Revisiting the Altman Z'' score for Software as a Service (SaaS) companies

Siddhi Kabra

Student

Symbiosis International University

Abstract

The Altman's Z" -score is a technique widely used in the prediction of corporate bankruptcy. However, In today's climate of rapid innovation and cloud business models, traditional Altman Z''' score does not give insight into a SaaS company's success. SaaS companies fundamentally differ in their accounting methodologies. For a SaaS or subscription business, revenue recognition can be complex, mainly because of the service-oriented nature of the product. The study argues that the Altman Z'''-score does not provide accurate material information (i.e.- predicting forthcoming bankruptcy) that can be used by investors for their SaaS based investments.

Keywords : Software as a Service, Corporate Bankruptcy

Introduction

Software as a Service (SaaS) is a software delivery model, which provides customers access to business functionality remotely (usually over the internet) as a service. Revenues globally for the SaaS industry was forecasted to grow from 2008 to 2013 by 19.4% overall, which is more than triple the total market compound annual growth rate of 5.2% (Mertz et al. 2009, Pettey 2006). Thus, it becomes increasingly important to identify metrics that help investors invest in a SaaS company. SaaS companies use a recurring subscription model for their software services. However, fast growth of such companies is accompanied with large upfront costs in marketing expenses (Yizhe Ge, Shan He, Jingyue Xiong & D. E. Brown, 2017). According to Sun W., Zhang, 2007 "The customer does not specially purchase a software license. The cost of the infrastructure, the right to use the software, and all hosting, maintenance and support services are all bundled into a single monthly or per-use charging"

Revenue recognition is the most important of accounting segment for any business. The Financial Accounting Standards Board (FASB) defines the purpose of revenue recognition as "to report useful information to users of financial statements about the nature, amount, timing, and uncertainty of revenue from contracts with customers." According to Shiri & Raftar, 2012 "Bankruptcy prediction research using different models has increased significantly [..]" The Altman Z''' score allows one to use the data presented through revenue recognition and predict corporate bankruptcy (Altman, 1968; Altman & Spivack, 1983; Palenu & Healy, 2008). However, SaaS companies fundamentally differ in this aspect.

The Altman's z-score is a technique used in the prediction of corporate bankruptcy (Alkhatib &Bzour, 2011; Altman, 1968; Altman & Spivack, 1983; Bhunia & Sarkar, 2011; Burksaitiene & Mazintiene, 2011). In today's

climate of innovation with cloud business models, traditional Altman Z''' score does not give insight into a SaaS company"s success.

Objective of the study

The objective of this study is to highlight the inability of the Altman Z'' score to predict corporate bankruptcy for SaaS companies.

Literature review

Industry research in the SaaS domain is commonly presented as web content, published by a practitioner or practitioner organization. While recent and active, it is rarely peer-reviewed. Any insights into the SaaS industry is typically written from a practitioner perspective, with a focus on tactical case studies (Sukow & Grant, 2013). The Z-Score exists in three forms. The original version developed was for predicting bankruptcy potential in publicly held manufacturing businesses. According to Hauschild, 2013 "The Z-Score formulation by Edward Altman in 1968 successfully predicted bankruptcy with 90% accuracy within one year of filing and 80% accuracy two years in advance. Dr. Altman then created two new forms of the bankruptcy prediction formula. These were identified as Z" (Z prime) and Z" (Z double prime) although they are also referred to as Z (A) and Z (B). Z" was developed for privately-held industrial companies and Z" developed for non- manufacturing and service companies" (Hauschild, 2013).

The current score to predict the bankruptcy for SaaS companies (in developed and emerging markets) is:

$$Z''' = 3.25 + (6.56 \times A) + (3.26 \times B) + (6.72 \times C) + (1.05 \times D) \text{ where}$$

Where, A = Current Assets – Current Liabilities / Total Assets   B = Retained Earnings / Total Assets
C = Earnings before interest and taxes / Total Assets   D = Book Value of Equity / Total Liabilities

Traditional financial data is used as variables in the Altman Z score. (Altman, 1968; Altman & Spivack, 1983; Palenu & Healy, 2008).These variables include sales, asset turnover, leverage, short-term leverage, and profitability analysis (Altman, 1968; Altman & Spivack, 1983; Bhunia & Sarkar, 2011; Burksaitiene & Mazintiene, 2011).

SaaS companies fundamentally differ in their accounting methodologies. Revenue recognition can be complex for a SaaS company because of its service-oriented nature. While the customers may pay a lump sum upfront for a year"s worth of usage, the business do not categorize the entire amount of cash as revenue right away. For example – If a SaaS company books a customer on a annual plan of $10,000, then the company recognizes $833.33 each month, or $27.40 each day.

Deferred subscription fees which are generally carried over in the balance sheet for the purpose of revenue recognition make up an integral part of the liabilities of a SaaS company. Smale (2016) further elaborates that "a large amount of intrinsic corporate value lies within intangible or qualitative measures of the firm. Examples of this include stability of the earning power, owner-specific business relationships, business traffic attributable to search engines and their algorithms, level of competition within the business niche, and type of customers

targeted by the company."

Applying the traditional Altman Z''' score for some of the most successful SaaS based companies does not indicate any forthcoming bankruptcy. Mark Verbeck, former CEO of Coupa (a Business Spend Management platform) illustrates using the data for successful SaaS companies as calculated for the year prior to each of their IPOs based on their public filings on sec.gov:

salesforce.com	22 + (6.26) + (1.66) + 0.15 + 3.25	(4.30)
NetSuite	(4.39) + (12.84) + (3.12) + (0.53) + 3.25	(17.63)
Marketo	2.35 + (3.39) + (2.90) + 1.29 + 3.25	0.60
Workday	(0.27) + (6.37) + (3.74) + (0.19) + 3.25	(7.32)

According to Dr. Altman "A Z''' score of greater than 2.6 means that the entity being measured is safe from bankruptcy. A score of less than 1.1 means that a business is at considerable risk of going into bankruptcy, while scores in between should be considered a red flag for possible problems." The above scores indicate the non-sustainability of successful SaaS companies. Thus, the Altman Z''' score is not indicative of the sustainability of SaaS based companies.

Thus, the usage of Altman Z'''' score for predicting the bankruptcy of SaaS companies is not justified. The revisited Altman Z''' score does not take into account aspects that make a SaaS company fundamentally from other companies.

Discussion (Variable selection)

In the traditional definition, enterprise software is software an organization buys and installs on its servers. SaaS software is software that is "rented" and is hosted "in the cloud" and accessed via the internet. According to Haeger, Douglas & Nisby, 2013 "For a company with a subscription based business model two key customer metrics are commonly used to measure the company"s performance. These metrics are Churn and Customer Acquisition Cost (CAC) and they are related to the company"s customer base (i.e - the group of customers or consumers that abusiness serves)" and sales. At the early stage when software is still in beta, it may be riddled with bugs and certainly far from user-friendly. The ones who choose to use the software in its rudimentary version tend to be tech optimists.

According to The theory of diffusion (Rogers, 2006), this group comprises of innovators and early adopters. The software is continually proven due to the feedback provided by the members of this group. Thus, innovators and early adopters do not prefer using the software for long periods of time. As a result, a high churn rate is expected during the minimum viable product stage of software.

The churn rate increasing rapidly should be coupled with a rising customer acquisition cost. The selection of these measurements (typical of any SaaS start up) (Desjardins, 2017 & Gorski, 2016) thus, conveys a great deal of information. According to Sukow & Grant "subscriber's behavior changes over the life cycle of the subscription, using a continuous churn rate over the life the subscription will result in inaccurate subscription analysis.

Discussion

As such, some important variables we may focus on while investing a SaaS company can be:

Customer Churn Rate – Churn rate refers to the loss of subscribers (or clients). Acording to J York, 2010 - "Churn impedes the growth of a SaaS-based business. It also determines the maximum number of users a business can support in a steady stat" In general, churn is the number or percentage of subscribers that discontinue their subscription to a SaaS service.

Logically, for a company to expand its clients base, the number of new customers must exceed number of lost customers. In an article at SaaS Capital, Todd Gardner and team calculate that a 1% difference in churn can have a 12% impact on valuation in five years. This can happen as people leaving decrease the potential value of a recurring revenue stream.

Customer Acquisition Cost- According to SaaS Metrics, "Customer Acquisition Cost refers to the resources that a business must allocate (financial or otherwise) in order to acquire an additional customer. It includes every effort required to introduce an organisation"s products and services to its prospective customers, and then convince them to buy and become active customers. Some common sales & marketing expenses are: paid advertisement, sales and marketing staff salaries, CRM and marketing automation software licenses, events, sponsorships, gifts to customers, content production, social media and web site maintenance. CAC plays a major role in calculating the value of the customer to the company and the resulting return on investment (ROI) of acquisition."

How much of a company"s resources can be spent profitably on a customer is a question that customer valuation helps companies decide. In general terms, it helps to decide the worth of the customer to the company.

Customer Lifetime Value: According to Chargebee, CLTV (Customer LifeTime Value) refers to the amount of revenues that the company expects to generate from a customer during the period over which their service will be of value.

According to Cohen & Neubert "Every additional user or every additional activity a user performs (e.g. increase of required storage or download volume), immediately result in higher sales revenues" (Cohen & Neubert, 2018). Companies spend more in acquiring customers than the amount they spend on retaining current customers in the SaaS industry. This translated into a problem of customer retention. Often, SaaS companies spend most

of their resources on growth through new customers while failing to keep the existing customers happy. Thus, In any SaaS business model the goal has to be to minimize CAC while maximizing LTV.

Net New Monthly Recurring Revenue (MRR) - Recurring revenue from the existing customer is what makes SaaS fundamentally different from other enterprises. It is noted as the "Lifeblood of SaaS based companies."

According to Klipfolio, "Net monthly recurring revenue refers to the monthly value of newly acquired accounts to an organisation''s sales system and monthly added value to current accounts, minus the value lost from closed or reduced accounts." The sustainability & success of a business depends on how consistently it brings in revenue every month. The SaaS is based on a subscription model, thus revenues and profits trickle in slowly. Thus, MRR can act as a baseline to measure success of a SaaS company.

Because SaaS companies have to invest upfront in marketing expenses to acquire customers, and only get payments from those customers over a delayed period of time, they face a cash flow problem initially. The upfront costs in setting up the infrastructure are easier to maintain as there is a continuous flow of predictable revenue indicated through MRR.

The significance of this study lies in identifying the unviability of the Altman Z''' score to indicate the sustainability of SaaS companies. Further, this study highlights the unique factors that distinguish a SaaS based company from a non-SaaS company.Further scope of study lies in developing a score specifically for SaaS companies with the factors highlighted

It is important to note a few problems with developing a score specifically for SaaS based companies. Subscription-based business models are driven by four factors: (1) average revenue per user (ARPU), (2) cost per acquisition, (3) cost of service, and (4) churn. Consequently, the majority of companies identified in the study discuss a subscription-based business model provide data for at least one of these customer metrics (Bonacchi, Massimiliano, Kolev & Lev, 2011). However, there is a lack of uniformity in the reported metrics potentially due to competitive pressures or voluntary nature of disclosure.

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