Economic Meltdown and Challenges in Information Technology: A KMs Approach

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Abstract

Economic meltdown, which is a situation in which economic activities and its associated parameters shrink to unexpected level, has recently become the most widely studied theme. Different approaches have been adopted by various experts and researchers in proffering solutions to the challenges of economic meltdown. In this work, a knowledge management approach which comprises a range of practices used in an organization to identify, create, represent, distribute and enable adoption of insights and experiences is considered. This approach involves studying the challenges of information technology and its limitations from current economic perspectives. The findings showed that KM is the solution to the present economic meltdown as it affects IT Industries.

Keywords: Economic Meltdown, Information Technology, Knowledge Management, E-Commerce and Trust

Introduction

Information technology (IT) is the branch of engineering that deals with the use of computers and telecommunications to retrieve, store and transmit information. It encompasses the methods and techniques used in information handling and retrieval by automatic means (Folorunso, Ogunde, & Vincent, 2007). The means include computers, telecommunications, office systems or any combination of these elements. The purchase or sale of goods between two or more countries requires the connection and use of a complex set of service operation offered by IT. These services operation has been affected by the recent global economic meltdown.

Economic meltdown is a complete collapse in economic activity over a long period of time, or a business cycle contraction. During recessions, many macroeconomic indicators vary in a similar way. Production as measured by Gross Domestic Product (GDP), employment, investment spending, capacity utilization, household incomes, business

profits and inflation all fall during recessions; bankruptcies and the unemployment rate rises. The global recession has resulted in a sharp drop in international trade, rising unemployment and slumping commodity prices. Several economists have predicted that recovery may not appear until 2011 and that the recession will be the worst since the depression in the 1930s (Bezemer, 2009). The conditions leading up to the crisis, characterized by an exorbitant rise in asset prices and associated boom in economic demand are considered a result of the extended period of easily available credit, inadequate regulation and oversight, or increasing inequality (Bezemer, 2009).

The economic crisis has challenged researchers in various fields of studies as the current proposed solutions by economists seemed not to work. It has been argued that economics problems could not be adequately handled by empirical scientific knowledge (Lightman, 2009). Knowledge has however been identified as the major driver of any successful business. The present economic crisis is a reflection of general failure of business in different regions of the world. Poor economic calculation, non-performing loans and other factors have been identified to fuel the present situation (Rubin, 2008).

IT budgets are disappearing as fast as Wall Street investment banks. It Industries are faced with the consequences of the credit industry drying up and the effects it will have on our IT budgets. In a time when businesses can't borrow to meet payrolls, funding an IT project becomes an additional problem. In this research work, we identify knowledge management (KM) system approach as a viable tool in combating and preventing the present situation of financial meltdown. Knowledge management is the methodology for systematically gathering, organizing and dissemination of facts called information (Davenport et al., 1998).

Knowledge need not be a set of defined assertions with precisely specific domain; it may be both empirical and vague in nature (Folorunso et al., 2007). KM essentially consists of processes and tools to effectively capture and share data as well as use the knowledge of individuals within an organization. The major advantage of a KM approach is that it guides investment decisions (Davenport, 1998). Today, in the market place of e-business, KM initiatives are used to systematically leverage information and expertise to improve organizational Responsiveness, Innovation, Competency and Efficiency (RICE) (Sidore, 2008).

Background

The onset of the economic crisis took most people by surprise. Bezemer, in his work, identifies twelve economists and commentators who, between 2000 and 2006, predicted a recession based on the collapse of the then booming housing market in the U.S. The decade of the 2000s saw a global explosion in prices, focused especially in commodities and housing, marking an end to the commodities recession of 1980-2000. In 2008, the prices of many commodities, notably oil and food, rose so high as to cause genuine economic damage, threatening stagflation and a reversal of globalization (Dirk, 2009).

In January 2008, oil prices surpassed $100 a barrel for the first time, the first of many price milestones to be passed in the course of the year. In July 2008, oil peaked at $147.30 per barrel and a gallon of gasoline was more than $4 across most of the U.S.A. These high prices caused a dramatic drop in demand and prices fell below $35 a barrel at the end of 2008. Some believe that this oil price spike was the product of Peak Oil. There is concern that if the economy was to improve, oil prices might return to pre-recession levels (IMF, 2009)

In February 2008, Reuters reported that global inflation was at historic levels, and that domestic inflation was at 10-20 year highs for many nations. "Excess money supply around the globe, monetary easing by the Fed to tame financial crisis, growth surge supported by easy monetary policy in Asia, speculation in commodities, agricultural failure, rising cost of imports from China

and rising demand of food and commodities in the fast growing emerging markets," have been named as possible reasons for the inflation (Wearden, 2008).

In mid-2007, IMF data indicated that inflation was highest in the oil-exporting countries, including Nigeria, largely due to the unsterilized growth of foreign exchange reserves, the term "unsterilized" referring to a lack of monetary policy operations that could offset such a foreign exchange intervention in order to maintain a country's monetary policy target. However, inflation was also growing in countries classified by the IMF as "non-oil-exporting LDCs" (Least Developed Countries) and "Developing Asia", because of the rise in oil and food prices. Inflation was also increasing in the developed countries, but remained low compared to the developing world (Chinn, 2008).

Economic Indicators of Global Financial Crisis

The effects of global economic meltdown vary from countries to countries depending on the level of government response and proper economic initiatives (Metaxiotis et al., 2007). However, the following factors are indicators of financial crisis in a country:
(i)   Reduced trade and industrial production
(ii)   Unemployment
(iii)   Recession entrepreneurs
(iv)   Decreased volatility of financial markets
(v)   Reduced business travels

KM Architecture for Economic Meltdown

A Knowledge Management (KM) architecture is presented below with a five-tier level approach comprising each of the major indicators of global financial crisis namely;

1. Trade & Production (TP) KM
2. Unemployment & Job(UJ) KM
3. Entrepreneurs (EP) KM
4. Financial Market (FM) KM
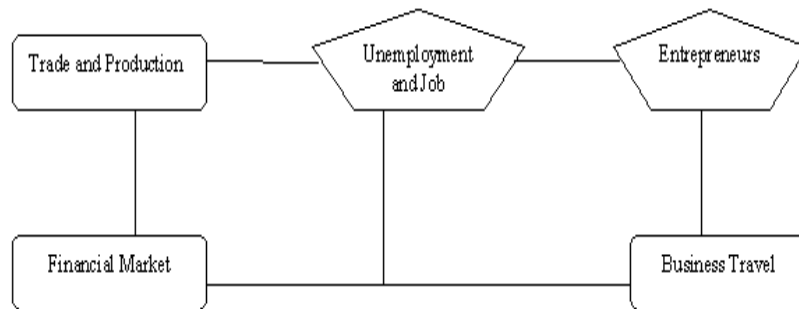5. Business Travel (BT) KM

Figure 1: A KM Economic Architecture

The underlying strength of the architecture in figure 1 is that it could give an early warning of economic crisis because of the intelligent capability of a KM technology. A KM technology accepts data/information from users and makes a more intelligent decision based on the inbuilt parameter within the KMs architecture. Each of the components in the architecture is equipped with two major baselines: an upper baseline and a lower baseline. The upper baseline is an economic function that indicates healthy financial activities within an economic system whereas; the lower

baseline signals shrink economic financial activities. Each of the baselines is calculated based on the inputted information into each of the components of the architecture. The weighted aggregate from all the five components are then used by KM to forecast and guide the economic investment of the users. The two baselines possess data mining capability that enables them to calculate the divergence and convergence about these two extreme points. The data mining technique maps the inputted information into the KM to identify common pattern of economic growths/economic shrinks. At this stage the Information pass through the economic manager in figure 2 to forestall a stable economic level.
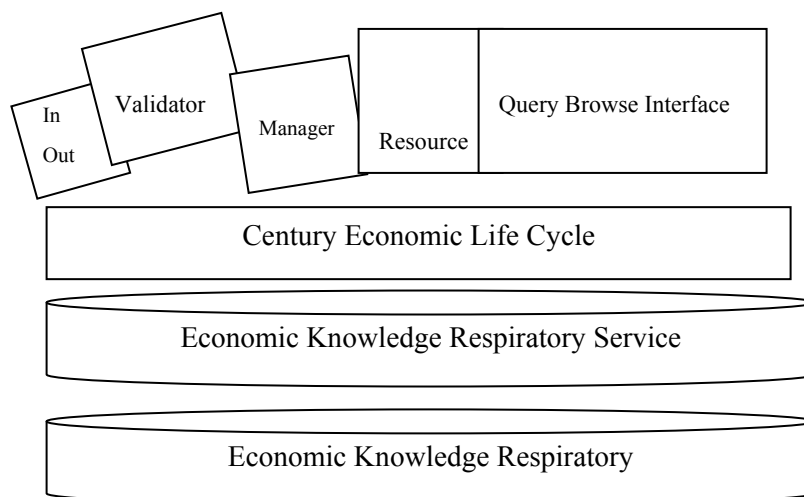

Figure 2: Economic Knowledge Manager

The return of investment ability of the KM technology is dependent on appropriate investment information of managers/stakeholders form the century economic life cycle in figure 2. Managers input their investment information from experience of good and bad investments to prevent recurring of such bad investment decision. These experiences can assist the new manager in future decisions as the knowledge is already automated on a KM platform. The trade and production (TP) KM is consists of information from the manufacturing and business sector on the state of economics statistics and other economic indicators. Operators in this industry make their information available to a TP for processing and in guiding new investors about areas of economic saturation and economic buoyancy. This prevents blind investment in only one sector and ensures the divergence of economic for greater performance and results. The availability of TP boosts economics information on investment and is an indicator on economic well-being of a particular country.

The unemployment and job (UJ) consists of information supplied by eligible job seekers in their quest to gain employment. It also contains information about available jobs and the numbers of qualified applicants. It also measures the skills level and education in job seekers to determine the real cause of unemployment. This KM assists governments in putting relevant structures in combating unemployment. KM approach differs from conventional database in that its content include data from experience of job seekers and implications of economic activities in providing information for decision making and strategic planning. The entrepreneurs (EP) is a knowledge management platform that contains information from experience of aggressive entrepreneur who knows how to use recession to develop their business skills in pursuing personal satisfaction. This knowledge can assist those that lose their jobs in financial crisis to have confidence in starting their own business.

The business travel (BT) provides a means of collating information on business travels within and outside geographical areas during economic boom as well as during economic failure. Informa-

tion from aviation can provide cross-geographical business activities of global implications. This information forms major indicators of economic growth within a given period that can assist in monitoring the ailing sector of economics. The financial market (FM) is arguably the most viable in preventing the challenges of global economic meltdown. The multiple effect of decreased volatility of financial market is one economic activity that can shrinks all other sectors of economic. This KM platform is included in our architecture to support financial market knowledge sharing to assist inexperienced investors from making grave financial error and investment that can have effects on lending and liquidity rate of other investors. Adequate knowledge from liquidity capital can assist in monitoring the level of economic activities through appropriate KM support techniques.

Economic Security of A KM

Knowledge Management System promotes sharing information among employees and should contain security features to prevent unauthorized access. Moreover, KMS content is much more sensitive than raw data stored in databases. Issues of privacy also become important especially now that KM is becoming a major driver of organizations. Economy generates increasing value by synthesizing knowledge capital and technology and uses it effectively to create an innovation dynamics that drives superior performance.

We identify three security requirements for efficient implementation of this architecture. The security areas borders on KM are confidentiality, integrity and availability. KM confidentiality implies that economic information and other parameter in the KM approach should be protected from unauthorized access by providing appropriate login token to forestall the activities of hackers and masqueraders who can use the information in KM to create undue economic advantages. While integrity is a security term that prevented unauthorized modification and disclosure of information in KM. it also implies that authorized party makes changes. Availability intends to make sure that KM resources and information are guided against denial of service attack. This can greatly affect economic decisions when needed parameters are not available on time.

Conclusions

This paper examines how KM could enhance economic activities in preventing the challenges of global economic meltdown. In this paper, a KM conceptual framework for managing the challenges of global economic meltdown is discussed in reference to major indicators of economics crisis. The paper also presented issues of security in terms of confidentiality, integrity and availability of a KM system approach. Every KM initiatives require time, money, energy and resources so that it may mature. Let us hope that in the coming years KM technologies would prove a good use in combating the challenges of economic meltdown

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Biographies

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