Business Strategy Modelling in the Information Age

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ABSTRACT

The sophistication of technical and organizational networking enables not only a broader range of business architectures and business models, but also allows for their faster adaptation to innovations. By increasing the degree of formalization of strategy modelling, model consistency can be enhanced and specifications can be reused in subsequent business engineering phases like process (re-)design and information systems development. Modelling techniques for business architecture specification and business model specification, are outlined and notations are presented. Experience from applying these techniques in financial service companies is summarized.

Keywords*: Business Networking; Conceptual Modelling; Business Model; Business Architecture; Strategy Making*

INTRODUCTION

Electronic channels, business networking and web services do not only allow for more flexibility in sourcing and bundling products and services, but also enable new forms of disintermediation and re-intermediation. As a consequence, many industries that were traditionally characterised by complex, monolithic business models are transforming into networks of smaller units which are focused either on specific production processes or on specific customer processes (Österle 1999, Winter 2001). Such transformations lead to a greater variety of possible business models. 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).

Being the primary subjects of strategy specification, business architectures and business models are usually developed in widely informal strategy making processes and documented as well as communicated mostly by means of natural language. If not only the range of possible business architectures and business models is extended, but also the speed of their alteration is increased, both the method of development and the means of documentation and communication become increasingly problematic.

Business Engineering as a discipline is aimed to provide methods and models which support all phases and aspects of collaboratively constructing men-machine systems in business. Methods and models cover business strategy development, business process development and information systems development (Österle 1995, Österle and Winter 2000). Like business process (re)design is supported by appropriate conceptual process models and information systems development is supported by appropriate conceptual data models and functional models, strategy development can be significantly improved if business architectures and business models are 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 used to designate a modelling technique or modelling rules (e.g. entity relationship model), but is also used to designate the result of the modelling process

(e.g. business model). From a database oriented perspective on conceptual modelling, we should designate the modelling technique as 'model' and the resulting specification as 'schema'. Since the term 'business model' is widely used in academia as well as in companies or by consultants to designate a result of the strategy making process, we maintain this term. As a consequence, we designate the modelling rules as 'technique'. A technique is characterized by a set of rules governing the modelling process and by an underlying conceptual information model. Techniques are associated with certain notations for representing their results (Brinkkemper et al. 1996).

In this paper, we present notations and outline techniques for business architecture specification and business model specification. In Section 2, design principles for networked business architectures are identified and a notation is presented. Specification dimensions for business models are presented in Section 3. The application of the proposed techniques in a strategic planning process of a retail bank is described in Section 4. This case is also used to present industry specific scales for the business model dimensions. A short summary concludes the paper in Section 5.

BUSINESS ARCHITECTURE MODELLING

A sophisticated technical networking infrastructure together with an organizational business networking infrastructure allow to broaden the transformation scope from isolated companies or business units towards entire value networks. This effect is considered to be the most important business potential of recent information technology innovations (Österle 1999). Enabling 'technologies' for networked business architectures include cheap, high-bandwidth communication networks, business oriented communication standards (e.g. ebXML CPA/CPP), software packages that support the management of intercompany business processes (e.g. SAP APO), electronic markets, and successful business networking practices.

Parallel to advances in business networking, internet literacy and internet access have become available to a growing portion of end consumers. By communicating directly with service providers via electronic channels, end consumers can be integrated into value networks more closely, and service design can be influenced more directly. Particularly for services based on products bound to electronic media (e.g. software, information, music, movies) and for financial services, offerings can be customized to specific needs of customer segments.

As a consequence, companies can focus on a production (or resource utilization) oriented competency or on a customer process oriented competency and team up with partners that bring in complementary competencies instead of having to implement both competencies in one monolithic business model. The value network is then composed of production-oriented components and customer process-oriented components. Due to the similarity of the composition of a value network to the composition of a traditional, monolithic business model, traditional business process types can serve as templates for value network component types:

?? Procurement and distribution processes integrate products and services according to customer needs. Together with customer relationship management, these processes support the customer side of a traditional business model and therefore become the foundation of a 'customer intimacy' business model type in a value network.

?? Transaction processing processes (e.g. production lines for consumer products, processing of financial products) organize efficient production of services in large numbers, thereby becoming the foundation of a 'factory' business model type in value networks.

?? Product development and certain management processes (e.g. risk management) are examples for processes for which cost efficiency is not the most important success factor. Such processes become the foundation of a 'specialist' business model type in a value network.

While the various processes are traditionally linked together by a company-specific communications and integration infrastructure, value networks require an open 'business collaboration infrastructure' (BCI) to flexibly support collaborations of the participating companies / business units. The relation-

ship between value network component types and a generic process map for financial service institutions is illustrated by Figure 1. According to Österle and Winter (2000), 'customer intimacy' type business models are designated as 'service integrators', 'factory' type business models are designated as 'shared service providers', and 'specialist' type business models are designated as 'exclusive service providers' in a value network.

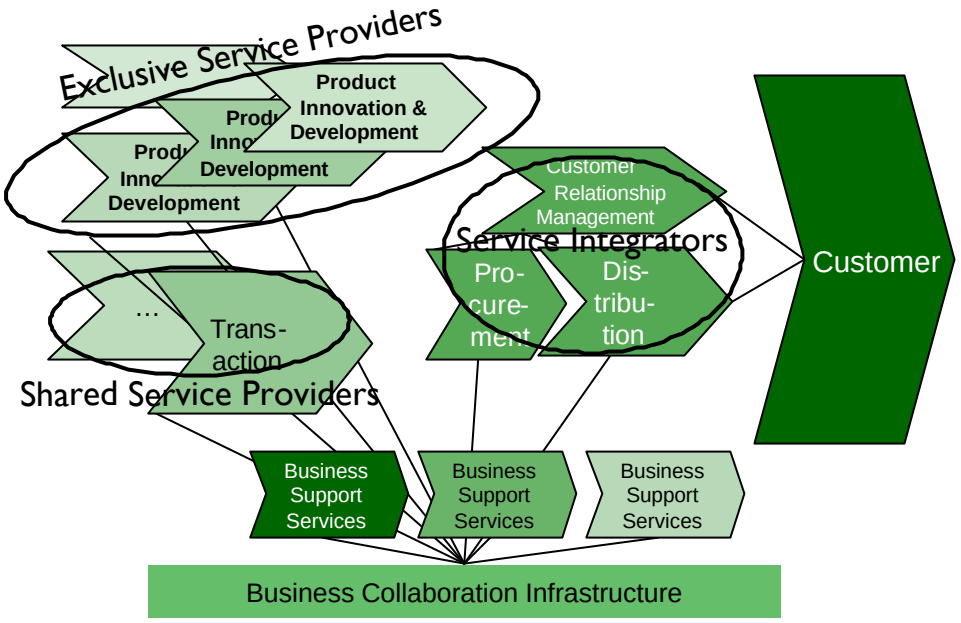

Figure 1. Relationship of value network component types and traditional business process types

Customer processes become the focus of the overall value network design. Service integrators aggregate standardized product and / or service components in order to create solutions that are tailored to a specific, holistic customer process (e.g. buying a home) or a specific life event (e.g. retirement, marriage, moving to a new community). In most cases, information components become a more important solution component than in traditional products. The most important success factors for service integrators are flexibility (implemented e.g. by personalization capabilities) and customer intimacy (implemented e.g. by customer knowledge management). Examples for service integrators are autobytel.com, yourhome.ch or thirdage.com.

Shared service providers produce large amounts of standardized products / services that can be reused by many service aggregators and / or other service providers in subsequent stages of the value network. It is most important for shared service providers to exploit economies of scale and to support an efficient interface to as many other nodes in the value network as possible. Examples for shared service providers are IT insourcers or transaction banks.

In contrast to standardized, cheap product / service components that are reused in many solutions, some product / service components may be produced exclusively to create a unique selling proposition or by exploiting a specific competency or resource. As a consequence, such exclusive service providers may maintain direct, one-to-one networking links to their customers (service integrators or other service providers) instead of maintaining an adapter to the BCI. Examples for exclusive service providers are engineering companies for product development or funds management companies and risk management units in financial services.

A BCI is needed to support the open and flexible exchange of services and information necessary to run value networks. The services component of the BCI comprises standardized, cross-industry business support services like payments services, risk trading, payroll processing, business directories, and network operations (just to name a few). These services are complemented by communications standards not only on the software level (e.g. SOAP) and on the application level (e.g. ebXML compliant

industry standards), but also on the process level (e.g. ebXML process standards) and particularly on the business level (e.g. contracting standards, service level agreement templates, ebXML CPA/CPP).

The four levels on which communications standards are defined (business, process, applications, software) are also used to describe business models that participate in the value network. On all levels, business models are linked either directly (e.g. exclusive service providers to service integrators, service integrators to end consumers) or using the BCI. In Figure 2, a generic business architecture model is illustrated. By replacing generic business model types with actual business models, this generic architecture model can be used to specify a concrete value network.

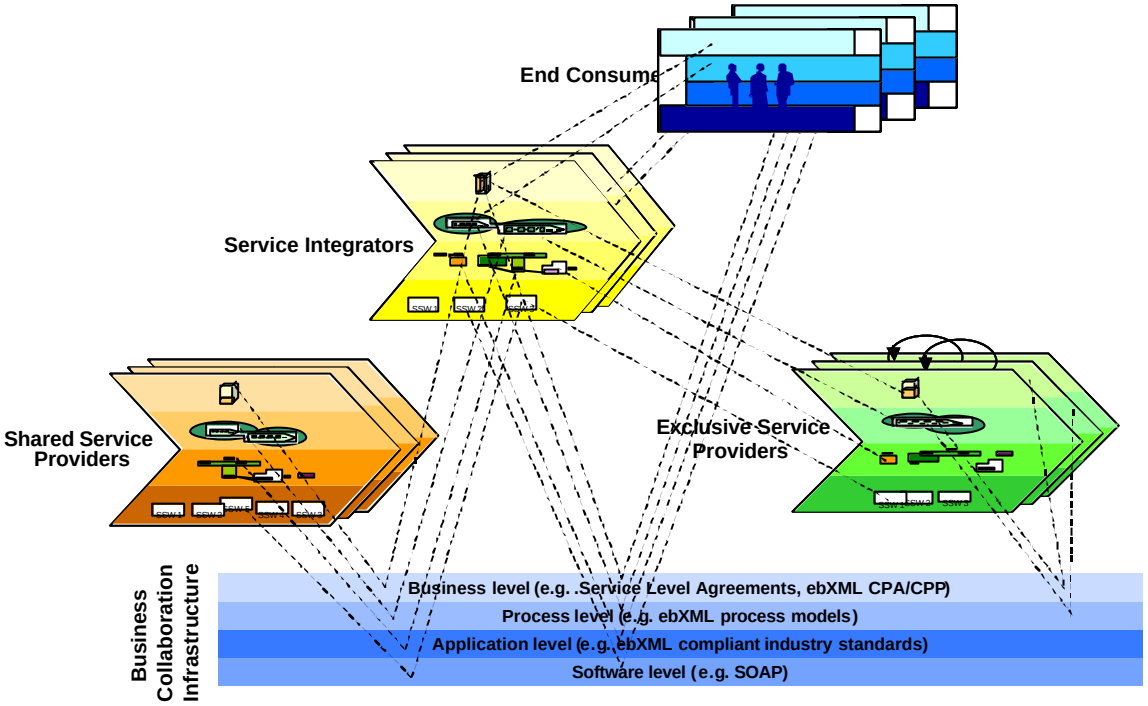

Figure 2. Generic business architecture (based on Leist and Winter 2000)

BUSINESS MODELLING

A business model specifies strategic (i.e. long-term, 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 (Heinrich and Winter 2002). The respective company / business unit should be able to influence these properties at least indirectly. Business strategy making intends to change the strategic positioning of a company or business unit by certain actions (Kreikebaum 1997). Hence strategy making, often referred to as corporate development, can be interpreted as the process of specifying or modifying properties of the business model.

A short discussion of explicit business model proposals as well as strategy making paradigms is used to identify relevant business model properties. The identified properties are then presented as elements of an external view and an internal view of the business model, respectively. Alternative notations for the proposed business model are proposed in a fourth subsection. The conceptual discussion as well as the notations are mostly based on (Heinrich and Winter 2002).

Related Work and conceptual foundations

Schwaningers (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 to repre-

sent not only these dimensions, but also binary relationships between them. For every dimension, a scale is proposed that represents the most important potential properties. This approach covers many important aspects of business modelling. In contrast to our definition, dimensions are included that cannot be significantly influenced by the respective company / business unit (e.g. competition).

As a component of IBM's 'Enterprise Solutions Structure' 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. These relationships are then grouped in order to identify business patterns. Although the process of identifying business concepts and their relationships is not documented in detail and the analysis is rather generic (i.e. the model is not directly applied to actual cases), relationship analysis is instrumental in analysing dependencies among business model dimensions.

Another widely diffused approach is Timmers' (1998, 2000) 'business models' that were proposed to conceptualize business practices in (mainly B2B) electronic markets. Timmers defines business model as 'an 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' (Timmers 2000). The primary focus is on market view and economic foundation of business activities. Business models are understood as building blocks of value networks. Based on 'interaction patterns' and simulated intermediation as well as disintermediation, the analysis of value networks 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.

In summary, these 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 modelling process (Heinrich 2000).

Even if no explicit business model is proposed, approaches to business strategy making could provide additional input for specifying business models systematically. Approaches following the 'market based view' call for business strategy to primarily focus on markets and in particular sales markets. Design parameters for business models therefore are based on a structured specification of relevant markets or an industry sector (as defined by related or similar products and / or service). In order to create structures for markets or industry sectors, dimensions like product groups, customer segments, distribution channels or geography are proposed. Porters (1998) value chain approach proves the significance of business networking for realizing competitive advantages and its interrelationship with a company's internal organizational structure. Early 'market based view' approaches in Germany (e.g. Meffert 1985) assign a pivotal role in strategy making to marketing planning. Hence constituents of marketing planning like products / services, contracting, communication, sales support and distribution have to be considered in the business model.

An alternative approach suggests that business strategy should focus on internal resources and potentials. The reason for such a 'resource based view' is that, since specific company potentials are not considered enough in the market based view, the resulting strategy is nearly arbitrary and could be imitated quite easily. In contrast, specific resources and potentials reflect the individual company's ability to compete much better. Resources and potentials are developed in a core competency oriented process. Core competencies are long-term capabilities that cannot be transferred and imitated easily, cannot be substituted short-term and are complex in creation as well as in application (Hamel and Prahalad 1990, 1994). As a consequence, specific resources and core competencies should be included in the business model.

A third approach to strategy making is the 'value based view'. Initially based on Rappaports (1986, 1990) shareholder value concept, value creation is considered the primary goal of business strategies. The value based view is interpreted as a combination of the market based view and the resource based view, being complemented by rigid quantification and evaluation mechanisms that are oriented on

value creation (Gomez 1993). A business model should represent - and not evaluate - properties that allow for a classification, analysis, and comparison of business strategies (Heinrich and Winter 2002). Hence the quantification and evaluation mechanisms of the value based view are not incorporated into our approach.

External view of a business model

The external view of a business model corresponds to the 'market based view' on strategy making, 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 and Winter, 2002).

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** & **subject** 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 specified by the business model and the entity (business unit or company) which it represents, respectively.

Customers are the most important party in the value creation network. 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 (e.g. buying a home, managing financial assets) and should support such processes significantly. In addition to quality requirements for elementary products / services, success factors for core products / services address the degree to which complex customer processes are supported.

An important business model aspect that relates core products / services to customer segments is **brand design**. Branding is intended to create a distinctive, unique perception in the market. It is related to products and services (Weber 1992), but also can be related to the organization as a whole (Halstenberg 1996). Other constituents of the marketing strategy that relate to both core products / services and to customer segments are communications policy and pricing policy (Becker 1998). For all three relationship types, it is essential to identify generic types in order to create a usable scale for the respective business model dimensions.

Interactions between a business unit and its customers are determined primarily by **sales channels** and **customer services** (Berndt 1995). Sales channels are used for the transfer of products / services, funds and information, thereby representing different forms of interaction between business units and customers (Kreuzer 1998). Customer service design does not only assign sales channels to products / services, contact channels, and customer segments. In addition, quality criteria and success factors for this assignment are specified.

With regard to **communications policy**, unidirectional and bi-directional communication are differentiated (Berndt 1995). Unidirectional communication comprises all activities intended to increase the general propensity of anonymous customers or prospects to do business with the organization (e.g. public relations, advertising). In contrast, bi-directional communication is directed at individual customers (although not necessarily having to be performed individually) and aims to trigger specific sales activities (e.g. direct marketing). While unidirectional communication can be represented similar to brand design (i.e. relating core products / services to customer segments), bi-directional communication should relate specific products / services to specific sales channels.

Internal view of a business model

In contrast to specifications of the external business model view that reflect marketing strategy, the internal business model view represents sources, characteristics and effects of capabilities. It corresponds to the 'resource based view' on strategy making, 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 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 and Winter, 2002).

We do not represent specific value-creating activities because this would either impede the easy communication of business models (if activities were modelled in too much detail) or 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 business model.

In addition to competencies and value chain, **organizational structure** and, relating it to competencies, **corporate culture** are considered to be important dimensions of the business 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 business model dimensions.

Graphical business model representation

If combined and complemented by appropriate scales, the dimensions identified as relevant in the preceding two subsections can be interpreted as a meta model for business models. Based on Heinrichs (2000) initial work, Heinrich and Winter (2002) present rules that support strategy makers in assigning appropriate values for all dimensions, integrity constraints that guide the analysis process and avoid inconsistent business models, and alternative notations for documenting and communicating business models. To support strategy makers in working with such business models, typical values of the proposed modelling dimensions should be provided. In our experience, the definition of appropriate scales 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) financial services, while different values would be needed not only in completely different sectors like mechanical engineering, but even in related sectors like private banking.

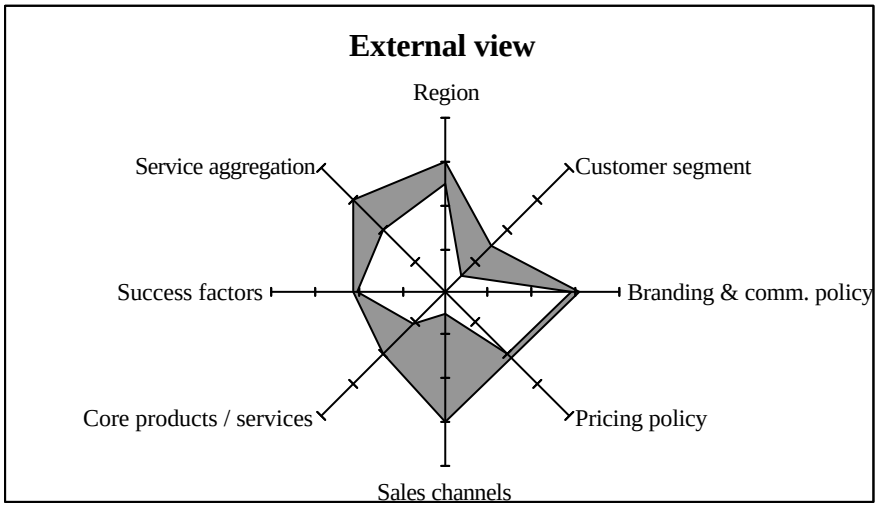

Figure 3. Cobweb diagram of external business model view (Heinrich and Winter, 2002)

Business models that are specified by assigning values to more than three dimensions can be graphically represented as cobweb diagrams. Figures 3 and 4 are cobweb diagrams of a business model's external view and internal view, respectively. These representations are created by selecting values (e.g. degree of coordination of channels) or ranges of values (e.g. sales channels) for all dimensions using industry specific scales - in this case scales for retail banking.

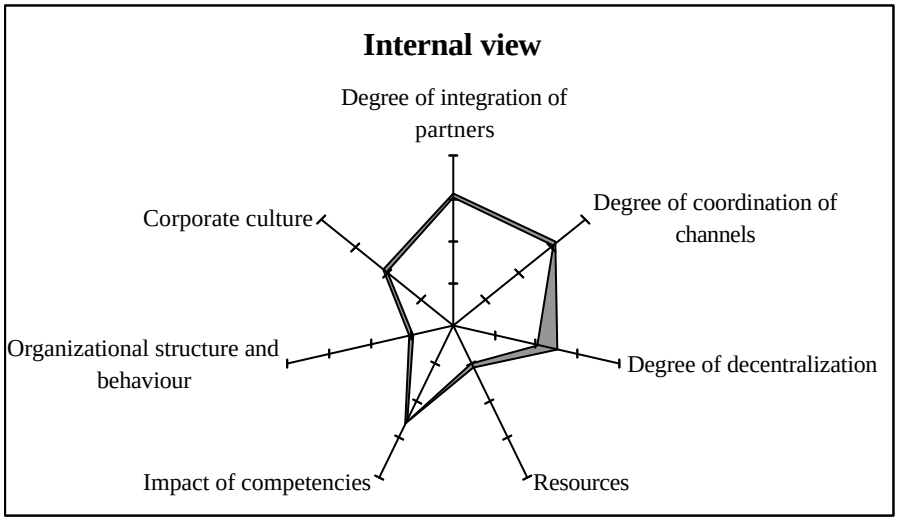

Figure 4. Cobweb diagram of internal business model view

An alternative graphical representation of the proposed business model is illustrated in Figures 6 and 7. In this 'box-type' representation, business model dimensions are arranged vertically while industry specific scales are arranged horizontally. The specification of a business model is achieved by marking appropriate values or value ranges. If the business model does only partially correspond to a particular value, the grade of compliance can be represented graphically by grey tones.

If different business models (e.g. as-is vs. to-be, business unit A vs. business unit B) are to be compared using the same graphical representation, the use of different colours (for cobweb diagrams) or fill patterns (for box diagrams) is recommended.

APPLICATION EXPERIENCE

This Section summarizes the application of the proposed techniques in a strategy making process of a large retail bank. The business model subsection is based on the case study described in Heinrich and Winter (2002). All specifications have been elicited in workshops with top executives. Other applications of the proposed techniques for business architecture specification and / or business model specification in retail banking are described in several articles by Leist and Winter (2002).

Business architecture 'retail banking'

The regarded retail bank understands itself as a service integrator. For different geographic regions and also for selected customer segments, business models are defined that differ with regard to sales channels, customer potentials and services offered. All service integrator units reuse as many shared services as possible, e.g. 'factories' for payments processing, custody services, leasing services and securities trading regardless of whether these services are offered within the corporate network or by external companies. Investment funds management, risk management and product development are among those services that are sourced exclusively from certain specialists. A common platform for business networking is used as widely as possible. Over this platform, support services like card proc-

essing or foreign exchange trading are sourced. A simplified version of the to-be business architecture is illustrated by Figure 5.

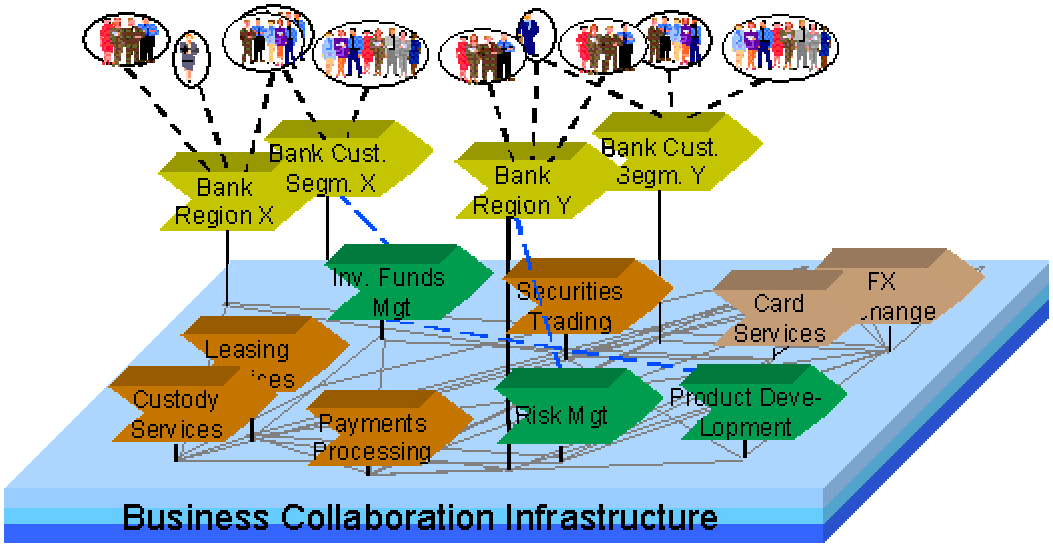

Figure 5. Business architecture model

Business model 'bank region X'

With regard to **regional orientation**, countries are differentiated due to widely different legal banking regulations. The modelled business unit targets German customers (ANSI country code = DE).

With regard to customers, basic orientation, consumer behaviour and customer potential are differentiated. According to Sinus (2000), **basic orientations** can be conservative, materialistic, hedonistic, post materialistic and post modern. **Consumer behaviour** can be classified to be complex, dissonance reducing, habitual or event oriented (Assael 1987). **Customer potential** should be measured as average, future oriented lifetime value. The regarded bank focuses on a materialistic, dissonance reducing customer segment with medium potential.

According to Weber (1992), **brand design** of banks can be classified into traditional, convenience, exclusiveness, professional, community, discount and modern & innovative. The bank's **price policy** can be oriented on value, volume or number of transactions, on time, on performance or can focus on flat rates per service or even overall flat rates (Bernet 1995). The bank's brand stands mainly for convenience and its price policy focuses on value / volume of transactions.

According to Kreuzer (1998), **sales channels** in financial services can be stationary (i.e. bank component is bound to a location, no customer component), mobile (i.e. bank component is mobile, no customer component) or electronic (i.e. bank component and customer component are computer applications, location is irrelevant). **Success factors** for sales processes can be time, convenience, value added / cost efficiency, competence & quality, flexibility, or image. From an output perspective, the bank can offer complaint management, consulting, personal sales and information **services**. **Customer contacts** can take place primarily as self service (e-banking, ATMs, phone banking), as passive, semi personal contacts (e.g. customer care teams in branches), as passive, personal contacts (e.g. personal bankers in branches) or as active contacts (e.g. outbound call centres) (Kreuzer 1998). The regarded bank utilizes all sales channels with a focus on mobile. Convenience and image are regarded as primary sales success factors. All services are offered with a focus on personal sales and complaint management. Personal customer contacts are sought after actively although self-service and semi-personal contacts are also supported.

A retail bank's traditional **core products and services** are financing, investments & savings, value transfers, (financial) retirement planning, insurance, and law & tax services. **Success factors** for these

products / services are time, standardization (compatibility to other products, comparability), range of products, price / costs, risk, performance, flexibility and image. The regarded bank offers all products except for insurance with a focus on investment / saving and financial retirement planning. These products are primarily designed to be compatible with complementing financial services from other service integrators.

Being the final dimension of the external business model view, the **service combination** of elementary products and services can be driven by products, by product bundling, by customer problems or by customer events. In the regarded case, the primary focus is on product bundling while also some problem-oriented services are offered.

The business model specifications of all dimensions in the external view are illustrated by Figure 6.

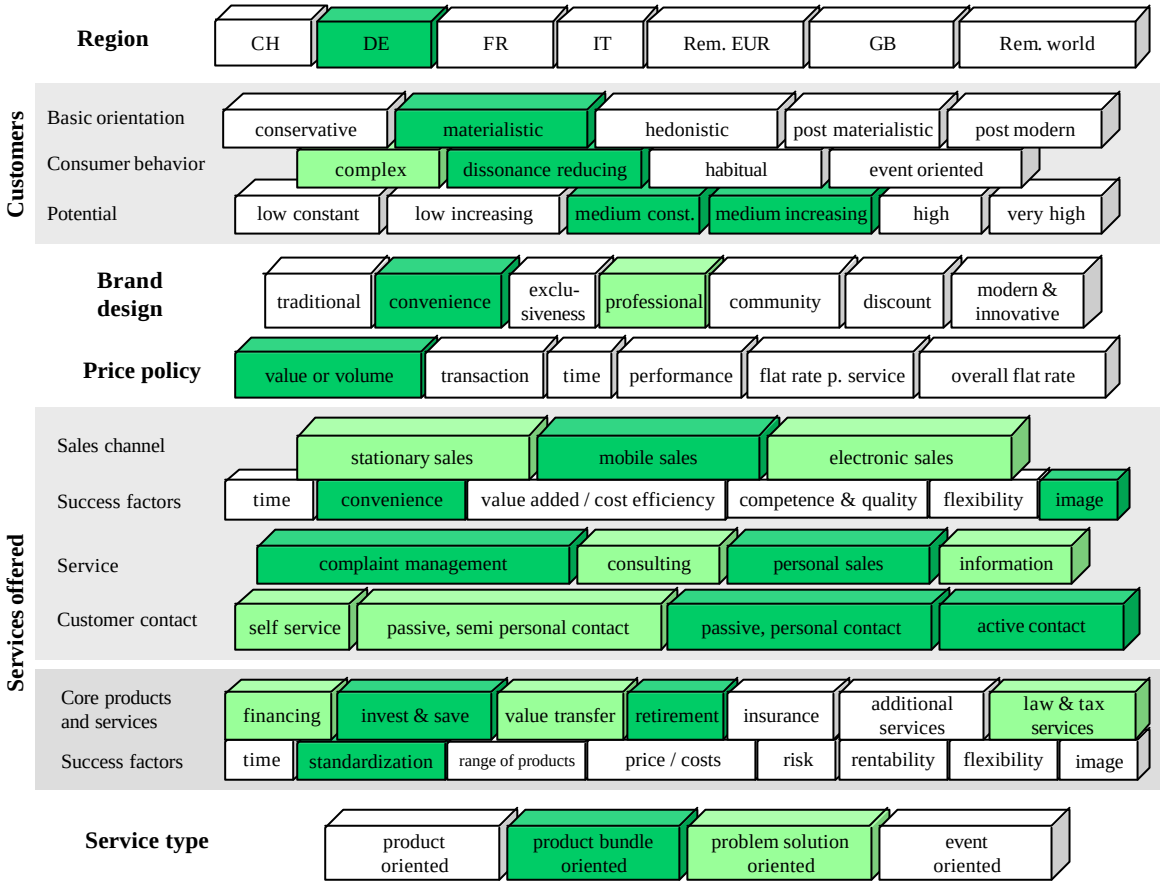

Figure 6. Alternative representation of external business model view

The value chain is described by the degree of integration of partners, the degree of integration of (sales) channels and the degree of decentralization. With regard to the **integration of partners** in the value-added network, several business networking arenas can be differentiated: Partners can be integrated in logistics, product development, procurement, operations, marketing & sales, support, and / or even management processes. Multi-channel management, i.e. the **integration of sales channels**, can be centred around customer segments, products (e.g. common procurement), processes & systems (e.g. common platform), marketing (e.g. common pricing), finance or combinations of these. Regarding the (spatial) **decentralization** of operations, the same decentralization arenas can be differentiated as for business networking. The regarded bank collaborates in all areas except for marketing & sales. Particularly product development, procurement, and operations are implemented in close collaboration with partners. A comprehensive multi-channel approach covering all aspects is followed. However, the largest extent of channel integration is reached for products and marketing. No activities are totally central-

ized. Among the decentralized activities, marketing & sales is considered to leave the highest autonomy to the business units.

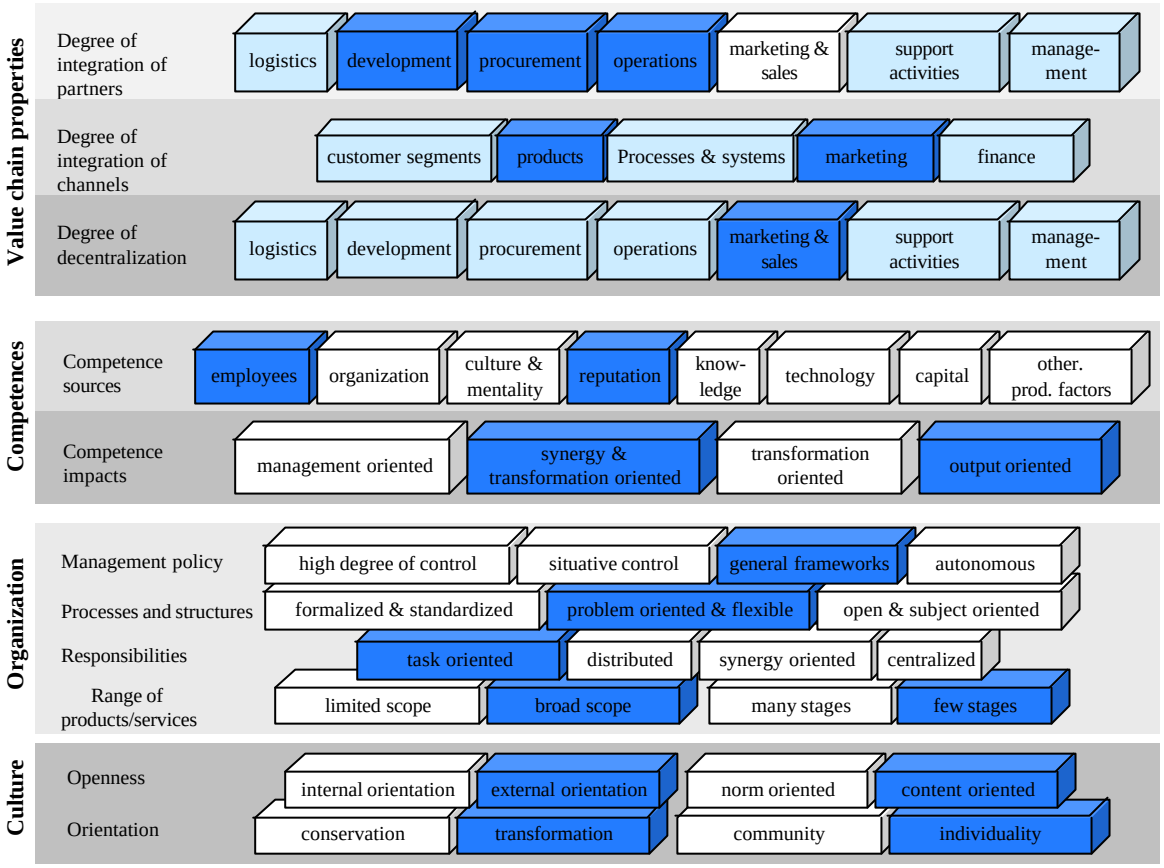

Figure 7. Alternative representation of internal business model view

Competencies can arise from employees, organizational capabilities (e.g. 'economies of scale'), corporate culture & mentality (e.g. innovation culture), reputation, knowledge, technology, or capital and other production factors (Lado et al. 1992, Hamel 1994). Regarding their **impact**, it can be differentiated whether the focus in on management capabilities, synergies and change capabilities, transformation capabilities or output-oriented capabilities (Heinrich 2000). For the regarded bank, employees and reputation are considered to be the most important sources for transformation oriented and output oriented competencies.

With regard to organization, management policies, processes & structures, responsibilities and the range of activities are differentiated (Bleicher 1999). As basic **management policies**, a high degree of control, situative control, general frameworks (e.g. management by objectives) or total autonomy can be implemented. **Processes & structures** can be highly formalized and standardized, problem oriented and flexible, or open and subject oriented. **Responsibilities** can be defined in a task oriented, distributed (e.g. team organization), synergy oriented or centralized way. The **range of activities** can be small or broad, and activities can cover many production stages, but also only a specific stage. The regarded bank claims to organize its processes problem oriented and flexibly and to manage by objectives. Responsibilities are task oriented, and job profiles usually cover a broad range of activities while focusing on specific production stages.

Corporate culture is difficult to classify. According to Bleicher (1999), openness and basic orientation are the most important criteria. Regarding **openness**, a primarily internally and externally oriented culture should be differentiated. It is important whether content (e.g. business problems) or norms are more important for employees. An organization's **basic orientation** is either more traditional (e.g. preserving values) or transformation oriented. Regarding the role of employees in the organization, more

individuality oriented and more community oriented approaches can be observed. The regarded bank appears as a modern organization with external orientation, content orientation, transformation culture and individual focus.

The business model specifications of all dimensions in the internal view are illustrated by Figure 7.

Application experience

The proposed techniques have been utilized in different ways:

1. **Documentation**: Using industry specific scales and specification rules, actual business architectures, companies and business units have been modelled 'as-is'.
2. **Envisioning**: Based on 'as-is' specifications, 'to-be' specifications have been derived 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).
3. **Manipulation**: Business model 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 business 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 documentation and envisioning usage, manipulation usage incorporates discussion, evaluations, and group decision making in order to develop several input business models into a single output model or an aggregate evaluation. For this type of projects, the proposed techniques can only be regarded as a partial yet important methodological support.

CONCLUSIONS

We have presented an approach to support strategy making that is based on a discussion of related work, widely diffused strategy making paradigms and experience with strategy making processes in several retail banks. By using the proposed techniques to specify business architectures and business models,

- business strategies can be compared and classified: E.g., the strategy making process can be documented by a series of business models that differ in time reference, technology focus, transformation focus, etc.
- business strategies can be standardized: E.g., reference business architecture and reference business models for specific industries can be used as a foundation for individual adaptation.
- business strategies can be checked for completeness and integrity: The proposed dimensions specify the market-based view of the firm as well as the resource-based view. Integrity constraints can be used to avoid value assignments that are incompatible.
- strategy making can be linked to process (re-)design and information systems development: In actual applications, many specifications from the business model have been reused in subsequent stages like customer process analysis, process vision, process output analysis and process dynamics modelling.

In summary, the proposed strategy modelling techniques proved instrumental in supporting the representation of 'as-is' business structures as well as the envisioning of 'to-be' business structures and their consolidation. Since application experience is limited to companies of one industry sector, however, it has to be shown whether the meta models are general enough to be applied to completely different industries. Furthermore, the scope of our research was limited to 'service integrator' type business models so that the technique's applicability to other business model types (e.g. shared service provider, exclusive service provider) is pending. A detailed, maybe formal analysis of interdependencies between specification dimensions and the integrity constraints resulting from these interdependencies is also pending.

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