

Self-Service Banking: Value Creation Models and Information Exchange

Ragnvald Sannes
Norwegian School of Management BI, Norway

Ragnvald.sannes@bi.no

Abstract

This paper argues that most banks have failed to exploit the potential of self-service banking because they base their service design on an incomplete business model for self-service. A framework for evaluation of self-service banking concepts is developed on the basis of Stabell and Fjeldstad's three value configurations. The value network and the value shop are consistent with self-service banking while the value chain is inappropriate. The impact of the value configurations on information exchange and self-service functionality is discussed, and a framework for design of such services proposed. Current self-service banking practices are compared to the framework, and it is concluded that current practice matches the concept of a value network and not the value shop. However, current practices are only a partial implementation of a value network-based self-service banking concept.

Keywords: Internet banking, electronic banking, self-service banking, self-service technology (SST), value creation, value network, value shop, information exchange

Introduction

The growth in the number of PCs and Internet users has not been followed by a corresponding rapid adoption of banking services on the Internet. International estimates of Internet users range from 35-50 percent of the population in countries with the highest adoption rate (ITU, 2001). These numbers may be underestimated as other surveys report an Internet adoption rate above 70 percent in Scandinavia (Tjøstheim & Solheim, 2001) and the US ("How Consumers View Banks: ABA Consumer Survey Results," 2001) compared to 45-50 percent for the same countries by the International Telecommunication Union (ITU). Estimates of how many customers use Internet banking range from 8 percent (Cocheo, 2001) to 22 percent ("How Consumers View Banks: ABA Consumer Survey Results," 2001) for the US and around 30 percent in Scandinavia (Tjøstheim & Solheim, 2001). In other words, less than half of the Internet users in Scandinavia have used the Internet for banking services, and less than one out of three in the US. Banks are reporting steady growth of

Internet banking users, but for the top five Internet banks in the US only 40-60 percent of the adopters are active (Furst, Lang, & Nolle, 2000). They may have found the relative advantage of Internet banking compared to other distribution channels to be smaller than the cost or effort of changing their behavior.

Self-service technologies are technological interfaces that enable customers to produce a service independent of direct service employee involvement (Meuter et. al., 2000), i.e. person-to-technology service delivery (Dabholkar, 1994). Self-service technologies are viable for banks and other financial intermediaries because information processing is essential to their services. Automation of standard services is expected to reduce the need for financial intermediaries while there will be continued demand for non-standard, differentiated transactions and services (Emmons & Greenbaum, 1998). The technology holds great promise of future simplification and automation. For instance, the next generation of international payment systems (e.g. electronic funds transfer networks) based on smart card technology (for use in e.g. bank cards, credit cards and electronic purses) with embedded digital IDs can be expected to simplify use of self-service and cross-border transactions by global standardization. In a few years we will have mobile terminals with high capacity mobile communication; potentially these will be individualized, pocket size bank terminals.

The current consolidation in banking (Davis, 2000; Mishkin, 1998), together with an expected technology driven globalization of banking infrastructure, threaten to mar-

Material published as part of this journal, either on-line or in print, is copyrighted by the publisher of Informing Science. Permission to make digital or paper copy of part or all of these works for personal or classroom use is granted without fee provided that the copies are not made or distributed for profit or commercial advantage AND that copies 1) bear this notice in full and 2) give the full citation on the first page. It is permissible to abstract these works so long as credit is given. To copy in all other cases or to republish or to post on a server or to redistribute to lists requires specific permission and payment of a fee. Contact Editor@inform.nu to request redistribution permission.

ginalize the parties who choose not to participate in the game. Use of information technology and self-service has the potential for order-of-magnitude reductions to the cost of processing and transmitting information (Emmons & Greenbaum, 1998). *Self-service banking* is the use of self-service technologies in banking. Examples of self-service banking include banking by telephone and the Internet, EFTPOS (Electronic Funds Transfer at Point Of Sale) terminals, automated teller machines and other interactive kiosks. In this paper, self-service banking is limited to the retail segment which is very different from electronic integration in corporate segments. (Retail banking is defined as banking services for small and medium sized enterprises (SMEs) and private customers.)

This paper explores some implications of increased self-service banking. In particular it focuses on the relationship between value creation and information exchange. The paper is divided into four sections. First, the *theoretical background* includes a review of topics that are central to self-service banking. Second, *a framework for self-service banking* provides a framework for analysis of self-service banking initiatives. Third, the section *current business models* applies the framework for analyzing the existing practices and trends in self-service banking, particularly for Internet banking. Finally, *discussion and conclusions* briefly discusses implications for future research and practice.

Theoretical Background

The review of literature includes three main areas that are deemed important in conceptualizing a framework of self-service banking. First, literature in strategy, particularly about firm level value creation (e.g. Stabell & Fjeldstad, 1998) combined with bank specific issues (e.g. Crane & Bodie, 1996) provides a basic understanding of bank strategic issues. Second, literature on information exchange (e.g. Grover, Ramanlal, & Segars, 1999) enables us to discuss the implications of self-service banking on information asymmetry and its implications on the customer relationship. Third, literature on self-service technology (e.g. Meuter et al., 2000) add to a principal understanding of technology-based service encounters in a customer viewpoint.

The logic of value creation in banking

In the analysis of firm level value creation it is necessary to understand the underlying principles of how the firm creates value for its customers. The value chain (Porter, 1985), the value shop and the value network have been proposed as three distinct generic models of value configuration (Stabell & Fjeldstad, 1998). The value configurations are based on Thompson's (1967) typology of long-

linked, intensive, and mediating technologies. The value chain analysis is based on a typology of primary and support activities. Primary activities are the activities directly involved in the creation and transfer of products and services to the customers. Each value configuration has its own set of primary activities. Support activities enable and improve the performance of the primary activities and comprise procurement, technology development, human resource management and firm infrastructure (Porter, 1985). These are common for chains, shops and networks.

In the *value chain* model the basic logic of value creation is the transformation of input into products, mainly through sequential processes. The evaluation of the product and related services is the source of customer value. An example is the assembly line using long-linked technology to produce standard products at low cost. Primary activities of a value chain are inbound logistics, operations, outbound logistics, marketing & sales, and service.

In the *value shop* model the basic logic of value creation is problem solving. Value is created by mobilizing resources and activities to resolve a particular customer problem (Stabell & Fjeldstad, 1998). Customer value is not related to the solution itself, but to the value of solving the problem. Examples of value shops include doctors and consultants.

"The 'shop' label [describes] a firm so configured is directed at a unique and delineated class of problem [...] The shop metaphor signals that assembly and matching of both problems and problem-solving resources are important for the organisation and management of the shop [...] A strong information asymmetry between the firm and its client is perhaps the single most important attribute of an intensive technology [...] Client problems often involve more or less standardised solutions, but the value creation process is organised to deal with unique cases. In many situations, less specialised personnel could handle most of the problems." (Stabell & Fjeldstad, 1998: 421)

The primary activities of a value shop are a cyclical or spiraling process of problem-finding and acquisition, problem-solving, choice, execution and control/evaluation (ibid).

In the *value network* model the basic logic of value creation is linking customers. Linking, and thus value creation, can be direct between two customers, or indirect where one customer is not linked directly to another customer but linked through a pool. Value networks rely on a mediating technology to link independent customers.

"The business value system relationships between industry actors are not as suppliers and customers in an industry value chain but as simultaneously co-

performing levels of mediation service. The business value system in a mediation industry is potentially a set of co-producing, layered and interconnected networks that enhance the range and reach of the services provided.” (Stabell & Fjeldstad, 1998)

The primary activities of a value network are network promotion and contract management, service provisioning, and network infrastructure operations. The primary activity *network promotion and contract management* consists of activities related to attracting and selecting customers and to managing the customer relationship, in particular contracts related to governing service provisioning and pricing.

“.. the value network models firms that create value by facilitating a network relationship between their customers using a mediating technology.” (Stabell & Fjeldstad, 1998: 414)

Service provisioning is linking customers to one another and charging for the services provided. *Network infrastructure operation* consists of activities related to maintaining a physical and informational infrastructure.

It has been argued that form follows function in the ongoing transformation of banking (Crane & Bodie, 1996). The global financial system project at Harvard defined six core needs served by a financial system: methods of making payments in order to facilitate the exchange of goods and services; mechanisms for pooling resources to fund large scale enterprises; ways to transfer economic resources over time and across distances (e.g. lending and investing); methods of managing risk (e.g. insuring, diversifying and hedging); price information (e.g. interest rates and securities prices, to help coordinate decentralized decision making in various sectors of the economy); and finally, ways to handle incentive problems that interfere with business transactions (ibid). Each of these functions meets a basic need, and many of the services offered by banks involve more than one of these needs. For instance, when banks take deposits they combine payment and pooling functions. Lending includes transfer of economic resources with risk management. A payment may combine payment, pooling and transfer functions. Without these functions, the modern bank is unthinkable.

Building on these functions, a bank can be thought of as a mediator in a network of customers that are best modeled by the value network configuration (Stabell & Fjeldstad, 1998). However, implementation of self-service banking differs in scale and scope (e.g. Furst et al., 2000; Sannes & Kyvik, 2000), and we will discuss below how the three configurations can be applied to self-service banking.

An online replica of the traditional full-service bank is best viewed as a *value network* since the Internet does not alter

any of the basic characteristics of this value configuration. The implication for self-service banking is that the site must support the primary activities of a value network. Network promotion and contract management are necessary in order to recruit new customers into the network and to maintain the relationship with existing customers. Network promotion may include placing banner ads on websites that reach your target groups with links to automated processing of new customers. Contract management applies to changes and renewals of existing contracts. Service provisioning is offering self-service technology that enables customers to perform banking services as self-service. Infrastructure operation is running the operation of the self-service banking platform

Viewing banks as *value shops* implies that banks solve problems for their customers – and that these problems are unique to each customer. We will argue that the advisory services for investments, as well as to a certain extent loans, and financial planning share the characteristics of problem solving as defined in the value shop model. Self-service in a value shop model is a demanding concept because the customers will be their own experts. As a consequence a bank has to give up its information asymmetry relative to its customers to enable them to give themselves expert advice. The following is a scheme of how the primary activities of a value shop can be supported by self-service. In problem finding and acquisition the customers must be supported by training programs for the financial products, enabling the customer to recognize the task at hand and how it may be carried out. Subsequently, self-service in problem solving can be in the form of offering the customers tools for financial modeling for analysis of potential investments, portfolio management of personal finances, and mortgages. Templates and wizards can make these systems easy to use for the non-professional user. In the choice stage, the model has to include a decision aid that helps the customer choose between alternative solutions, based on the customer’s own criteria. Then, the customer should be able to execute the decision he/she made. In control/evaluation the customer has access to benchmarks concerning how successful the decision was, and for a complex service that includes many steps, the customer can monitor the progress of service execution. Self-service banking in a value shop concept can be embedded in a value network model, or offered as a stand-alone service from a niche player.

In the *value chain* model the focus is on production and throughput in the transformation of inputs into products and services. Self-service solutions should support this transformation, but the author has not been able to identify banking services that share the properties of a value chain. Processing payments, transportation of cash, servicing ATM’s are all examples of processes that can be described

Self-service banking

as sequential workflows. However, neither of these processes creates value by transforming inputs into products. Production and distribution of credit cards is an example of a value chain process – between the bank and the card supplier. The value for the customer is not created when the card is issued, but whenever the card is used to pay for a product or service.

The conclusion is that the value network and the value shop are potential value configurations for self-service banking, while it would not be appropriate to use the value chain model.

Information exchange

Adoption of self-service banking relies on effective information exchange between the bank and its customers. Customers will need information to reduce the uncertainty and equivocality of carrying out self-services compared to the professional service in a branch office (Daft & Lengel, 1984). Equivocality refers to ambiguity in selection among different services while uncertainty is related to information necessary to carry out a specific service (ibid). The traditional service encounter in a branch office involves information exchange between bank personnel and the bank customer. The richness of this exchange depends on the amount of uncertainty and equivocality in the encounter. Uncertainty and equivocality is usually low for standard services and considerably higher for non-standard, differentiated services. The latter results from a more complex decision where individual needs or preferences lead to a composite of interconnected services. When self-service replaces a traditional service-encounter, the customer needs full access to all relevant information, as it can no longer rely on the service personnel at the branch office. The Internet/World Wide Web is a low-cost communication channel that support self-service banking by enabling customer access to information. A challenge for the banks is to determine what information they need to reveal in order to enable self-service and to remain as a preferred partner versus the information they will not share in order to control customer decisions (Grover et al., 1999).

The information a customer needs will depend upon their knowledge and experience with banking services and with self-service technology (Carlson & Zmud, 1999). The main argument in their channel expansion theory is that channel use in electronic communication is largely based on previous experiences with the channel, the messaging topic, the communication partner, and perceived social influence. Transferred to self-service banking, experience with computers, the Internet and electronic banking services would be positively associated with use of self-service. Experiences with other service channels would

also be valuable; e.g. that experience with payments in other self-service channels has a positive impact on self-service for payments, particularly as the banking sector is characterized by little differentiation and multi-domestic competition (Porter, 1998). On the other hand, there may be little learning between different services as, for example, payments and stock trading. Therefore, banks must develop functions that will provide the customer with information that matches the individual information need. Service complexity and customer familiarity with a service drive this need.

A logical implication for self-service banking in a value network perspective is that the bank must reveal all information about services, pricing, conditions of use and transactional fees, and deliver them through a channel that clearly and consistently helps customers select among alternative services. A strategy based on information asymmetry may hinder the adoption of self-service banking if the bank does not reveal sufficient information that meets customer information needs. Customers that are more confident with information provided at the branch office, and customers that make better deals at the branch office, will not use self-service channels unless the convenience of access outweighs the price-performance advantages of branch office transactions.

Delivery of self-services in a value shop model is even more demanding. Value shop means problem solving, and self-service means enabling the customers to be their own problem solvers. Banks' advisory services may include budgeting, cash flow analysis, savings, investment and financing. It is not unusual for banks to have standard models based on "rules of thumb" heuristics as front-office systems to aid their personnel in giving advice to customers. Putting these systems on the web enables self-service even though their interface is unambiguous. This may work for customer problems that involve more or less standard solutions, but not in the truly unique cases that cannot be standardized. However, with a combination of information access methods (for instance, the Internet combined with branch office) it is possible to enable self-service of parts of the problem-solving process and reduce the need, for example, for service employees to be involved in choice and execution.

In addition to the functional information requirements that enable self-service, the customer will form expectations of information access based on the information revealed by competitors (Grover et al., 1999). Customers getting acquainted with information about financial services on the web are likely to acquire information from other sources as well. Customer acquisition of information has two potential impacts. First, it may result in an information asymmetry where the customer has more information than

the bank, and they may choose to bypass the bank for services that are offered by alternative parties. Second, it is possible that an information transparency may result in an electronic market of banking services in self-service channels (Grover et al., 1999). It is likely that a new or existing party will exploit this information and create an all-in-one marketspace (Kambil, Nunes, & Wilson, 1999). Both impacts may stifle competition and reduce margins because knowledge of other banks' offerings is an important factor when customers move their business to another bank or to an all-in-one market (Dick & Basu, 1994). Banks cannot afford to have premium pricing without creating premium value for their customers. Increasing service complexity is a strategy that will make direct comparison more difficult (Grover & Ramanlal, 1999), but that is not likely for standard products.

The conclusion is that services promoted in the value network have more potential for self-service than the more complex and unique services of the value shop model. The pricing of standard services will be set in a transparent market where the profit will come primarily from volume. Benchmarks for more complex services are likely to increase information transparency, but individualization may make it difficult to compare similar services between banks.

Technology-based service encounters

The purpose of technology-based self-service has been divided into three broad categories: transactions, customer service and self-help (Meuter et al., 2000). In banking, direct transactions in self-service may include payments, loans and online trading services. Customer services may include functions such as online balance statements, ability to change personal information, and troubleshooting. Self-help refers to services that enable customers to train themselves in self-service, learn about banking, and provide their own support. This category of services may include functions such as ordering new credit cards, opening new accounts, signing contractual agreements, online learning modules for self-service, online learning modules for financial services that enable customers to be their own problem solvers. Self-help is probably the most important means of reducing uncertainty and equivocality in a self-service situation. Service complexity is probably the most important driver of uncertainty and equivocality. For services that a customer uses frequently, we can expect uncertainty and equivocality reduction by learning.

Successful exploitation of self-service technology requires positive customer experiences. Meuter *et. al.* (2000) examined incidents that led to satisfaction/dissatisfaction with various self-service technologies. The positive experiences were related to convenience, in terms of availability, rela-

tive advantage, and the fact that the technology actually did its job. The negative experiences were concentrated on failures and interface problems. Failure is the opposite of '*the technology did its job*', and these customer experiences were linked to the technology itself, the service outcome, and situations where the customer made errors. Interface problems were related to the design of the user interface or the service itself.

These findings suggest that customers prefer self-service when it is convenient and contributes to individual efficiency and effectiveness. New services such as electronic bill presentment and payment will be perceived as more valuable than ordinary online payments because they allow bank customers to do more with less effort. One-click shopping, like Amazon's concept combined with direct deduction that allows the customer to place an order for a product or service and arranges the payment in one operation, is likely to set the standard for future on-line shopping. Consequently, payments will be commodities in a standard infrastructure of interoperable transaction processing systems. As a result, the focus of self-service banking will shift from transactions to customer service and self-help, partly because transactions are automated elsewhere, and partly because the remaining non-standard services place larger demands on these self-service technology functions.

A Framework for Self-service Banking

In this section I will develop a framework for analysis of self-service banking based on the theoretical background. First, self-service banking models for the value network and the value shop configurations are presented. Second, these models are compared. The building blocks of the models are the primary activities of the value configuration, the role of information exchange and service frequency and complexity, and the three purposes of self-service technology.

Self-service banking in a value network

A value network is facilitating a network relationship between customers. In traditional banking this is usually an indirect function by means of pooling resources in layered and interconnected networks that provide customers with individual efficiency. We can expect banks to offer standard transaction services in this model and to target integration in the events where bank transactions are created.

In a network model, information transparency will drive a standard pricing scheme for commodities. The transactions are simple and are either captured from the event generating the transaction (e.g. electronic bill presentment and

Primary activity	Function of self-service technology		
	<i>Transaction</i>	<i>Customer Service</i>	<i>Self-help</i>
<i>Network promotion & contract management</i>	Functions for cross-selling of services and bundling banking services with other products and services.	Functions for managing the customer relationship, e.g. by ordering new cards or opening and closing accounts.	Customer self-recruiting from click-able banner ads and referential e-mails from friends. Self-configuration of services.
<i>Service provisioning</i>	Standard banking services that are automated or based on forms.	Online services that enable customers to monitor their relationship with the bank in terms of status information, history, and pending transactions or services.	Customer self-training and support in financial services.
<i>Infrastructure operation</i>	Anywhere-anytime transaction processing in interoperable systems.	Secure access to customer history and transactions.	Customer self-training in use of the technology for self-service banking.

Table 1: Self-service banking issues in a value network configuration

payment) or the customer can execute self-service by entering information into standard forms that are processed automatically by the technology. Transactions can be payments, mortgages, loans, insurance and mutual funds. More complex products such as stock trading and situations where the customer needs to perform interlinked services are less likely to be feasible in a value network model unless you have a customer base that is familiar with these services.

Bundling and cross-selling are mechanisms that may lead to differentiation. Bundling and alliances are potential strategies to present the situations where transactions are created. Cross-selling of related services is a potential source of differentiation. Operation of layered and interconnected networks is necessary for these strategies.

To reduce uncertainty, and to enable a sense of control, monitoring services such as account balances, transaction history and transactions pending must accompany transaction services. Being a low cost business model with low margin, a bank will need a high volume of self-service customers. Intelligent linking that makes it easy for new customer to switch bank is important. For existing customers there must be a full range of self-help services such as opening new accounts, change customer information, and self-configuration of the service. For instance, Accu-card in the UK allows customers, within boundaries determined by their credit rating, to set the fee structure of their credit card, choosing whether they want to pay a high annual fee (advantageous for people who use the card a lot), a high transaction fee (for people who do not use the

card much), or a high interest rate (for people who do not revolve their credit card debt).¹ Security is also an issue, particularly in relationship, in order to maintain privacy and prevent fraud.

Self-help is also necessary for standard services. There is no such thing as self-explaining services. Intuitive interface design that is consistent with previous experiences and knowledge will promote adoption and use (Carlson & Zmud, 1999). A major functional requirement is that self-service technology must enable the customer to complete a transaction or service function without help. Information exchange between the customer and the self-service solution must be interactive with easy access to search functions. The more complex service, the larger is the requirements for information content, its organization, and availability. Table 1 summarizes the main issues for self-service banking based on a value network configuration.

Self-service banking in a value shop

The problem-solving approach of the value shop is a more demanding concept for self-service than the standard service of a value network. Higher service complexity places higher demands on customer knowledge and skills. First, in addressing problem-finding and acquisition, a self-service concept must provide the customer with tools that

¹ I am indebted to my colleague Espen Andersen for the Accu-card example.

	Function of self-service technology		
Primary activity	<i>Transaction</i>	<i>Customer Service</i>	<i>Self-help</i>
<i>Problem-finding and acquisition</i>	Support to the customer in identification of the decision situation.	Pre-transaction support in terms of information about financial products and terms.	Customer self-training in financial knowledge and financial services and other online support.
<i>Problem-solving</i>	Problem-solving support by templates or wizards that helps the customer to find alternative options.	Provide the customer with information that may help in setting decision criteria; example: benchmarks for the outcome of alternative decisions.	Customer self-training in financial analyses plus online support.
<i>Choice</i>	Decision models that aid customer in choosing among alternatives.	Functions that let the customer evaluate expected outcome in relation to the total customer relationship; example: portfolio risk.	Customer self-training in financial analyses plus online support.
<i>Execution</i>	Automated services for execution or ordering of a financial product.	Monitoring of service execution.	Customer self-training and support in how to execute a decision in the self-service technology.
<i>Control/ evaluation</i>	Functions that allow customers to control the outcomes of service execution and compare it to expectations or a benchmark.	Monitoring of service history and benchmarking of decision outcomes, particularly for the total portfolio of a customer.	Customer self-training in evaluation of financial transaction outcomes and portfolio analysis.

Table 2: Self-service banking options in a value shop configuration

support the ‘diagnosis’ of a decision situation (e.g. how to invest a certain amount of money) or an economic ‘problem’ (e.g. how changes in interest rate affect household economy). Access to information on financial services and terms is required for this process, at least to reduce uncertainty. Learning modules that a customer can use to be knowledgeable in terminology and services will reduce equivocality.

Second, the concept must include workflow management that facilitates the generation alternative solutions to the ‘problem’. Use of simulation models, templates and wizards are technologies that can be used to generate solutions. The customer will need access to information that can verify whether a potential alternative is a solution or not. Information on benchmarks from decision outcomes may be a source of such information. In order to use these functions, the customer must have knowledge of financial analyses and understand the self-service concept.

Third, a customer will need decision models that help in choosing among the alternative solutions. To use these models, the customer must be allowed to define and set the decision criteria to be used in selection of alternatives, which requires more knowledge in financial analyses.

Fourth, when a choice has been made, the self-service concept should automate the execution as much as possible. The support for problem-solving and choice should be fully integrated with execution. Customers should be able to monitor the progress of services that include several steps or that cannot be executed immediately after customer choice. Fully automated and integrated, this stage should not place particular requirements on customer knowledge or skills.

Finally, a self-service concept should include functions for evaluation and control. Did the decision solve the problem? Does it perform to expectations and to benchmarks?

While monitoring the performance of a particular decision, it is at least equally important to support the customer in monitoring its total portfolio of services. Customers may need training to be empowered to perform control and evaluation. Table 2 summarizes the main issues for self-service banking based on a value shop configuration.

Configuring self-service banking

These frameworks highlight the differences in emphasis in the value network versus the value shop configuration.

The delivery of the standard services of a value network can be thought of as a predetermined path of actions, while the non-standard problem solving of a value network can be viewed as a path with infinite options. Hence, the two models constitute two very different self-service concepts. First, network configuration-based self-service banking is appropriate for high-volume standard services where one can expect information transparency in terms and thus low margins. Volume is created by network growth and cross-selling of services to existing customers. Individualization of the self-service bank is made by the individual customers selection of services from the total range of services available; every service is a standard component. Customer value may be created by offering a full range of services, thus enabling 'one stop banking'. On the other hand, in a value shop-based self-service banking, the services are non-standard and differentiated, targeted to solve the particular needs of a customer. In a value network-based concept, the primary role of information exchange is to reduce uncertainty, while in the more complex processes of a value shop-based concept, it also reduces equivocality. However, the degree of uncertainty and equivocality is relative to the customer knowledge and experience. It may therefore be difficult to draw the line between standard and non-standard services as perceived by the customers. Second, value creation by linking customers (as in the value network-based concept) requires a mediating technology where interconnected networks may be a critical success factor. In the value shop-based concept one must develop solutions that support the intensive problem-solving process. In the execution stage, one will probably face the same challenges for interconnected systems as in the value network-based concept. Third, in the value network-based concept one can expect information transparency because banks will not gain by concealing information on commodities. In the value shop-based concept, individualized services enable information asymmetry, unless there is a critical mass of knowledgeable customers that demand information on well-defined benchmarks.

We can conclude that these two concepts for self-service banking are indeed different and require different solutions. The value network model is appropriate for a full-service bank with standard services. The value shop model

is appropriate for non-standard and differentiated services. The value shop model can either be offered such as a stand-alone concept as a niche player, or it can be embedded in a value network model. In a combined model, the value shop concept can be viewed as an expansion of the service provision in the value network. In a full-service concept, all standard and non-complex services are offered based on the network framework, while all non-standard and complex services are offered based on the value shop concept within a value network-based self-service banking concept.

Discussion and Conclusions

We initially concluded that banks have not exploited the potential of self-service banking. The framework proposed here, based on the value network and the value shop configurations, addresses how the issues of value creation and information exchange form self-service banking concepts. This framework only has value if it can help in discriminating between more and less successful self-service banking concepts. In this paper, we have neither proposed that one model is superior to the other nor presented any data that guides such a conclusion. On the contrary, the framework describes the models as complementary concepts that can be offered as stand-alone or combined with each other. We will therefore start the discussion with a review on current self-service banking concepts.

Studies in the US (Furst et al., 2000) and Norway (Sannes & Kyvik, 2000) of state of the art self-service banking found that the majority (77% in the US and 99% in Norway) of banks offer basic services (i.e. funds transfer, account history and bill payment).² Banks that are experienced with self-service banking, i.e. offered self-service for a long time, are more likely to offer a wider range of services (Furst et al., 2000). Both studies found the services offered to be standard transactions and customer service. Information exchange is based on the customer downloading information. It therefore can be concluded that current self-service banking concepts are not based on the value shop model, and the question is to what extent current practice matches a value network model. It should be noted, however, that we have knowledge of banks that plan to launch self-service concepts that resemble a value shop configuration. An analysis of these efforts will be important to further qualification of the framework.

² These studies are particularly useful for this analysis as they cover a total market, compared to case studies that dominate the literature on self-service banking. The US study covers all national banks and the Norwegian study includes all banks with Internet presence in Norway.

Current practice in self-service banking with standard services is consistent with a value network-based concept. The majority (close to 100%) of banks offer standard customer service functions as balance inquiry and account history (Furst et al., 2000; Sannes & Kyvik, 2000). Self-service functions for customer relationship management as new account set-up (37% in the US, 1 % in Norway) and credit applications (60% in the US, 37% in Norway) are less common. Customer self-help functions were not reported in the US study. In the Norwegian study, self-help was limited to an on-line demonstration of the transactional interface. Self-service functions for cross-selling and service bundling were beyond the scope of these studies, but our experience indicates that these are exceptional. It is therefore concluded that current practice does not match a value network based concept.

The main conclusion is that current self-service banking is too narrow to be a complete business concept, and that banks have failed to address the functions that create customer value. The paper suggests a conceptual framework based on the value configurations suggested by Stabell and Fjeldstad (1998). One limitation of this paper is, of course, that we did not succeed in evaluating current practices with the concepts that match the proposed framework. Development of measures of the degree of match with a concept is necessary for future research on the framework.

The recommendations for implementation are therefore based on theoretical reasoning founded on the conceptual framework. The first recommendation is to expand current self-services offerings with functions for customer service and self-help. The second recommendation is to create a service offering/value configuration matrix to determine which services are best suited for a value network concept versus a value shop concept.

References

- Carlson, J. R., & Zmud, R. W. (1999). Channel expansion theory and the experiential nature of media richness perceptions. *Academy of Management Journal*, 42(2), 153-170.
- Cocheo, S. (2001, April). Community bank competitiveness survey; Web census 2001. *ABA Banking Journal*, 93, 31-38.
- Crane, D. B., & Bodie, Z. (1996). Form follows function: The transformation of banking. *Harvard Business Review*, 74(2), 109-117.
- Dabholkar, P. A. (1994). Technology-based service delivery: a classification scheme for developing marketing strategies, *Advances in Services Marketing and Management* (Vol. 3, pp. 241-271). Greenwich: CT: JAI Press Inc.
- Daft, R. L., & Lengel, R. H. (1984). Information richness: A new approach to managerial behavior and organization design. *Research in Organizational Behavior*, 6, 191-233.
- Davis, S. I. (2000). *Bank Mergers: Lessons for the Future*. London: MacMillan.
- Dick, A. S., & Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. *Journal of the Academy of Marketing Science*, 22(2), 99-113.
- Emmons, W. R., & Greenbaum, S. I. (1998). Twin information revolution and the future of financial intermediation. In Y. Amihud & G. Miller (Eds.), *Bank Mergers & Acquisitions* (pp. 37-56). Boston, Mass.: Kluwer.
- Furst, K., Lang, W. W., & Nolle, D. E. (2000). *Internet banking: Developments and prospects* (Economic and Policy Analysis Working Paper 2000-9). Washington: Office of the Comptroller and Currency.
- Grover, V., & Ramanlal, P. (1999). Six myths of information and markets: Information technology networks, electronic commerce, and the battle for consumer surplus. *MIS Quarterly*, 23(4), 465-495.
- Grover, V., Ramanlal, P., & Segars, A. H. (1999). Information exchange in electronic markets: implications for market structures. *International Journal of Electronic Commerce*, 3(4), 89-102.
- How Consumers View Banks: ABA Consumer Survey Results. (2001, September). *ABA Banking Journal*, 93.
- ITU. (2001, 15 August). *Internet Indicators: Hosts, Users and Number of PCs*. International Telecommunications Union. Retrieved 1 October, 2001, from the World Wide Web: http://www.itu.int/ITU-D/ict/statistics/at_glance/Internet00.pdf
- Kambil, A., Nunes, P. F., & Wilson, D. (1999). Transforming the marketplace with all-in-one markets. *International Journal of Electronic Commerce*, 3(4), 11-28.
- Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: Understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, 64(3), 50-64.
- Mishkin, F. S. (1998). Bank consolidation: A central banker's perspective. In Y. Amihud & G. Miller (Eds.), *Bank Mergers & Acquisitions* (pp. 3-19). Boston, Mass.: Kluwer.
- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: The Free Press.
- Porter, M. E. (1998). *The Competitive Advantage of Nations* (2nd ed.). Basingstoke: Macmillan Business.
- Sannes, R., & Kyvik, H. (2000). *En kartlegging av norske bankers Internettkontor: en ekspertbedømmelse (An Evaluation of Norwegian Banks' Internet Services)* (Research Report 18/2000). Sandvika: Norwegian School of Management BI.
- Stabell, C. B., & Fjeldstad, Ø. D. (1998). Configuring value for competitive advantage: On chains, shops, and networks. *Strategic Management Journal*, 19(5), 413-437.

Self-service banking

Thompson, J. D. (1967). *Organizations in Action*. New York: McGraw-Hill.

Tjøstheim, I., & Solheim, I. (2001). *Nordmenns Internettbruk og e-handel (Norwegians' use of Internet and online shopping)* (Research Report 971). Oslo: Norwegian Computing Center.

Biography

Ragnvald Sannes is an assistant professor in Information Management at the Norwegian School of Management BI,

Department of Technology and Knowledge Management. He holds a licentiate degree in Information Management at the Stockholm School of Economics and is a PhD candidate at the same institution. Sannes' research interests are focused on the business value of information technology, particularly in relation to business innovation and IT management. He is currently involved in several research projects on Internet banking.