Association for Information Systems
AIS Electronic Library (AISeL)

AMCIS 2000 Proceedings

Americas Conference on Information Systems (AMCIS)

2000

Assessing the Business Value of Electronic Banking Delivery Channels by Means of a Multi-Perspective Evaluation Model

Dimitrios Stamoulis
University of Athens, dstamoulis@yahoo.com

Follow this and additional works at: http://aisel.aisnet.org/amcis2000

Assessing the Business Value of Electronic Banking Delivery Channels by Means of a Multi-perspective Evaluation Model

Dr. D. S. Stamoulis, Department of Informatics, University of Athens, dstamoulis@yahoo.com

Abstract

The IS/IT evaluation research has been re-oriented towards the total value of ownership instead of being stuck to the traditional cost /benefit analysis that often led to the shortsighted total cost of ownership approach. However, not only the previous IS/IT evaluation paradigm but mainly the new one suffer form "a lack of post-implementation measurement of benefits and confusion regarding success criteria". This paper proposes a post-implementation contingency model consisting of five perspectives that evaluate the business value of electronic banking delivery channels. For each of these perspectives, specific measurements and criteria for success that pertain to e-banking channels are proposed. The model can be generalized to cover the post-implementation evaluation of any IS/IT investment.

Introduction

The proliferation of electronic ways of doing banking due to the plethora of technologies that can be used as a customer's interface to a bank as well as the cost of running a number of electronic banking channels calls for an evaluation of a bank's investments in electronic delivery channels. This evaluation is not a question of cost and revenue, since most of the electronic banking delivery channels do not create any direct revenues. Instead of the traditional cost/benefit analysis, the business value of the IT/IS that implements an electronic banking delivery channel has to be assessed. The business value of an electronic banking delivery channel is related to the contribution of such a channel to the overall effectiveness of the enterprise and, therefore, cannot only be determined by means of quantitative measurements.

Resorting to more qualitative instead of purely quantitative measurements methods in order to conceptualize the business value of IT, the research inevitably turns to a hermeneutic epistemological paradigm in the pursuit of a real business-wise IT/IS evaluation. Defining hermeneutic, "as methods of interpretation of data which use non-structured and non formal approaches to both understanding and decision making", Bannister and Remenyi (1999) "argue not only that hermeneutics is pervasive, but that there are limits to the purely positivist approach". In their excellent profound epitome critique on the value perception in IT Investment Decisions, they observe that "IT is valued in more complex and subtle ways than the raw economic and financial data suggest. The business and human concept of value may be much deeper and wider than the narrow rationalism that economic and accounting models allow". Hence, they conclude that "value, like beauty and the contact lens, remains in the eye of the beholder and the eye of the beholder in business and management situations needs to be cultivated" (ibid).

This sort of cultivation is exactly the purpose of this paper. To show how to evaluate an IS investment, based on the above new concepts and disciplines, which call for softer, more qualitative measurements and hermeneutic thinking approaches for a pragmatic evaluation of the IT value. This is achieved by means of discussing a real-world example, the evaluation of electronic banking delivery channels.

To evaluate an electronic banking delivery channel in a systematic as well as hermeneutic manner, a contingency model was created. Contingency models "should be driven by the 'type' of IS to be evaluated. (Such models) would assist in the understanding of the role and impacts of the particular case in hand" (Serafeimides and Smithson, 1998). Since "evaluation is properly regarded as an embodiment not of a formal, objective procedure, but of a social process involving multiple perspectives" (Symons, 1991), the proposed evaluation model is made up of five perspectives: the customer, marketing and sales, financial, information technology and strategic perspective. From each perspective, the business value of an electronic banking delivery channel is evaluated by means of methods, measurements and indicators of success, which are explained both in theory and with examples. Due to the fact that "it is a huge problem deciding what to measure especially as many of these aspects are highly intangible" (Smithson and Hirschheim, 1998), this research proposes some quantifiable and qualifiable measurements or indicators of success and organizes them into five perspectives, which constitute the contingency model. Exemplifying the model for the case of electronic banking delivery channels, this paper demonstrates how a multi-perspective evaluation for IS/IT investments can be applied. We mainly focus on the metrics of the evaluation model and on the organization of the methods, measurements and indicators of success in perspectives leading towards a holistic evaluation approach, which represents a major mentality shift from the traditional cost/ benefit analysis. Figure 1 depicts the basic idea of the proposed post-implementation evaluation model.

Figure 1. The Five Perspectives of the Evaluation Model, for which appropriate methods, measurements and indicators for success are proposed. The business value of an electronic banking delivery channel is assessed from the five shown perspectives/viewpoints.
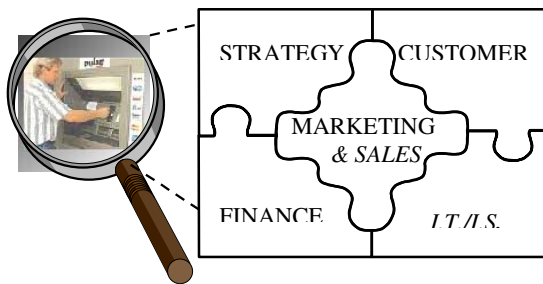
The next sections describe the evaluation methods, measurements and indicators of success for each of the five perspectives. The process by which the evaluation of electronic banking channels can be carried out within an organizational context using this model is outside the scope of the paper.

The customer's perspective

The most basic question for the customer perspective is the added value offered by a banking channel to the customer. The answer relates both the medium and to the content. The content has to do with the products and services that are offered through this channel. The medium is the IT infrastructure that implements the channel. As far as the medium is concerned, each infrastructure has its own benefits, which are summarized in the Table 1.

Table 1: The Added Value of the Core Technology on which E-banking Channels are Built on

Technology	E-channel's medium _Value proposition_ to the customer
PC/dial-up:	safety, security, direct link with the bank's host: no fluctuations in response times
Internet	independence from software (only a browser is required) and hardware
Telephone	location independence, device available everywhere
Mobile phone	location independence + mobility support
_TV_	infrastructure & location independence, ease of use
Multimedia kiosk	ease of use, max security, any set of banking products, services and transactions

Besides the medium's added value, its context is also very important for the customer who wants a high quality product. "High quality means pleasing customers, not just protecting them from annoyances" (Garvin, 1987). Garvin (1987) identified eight "critical dimensions or categories of quality" on which competition for the customer satisfaction takes place. These eight dimensions of quality "that make strategic quality management possible" (ibid) are very good indicators for assessing the customer attitudes towards a product, service or channel. For each of these dimensions, several measurements and/or indicators of success can be identified, depending on the nature of what is assessed. In the following, explanations and examples for electronic banking channels that apply to these eight dimensions are given.

1. _Performance_: the overall performance of the channel depends on the hardware, software and communication components of the technological solution. For example, it is important that response times are below some maximum values.
2. _Features_: mainly refers to the technical specification of the channel. For example, it may be very important for a user to be able to execute transactions (credits-debits) either in batch (altogether) or in interactive (one-by-one with a response) mode. Other features are the ability to print data from any part of the screen, to store data to other means and to ask for a repetition of an information or an enquiry's response.
3. _Reliability_: any banking application must be reliable; otherwise it is unusable. Reliability can be measured by statistical methods, such as the mean time between failures, the types of failures occurring, fault tolerance mechanisms and probabilities for malfunctioning or intentionally bad handling of the system. Part of reliability is safety, which is obviously critical for banking IT. Both corporate and channel-specific safety policies and techniques must be in place to minimize risk both for the bank and the customer.
4. _Conformance_: the channel must conform to existing and emerging standards or new requirements. For example, all software components must follow the basic conventions of the windows applications; they must also be Euro ready.
5. _Durability_: this notion refers to the channel's capability to continue working after some time, during which operational characteristics or environmental parameters have changed.

6. *Serviceability*: if customers do not get from a channel a level of service that is higher than what they get from the others, they will not use this electronic channel. Therefore, serviceability levels must always remain as high as possible. This includes not only the friendliness of the user interface, but also a help desk which can answer questions and guide through a troubleshooting procedure.

7. *Aesthetics*: Substituting the comfort of dealing with a man, the channels must by aesthetically attractive. The voice of a recorded message must be soft, calm and clear. Beautiful icons and images always catch the eye and link immaterial concepts – such as banking products – to easily conceivable concepts. Aesthetics is the big issue when designing the user interfaces of channels.

8. *Perceived quality*: this dimension of quality has to do with the brand name, previous success history of a channel, image etc. Building upon a previously existing strong reputation of other channels that the bank owns, or on information technology innovation and competence, or on an acknowledged past record of servicing customers with quality, the perceived quality of a new channel is higher.

Concluding, the customer's perspective contributes significant information to the evaluation of the offered solution as it analyses the business substance with which a company tries to penetrate a market or a niche market by delivering clearly identifiable added value to the customer.

The marketing and sales perspective

In the traditional cost/benefits analysis, the benefits part of the equation is always difficult to quantify, since intangible benefits cannot directly be linked to financial data. The second perspective of our model for evaluating electronic banking delivery channels takes a broader view of the evaluation of economics, by looking at the marketing and sales measurements that pertain to electronic banking delivery channels.

From the marketing and sales point of view, a delivery channel must acquire new customers and retain its ever-increasing customer base. The former requires a measurement of the sales volumes and a monitoring of the promotion activities to ensure that new customer segments are being targeted and exposed to the offered service. Promotion activities may have the form either of selecting eligible customers and offering the product free-of-charge for a trial period, or of presentations to an invited audience. Both forms of promotion activities as well as discount policies for good customers have been proven a fruitful marketing tool for promoting e-banking channel to new customers.

As far as customer retention is concerned, the usability of the channel says almost the whole story about whether customers are using this channel or they do not perceive it

as a real value addition to the rest of the ways of doing banking. The usability of an banking channel can be measured in terms of, at least, three criteria: the hours of system usage or logging-in statistics, the number of transactions executed and the total amount of funds manipulated through this channel.

Technically it is easy to count the hours of system usage. A short program calculates the time that elapses from logging-in to logging-out. Comparing the increase of the hours of the system usage to the increase of the product volumes, the degree of system usability can be assessed. Other straightforward measurements include the number of transactions both as a total and per type, the total amount and the mean value of the funds that are being transferred through a channel. Channel-specific situational measurements can also be devised. For example, if a channel offers application programming interfaces (APIs) then its business success is indicated if it is chosen by third parties for building other software applications upon it.

The financial perspective

From the financial point of view, cost reduction, profitability and risk are the prime measurement instruments. It is outside the scope of this paper to discuss methods and techniques used for financial appraisal of IS/IT investments (Ballantine and Stray, 1998), which are also part of a thorough financial evaluation of IS/IT.

The cost reduction refers to the labour and premises costs that are saved because it is the customer who replaces the bank's teller in executing the transactions via the e-channels. The saved effort can be readily translated into labour costs, measured by the number of tellers who would be required over a period of time to execute an equal number and type of transactions to those executed through the electronic channel. To calculate this, the number of transactions, per type, are divided by the mean number of this type of transactions a teller can execute and the total is summed up to give the total number of tellers required. Multiplying this by the mean value of the tellers' salaries gives the mean value of the labour component of the cost reduction achieved. Premises cost is derived from the leasing price of a branch or through depreciation methods of the acquisition cost.

Sometimes, electronic banking delivery channels are not profitable in the sense that the income they produce – initial charge plus subscription fee – does not counterbalance the development and maintenance costs of such a channel. However, this is a myopic view of a channel's profitability. The channel is profitable because it generates revenue both by reducing costs and by charging directly the customers. Calculating the revenue like this, an electronic banking delivery channel achieves the break-even point within a few months or years after its introduction into the market. Ideally, the calculation of the revenue generated by a channel should also take into

account the contribution of the channel to the profitability of those customers who are subscribers to this channel. This is because the customer profitability depends on the customer loyalty, which partly results from the use of an effective e-banking channel. But, it is an open research issue how to estimate the contribution of an electronic banking delivery channel to the overall customer profitability. Moreover, some products may generate profit apart from the cost savings and the charges to the customer, as it is the case with the electronic purse. When a customer loads a smart card with value, this money is debited from his/her account. However, the owner does not immediately spend them. In the interim, the money stays in a float account in the bank. Until this money is spent, the bank makes profit out of that float.

Finally, risk must always be taken into account, as e-banking channels offer access to money and to the bank's information systems. A channel should always give the customer the capability to reverse and/or cancel a transaction, because users make mistakes. Appropriate safeguards must be embedded into IT infrastructure of the channel to minimize the risk of fraud, misappropriation, security vulnerability, technical malfunction etc. There are guidelines as to how much money should be spent to prevent unpleasant situations with channels. Obviously, the more secure a channel is, the better for the bank. However, the market itself often forms a minimum level of threat aversion provisions. For example, a typical security scheme for Internet banking consists of the combination of user-id and password, a 128-bit encryption over the transmission medium and a certification of the bank's server to prevent another server's masquerading. The above scheme tends to become a de facto industry standard. Ideally, the exposure of the channel to the various risks, which may lead to potential financial loss, must be taken into account in a proper financial evaluation of an electronic banking delivery channel. The potential financial loss from a channel's vulnerability is related to the type of banking products and services that are available through this channel.

The information technology perspective

The quality characteristics of a service that is entirely based on information technology are being affected by the technical quality of the underlying information technology. There are several studies on the topic of IT quality – for example (Veenendaal and McMullan, 1997; Dromey, 1995; Ince, 1994) – but it is not in the scope of this paper to review or comment on them. Obviously, any method and measurement developed to assess the technical quality of an IS can be used in this perspective. The technical merit of a product/ service/ channel is often underestimated, despite its critical importance for the overall quality of an electronic banking delivery channel. This is probably due to the fact that it is only in the capacity of IT experts to assess whether the offered

solution is of a high technical calibre or a patchwork which will not last for long. Nonetheless, technical malfunctions are always manifested and perceived by the customer as business problems. Requirements and specifications for the IS/IT quality have been published by many standardization bodies, such as ANSI, IEEE, ISO, CCITT etc.

The strategic perspective

An electronic banking delivery channel allows for automated, self-service banking. Therefore, its value proposition for the customer is evident and its strategic importance for the bank is obvious. As Ciborra (1994) claims, the more strategic an IT/IS is for the organization, the more appropriate assessment is the qualitative one. To evaluate the strategic perspective, we propose three qualitative methods (others could be used as well) drawn from the strategic management discipline to show the necessity of evaluating a channel from the strategic viewpoint. The first method examines the positioning of a channel among the other ones owned by the bank. The second one is a collection of opinions within the organization which document why a channel is seen as a strategic weapon for the bank. The third method is the classical SWOT analysis, which is always useful in locating the product/ service within its own business context.

When a bank offers multiple electronic banking channels, it has to define carefully the strategic targets of each channel and manage their potential competition. The patterns of channel usage must be closely monitored to ensure that the introduction and running of a new channel does not kill the market of other channels. Sometimes the killing of one channel's market is done intentionally, in order to move the customer base of one channel to another. However, this should be a strategic decision and a managed situation.

For example, the advent of Internet caused concern about the future of PC/dialup channel, especially when these two channels offer identical services. Also, the question of priority among emerging channels, e.g. mobile and TV banking, concerns the IS/IT investment decision makers. Geographical distribution of a channel's users and potential users, pricing and other accompanying incentives of each channel may cause differentiation and shift of customers among channels. Ideas for the management of competition among banking channels have been proposed by Holmsen et al. (1998).

Opinion surveys within and outside the bank can identify several reasons for deeming a channel as a strategic weapon. These reasons may include (Stamoulis, 1999):

♦ Reduction of operating costs for the bank, as it off-loads work from the branches staff.
♦ Facilitation of capital mobility, which potentially creates revenue for the bank.

- Improved quality of service to the customer, who has total control over his/her banking transactions and on the manipulation of his/her account.
- Strengthening of customer loyalty, through customer satisfaction
- Augmentation of the added business value of any banking services package offerings, especially those destined for high net worth customers, by providing an easy and effective means of handling their basic finance needs.

A SWOT analysis assesses the strategic position of a channel in the market and triggers a decision-making process. Others strategic management tools and techniques, such as the Resource-Based View (Lee, 1999) can also be used. Summarizing, the strategic perspective aims at assisting the financial institution to reassess and manage the distribution channels mix that offers to the customer, check whether the perceptions of the internal and external customers of the channel match the channel's implemented capacities and identify its potential for further business development.

Conclusions

The evolution of IT capabilities, and especially their growing interactive character, as well as the dematerialization of the banking / financial products and services have caused a shift from electronic banking delivery channels to electronic finance. "E-finance can be defined as electronically enabled access to financial services. It is not a delivery (institution centric) vehicle, but a vehicle for access (customer centric)" (Schlier, 1997). This fact is reflected upon the proposed evaluation model by including the customer and strategic perspectives. The former relates to the added value perceived by the customer and the latter relates to the position of the channel in the market.

A recent survey of IT evaluation practices revealed "a lack of post-implementation measurement of benefits and confusion regarding success criteria and delivery of benefits" (Ward et al., 1996). The proposed evaluation model for electronic banking delivery channels is destined to address exactly these problems and can be generalized to evaluate any IS/IT investment within an organizational context. The evaluation instruments include statistics, qualitative assessments, indicators of success as well as methods and tools drawn from various disciplines relevant to each perspective. All these measurements, exemplified for the case of an electronic banking delivery channel, constitute a five perspectives model which assesses some key aspects of the business value of an IS/IT investment.

Further research will cover the evaluation process into which the proposed post-implementation multi-perspective evaluation model will be used. It will also address the question of the distribution channel mix that must be offered in order to maximize both the added value for the customer and the business success for the financial institution.

References

Ballantine, J., and Stray, S. "Financial appraisal and the IS/IT investment decision making process". *Journal of Information Technology*. 1998. Vol. 13, pp. 3-14.

Bannister, F. and Remenyi, D. "Value Perception in IT Investment Decisions". *Electronic Journal of Information Systems Evaluation.* http://is.twi.tudelft.nl/ejise Vol. 3 (Current September 1999)

Ciborra, C. U. "The grassroots of information technology and strategy". In: *Strategic Information Systems: A European Perspective* (Ciborra C.U., Jelassi T. Eds), J.Wiley & Sons, Chichester, 1994.

Dromey, R. G. "A Model for Software Product Quality". *IEEE Transactions On Software Engineering*. January 1995. Vol. 21, No. 1, pp. 146-162.

Garvin, D. A. "Competing on the Eight Dimensions of Quality". *Harvard Business Review.* November – December 1987, pp.101-109.

Holmsen, C.A, Palter, R.N., Simon, P.R. and Weberg, P.K. "Managing competition among your own channels". *The Mckinsey Quarterly* 1998, No 1, pp. 81-92

Ince, D. *ISO 9001 and software quality assurance.* International Software Quality Assurance Series. McGraw-Hill 1994.

Lee, M.Y. "A proposed business model for the electronic commerce: using resource based view to examine the strategic value of the web site". Proceedings of the *6th European Conference on the Evaluation of Information Technology*. Brunel University London, 4-5 November 1999, pp. 237 –242.

Schlier, F. "Hypercompetition in Financial Services". *Gartner Group Research Note* SPA-240-141. November 14th, 1997.

Serafeimides, V. and Smithson, S. "Information systems evaluation: the interpretive paradigm". Proceedings of the *6th European Conference on Information Systems* 1998. (W. Baets Ed.) Vol II. pp. 823 – 838.

Smithson, S. and Hirschheim, R. "Analysing information systems evaluation: another look at an old problem". *European Journal of Information Systems* 1998. Vol.7, pp 158-174.

Stamoulis, D. "A multi-perspective evaluation of an electronic banking delivery channel: the case of ALPHALINE". Proceedings of the *6th European Conference on the Evaluation of Information Technology*. Brunel University London, 4-5 November 1999, pp. 345-352.

Symons, V.J. "A review of the information systems evaluation: content, context and process". *European Journal of Information Systems* 1991, Vol.1, No.3, pp 205-212.

Veenendaal, E.V. and Mc Mullan, J. (Eds) *Achieving software product quality*. UTN Publishers 1997.

Ward, J., Taylor, P. and Bond, P. "Evaluation and realisation of IS/IT benefits: an empirical study of current practice". *European Journal of Information Systems* 1996. Vol.4, pp 214-225.