An Investigation of Factors Affecting Marketing Information Systems' Use

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Using an exploratory case study approach, this article examines factors that contribute to effective use of marketing information systems. Research results indicate that system integration, flexibility, and ease of learning are important measures of system quality that affect the use of marketing information systems and user satisfaction. Availability of customer information and use of appropriate formats for presenting information significantly impact user satisfaction. For marketing information systems to be effective, they should meet the information processing requirements of the organization and be aligned with broader organizational systems and strategies.

INTRODUCTION

The rapidly changing business environment and increasing availability of information have brought new challenges as well as unique marketing opportunities that did not exist even a few years ago. As Mullins, Walker, and Boyd (2011, p.283) state, "Marketing is rapidly becoming a game where information, rather than raw marketing muscle, wins the race for competitive advantage." As a result, Marketing Information Systems (MkIS) have become a vital element for effective marketing. These tools are designed to support marketing processes including marketing research and analysis, planning, budgeting, and controlling (Saaksjarvi & Talvinen, 1993).

Many organizations are investing in sophisticated marketing information systems, but the effectiveness of these systems within organizational contexts is a major managerial concern. In fact, some studies show that marketing information systems often fail to improve organizational performance and to address users' expectations. Take for example, global expenditure on Customer Relationship Management (CRM) systems, which exceeded $8 billion in 2008 and was expected to be approximately $13 billion in 2012 (Gartner, 2011). Research shows that "one in every three CRM deployments fails and fewer than 50 percent of CRM projects fully meet expectation" (Frow, Payne, Wilkinson, & Young, 2011, p.79). Thus, it is important to identify the factors that contribute to effective use of marketing information systems. This paper investigates some of these factors using an exploratory case study approach. It is organized as follows: First, the theoretical background and research model for the study are presented. This is followed by a discussion of the research method. Then the empirical findings are outlined and discussed. Finally, the study's conclusions are presented.

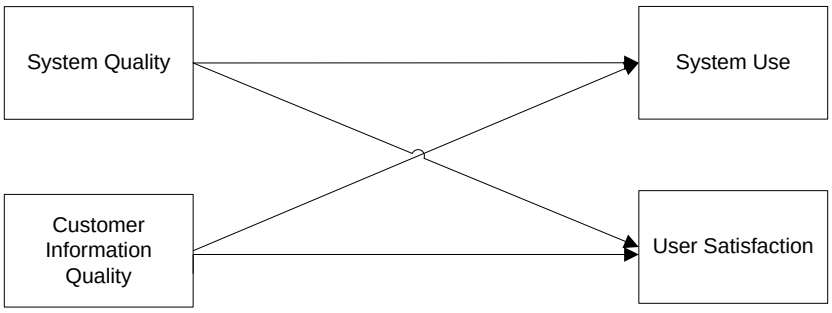
THEORETICAL BACKGROUND

To facilitate marketing decision making and information processing, more and more organizations are deploying marketing information systems (MkIS). In an early definition, Cox and Good (1967) described MkIS as a set of procedures and methods for planning, analyzing, and presenting the information required for marketing decisions. Kotler (1991) offered a model of MkIS that includes four major subsystems: an internal record system, a marketing intelligence system, a marketing research system, and a marketing decision support system.

In order for an MkIS to provide the expected results, it needs to be used effectively. Users must be able to use the system and should anticipate that the system is capable of producing the results they are aiming for. Despite the importance of this, there are few studies that investigate the factors that affect the use of marketing information systems (Gounaris, Panigyrakis, & Chatzipanagiotou, 2007). Within the Information Systems (IS) literature, the most widely cited model for the evaluation of information systems is DeLone and McLean's (1992) IS success model. Briefly, in this model, two main factors, system quality and information quality, influence system usage and user satisfaction, which in turn lead to individual and organizational impacts. System quality refers to the "desirable characteristics of an information system," (Petter, DeLone, & McLean, 2008, p.238) such as system flexibility and ease of learning. Information quality refers to the "desirable characteristics of the system outputs," (Petter, DeLone, & McLean, 2008, p.239) namely, the quality of information that the system produces in the form of reports, analyses, and web pages, for example. System use can have different meanings. It can refer to the amount of use, frequency of use, and extent of use, as well as the nature and purpose of use. User satisfaction measures users' positive attitudes toward system capabilities and outcomes. System impacts reflect "the extent to which IS are contributing to the success of individuals, groups and organizations" (DeLone & McLean, 2003; Petter, DeLone, & McLean, 2008, p.239).

The focus of our study is the use of marketing information systems. We are interested in exploring the factors that limit the use of these systems and lead to user dissatisfaction. Given the exploratory nature of our study, we used the IS success model as a general framework to guide our MkIS interview questions. We examined how system quality and information quality explain some of the challenges that lead to limited use of MkIS systems and user dissatisfaction. Figure 1 represents the general framework of study.

FIGURE 1
RESEARCH FRAMEWORK



RESEARCH METHOD

To explore how marketing information systems are used in their organizational settings, we used a qualitative case approach. Multiple organizations were studied to have a more robust design. Semi-structured interviews were conducted with managers, users of marketing information systems, and system developers in three Canadian organizations in different industries. These organizations vary in size, level

of system development, and competitiveness. A variety of systems were considered in this study. The systems range from internal record systems (e.g., databases) and transactional systems (e.g., point of sales systems) to more analytical and decision support systems (e.g., data mining applications) as well as marketing communication systems (e.g., a "voice of customers" portal). A list of key systems examined is presented in Table 1. Although we examined only three organizations in detail, the diversity of their systems and organizational settings allowed us to thoroughly investigate the factors that affect systems' usage.

TABLE 1
MARKETING INFORMATION SYSTEMS

Example Systems
Customer service and support (e.g., call centers)
Sales force automation (e.g., Point of Sales (POS) systems)
Marketing automation (e.g., e-mail campaigns)
Database management systems
Data analysis systems (e.g., data mining, spreadsheets)
Marketing communication systems (e.g., internal portals, social media)

The three organizations are kept anonymous and are referred to as the Electronic organization, the Health organization, and the Education organization. The Electronic organization is a large nationwide seller of digital and electronic appliances. The company uses advanced marketing information systems that facilitate marketing communications and customer information analysis. The Health organization is a nationwide organization that offers individually designed dietary plans and one-on-one nutrition and health consulting as well as nutrition and health supplement products. The company has strong communication systems (e.g., a call center and customer portal); however, it uses a simple software tool—Excel—for much of its customer information analysis. The third organization studied is a university department. This business school uses a CRM system for managing relationships with its customers (i.e., potential, current, and past students, and potential recruiting organizations). The CRM system offers sophisticated data mining capabilities; however, as in the case of the Health organization, employees prefer Excel for information analysis and marketing decision making. In addition, the school has several portals that facilitate information sharing internally (across departments) and externally (between the school and its clients).

Twelve in-depth interviews were conducted with managers and employees who represented marketing, customer interaction centers, regional sales offices, and IT in the three organizations. The interviews were recorded, transcribed, and coded using the NVivo program. The results of the study are discussed in the next section.

RESULTS AND DISCUSSION

The qualitative results of the study are presented below, using the proposed research framework to guide our discussion (see Figure 1). As argued by DeLone and McLean (1992, 2003), the quality of systems, and the quality of information produced by systems, are the main factors that affect their use and the level of user satisfaction. However, in order to effectively use information systems to facilitate business processes, certain contextual organizational factors are required. For example, the case studies

revealed that a high quality and sophisticated marketing information system might not produce satisfactory results unless it is properly integrated with business and organizational processes. These organizational requirements are discussed separately.

System Quality

Various measures of system quality are described in the literature (e.g., DeLone & McLean, 1992, 2003). These measures explain why some marketing information systems are not used to their full potential and why some users are dissatisfied with systems. In our study, the interviewees highlighted measures of system integration, system flexibility, and ease of learning. These are expanded on below.

One important aspect for MkIS quality is system integration, which can be defined as "the realized possibility of getting separate components or parts of a system to work effectively together" (Talvinen, 1995, p.15). Integrated systems facilitate the flow of information through the organization and allow users and managers to get access to the right information in a timely manner. Integration can be considered as vertical (i.e., connected systems in which data can easily be transferred from operational systems into management decision-making systems) and horizontal (i.e., operational subsystems are integrated, and individuals can use and transfer data from one subsystem into another one without difficulty) (Sääksjärvi & Talvinen, 1993). Lack of integration among marketing information systems can negatively affect system use and user satisfaction. For instance, in the Health organization, MkIS lacks vertical integration. Consultants at regional offices gain rich customer information through direct interaction with customers. However, this information is not accessible by managers and therefore is not incorporated into marketing decision making. In the case of the Education organization, a lack of horizontal integration of subsystems across departments has led to unnecessary work and/or work overload on many occasions. Potential and current students can be regarded as customers who receive services from several departments at different stages of their interactions with the organization. However, lack of system integration causes potential dissatisfaction among customers and employees since in some cases, employees have to spend time manually gathering and combining all the information they need to serve customers or to perform analyses, leading to delays and potential inaccuracies.

System flexibility is another aspect that affects the use of MkIS. It is generally assumed that more flexible systems are preferred since they facilitate the flow of information and system customization. However, we observed that under certain conditions, a high level of flexibility in fact restricts system use. For instance, the customer database in the Education organization is highly flexible; it allows employees to easily create new custom-made fields based on individuals' preferences. As a result, paradoxically, employees cannot easily retrieve the information they need from other employees' databases and integrate it with their own databases. This restricts the flow of information and leads to dissatisfaction.

Ease of learning is another factor that reflects users' evaluation of system quality and that influences system use and satisfaction (Petter et al., 2008; Ravichandran & Rai, 2000). Some organizations neglect to provide the required training to enable users to work with somewhat sophisticated systems, although the need for training may seem obvious. Employees are therefore less willing to use the systems. Interviews at the Education organization revealed that the MkIS has powerful analytical capabilities; however, most employees do not have the required IT skills to deploy these capabilities. Employees are "scared" to use the system, and the hardcopy system manual has not helped them to overcome this fear. As a result, employees prefer to avoid the system, relying instead on Excel spreadsheets to do basic analyses and reporting.

Customer Information Quality

Our analysis showed that customer information quality is associated more strongly with user satisfaction than system use. Specifically, the availability of information (i.e., access to the right information in a timely manner) in a desirable format strongly influences users' satisfaction; if the information is not readily available or is not properly organized, it will take a long time for employees to pull out the information they need. This process is not only inefficient but tedious and time consuming, and is likely to lead to user dissatisfaction.

Organizational Requirements

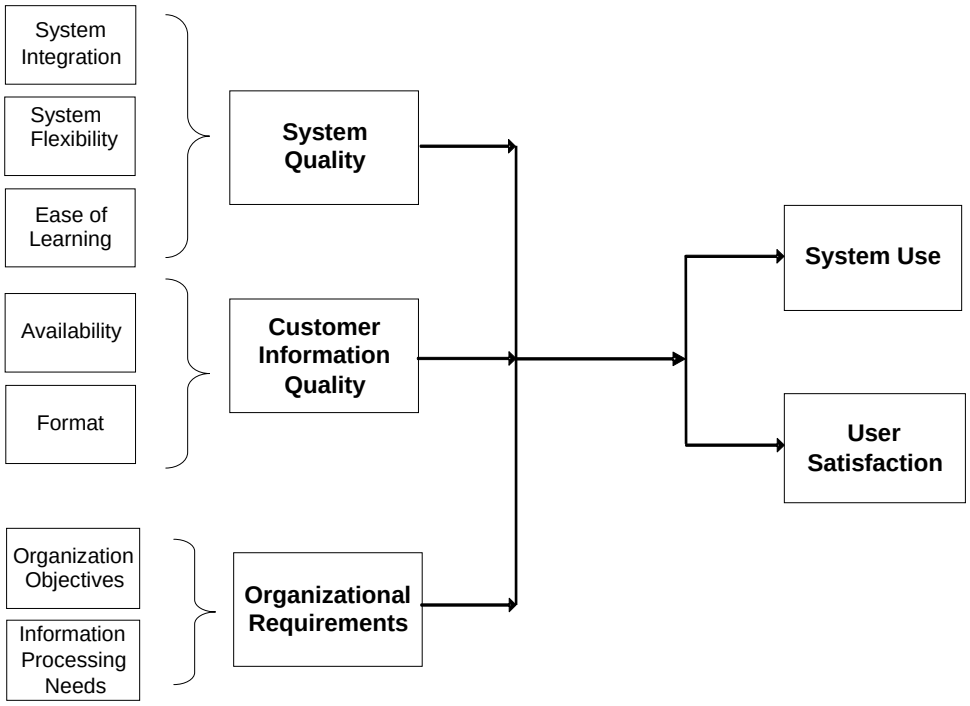
While many information systems studies ignore the role of organizational factors on the success of organizational systems (e.g., DeLone & McLean, 1992, 2003; Petter et al., 2008; Sedera & Gable, 2004), our research highlighted that the success of MkIS can be affected significantly by factors such as organizational objectives and information-processing requirements. In fact, it became clear that marketing information systems should be aligned with broader organizational systems and strategies to serve as effective tools to accomplish organizational objectives. For instance, in the case of the Educational organization, the use of a CRM system seems inappropriate; systems like these are mainly designed to serve the requirements of sales-oriented organizations, and many of their features appear unnecessary in an educational context. Let us take another example. The Health organization relies primarily on using Excel spreadsheets to analyze customer information. Excel applications might have sufficient capabilities to serve the analytical needs of one department or a small company; however, in the case of a nationwide customer-centric organization, with a growing base of customers, Excel does not seem sufficient to effectively analyze and manage high-volume customer information.

CONCLUSION

Through a series of case studies, marketing information systems were investigated. System integration, flexibility, and ease of learning were identified as particularly important measures of system quality that affect the use of systems and user satisfaction. In addition, the availability of customer information and use of appropriate formats for presenting information significantly impact user satisfaction. Finally, the case studies emphasized that for marketing information systems to be effective, they should meet the information-processing requirements of the organization and be aligned with broader organizational systems and strategies. Figure 2 presents the final framework that summarizes the findings of this study.

Organizations are interested in improving the performance of often costly marketing information systems. This study investigates factors that can negatively affect the use of these systems as well as users' satisfaction with them. Our analysis is based on three Canadian case studies. We recommend that other researchers triangulate our qualitative findings with the results of larger-scale quantitative studies. This will increase the generalizability of the findings and further the investigation of the use and usefulness of marketing information systems.

FIGURE 2
SUMMARY OF RESEARCH FINDINGS



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