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Full Length Article

Modelling and evaluating customer loyalty using neural networks: Evidence from startup insurance companies

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Abstract

The purpose of this study is to investigate the customer–service provider relationship in the insurance industry using artificial neural networks and linear regression. Using a sample of 389 customers from 10 different startup insurance companies, it was found that artificial neural networks are an efficient way to evaluate the factors affecting customer loyalty. The results indicated that customer satisfaction and perceived value are significant predictors of customer loyalty. Additionally, it was found that trust, perceived quality, and empathy have a significant impact on both customer satisfaction and perceived value. The results also showed that customer commitment to service provider is positively associated with customer satisfaction and loyalty. After comparing the performance of linear regression models with artificial neural networks, it was found that the use of neural networks is a better approach for analyzing the customer loyalty, satisfaction, and perceived value. The use of new techniques such as artificial neural networks for analyzing the customer behavior can be particularly beneficial for startup companies who aspire to gain competitive advantage over their strong and well-established rivals.

Keywords: Startups; Customer loyalty; Relationship marketing; Artificial neural networks; Insurance companies

1. Introduction

In the past decade, startups have been in the spotlight in all countries; particularly in developing economies where they are considered as an important economic growth factor and a source of sustainable employment. Some experts believe that startups and emerging market economies can recover from the worldwide economic crises more rapidly compared to large companies and advanced market economies (Kose, Otrok, & Prasad, 2012). Therefore, startups can be considered as new engines of worldwide economic growth (Wälti, 2009). Previous studies showed that between one-fourth to approximately one-third of the variation in economic growth and development in many industrialized countries is due to the creation of new independent businesses (Carter, Gartner, Shaver, & Gatewood, 2003; Davidsson, Lindmark, & Olofsson, 1994; Reynolds, 1994; Reynolds & Maki, 1990; Reynolds, Hay, Bygrave, Camp, & Autio, 2000). According to U.S. Small Business Administration (SBA) (2014) about 50% of all new businesses survive five years or more and roughly one-third of them

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survive ten years or more. In addition to this, the level of competition among firms has moved from the local markets to the global markets (Nyaoga, Wang, & Magutu, 2015). In other words the business environment is experiencing excessive competition as customers have become more aware of the competing products and services and regularly search for new options. Therefore, it is easy to claim that no organization except monopolists can survive in this competitive business environment without having loyal customers (Afsar, 2010; Riasi, 2015). Therefore, customer loyalty is considered as the key to business success. Experts believe that customer loyalty is rapidly becoming the marketplace currency of the twenty-first century which indicates that the value of the firms can be determined by the degree of their customers' loyalty (Singh & Sirdeshmukh, 2000). Studies showed that increasing customer loyalty can affect the profitability of the firms and can lead to reduced marketing and customer acquisition costs (Gee, Coates, & Nicholson, 2008). The study of Reichheld (1992) indicated that depending on the particular industry, after a 5% reduction in customer migration it might be possible to increase the profitability by up to 60%. Therefore, it is easy to see that the retention of loyal customers can positively affect the long-term prosperity of the companies (Kuusik, 2007). For startups in financial services industry, customer loyalty is a more complicated issue and it is becoming significantly important. Insurance companies are an example of financial services firms which compete in a complicated and competitive business environment and should use their limited resources in order to increase their customers' loyalty. The high costs of new customer acquisition have made the initial stages of customer–provider relationship less profitable for the firms. Therefore, the relationship between firms and their new customers is only profitable in later stages after the customers become loyal and the firms become more cost efficient (Riasi & Pourmiri, 2015; Wang, Lo, & Hui, 2003).

According to Menelec and Jones (2015), small professional service businesses lack the business/marketing language which is necessary to articulate their approaches and values to their customers. Historically, the firms competing in Iranian insurance industry have not been very successful in constructing long-term relationships with their customers. As small private insurance companies (i.e., non-government owned and non-government sponsored insurance companies) entered this industry, competitiveness among firms significantly increased. As private insurance companies emerged in Iran, the customers' expectations from their service providers increased. Therefore in order to be successful in customer acquisition and customer retention, the Iranian insurance firms have to identify the factors affecting customer loyalty (Bahramzadeh & Shokati Moghareb, 2009) and should adjust their marketing strategies according to these factors. One purpose of this study is to identify the factors that affect the customer–service provider relationship in the insurance industry.

Traditional statistical analysis techniques for assessing the service quality, customer loyalty, and profitability include multiple regression with interactions, principal component regression (PCR), structural equation modeling (SEM), and partial least squares (PLS) (Lee, Rey, Mentele, & Garver, 2005). Recent developments in artificial intelligence and the use of innovative techniques for modelling the decision making process have led to the introduction of artificial neural networks. Artificial neural networks are a group of models used in machine learning which are inspired by biological neural networks and can be used to estimate or approximate various functions including those that depend on a large number of inputs and/or are generally unknown (Mirghafoori, Taheri, & Zareh Ahmadabadi, 2010). The significance of using artificial neural networks is underlined by the fact that about eighty percent of the Fortune 500 companies have heavily invested in neural networks in order to improve the quality of their data analyses (Johnston, 1991). The goal of this study is to use artificial neural networks to model the customer loyalty in startup insurance companies and it intends to answer the following questions: How artificial neural networks can model the process used by startup insurance companies to make their customers loyal? In what dimensions, can artificial neural networks be beneficial for the process of making customers loyal? What are the dimensions of the mechanism used by private insurance firms in order to make customers loyal? How different factors affect customer loyalty in the insurance industry?

2. Conceptual framework

2.1. Nascent organizations

Organizations and firms became important parts of the global economy after the industrial revolution. Nascent organizations or startups are a relatively new concept in the business environment. Startups are young firms which have been created in order to pursue a technological innovation or to target market demand for a specific product or service which have not been offered before or have not been adequately supplied by well-established companies in the industry. Startups attempt to use these opportunities to enter the market and sell their products or services.