2 Literature Review

2.1 Offshore Software Services

Offshore software development can be defined as the “purchase of services abroad with the supplier and buyer remaining in their respective locations.” This paper follows this definition to identify the software offshore service providing companies in the IT service sector in Sri Lanka and studies relationship of factors affecting the business value of such companies [1].

2.2 Global Trends for Offshore Software Services

Outsourcing continues to be the main source of growth in software services, and has become a mainstream business practice for companies of all sizes. According to Gartner, Inc., in 2004, outsourcing will account for 53% of the total worldwide software services market, and will make up 56% of the market by 2007 [2]. Joe Forehand , Accenture CEO notes “Global outsourcing is a $550 billion industry, yet the top five players don't command a 20% market share," [3]. Colombo, Sri Lanka identified as a seventh attractive emerging offshore outsource destination in a study of “Top 50 emerging outsourcing cities”, jointly carried out by Cyber Medias Global Services magazine and investment advisory firm Tholons [4]. Global Services Location Index for 2007 compiled by global consulting giant A.T. Kearney’s, lists Sri Lanka among the top 50 outsourcing destinations. Sri Lanka is ranked the index at rank 29 among the 50 countries considered in this research [5].

2.3 Necessity of Business Valuation of Software Companies

The number of M&A transactions in the software sector was 29% higher in 2006 than in the previous years in US software industry. The aggregate deal value is at about $34 billion. Focus has been to acquire of smaller, less expensive companies [6]. If Local industry players were introduced to these companies in US there is a high possibility that these US companies will be interested in dealing some sort of strategic partnership with the local software industry players.

Software companies in US in year 2004 is particularly active on the merger front, trend is expected to continue. Software industry averages 250 transactions per quarter with half of those worth under US$ 13 million [7]. It is expected this trend will be transferred to South East Asia in the next decade since there is a high growth in the software industry in this region.

2.4 Existing Practices in Business Valuation of Software Companies

There are nine methods commonly used to value software companies. Two methods are focused on the company's assets, five methods are focused on similar or comparable companies and last two methods are focused on earnings or cash flow generated by the company [8]. Nine valuation methods are as follows,

• Asset Focused Value Methods
o Replacement Value
o Liquidation Value

• Market Focused Value Methods
o Internal Transaction Price
o Public Company Revenue Multiple
o Private Similar Company Earnings Multiple
o Public Company Earnings Multiple
o Private Similar Company Revenue Multiple

• Earning Focused Value Methods
o DCF – Discounted Cash Flows
o Free Cash Flow

There are few alternative practices other than what were mentioned that have been used to value software business ventures. These alternatives are discussed in the research done

by charted financial analyst in his research of “Valuing Software Company” [9][10]. These methods are as follows.

1. Sales Multiple
2. Price Earnings Ratio
3. Internal Rate of Return Method
4. Book Value Method

2.5 Limitations of Existing Practices

There were many limitations in these methods in terms of measuring intangibles of a software company. Sri Lankan based software companies are having a problem of providing documents or finding out the relevant data required for such methods.

2.5.1 Asset Focused Valuation Methods

- Replacement Value

Replacement value method is not applicable to measure the value of technology asset. The large portion of the software company value belongs to intangibles. Especially Sri Lankan based companies do not properly capitalize their Software development cost due to lack of experience and technical knowledge. Further, this method did not consider the loss of value due to time to market delays.

- Liquidation Value

Liquidation value method is used only when the company is going to liquidate. Therefore this method can be practically used only in one particular incident in a company’s life cycle. Again values are easier to obtain for tangible assets and not for intangibles and technology assets. Software companies have very little in the way of hard assets, and the most valuable assets are intangibles.

2.5.2 Market Focused Value Methods

- Internal Transaction Price

To calculate the business value through internal transaction price method it is required to quote in the stock exchange and issue shares to the public at least once and the transaction price is known to the investor. Therefore, this method is not practical for software companies registered in the company registration act in Sri Lanka.

- Public Company Revenue Multiple

Public company revenue multiple methods are not practical to value Sri Lankan software companies since we do not have quoted public limited software companies in Sri Lanka. Further parameters such as company size, profit margins, growth rates, market penetrations, user base and distribution channels need to be comparable with the valuing company. Therefore it is impossible to find a comparable similar public quoted company. E-channeling is one of the unique business ventures in Sri Lanka and could not be compared with any other software development business venture.

- Private Similar Company Revenue Multiple

Private similar company revenue multiple methods is not practical in valuing software business ventures in Sri Lanka since there are any frequent mergers and acquisitions happening in the Sri Lankan software industry. Even if it does happen transaction values are not disclosed to the public. For this method to be practiced it is essential to know the transaction price of a similar size private software company which has undergone a merger or acquisition.

- Public company earnings multiple

Public company earnings multiple method is not practical due to the same reason of non existence of similar size public quoted company to calculate the earning multiple. Earning multiple method of a similar size public quoted company has been used to measure the value of the company. Further in this method it is required to use a fundamental subjective discount value as per the discretion of the assessor to reflect the differences between the public and private company. Therefore this method is highly subjective.

- Private similar company earnings multiple

Private similar company earnings multiple method is not practical in valuing software business ventures in Sri Lanka since mergers and acquisitions do not frequently happen in Sri Lankan software industry. Further, the transaction values and earnings of those private companies are not disclosed to the public. For this method to be practiced it is essential to get to know the transaction price and earnings of a similar size private software company which has undergone a merger or acquisition.

2.5.3 Earning Focused Valuation Methods

- Free cash flow

Free cash flow method is complex and is based on several broad assumptions such as buyer not willing to take any debts of the company and assumed that the investor is willing to receive repayment of investment within 3 to 8 years depending on the risk perception of the company. Therefore this method is very sensitive for the assumptions used by the buyer or seller. More importantly this method has been practiced in acquisition and mergers. Therefore its applicability in considering business value when forming business alliances and partnerships is less.

- Discounted cash flow

Discounted cash flow is the best method that accurately measures the value of business if the projected revenue, expenditure and discounted factor represent the true potential for growth and perceived risk of the company. Very high complexity, too many parameters and subjectivity of projected growth are major concerns for accuracy of this model. If the company has not prepared projected growth figures then it is very difficult to use this model. Further most of the companies have not identified or captured the intangibles of the company in their balance sheets. Intangibles and the knowledge assets are key factors that govern the growth potential of a company.

2.5.4 Limitation of other Alternative Practices

1. Sales Multiple

This is a quick and easy way to estimate the value of a software company by applying a multiple to the annual revenue. Since the sales of software company is highly volatile applicability of this method is questionable. Further historical sales figures do not reflect the true picture of the future and potential for growth. Forecasted revenue for the next fiscal year will result more accurate results than historical revenue numbers.

2. Price Earnings Ratio

This method of valuation has been applied to companies in all industries, and it is the most often used method of valuation for public companies. Therefore it is not practical to apply this method in the Sri Lankan context since other than e-channeling none of the software companies are listed in the stock exchange. Therefore identifying the P/E ratio of a similar size company is questionable.

3. Internal Rate of Return Method

Theoretically this is a good valuation method. The Problem with Sri Lankan software companies is that most of them are in operation for less than 3 years. Further it is very difficult to calculate up to five years of projected cash flow due to high volatility of the industry.

4. Book Value Method

It is generally not relevant in determining the true value of most software companies, since the value of the user base, recurring revenue stream, and cost to recreate the technology are largely ignored using this method. Also, book value for a software company may be influenced heavily by the company's policy with respect to capitalizing software development costs.

2.6 Importance of Intangibles in Business Valuation of Software companies.

The book value of a Software company given in its annual report is merely the value of its facilities, equipment, inventory and finances and does not reflect the true potential of the company with respect to future growth and intellectual wealth of its employees and processes adopted by the company.

Paul Krugman argues that in the past, businesses primarily invested in tangible means of production. The value of a company was at least somewhat related to the value of its physical capital. But now businesses increasingly invest in intangibles and these assets make "it extremely hard to figure out what that company is really worth". Krugman's observation reflects the phenomenal growth in the market values of some of knowledge driven Internet companies and software development companies in the 1990s. This is very applicable for offshore software development companies where they do not have any significant tangible physical assets though their revenues fall within millions of dollars [11].

IT organizations as KB organizations are difficult to value because of the greater importance of intangible assets, such as human capital, knowledge assets and innovation. Traditional valuation methods rely on earnings, dividends and assets, which for many software development firms are either non-existent or distorted by different accounting practices. Therefore these firms require new valuation methodologies [12].

Book value is less significant on deciding how investors value companies in the software Industry. Example considered in the book "Valuation of Intellectual Property and Intangible Assets", [13]. SAP's annual report for 2003 had an asset value of Euro 6.3 billion. Market price of a share (about Euro 100) and 315 million shares in circulation means that SAPs shareholders valued the company at Euro 31.5 billion. The difference of Euro 25.2 billion is due to the intangible assets owned by SAP and its shareholders. The market value of the SAP brand in 2004 was estimated at Euro 6.8 billion. The IC on the

knowledge of how to produce, improve and sell was amounting to the balancing figure of Euro 18.4 billion. U.S. and U.K software companies show similar ratios.

It is very interesting to find out what makes it possible for offshore software companies to earn a large revenue stream without investing on tangible assets. The secret is the human assets and the knowledge accumulated in the organizations that enable them to sell this knowledge at a price minimum to wealthy countries that require accessing this knowledge at a low cost basis.

The traditional valuation tools discussed in section 2.4, do not fully capture how intellectual capital contributes to firm value. Although the discounted cash flow (DCF) model represents a more sophisticated approach to valuation than one based on multiples, it does not adequately address the complexities of intellectual capital-based competitive strategies. For example quality of management and engineering team, Software engineering process knowledge gained over the past years takes an important stand of Business Value but hardly incorporated in the traditional DCF model [14].

2.7 Intellectual Capital

For business valuation purposes intellectual capital (IC) needs to be discussed from a financial valuation perspective. For this research, IC defined in accordance with Marr and Schiuma [15] as “the group of knowledge assets that are attributed to an organization and most significantly contribute to an improved competitive position of an organization by adding value to defined stakeholders”. IC is a broad concept that is often split into different categories – most commonly human, relational and structured capital.

This framework helps to identify intangibles in the overall value of firms, problems in identifying, measuring and valuing such intangibles, and inadequacies of traditional valuation tools. Further it can be used to describe how intangibles help to improve a firm’s competitive advantage and create potential for growth opportunities. Further, it’s providing justification for initial investments on intangible assets with the potential for growth opportunities [16].

2.7.1 Intellectual Capital Components

Knowledge Asset Map (KAM) developed by Marr and Schiuma [15] has been used to identify the IC components in an organization for this research. This framework provides a good guidance to identify and evaluate the organizational knowledge from both an external and internal point of view.

The KAM is based on an interpretation of a company's knowledge assets as the sum of two organizational resources: stakeholder resources and structural resources. This distinction reflects the two main components of an enterprise, first, its actors, who can be internal or external to the organization, and second, its constituent parts, i.e. the elements forming the basis of the organization's processes. Figure 1 illustrates the hierarchy of knowledge assets with its sub-classifications. Stakeholder resources are divided into stakeholder relationships and human resources. The former identifies all external stakeholders of a company while the latter represents internal ones. Structural resources are split into physical and virtual infrastructure, which refers to their tangible and intangible nature respectively. Intangibles consist of culture, routines and practices, and intellectual property.

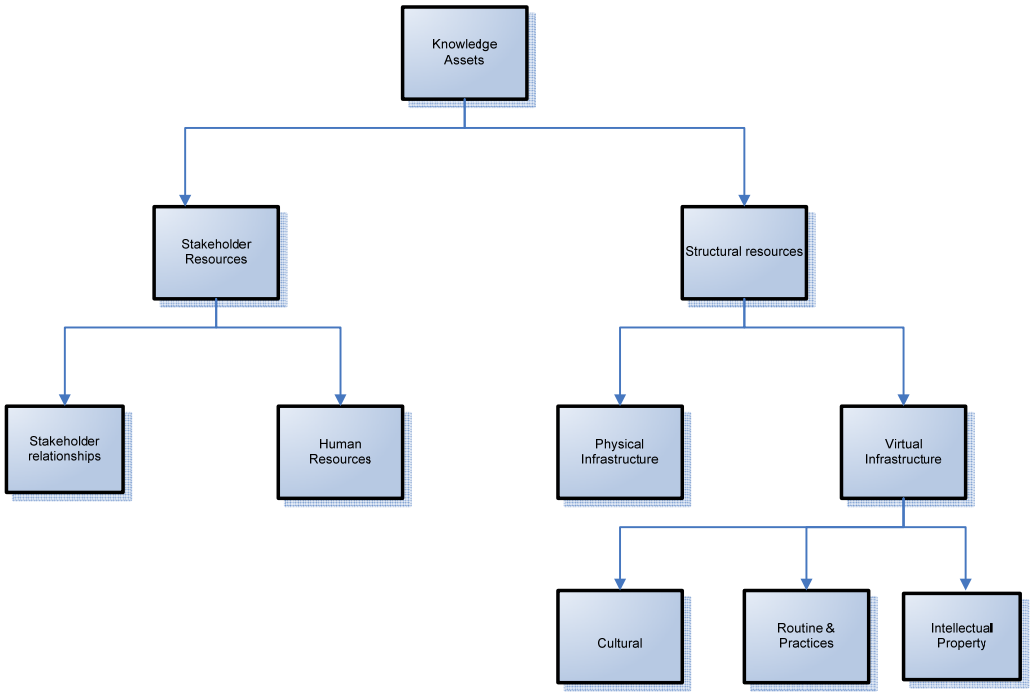

Figure 1: Knowledge Asset Map

For majority of the offshore software development companies located in developing countries stakeholder relationship is a critical factor. It is about creating and managing strategic partnerships with other global software solution providers in order to access market, technology and business domain expertise and more importantly retained satisfied valued customer base to strengthen the business continuation.

Human resources is the most important and dominant IC component for software development companies. It contains knowledge and skills provided by employees in the form of, e.g. competence, commitment, motivation and loyalty. Some of the key components are know-how, technical expertise, and problem solving capability, creativity, education, attitude and entrepreneurial spirit. Eric Brynjolfsson recently studied the interaction of information technology and human capital to reveal that the intangible benefits of workplace organization in conjunction with technology deployment may exceed productivity benefits from the technology itself [17].

The significance of physical infrastructure in terms of measuring the business value of local software companies is negligible. This is because most of time in the Sri Lankan context these companies do not maintain their own land and buildings. Most of the instances computers too are purchased under operating lease agreements.

Culture embraces corporate culture comprising the organization's values, the networking practices of employees as well as the set of mission goals. Culture is of fundamental importance for organizational effectiveness and efficiency. It shapes the organization members' behavioural responses to the threats and opportunities their organization faces. Culture also determines organizational flexibility and risk preferences, whether it aggressively pre-empts or defensively access to new technology, business domains or to exploit new markets. The culture helps offshore software development companies to effectively communicate and satisfy demanding requirements of customers who are working in a different time zone. Soft skills such as communication and presentation skills are very important in dealing with onshore client requirements. Mr. Raomal Perera chairman of Valista said that this skill is poor in Sri Lankan engineers and culturally we

always tend to take back seat [18]. The quality of the Culture that conducive for continuous learning and innovation will help knowledge workers of the software development companies to strive towards engineering excellence. Further management, company culture encouraging all engineers adhere to software development processes and best practices adopted by companies are very critical factors.

Practices commitment and routines include software engineering best practices, unique software development process to catering demands of offshore clients and level of process maturity. Some key components are process manuals providing codified procedures and rules, tacit rules of behaviour as well as management style. Practices and routines while simplifying work flow and communications can also make a software development companies to reduce time to deliver market and improve the quality of the deliverables. Many of the medium scale IT companies and ICTA have found that this is a major area that needs to be improved in the Sri Lankan IT industry. The chairman of SEA Mr. Mano Sekaram stated that SEA is targeted to certify 50% of the Sri Lankan companies with either ISO 9000 or CMMI process maturity standards [19], [20].

Intellectual property (IP) comprises assets such as patents and copyrights with property rights established under the law. Ownership of IP may be transferred. In contrast, other intangibles such as goodwill, R&D capabilities, organizational networks etc. may be too embedded within organizations to be tradable separately. This is another area that is less significant in the Sri Lankan context though in the global software industry this is the area companies possess highest portion of their IC. As in other local industries, local software companies too not invest on patent and copyrights. Further their investment in R&D is less significant comparing to their revenue and they are more dependant on the technologies developed by other global players. Further whatever R&D work carried out by these companies, are not capitalized in their balance sheets. Reasons are technical complexity of identifying R&D cost and complexity of accounting standards and ignorance by the management team.

2.7.2 Measuring the value of intellectual Capital

Previous research carried out in the fields of financial valuation and IC found that the real option model is used for the assessment of intellectual capital in firms. Real option models extend to the valuation of firm's growth opportunities. According to real option model, intellectual resources embody opportunities that contributing to both their evolution over time and their realization in future. This approach provides a richer framework to analyze the relationship between IC and corporate value. Different types of IC impact on risk taking, timing of investment projects and the value of speculative investments. Intangible assets can provide an explanation for the high market valuation found for IT companies than the values represented in the balance sheet. Costly investments in software, training can be regarded as creating intangible assets. These intangible assets do not appear in firm's conventional balance sheets but they can produce both higher market valuations and excess returns [21], [22].

2.7.3 Intellectual Capital and Business Value of a Software Company

Today's knowledge intensive companies' value is not based on their real assets but on the contrary on their intangible assets like knowledge, networks and the brand. In the nineties, it was argued that revenues and earnings were neither sufficient nor relevant ways of putting value to emerging e-businesses or 'dotcoms'. Still the basic dilemma remains. Venture Capitalists are looking to become a shareholder as cheaply as possible; the entrepreneur is trying to retain as much ownership as possible. This would not be an issue if there were a transparent, objective way of estimating the value of the venture. Unfortunately, there are many unknown factors affecting the business value of a software company [23].

Valuation of software is not easy for a product development company. The latest contribution for this work is the software growth model. It is revealed though the maintaining of software is costly it is worthwhile. Investment in maintenance provides continuing stimulation of the inherent Intellectual Property [24].

Previous studies investigates the adequacy of existing intangible asset models and defines and codifies common principal valuation drivers of intangible assets for use in enterprise balanced scorecard valuation practices of IT firms. Firms that use a standard and consistent taxonomy of intangible assets could increase its ability to identify and account for more intangible assets for measurement and valuation [25]. To measure the role of intangibles in creating value in IT firms, need to develop a rigorous, comprehensive model for the value creation for progressive companies, enabling users to measure the impact of key intangible assets on a company's market value [26]. Research have been carried out to identify issues pertaining to the strategic management focus on financial perspectives of value and risk in the intellectual capital [27].

2.8 Research on Business Value of Software Companies

David Dunn-Rankin developed a model from an analysis of available public company data. It was found that as a rule of thumb Software companies are generally worth somewhere between 1 and 2 times of annual revenue. He has considered profitability, revenue growth, size of market share and novelty of technology use. It was found that the company is probably worth far less than 1 times annual revenue if these factors are unfavorable. At the other extreme, if these factors are favorable to the company, then it may be worth much more than 2 times annual revenue. Most of the software companies are likely to fall within the 1 to 2-times annual revenue as a rule of thumb. The multiple of revenue valuation was related to net profit margins and revenue growth rate of the software companies as shown in the following equation [9].

[(net profit margin / 5%) + (growth rate / 10%)] ÷ 2 = multiple of revenue valuation

Multiple of revenue valuation x Annual revenue = Value of company

Valuation of technological assets is having great ambiguity in the business though there is serious research work that has been done. In-depth analysis of the whole appraisal process is lacking. The article [28], [29] presents the complexity of the appraisal process in valuation of technological assets. The results show that the valuation process is not simple, but quite multifaceted and that it is not systematic either in literature or in corporate practice.