INTRODUCTION

Calls centers are key organizational structures in a wide variety of industries, including the insurance industry (Callaghan & Thompson, 2001). Call centers were developed in part based on work done by Agner Erlang, the originator of traffic engineering and queuing theory (Angus, 2001). Erlang C is a mathematical formula that can be used to predict the most probable distribution of incoming calls based on historical data. By using the incoming call distribution, the appropriate number of phone lines and staff can be determined based on the trade-offs between costs and service quality (Townsend, 2007).

However, there is disagreement on the role and purpose of call centers, and there are two views of the cost vs. service trade-off. One view is that call centers are used by organizations as a way to reduce costs with customer service delivery a secondary consideration. The other view is that call centers can increase profits by maximizing customer service (Robinson & Morley, 2006; Li, Tan, & Xie, 2003). From either perspective a key concern of companies is “stickiness” or lock-in. Customers are more likely to leave or switch to another company.
if they have a bad experience or receive low service quality, and this can be true more-so in comparison with several other types of business interactions (Keiningham, Aksoy, Andreassen, Cooil, & Wahren, 2006). From either perspective, the effectiveness and service level provided by a call center is vital to the competitiveness of an organization (Lam & Lau, 2004).

The metric used for service levels in this study is a commonly used metric by call centers (Koole, 2003), used in industries and call centers well beyond the insurance call center in this study. Prior work shows it is related to customers’ satisfaction with their call center experiences (Cronin, Brady, & Hult, 2000); in this study we examine the degree to which other variables impact service levels to help decision-makers more fully understand the metric they use, and to help them reallocate resources to maximize their service levels.

Determining which factors most significantly service levels is not straightforward, and approaches such as considering the number of calls answered does not necessarily equate to service. Traditionally call center service levels are based on capacity optimization for a given volume of calls. Our analysis shows that call volume is not related to service levels, implying that capacity is sufficient enough not have an impact on service levels. However, since neither capacity nor call volume explains service levels, managers are left wondering which variables do have effects.

Companies collect large amounts of data from their daily operations to help manage call centers. Computer-based decision support models have the advantage of sharpening information-processing skills (Curry & Moutinho, 1994), and the importance of implementing business intelligence tools to analyze and use this data is increasingly realized by many organizations. This paper demonstrates how business intelligence (BI) can be used to identify and analyze different factors affecting call center service levels in the insurance industry, which can lead to improved customer service while at the same time possibly maintaining or reducing costs.

BACKGROUND

Business Intelligence

Before the Information Age, businesses had no method to automate the collection, analysis, and interpretation of business data. Reports to summarize corporate metrics could take several months to generate. These reports allowed for informed long-term strategic decision-making, but little support was available for short-term tactical decision-making, prompting managers to rely on intuition for important daily decisions.

Business intelligence allows organizations to improve business performance by including the following technologies: Extract, Transform and Load (ETL); data warehousing and data marts; query, reporting and analysis; and XML web services (Bitpipe, 2008). Business intelligence supports three distinct types of users. The first are executives; executives need BI for strategic information showing the health of an organization, and for this purpose use BI tools such balanced scorecards, dashboards, and Key Performance Indicators (KPI). The second group of users are analytical users. Those users commonly employ on-line analytics processing (OLAP) tools with ad-hoc reporting capabilities for managing and planning. The third group are operational users, who use BI for frequently occurring short-term decisions. Operational users need BI output that is easy to use, such as flexible reports in formats like HTML, Excel or PDF (Information Builders, 2007).

Companies have much more data than they can analyze in a reasonable time frame. While precise numbers are difficult to determine, one industry study found that many businesses access only 20% of their data and deliver it to only 10% of the people that need it to do their jobs (Kenney, 2007). Part of the challenge is knowing what data is important to capture (Green, 2007). US corporations such as Google and Capital One Financial have begun to manage their employees and companies using data analysis (Thurm, 2007). But some report that 70% of enterprise content is recreated rather than reused (Kenney, 2007). This results in
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