. The complete version of this paper (see <http://www.iwi.unisg.ch> and <http://www.wi-if.de>) comprises a Section on deriving appropriate scales / domains for retail banking.

Models that are specified by assigning values to a set of given dimensions, can be represented graphically by cobweb diagrams. For alternative graphical representation of the proposed modelling technique see Heinrich (2000). Figure 3 is a cobweb diagram of the external view of the proposed strategy model. The extensional representation is created by selecting 'values' (e.g. price policy) or ranges of values (e.g. sales channels) for all dimensions using industry specific scales.

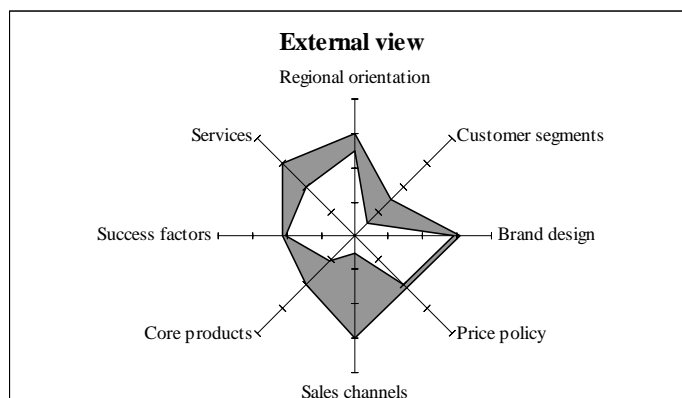


Figure 3. Cobweb diagram of external view of the strategy model

## 5 APPLICATION OF THE PROPOSED STRATEGY MODELLING TECHNIQUE

This Section describes the application of the proposed strategy modelling technique in a strategic planning process of a large retail bank. The scales as well as the values / value ranges for the regarded company were elicited in workshops with top executives. A complete description of the scale / value derivation process as well as the resulting strategy model can be found in Heinrich (2000).

The proposed strategy modelling technique has been utilized in different ways:

- **Documentation:** Using the conceptual model, industry specific scales and specification rules, actual companies or business units have been modelled 'as-is'.
- **Envisioning:** Based on 'as-is' strategy models, 'to-be' strategy models have been specified by simulating the effects of technology innovations (e.g. mobile broadband access to banking services), business changes (e.g. targeting new customer segments or using new incentive plans), and / or cultural changes (e.g. opening the organization by selective business networking).
- **Manipulation:** Strategy comparison, aggregation and consolidation has taken place during competitive analyses (comparison of 'as-is' models), mergers & acquisitions (aggregation of 'as-is' models), or strategic planning (consolidation of 'to-be' models).

From a methodological perspective, these processes should be separated because the role of the strategy model, the quality control and the project goals are different: The success of documentation projects as well as envisioning projects depends on the appropriateness of scales and the compliance with integrity constraints that guarantee that values of different scales are consistent (e.g. a focus on electronic sales channels and self-service is not consistent with a focus on conservative customers). Documentation projects and envisioning projects however differ with regard to the extent of applicable quality control because the latter are visions and not models of an existing, real phenomenon.

In contrast to usage for documentation and envisioning, usage for transformation purposes incorporates discussion, evaluations, and group decision making. For this type of projects, the proposed conceptual model and its integrity constraints can only be regarded as a partial yet important methodological support.

Other applications of the proposed technique have been described by Braun (2002), Flück (2002), Heinrich (2002a) and Reich and Stucki (2002).

## 6 CONCLUSIONS

We have presented an approach to strategy modelling that is based on a discussion of related work and experience with projects in several retail banks. In addition to the proposal of a conceptual model and diagramming alternatives, several types of strategic planning processes have been analyzed where the proposed technique can be applied. To conclude this paper, the results have to be checked against the requirements (particularly quality requirements) proposed in Sections 2.2 and 2.3. A final critical discussion of the proposed model's utilization in strategic planning processes helps to assess the value of the contribution and to identify needs for future research.

Regarding the requirements listed in Sections 2.2 and 2.3, the proposed technique can be evaluated as follows:

- **Structured specification:** Based on the proposed conceptual model and its integrity constraints, an arbitrary number of alternative strategies can be represented that differ in time reference, technology focus, transformation focus, etc. The process of refining, aggregating or consolidating strategy models is not completely supported. Strategy manipulations, however, can be guided by the industry specific integrity constraints.

- **Standardization:** The proposed conceptual model is considered to be industry independent. However, actual strategy models are based on industry specific scales so that strategy models are standardized within an industry.
- **Completeness & conceptualization:** The proposed conceptual model covers the market-based view as well as the resource-based view. Since most of the dimensions are justified by an analysis of general strategy approaches, the resulting conceptual model was applicable in different companies (although all current application experience is from the financial services sector).
- **Clearness (clarity):** The proposed conceptual model is clearly structured by dimensions and industry specific scales. Strategies based on this conceptual model are therefore translatable, comparable and can (at least partially) be checked against a set of consistency constraints. In order to effectively support strategic planning processes, the modelling rules should be complemented by a glossary.
- **(In-)Consistency:** Informal ideas and expectations of senior managers have not been explicitly covered by the conceptual model or other parts of the proposed technique. However, such types of information can be represented informally by natural language comments to certain specifications in the strategy planning process. Of course these ‘comment’ type texts cannot be included in the consistency checking process.
- **Reusability by subsequent development phases:** Within the context of the competence centres research program (cf. footnote 1), many specifications from the strategy model have been reused in subsequent stages like customer process analysis, process vision, process output analysis and process dynamics modelling. The reusability has however only been shown in this context.
- **Avoidance of redundancies:** When identifying dimensions, one goal was to derive a system of independent properties that avoid redundant specifications. There is however a trade-off between the independence of dimensions and the number of integrity constraints that can be used to guide the modelling and model consolidation processes. The more independent dimensions are, the less the number of constraints will be and hence the modelling process will be less supported. It has not been achieved to identify the complete set of integrity constraints and systematically link these constraints to the various modelling processes.

In summary, the proposed strategy modelling technique is instrumental in supporting the representation of ‘as-is’ strategies as well as the envisioning of ‘to-be’ strategies and their consolidation. First application experiences suggests that the resulting strategy models can be considered as widely complete, highly structured, standardized (within an industry), that such models create a valuable support for strategic planning processes by providing a clear foundation for comparison and evaluation, and that strategy modelling can create reusable input for subsequent process management and systems development stages.

Since application experience is limited to companies of one industry sector, however, it has to be proved whether the proposal is general enough to be applied to completely different industries. Furthermore, the scope of the research was limited to companies having a ‘service integrator’ role within value networks (cf. Section 2.1) so that the approach’s applicability to other roles (e.g. shared service provider, exclusive service provider) is pending.

The most important future work however is the in-depth analysis of consistency constraints as well as the management of eleven dimensions over time. Based on a complete analysis of interdependencies between specification dimensions, the derivation process for integrity constraints as well as the formal assessment of the quality and generality of the resulting constraint sets has to be addressed.

## References

Due to length restrictions, all references had to be omitted. The complete paper including all references can be found at <http://www.iwi.unisg.ch> and <http://www.wi-if.de>