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SIMULATION BASED DECISION SUPPORT FOR CONTACT CENTERS

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ABSTRACT

Call centers are now experiencing a period of rapid evolution, as new communication technologies have become available, customer expectations have increased, and the strategic importance of customer experience has been recognized. While traditional single-channel call centers proved complex to analyze (the challenges and successes of modelling call centers have been widely published), the modern multi-channel connection centers with concurrent conversations and new technologies bring greater levels of complexity to managerial decision making. This paper presents the output of a current research project exploring simulation based contact center analysis, and suggests how advancing beyond traditional Erlang-C based calculators benefits organizations that need to understand and quantify the impact of change in their customer support business.

1 INTRODUCTION

There has been a massive shift in the way that people communicate on a daily basis. We now live in an always on economy and are contactable 24/7. This has led to a new normal wherein we expect information when we want it, how we want it and where we want it. Consumers have more information, knowledge, choice and higher expectations than ever before, resulting in a hugely competitive marketplace for every brand. In these environments, an efficient and effective customer support service can be a valuable differentiator, which is now recognized as a value center within organizations around the world.

The traditional view of customer support as a cost center resulted in metric driven and consequently highly monitored and analyzed environments. These business functions generate mass amounts of data which contribute to many different areas of analytics, e.g. customer analytics and performance analytics. Each of these analytical streams creates a set of key performance indicators to be managed, which in turn creates a demand for management to make decisions in these areas, while under significant time pressure.

The term "Connection Center" has emerged, recognizing the effect that the focus on customer experience and the introduction of new customer interaction technology, has had on customer support functions. Connection center managers are faced with challenging operational and strategic decisions (Abdullateef et al., 2014) as they grapple with the varied behaviors and requirements of the new channels. Unfortunately, most of the analytical tools used in contact centers are still based on Erlang calculations (described below) and very much call oriented.

2 ERLANG-C AND SIMULATION

Since the formation of call centers, Erlang-C calculators have been widely used by managers to model their own particular situations and predict performance. Erlang-C is typically used to identify the number

of agents required to answer calls in a specified time to achieve a specified service level (Mathew and Nambiar, 2013). As a technique, it has been recognized as being compact, easy to use, and easy to code in software or embed into spreadsheets. Although improvements to the original formula have been made over the years to overcome some significant weaknesses (e.g. ignoring call abandonment), at the core of the Erlang-C calculators is a multi-server queuing system (M/M/N) based on a number of fundamental assumptions which are questionable in the context of a call center environment (Robbins et al., 2010).

Discrete event simulation models address the limitations of traditional techniques such as Erlang-C by factoring in the more complex behaviors inherent in contact centers. These include overloaded and unstable queuing systems, changing arrival patterns, customer patience profiles, non-phone related tasks, multi-skilled agents, call priorities, and complex scheduling rules. Simulation is also used to conduct what-if analysis to manage and improve contact center operations and plan. "Simulation is one of the most powerful tools available to decision makers responsible for the design and operation of complex processes and systems" (May and Siebers, 2015).

3 CENTRICITY

Through an academic and industrial partnership, the presented research has resulted in a decision support tool, named Centricity, that combines modelling expertise and three decades of experience in delivering solutions to the contact center market. Centricity leverages the data rich nature of contact centers and harnesses the modelling power of discrete event simulation to develop actionable insights about current and proposed operations. Cognizant of the time pressures that contact center managers and analysts are under, significant importance has been placed on the usability of this new decision support tool. To support the ability to conduct rapid modelling of proposed ideas as they arise, the Centricity user interface allows for estimated values to be quickly and simply entered. For example, the arrival pattern of customer requests over a day can be entered on interactive charts using 'drag and drop' techniques or using touchscreen on supported devices (as a web based solution, Centricity can be readily used on tablets and smartphones). If the results from a rough cut model look promising or warrant further exploration, the user can move to the second phase where more granular data from the call center is uploaded to populate and run more accurate simulations. Finally, when the user has modelled a change scenario that they wish to implement, they can share the models, and illustrate the business benefit to the relevant stakeholders, within the Centricity platform. In this manner, the research aims to support more informed, accurate decision making based on tested scenarios without the associated risk and expense.

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