CUSTOMER ACCESS INFORMATION TECHNOLOGY (CAIT) DEPLOYMENT EVALUATION

by

Robert J. Kauffman
NEC Associate Professor
Leonard N. Stern School of Business
New York University
New York, New York 10003

and

Laura Lally
Special Assistant Professor of Business Computer Information Systems
Hofstra University
Hempstead, New York 11550

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Center for Research on Information Systems
Information Systems Department
Leonard N. Stern School of Business
New York University

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ABSTRACT

Customer access information technology offers great potential benefits to both the organization and its customers. However, managers lack methods for evaluating these technologies and determining whether conditions exist for success. We propose a model from Marketing Science which captures factors influencing the success of a CAIT. The factors include value platform features -- features of the CAIT, and location strategy features -- features of the environment into which the CAIT is deployed. This model is applied to home banking, providing insights as to types of systems most likely to be successful.

1. CAIT: Great Potential Benefits: But How and When?

Through the use of customer access information technology (CAIT), organizations can permit their customers to perform transactions from remote locations. When this kind of information technology (IT) is used effectively, benefits can accrue to both the organization and its customers [1]. Customers may benefit from improved service quality and increased locational convenience. Organizations may increase revenue from fees charged for use, reduce costs from streamlined operations, and increase market share from locking in existing customers and reaching out to new ones by establishing points of electronic presence in new areas [2]. However, these systems are expensive and time-consuming to develop and are not always a success.

Traditional accounting and economic methods often fail to accurately gauge the potential or actual performance of IT investments. Accounting methods such as net present value assume that cash outlays can be weighed against cash inflows in future time periods and at a discount rate reflecting the riskiness of the investment. But, IT investments often create impacts at points in the organization's value chain several levels of analysis away from the bottom-line. These impacts are frequently time-lagged, and their riskiness is difficult to determine [3]. Meanwhile, economics-based methods employing input/output productivity models usually rely on physical inputs and outputs, management's ability to pre-specify or target output levels, and an understanding of the functional relationships between inputs and outputs [4]. In CAIT deployment many of the inputs are non-physical, transaction outputs may range from zero to the capacity limit of the deployed technology, and the relationship between inputs and outputs may not be clearly defined. CAIT managers have need of models and methods that address these problems and provides insights as to why a specific deployment is likely to succeed and how to make it successful.

In this paper, we will examine two examples of CAITs and some new perspectives and methods that we have developed to evaluate them better. The examples involve home banking in Japan and in the United States. Together they illustrate that even when CAITs are deployed for similar purposes the value they provide to their organizations may vary greatly.

Yamaichi Securities wished to deploy CAIT to make securities trading more convenient for their customers. In Japan, household finances are usually handled by housewives who, because of home and family obligations, may find it difficult to travel to Yamaichi's offices. To reach their target market, Yamaichi used the Nintendo home computer game system as the platform for their trading system. The Nintendo system was already in 40% of Japanese homes and the Yamaichi cartridge was made available at a low cost. As a result of the success of its home banking system, Yamaichi increased its market share by 8% [5].

Chemical Bank's Pronto home banking system was also deployed to permit customers to conduct financial transactions in their home. Taking a somewhat different tack than Yamaichi, Chemical offered its services through special terminals. After several years, Pronto was withdrawn. When Ken Herz, a spokesman for Chemical Bank was asked how many customers used the hardware, he replied, "Not enough." [6, p.55]. The failure of Pronto led to a ten million dollar writeoff for Chemical Bank [7] and also caused many American retail banks to re-think their strategies in the area of home banking ITs.

With so much at stake in trying to make home banking succeed, managers need greater insight into the CAIT deployment process. This will enable them to understand what went wrong in the case of Chemical Bank relative to the success enjoyed by Yamaichi. New perspectives and evaluative methods will also enable better evaluation of potential CAIT deployments to improve the likelihood that their investments will pay off.

2. A Perspective from Marketing Science

We propose a conceptual model for CAIT deployment evaluation drawn from marketing science. Retailers often see themselves as players in a highly competitive

environment with relatively low entry costs. In the deployment of retail product/service outlets, two questions must be addressed. The first is "What do I offer?" It focuses on the outlet's **value platform**, the mix of goods and services and the means by which they are made available to the public. The second is, "Where do I place it?" It focuses on **location strategy**, and it involves managerial choices about the potential deployment environments which are most promising in terms of their potential to generate transactions [8].

The value platform features are considered controllable by management in the short run, representing investments in goods and services for sale, customer support, convenience, and the design and decoration of the outlet. Increased levels of these features tend to be associated with higher sales; but the increase in sales must be weighed against the increase in costs.

Location strategy focuses on features of the deployment environments, including the customer base, the competition, and the presence of social or legal features which may inhibit or encourage sales. A larger base of potential customers is believed to have a positive impact on the sales generated by the outlet, whereas the presence of competitors is believed to have a negative impact on sales. These environmental features are considered non-controllable by management, and so investments will not enhance them. Location strategy, therefore, involves determining whether environments with desirable features exist, and, when they do, choosing among alternatives that have the most promising features. A good locational choice places the outlet in an environment that will generate an acceptable level of sales without requiring expensive value platform investments.

Finally, retail managers must understand the relationship between the generation of sales at outlets and the overall profitability of the firm.

3. How a Retail Deployment Perspective Can Help CAIT Deployment Managers

3.1 Applying the Retail Model to CAIT Deployment

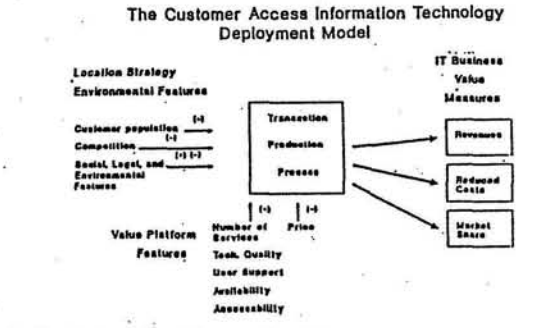
Similar decisions must be made by CAIT deployment managers. A CAIT's value platform consists of the extent and technical quality of the services provided, the degree of user support, the availability and accessibility of the CAIT site, and the fee for using the CAIT.

In terms of location strategy, CAIT must be deployed in areas with a sufficiently high customer base to generate a critical mass of users. The presence of CAITs from competing firms is likely to have a negative impact on the ability of a new CAIT to generate transactions and business value for the deploying firm. Social factors and regulatory restraints may also impact the ability of a CAIT site to generate transactions.

Deployment managers also need to understand how transactions generated at a CAIT site translate into business value for the firm. Research on IT value suggests that the primary locus of impact of many kinds of IT occurs in various segments of a firm's value chain rather than directly on the bottom line [9]. Managers need to understand how these intermediate benefits translate into increased profits, reduced costs and increased market share.

Figure 1 illustrates our conceptual model for CAIT deployment evaluation. The CAIT model illustrates the two categories of features, value platform and location strategy, representing the classes of decisions that must be made by CAIT deployment managers. Within each category, the likely impact of each feature is indicated on the transaction production process at each CAIT site and on the resulting measures of success.

Figure 1.



3.2 Insights for Home Banking

We next illustrate the usefulness of our CAIT deployment evaluation perspective in the context of the home banking service deployment example that was introduced in Section 1.

For managers considering the deployment of home banking services, the value platform features from the CAIT model indicate features that can be offered to the consumer. These include the range of financial services to be offered, the technical platform used, the user-friendliness of the software, and the price to the consumer. Location strategy first involves identifying the target

customer base and the existence of competitors in alternative deployment environments. From this analysis, managers can gain insight as to whether a sufficient customer base exists and which environments are most promising for deployment.

In the case of Yamaichi securities, the target customer base, upper middle class Japanese families, was identified first. At the time, none of Yamaichi's competitors offered similar home financial services. Yamaichi specifically designed its value platform to reach the customers it targeted. The technical platform used a computer game system that was already present in Japanese homes, and thus was familiar to many potential users. The financial trading system also was made available to customers at a very low price -- in essence, a subsidy -- to encourage adoption. Users did not have to own or rent expensive hardware. Nor did they need to gain a substantial amount of computer literacy before they could begin to use the system to effect trades.

Chemical Bank's value platform for Pronto was designed with less careful attention to the targeted customer base. Although Chemical's managers believed that home banking would have to be accepted by "the masses" to provide the transaction levels needed to make the system a success, Pronto relied on a technical delivery platform that utilized only special types of terminals. Furthermore Pronto software required a substantial degree of computer literacy on the part of consumers. Although Pronto's rollout was similarly aimed at upper middle class consumers, Pronto's value platform resulted in a severely limited base of users, even among promising market segments of the well-educated upper middle class. It is interesting to note that Chemical Bank then responded to this failure by developing a home banking system with a telephone-based technical delivery platform. Bank of America, in turn, developed a system that can be used with a TV set. Steven Yotter, a vice president at the bank, commented, "Once you start specifying hardware, you're in trouble."[10, p.56].

In terms of the location strategy variable of competition, Chemical Bank failed to consider the existence and growing acceptance of ATMs, a CAIT technology which provides many of the same features, giving consumers no compelling reason to switch to home banking [11].

4. Contributions

By applying the concepts of the CAIT deployment evaluation model in home banking, managers can gain important ex-ante insight into the "What do I offer?" and "Where do I place it?" issues involved in deploying such technology. The model brings the insights of a well-established theory base to bear on CAIT deployment and enumerates key features and their likely impacts on measures of success.

The model also suggests where managers can capture metrics that will help them to determine whether the conditions for success are present or can be created. These sources of information to support such measurement may lie outside the firm's boundaries. For example, Chemical Bank would have benefitted from surveys indicating the percent of their targeted customer base that owned or was willing to buy or lease the necessary hardware and that was computer literate. Furthermore, marketing surveys should have determined whether users with access to ATMs would desire home banking as well. Such evaluations might have led the firm to redesign the value platform to improve Pronto's likelihood of success, or to abandon the project earlier.

The CAIT model also provides a basis for measuring the "competitive efficiency" of CAIT deployment sites in terms of environmental inputs, and in the absence of clearly defined functional relationships between physical or capital inputs and business value outputs. For example because environmental features are considered fixed, managers may wish to study which CAIT sites are most efficient at producing transactions, given the constraints of their competitive environments, and which value platform features enhance this efficiency. We implemented this competitive efficiency measurement perspective on related research in retail electronic banking [12].

The model permits managers to gain insight into why CAIT deployments succeed or fail and to predict the future performance of CAIT sites in new environments or when environmental features change.

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