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Using a market-utility-based approach to designing public services: A case illustration from United States Forest Service

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Abstract

Government and public services have to not only enforce the requirements of the regulatory policies, but also have to satisfy the needs of preferences of their clients and customers. In this paper, we summarize the results of a multi-year case study conducted to assess the choices of campground users at the Shawnee National Forest (Illinois), which is managed by United States Forest Service. The results show how users' tradeoff between location, capacity-related and pricing attributes when choosing a campground. The case study provides guidance for design and development of new services and more effective management of effective resources within the national forest.

Keywords: Public services; Government; Campground; Field-based empirical research; Customer choice modeling

1. Introduction

Government agencies and public organizations (e.g. postal services, forest service, national parks service and internal revenue service) in a more complex environment than commercial firms because they are responsible for imposing/enforcing regulatory measures. In addition, government agencies exist to fulfill specific mission(s) within the domain of public laws (or equivalent) and therefore ''profit-maximizing'' or ''cost minimization'' is often not the main objective for their existence. While the governance and financial performance of government agencies are widely discussed in news magazines, their unique operational characteristics and constraints rarely get the attention they deserve (e.g. Keating and Frumkin, 2001). At the same time, because of shrinking funding levels, deregulation and competition from for-profit companies and not-for-profit organizations, many government agencies experience increased pressure to maximize the limited resources available to them in successfully fulfilling their specified mission. Managers in government agencies are increasingly asked to present strong ''business cases'' for additional and continuing funding requests. Therefore, it is crucial for government agencies to critically evaluate the needs and preferences of their ''customers'' and accordingly focus/align their operational resources.

The purpose of this paper therefore is to illustrate the usefulness of market-utility-based approach for effectively designing government and public services. Recent studies have demonstrated that market-utility-based framework, especially discrete choice analysis (DCA), is very effective in understanding customer needs and

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preferences when exploring new service designs (e.g. Easton and Pullman, 2001; Verma et al., 2001; Goodale et al., 2003; Iqbal et al., 2003). For example, based on discrete choice data collected at a large international airport, Pullman et al. (2001) developed a framework matching the needs of multiple market segments with service offerings. Easton and Pullman (2001) developed a mathematical modeling formulation of the sellers' utility problem within the context of new service design using discrete choice data. Verma et al. (2001) presented a non-linear optimization model linking customer preferences obtained from discrete choice analysis, production cost and operating difficulty. Using discrete choice data collected from over 2000 customers across the United States, Iqbal et al. (2003) tested the impact of usage familiarity on various features of transaction-based e-services.

While market-utility-based approaches have been applied to various service design problems such as examples cited earlier, we rarely see published examples of their use in government and not-for-profit services. The case illustration presented in this paper is based on a study of user preferences for campgrounds at a large United States based National Forest (Shawnee National Forest, Illinois) using field-based rigorous qualitative and DCA-based empirical data collected from 249 customers and several forest service staff members.

Specifically, the case study presented in this paper demonstrates how the visitors to a national forest trade-off price, location and operational characteristics when choosing a campground. While some of the unique geological characteristics of a region cannot be altered much by humankind, the price (nightly fee, day-use fees and discounts during extended stays) and operational features (e.g. capacity, reservation options, occupancy) can have significant impact on how visitors choose a campground. National Forest visitor preferences for location-related characteristics (e.g. proximity to natural water body, rugged hills, green valley, etc.) or outdoor activities (e.g. hunting, horse riding, physical/water-based recreation) can also provide guidelines for selecting sites for development of campgrounds.

Because of shrinking funding levels and because of increased emphasis on operational efficiencies, government and public agencies such as US Forest Service have to prioritize the use of resources allocated to them. We believe that use of rigorous market-utility-based approach, such as the example presented in this paper, can assist in aligning the operations strategy of government and public organizations with the needs and preferences of the users of their services. While the case illustration presented is specific to US Forest Service, we believe that similar approach can be easily implemented by other government and public organizations.

The rest of the paper is organized as follows: first, we briefly describe the background information related to the context of the case study—Shawnee National Forest; second, we describe the research methodology; third, we discuss the results and provide managerial recommendations; fourth, we conclude and provide directions for future research.

2. Background information

According to the United States Forest Service Web site (http://www.fs.fed.us/r9/forests/shawnee/), the origin of the Shawnee National Forest is closely linked to the economic calamity of the Great Depression. The southern Illinois economy was on the skids well before the stock market crash of 1929. Decades of timber exploitation, subsistence farming and wildfires resulted in massive erosion, declining soil fertility and a downward spiral in crop production. Non-agricultural jobs were centered in the timber and mining industries, both of which experienced significant market downturns throughout the 1920s. Upstate newspapers, principally the Chicago Tribune, began campaigning for the establishment of a national forest in Illinois. By 1931, the Illinois Department of Conservation and the Illinois Natural History Survey had pushed consent language through the State Legislature. This provided broad authority to the United States to establish, consolidate and extend national forests within the state without any limitation of acreage or approval by local or state agencies.

Fig. 1 shows the location/map of Shawnee National Forest within the state of Illinois, USA. In contrast to the gently rolling farm lands of the north, the more than 270,000 acres of the Shawnee National Forest is located in southern Illinois between Ozark and Shawnee Hills between Mississippi and Ohio rivers. Popular geological attractions within the national forest include Garden of the Gods, Stone Face, Little Grand Canyon and their hiking trails. Within the national forest 10% of the area is designated as ''wilderness''. The primary purpose of wilderness management is to preserve natural ecosystems and its character for future generations and to provide wilderness-experience in a natural appealing environment to visitors. All of the seven designated wilderness areas within the Shawnee National Forest are open to visitors; however, the use of motorized vehicle or mechanical equipments.