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Planning for IS applications: a practical, information theoretical method and case study in mobile financial services

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Abstract

We use information theory to justify use of a method to help managers better understand what new IT applications and features will be most valued by users and why and then apply this method in a case study involving the development of financial service applications for mobile devices. We review five methods for data gathering, analysis, modeling, and decision-making and compare them with information processing methods for IS planning. Then we develop an IS planning method, an extended version of 'critical success chains' (CSC), that supports five of six of the identified information processing needs. We use this method in a project to develop ideas for mobile financial services applications at Digia, a Finland-based R&D firm. We select a group of experts and potential early adopting users. In structured individual interviews, we ask why participants prefer particular specific features the participant would expect to be part of an application. We record this data as linked chains connecting features with consequential performance and with the perceived value of such performance. The data is analyzed across participants to create network models of features, performance, and values. We conduct an ideation workshop with Digia engineers and executives to generate ideas for new systems based on the CSC models. Workshop participants created back-of-the-envelope level ideas for three new applications and business models to show graphically the flow of information, value, and revenue among parties involved in producing and using the applications. We conclude by comparing the extended CSC and other IS planning methods in terms of information theory and the information processing needs for IS planning.
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1. Introduction

Firms planning financial services applications for use with next-generation wireless devices, face a familiar high-tech problem, ''How do you know what features customers will want and use from a technology that has not been available before now?'' Many innovations work fine in the lab and even in the factory only to fall flat with customers, as managers and

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engineers develop applications without knowing what customers want or are willing to pay for.

1.1. The problem of innovative applications

In the past innovations required many years, from when they were first technically feasible, before users widely adopted them. For example, in the US, 10% penetration among households required, from early demonstrations, more than 40 years for television, nearly 30 years for the Internet, and 20 years for mobile telephones [31]. Of course, not all, or even most, innovations are eventually successful. Many innovative applications were never successfully adopted. For example, in the 1960s observers thought that, by the beginning of the 21st century, most retailing would be done by machine. Now that the millennium has come, vending machines remain relegated to niche products and situations.

1.2. The case of mobile commerce

Observers are concerned about whether mobile commerce applications can be rolled out successfully, that is, whether firms will be able to develop and roll out applications that customers value sufficiently so that they are willing to pay more for them than they cost to produce and deliver. Senior executives are concerned that they do not have a clue about what m-commerce applications customers might be willing pay for [33]. So far, marketing research suggests, the 'killer application' that will make m-commerce successful has not yet been identified [24]. In Japan, for example, where 3G services were test marketed in 2001, customers, many of whom were gadget enthusiasts, seemed to be blasé about the services, suggesting that they would only be interested if it were much cheaper. Said one, "... there is nothing new on the service that I really feel I must have [2]." Other research has reported that customers are primarily focusing on paying less for current services [15], rather than looking eagerly forward to new applications.

Recently, this lagging interest has affected the hitherto very successful i-MODE service in Japan, where NTT DoCoMo's failed, according to test marketing [2] to interest potential customers because its third generation FOMA network service provided neither exciting new applications nor cheaper prices [12].

All of this points to the need for new methods that can identify valuable applications for which customers are willing to pay more than their cost and that can help model the ideas in such a way that they can be well understood by managers and developers.

The remainder of this paper contains six sections. In the next section we review research from the IS planning literature about the development of information about user requirements for new IS and then we explore how information theory could be applied to this issue. We apply information theory to IS planning and relate this theory to six information processing needs for IS planning that we identify. In the following section we review five representative participative IS planning methods and their objectives and discuss the efficacy of these methods in supporting the six information processing needs. Next we describe a new planning method, critical success chains (CSC) that could be applied to determining user needs, we characterize CSC in terms of its support for elements of information theory, and we use it to apply information theory to IS planning. Next we relate the story of a case in which CSC was used to understand customer needs for applications in mobile financial services. Then we compare CSC with other participative IS planning methods in terms of information theory. Finally we relate conclusory remarks that summarize CSC's contribution to the development of information for IS planning, comment on CSC's support for the characteristics of information theory, and comment on implications for managers.

2. How to determine what innovative applications customer will value?

2.1. IS planning literature

Research in IS planning has recognized this issue. Researchers, e.g., Segars and Grover [37], have identified information systems planning (ISP) characteristics that lead to its success, including widespread participation among employees across the firm, to incorporate the ideas of many, and a focus on projects that have the most potential to be important for the firm.

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