INTRODUCTION

Tom Friedman in his book ‘The World is Flat’ gives an example of Bangalore (Bengaluru) city whose roads are full of potholes and after a scary ride Tom finally reaches the Infosys (one of the largest IT companies in India) campus on the outskirts of the city and is amazed at the infrastructure inside which was comparable to anything available in the developed world. He called this as an example of the world being flat.

The point which Tom wishes to bring out is that companies, especially IT companies can grow and prosper inspite of the bad civic surroundings. This study focuses on the Eastern part of India viz Kolkata and Bhubaneswar where inspite of not having a world class infrastructure we find them ranked as the fastest growing cities for IT.

Importance of IT industry to India

India has emerged over the last 20 years as the most preferred destination for outsourcing of Information Technology (IT) services (Bhatt and Illiyian, 2009). The vibrant IT is contributing immensely by providing information about latest technology and international business practices. Various sectors of the Indian economy, such as industry, finance, insurance, communications and transport, have adopted IT in a big way. Trade in IT and IT-enabled services have been the main driver of growth in services in recent years.

Starting out with basic data entry tasks, the industry has rapidly acquired a reputation as the primary low-cost destination for voice-based customer contact/support services, finance and accounting, and arrange of back-office processing activities. The past few years have seen the scope of these activities
expanding to include increasing more complex processes involving rule-based
decision making and research/analytics services requiring informed individual
judgment and domain/vertical knowledge.

Indian companies adopt all the modes for supply of IT services abroad. The larger
companies have set up wholly-owned subsidiaries in USA, UK and the European
continent or have opened branches to facilitate the supply of services. Some of
them have adopted the strategy of acquiring local companies or entering into
strategic partnerships with them. They use the quality processes, innovative
techniques and delivery models of acquired companies to penetrate the local
market. They have permanent employees or hire consultants based in the host
country.

The AC Nielsen report, 2009 has ranked India has been ranked as one of the least
attractive countries to do business in but on the other hand remains one of the most
attractive destinations for outsourcing, especially of IT development. The IT and
ITES industry in India in value terms, according to estimates by NASSCOM, has
reached US$ 64 billion in 2007-08. This indicates an almost ten fold increase from
US$ 4.8 billion in 1997. As a result, the share of IT sector (defined by NASSCOM
as comprising of IT hardware, software and services) in GDP increased from 1.2%
in 1997-98 to 5.4% in 2006-07. By way of comparison, (Chandrasekhar et all,
2006) finds that IT revenues in 2004-05 were about 20% higher than construction
sector and almost three times higher than mining and electricity, gas and water
supply. What is more, gross revenue from IT services exceeded 12% of GDP
generated in India’s service sector that accounts for 54% of GDP. These figures do
not take into account the estimates for telecommunication (both equipment and
services), mass communication output like radio, television and other electronic
products that are an integral part of the IT sector. Thus these all combined together will contribute much higher to the GDP.

According to NASSCOM (National Association of Software and Service Companies) surveys, the software industry employed 284,000 people in 1999-00 as compared to 160,000 professionals in 1996 and reached a level of 1.63 million in 2006-07 recording an annual compound growth rate of more than 35%. The observed performance of the software and service sector in employment generation appears highly impressive when considered against the fact that employment generation by the organized manufacturing sector has been on the decline during the last decade (Nagaraj, 2004) and according to the NSS statistics during 1999-00 to 2004-05 growth in employment in the rural and urban areas has been only of the order of 1.97% to 3.22% respectively (Chandrasekhar et al, 2006).

However, there are certain areas of concern which need to be given the desired policy attention and weightage. Some of these are: sustainability of high growth rate of software exports in future; shortage of skilled labor; low diffusion of information technology in the domestic market; lagging hardware sector; regional concentration; excessive dependence on USA. The caveat here is that this industry is extremely vulnerable to the business environment, both local and global which makes this industry extremely volatile. The industry is also characterized by rapid technological change and under constant pressure from the customers to provide innovative business solutions to help them achieve competitive advantage taking IT as an enabler. This was evident from the fact that Indian IT industry has gone from the boom phase 1995-2001 to the dotcom bust 2001-2003. This was again followed by a high growth period from 2003 lasting up to 2008, followed by a dip in 2008-2009 periods. During this period it has been observed that during the
dotcom bust as well as the recent 2008-2009 when most of IT companies suffered heavy losses, there were a few selected companies that not only protected their market share but also expanded capacities.

Economy of Eastern India

The last few years has seen West Bengal fare poorly on the industrial development front (Bhattacharyya, 2004) which has resulted in the status of West Bengal dipping very low. Since 2001-02 West Bengal has joined the bandwagon of 'poor States' — Uttaranchal, Uttar Pradesh, Bihar, Jharkhand, Chhatisgarh, Madhya Pradesh, Orissa, Assam and Tripura. The BIMARU States, which included Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh, now stands modified to BIMABU — with West Bengal replacing Rajasthan. Out of 19 major states in India, on most major economic indicators like Agriculture (10th), Infrastructure (15th), Education (14th), Health (12th), Investment (17th), Consumer market (12th), Prosperity & Budget (14th), Law & Order (16th) West Bengal paints a dismal picture. The same can be said to be true for most of Eastern India including the Northeastern states. Also the recent incidents in Singur involving the house of Tata’s and the steel project in Orissa involving POSCO, South Korea prove that it difficult for production units to come to this region because of major problems including militant labor and political rivalry. This means that for the region to prosper we need to come up with a solution whereby these above mentioned problems can be eliminated or at least their effect can be minimized. One of the solutions can be investing in the IT sector where the problems of militant labor, political interference are low.

Knowledge, Knowledge management and its impact on IT companies
Knowledge Management which is a comparatively new field of study has already in these few years impacted most industries worldwide. The diffusion of KM practices in India has been slow but even then KM has impacted in a positive way in whichever industry has accepted KM. This study will focus on the impact of knowledge management on medium sized IT companies in Eastern India. The importance of IT industry on the economy of Eastern India cannot be overemphasized and hence it is imperative that for the IT industry in Eastern India to grow and flourish KM has to be the differentiator between success and failure. The IT industry in India as is the case worldwide faces the challenges of intense competition, fickle customers, and increased globalization. Hence for survival and growth IT industry has to develop strategies to remain competitive. The main competitive advantage a company has today is knowledge. ‘Knowledge has become the key economic resource and the dominant – and perhaps even the only source of competitive advantage’ Drucker (1993). This has led to an enhanced emphasis on establishing a clearer understanding and developing a better frameworks for accessing knowledge management (KM) effectiveness thereby determining its impact on bottom line business results (Lim and Ahmed, 2000). KM is an evolving discipline. Despite a growing body of literature on KM, there are critical gaps in existing knowledge about the discipline that have significant implications for research and practice in KM (Alavi and Leidner, 2001). One such research gap is how to measure the effectiveness of KM efforts (Stankosky and Baldanza, 2001; Ahn and Chang, 2002; Bassi and Van Buren, 1999; Kankanhalli and Tan, 2004).

Research in the knowledge management practices in a leading IT company viz Infosys brings out this point of knowledge being the key driver in success. As per the knowledge officer of Infosys, Bhubaneswar Mr.Biswajit Panda, Infosys lays
great emphasis on the KM repository. This repository consists of Business, Technical, Project management and Consulting domains.

**Purpose of this study**

The purpose of this study is to find out if there exists a relationship between knowledge management and business success in medium-sized IT companies in Eastern India.

**A study of 15 medium scale (sometimes referred as mid-sized) IT companies**

The Indian IT industry is very sensitive to global economic changes, especially the US market. A study done on 15 mid-sized IT companies in 2002 gave a few lessons. From supply-side constraints to demand-side bottlenecks, it has been a dramatic transformation for the mid-sized players in the Indian IT services industry. The slowdown in the US economy has had entirely different implications for these mid-sized players. Most have had to re-engineer to deal with the challenge. Lower demand, heightened risk awareness and increased competition — through lower billing rates, size becoming a critical factor, lower manpower utilization — have together raised questions over the future prospects of these companies. A look at the estimated export performance of the mid-sized companies *vis-à-vis* the frontline companies for the year ending March 2002 indicates the predicament of the players. According to McKinsey estimates, the exports growth rate of mid-sized and smaller players is likely to be negative. This compares unfavorably with the 30 per cent plus growth rate expected to be registered by frontline companies such as Infosys, Satyam and Wipro. The global slowdown forced customers to focus on costs and return on investment from the IT projects. In a multi-vendor environment, this brought about the trend of reverse auction where the vendors quoted prices and the customer chose from them.
Anxious about declining capacity utilization, companies aggressively bid and forced the billing rates down. Offshore billing rates for the industry as a whole may have dropped by around 50 per cent to the range between $15 and $18 an hour. Onsite billing rates were also under immense pressure although the fall may not have been as high. The offshoring of services, which was expected to grow significantly, also disappointed. In fact, in the case of quite a few companies, the proportion of onsite revenues increased in this period. Those that were successful in raising the proportion of offshore revenues, such as Polaris Software and Mascot Systems, had to contend with lower billing rates. As such, enhanced offshore revenues did not translate into higher margins and profits. For example, in the case of Mascot Systems, operating margins continued to be around the 14 per cent level, much lower than what was commanded by other major companies such as Polaris Software, Digital Globalsoft, Mastek and Mphasis BFL. In the case of Polaris Software, margins stayed at around the 26 per cent level despite the increase in the component of offshore revenues. In addition, despite bidding aggressively at lower billing rates, capacity utilization in most firms stagnated or declined. This was notwithstanding a decline in the employee base of companies. In the case of 15 mid-sized companies, only Digital Globalsoft increased its employee base. Others such as Polaris Software, Mascot Systems, Mphasis BFL, Aztec Software, Sonata Software had to reduce their strength to maintain capacity utilization levels, and cut costs. In addition, revenues of not only IT services companies but diversified and product companies faced pressure as the slowdown in both the US and India began to take effect. For example, VisualSoft, a product company, had to contend with de-growing sales. Companies such as Aptech, SSI, CMC and Tata Infotech, which are into more than one segment of the IT industry, did not benefit much from their diversified operations. In the case of Aptech and SSI, the recession in the training segment hit the industry hard. In the case of CMC and Tata Infotech,
stagnation in domestic services revenues effectively acted as growth constraints. Companies were forced to adopt a multi-pronged approach to deal with the crisis. Strategies that made sense when business was booming have had to be replaced with new, tailor-made ones. Some managed a breakthrough but many failed. The focus increasingly turned to the business models of companies and their durability. Most companies had to change their strategies fast just to survive. This was evident in the performance of a few industry players. Some, such as Information Technologies, saw their turnover for the quarter ended November 2001 decline by 94 per cent over the quarter ended November 2000. Importantly, the average decline for a sample of 15 companies was around 26 per cent for the same period. The contribution of increasing offshore revenues will have to be adjusted to arrive at a more accurate picture. Still, this indicates the pressure was on almost all companies. Strategies such as the de-risking model used by companies such as Infosys also became inapplicable in certain respects for these companies. This was because the diversification of offerings and services and reducing client concentration became a luxury these companies could ill-afford. In fact, Tier-II companies that succeeded during this challenging year were those that gave up this strategy. For example, Polaris Software and Mastek opted to focus on a couple of industries (verticals) rather than diversify across the spectrum. The level of client concentration also increased significantly for almost all companies and in particular those such as Aztec Software, Mascot Systems and Digital Globalsoft. The focus on technologies also narrowed. Legacy maintenance, earlier dubbed 'low value added', buffeted revenue flows during this period. The focus on survival has now forced these companies to become a niche, rather than a generic, player. Advocates of such a strategy for mid-sized players in the industry now abound. Most have had to abandon their ambitions of becoming the next big player in the industry. From the investment perspective, this is a major change in the business
profile of the industry's mid-sized players. Companies that had the support of a strong parent-customer-marketing front-end managed to beat the slowdown. For example, Digital Globalsoft, with ample support from Compaq that holds a 51 per cent stake, managed to record ever-increasing revenues each quarter. Revenues from Compaq increased at a much faster clip than that from non-Compaq sources. This helped the company maintain a healthy capacity utilisation and boost revenue growth. The fact that Digital Globalsoft's marketing efforts were dovetailed with that of Compaq, a total solutions provider, appeared to have had its impact. Another company that did well was Mastek. In its case, the focus on European operations appears to have been the strong factor. North America contributed to only 28 per cent of the revenues of Mastek, while in other companies this was above 50 per cent. There were other notable performers such as MphasiS BFL, Mascot Systems and Polaris Software. These companies benefited from their success in enhancing the proportion of offshore revenues to the total. However, in terms of profits, only Digital Globalsoft, Mastek and MphasiS BFL sizzled. Others such as Polaris Software and Mascot had had to contend with declining profits in the quarter ended December 2001. For Mastek and MphasiS, the sizzle was more due to a considerably poor performance in the earlier year. That leaves out only Digital Globalsoft. In its case, Compaq's contribution has to be factored in. These issues clearly highlight the challenges facing the mid-sized software segment. To succeed will be a demanding task and may be beyond a number of players. However, many caution that it is not all over yet. Still, the task is cut out for the mid-sized companies. But this study also emphasized that inspite of the slowdown affecting the mid-sized IT companies; it was possible for many to actually hold on to their profit margin while many others had to drastically reduce their profit margins. The study will focus on the differentiator for mid-sized IT companies
which is ‘knowledge’ and hence ‘knowledge management’ becomes extremely important for mid-sized IT companies.

Knowledge Management which is a comparatively new field of study has already in these few years impacted most industries worldwide. The diffusion of KM practices in India has been slow but even then KM has impacted in a positive way in whichever industry has accepted KM. This study will focus on the impact of knowledge management on medium sized IT companies in Eastern India. The importance of IT industry on the economy of Eastern India cannot be overemphasized and hence it is imperative that for the IT industry in Eastern India to grow and flourish KM will be the differentiator between success and failure.

Chapter Plan
The arrangement of the thesis is done in the following manner:
Chapter2 presents literature review whereby we look at articles from prominent management gurus and we will develop the working hypothesis from those articles and the pilot case study;
Chapter3 will present the research methodology which will be followed in this research study. The methodology followed will be a case based exploratory research which will use primary data followed by analysis of this data using confidence testing;
Chapter4 will present the results of this research and prove the same using pattern matching and triangulation for proving the hypothesis and also present the KM model developed from the results which can be replicated in all medium-sized IT companies in Eastern India;
Chapter 5 will summarize the entire research whereby we will start from the proposal stage to the final conclusions of this research;

Chapter 6 will present the bibliography of the authors whose work has been used in this research as well as those whose works have indirectly helped shape this research; and finally

Chapter 7 will contain the appendices viz the two questionnaires designed to elicit response from officers of the medium sized IT companies in Eastern India