

Minimizing Asymmetric Information in Online Markets through Knowledge Management

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Abstract- This article is about the role of knowledge management in minimizing the asymmetric information in online business. The asymmetry of information is the prime concern in online markets where consumer and seller are located in distant locations and they cannot see each other. The success of ecommerce business depends heavily on the minimization of asymmetric information between the seller and buyers. As the online business is done through codified knowledge and it is easy to manage the codified knowledge so by efficient use of KM principles and processes it has now become easy to minimize the asymmetric information among the seller and buyers. The article discusses the types of asymmetric information which can be minimized through use of codified online knowledge.

Key Words- Asymmetric Information; E-business; Ecommerce; Knowledge Management; Information System

1. INTRODUCTION

Knowledge Management is an emerging field and is heavily discussed in the business context for its use in the organizational setting to be more competitive and profitable (Baskerville & Dulipovici, 2006)[7]. The information age dominated by use of web based technology and other digital devices like mobile cell phones has put great pressure on the information synthesis capacity of individuals and firms. The increased information all around firms and individuals has enhanced the role of knowledge management. The knowledge management as discipline has got attention from management theorists and practitioners in the early 1990s (Shoemith, 1996)[29].

Parallel to the increased interests of management practitioners, organizational learning by academic and knowledge management professionals has also rose substantially (Stigler, 1961)[30]. This can be taken as evidence by the production of books and articles recently published on the subject. Knowledge management is now established discipline (Lee & Choi, 2003)[19] with its own functions and processes. Many researchers have presented their ideas on various dimensions of KM. Much has been done on the conceptual framework of KM on one side and on the other side some authors like Kankanhalli, 2005[17], Berman 2002[8], Shu-Hui 2004 have presented empirical investigation and tried to find out the link between the organizational performance and KM processes and practices.

Importance of KM is further strengthened by the rise of Knowledge Based View (KBV) of the firm in strategic management perspective (Ketchen & Giunipero, 2004)[18]. The discipline of strategic management makes a focus on identification of sources of sustained competitive advantage (Barney, 2001)[6] (Priem & Butler, 2001)[26]. The start of KBV has established the fact acquisition, processing and management of

knowledge has now taken as source of sustained competitive advantage (Carlos Bou-Llugar & Segarra-Ciprés, 2006)[10]. Organizations around the world are giving adequate attention to the management of their knowledge resources (Bowles, 1985)[9]. KM processes and practices are now being widely adopted in many business firms for achieving more competitiveness and profitability.

2. SIGNIFICANCE OF THE STUDY

The focus of the paper is application of KM practices in online markets as tool for minimizing the asymmetric information pertaining to the product pricing, attributes and availability and identifying business expansion and enhancing the trust. The use of web based bazars like Amazon, Ebay NetFix, and Bestbuy has surged in the last decade. The share of online retailing is increasing with the rate of average 11% growth annually; the percentage however varies from country to country and online website to website (Forrester research US, www.forrester.com online retail report 2011)[33].

The purpose of the article is to understand how KM practices have played role in the proliferation of e-businesses. Historically KM emerges as an important element for promotion of organizational performance, creativity and operational effectiveness leading to improved quality in product and services (Wiig, 1994)[32]. We want to study the role of KM to reduce the asymmetric information in business models of online websites. Knowledge based theory of the firm suggests that organizational assets that enables and triggers the competitive advantage reside in the knowledge management practices of the firm. The strategic importance of any organization is highlighted how best practices of KM are being adopted in an organization. In a pure competitive environment the difference among top competing products is the reflection of the organizational

setting embedded though systems of knowledge management (Alavi & Leidner, 1999)[4] in the top performer.

3. THE METHODOLOGY

The topic of the article carries lots of potential for understanding the online business dynamics and role of information management and machines in this online business. As this study is mainly a conceptual framework where we intend to analyze how online businesses manage and manipulate the information and how this analysis are then further used to attract more business. The pure empirical analysis and typical data collections are not needed here. However we have analyzed the information processing and storing by various online businesses and use of that information for further business generation by using the lens of knowledge management. From various strategies of online business firms we have applied different models of knowledge management to formulate a conceptual framework which can further be used as a tool for empirical analysis.

4. REVIEW OF LITERATURE

In the available literature of knowledge management we find three distinct streams of knowledge which have dominated. The one stream belongs to western school of thought purported by Mariam Alavi and Davenport. This school of thought takes KM as pure Information Science (IS) perspective and supports for more codification of all sort of organizational knowledge into explicit knowledge so that the knowledge as asset can be stored through available IS instruments.

The second school of thought is European lead by Karl-Erik Sveiby who is the founder of Swedish KM movement. His book, published 1990 (Sw. Kunskapsledning), was the world's first book carrying the title "Knowledge Management". Sveiby does not take knowledge management as mere an advance form of IS rather he goes one step ahead and discusses the sources of knowledge and the procedures for high efficiency through how a shift in focus from managing tangible assets and profits to managing knowledge and intangible assets, such as image, competencies and innovation to enhance profitability.

The third school is led by Nonaka and his followers from Japan. Nonaka got attention by the world when he first time published his book "The knowledge creating companies" in early 1990s. The philosophy of Nonaka is influenced by Chinese philosophy and he explains knowledge creation through knowledge traid relationship of explicit, tacit and phronesis (Nonaka, Kodama, Hirose, & Kohlbacher, 2014). Nonaka first time links knowledge creation through the teleology and value based system of knowledge creation lead by practical wisdom called phronesis.

Business models which are efficient in managing the knowledge have gained substantial business growth in the last two decades (Berman, Down, & Hill, 2002)[8]. One

such example is online businesses which have used KM as powerful tool for business generation. The purpose of the article is to understand how KM practices have played role in the proliferation of e-businesses. We want to study the role of KM to reduce the asymmetric information in business models of online websites.

4.1 Asymmetric Information

Asymmetric information is the phenomena explained through economics as lack of information transformation between the buyers and sellers (Morris, 1994)[21]. The information asymmetry explains the situation where one person has more or better information than the other. This leads to an imbalance of power during the economic transactions and can sometimes lead market failure in the worst case thus causing efficiency loss and fall in fair business deal. The examples of such problem are moral hazard, adverse selection and information monopoly (Chiappori & Salanie, 2000)[11]. The imbalance between the information transformation lead to economic problems such as adverse selection and moral hazards. These problems aggravate to the market failure and poor performance of the economic system and yield inefficiencies. Information asymmetry creates communication gaps in the transactional processes and mislead the buyer or seller for wrong decisions. The neo-classical economists mostly believe in perfect information exchange for a smooth business transaction. Adverse selection and moral hazards are the two main consequences of information asymmetry which lead towards market failure (Cohen & Siegelman, 2010)[13]. The adverse selection will lead to the decisions of selecting bad products. The ignorant party suffer loss and the party with more knowledge gets undue profits just because of concealing certain information. The moral hazard is the phenomena when an insured person behaves recklessly and takes more risks as usual to enjoy the benefits of insurance. The insurer on the other hand due to contractual obligations cannot deny the services to the insured person. Here asymmetric information from the part of insured person leads to inefficient deals of insurance.

The asymmetric information has severe consequences on the performance of business. Berle & Means are the two who first time realized the adversity of the asymmetric information problem for the business firms (Payne, Berle, & Means, 1933)[25]. Along with the work of Vickrey (1961)[31] and Mirrlees (1971) [20] many other economists has explored the role of information in a business context. To work markets efficiently the flow of information must be full and relevant. According to Radner (1968)[27] and Arrow (1974)[5] imperfect information can lead to incomplete contracts with resulting inefficiencies.

One of the significant work in the line of asymmetric information is done by Akerlof (1995) [3] by presenting the study of market for lemons. The "lemons" is used as metaphor for used cars. Akerlof explained that the owner of a used car has more knowledge than any potential

buyer. Thus the used car market necessarily counts to be an issue of asymmetric information. Akerlof characterizes the lemon market as following:

1. Asymmetry of information exist where no buyers will be able to accurately assess the value of a product through first hand examination.
2. In lemon market an incentive exists for the seller to pass off a low-quality product as a higher-quality one.
3. Sellers lack any credible disclosure technology (sellers who have a great car possess no way to disclose this credibly to buyers)
4. Lemon market buyers are pessimistic about the seller's quality
5. No authentic systems of warranties and guaranties exist.

4.2 Market Failure

In economics, market failure is when the allocation of goods and services by a free market is not efficient. This leads to the fact that there exists another possible result which can yield a participant of the market better off without making someone else worse-off. Market failures often leads to the consequences which is not efficient and can damage the welfare of the society (Cohen & Siegelman, 2010)[13].

Market failures are related to inconsistencies in time preferences, asymmetries in the information, non-efficient markets outcomes, market externalities and inefficient use of public goods. The presence of market failure often lead towards the government intervention in a particular market. Economists working for more equitable market outcome are concerned with the reasons of market failure and strive for correction.

Market failure is considered as anti-welfare. Increased market failure can lead to inefficient resources allocation and hence concentration of wealth in few hands. It is thus good subject of public policy to develop such policies for correcting any market failure in the society.

In the backdrop of asymmetric information in online businesses the danger of market failure is greater. How the online websites go about to minimize this danger and how by using KM practices these online business

organizations can reduce the issue of asymmetric information is the subject matter of this paper.

4.3 The Online Business Model and Functioning of Online Business Markets

E-Business has been a buzz word since 1995. E-business or online business markets are outcome of the dot com bubble happened in late 1999s. Many online sites started offering various types of selling services across the globes. The first ever online site which started online selling was in 1992 "book Stacks Unlimited" in Cleveland opens a commercial sales website (www.books.com) selling books online with credit card processing followed by many small and large online sellers using various available digital sources. It was 1995 when Jeff Bezos launches Amazon.com which is now the world's top most selling website followed by E-Bay which is founded by Pierre Omidyar. After that a flood of online websites appeared.

In current time online business is getting boom with each passing year and the number of users as well as number of suppliers is increasing. Top most companies which are engaged in internet business are EBay, Amazon and Google. The three firms are enjoying phenomenal growth in their business for the last many years (Yahoo Report 2014).

4.4 Taxonomy of Internet based Businesses

Before we get into the details of how online businesses reduce asymmetric information we must first classify what are the types of e-businesses. In general we can classify internet based business into two broad categories; goods and services. The goods category is further divided into two further categories; used goods and new goods. There are lots of websites like Ebay and Amazon which are offering platform for all types of goods. Similarly there are many websites which are offering platforms for service provisions only. At the moment however the volume of businesses pertaining to provision of services through internet is limited to few categories like software, education and advertising but still each day as the technology advances the new techniques are being developed to offer services through internet.



Figure 1: Online Business Taxonomy

Figure 1 explains the taxonomy of online businesses. The two pronged online business can be further divided into

sub categories but we have just taken two broad categories and two sub categories of goods oriented

business. The goods oriented e-business can deal the new goods or the used goods as well. Many websites offer all kinds of goods and services on just one single platform. The phenomenon of all sort of selling is however subject to the approval from online platform.

The traditional lemon goods are frequently being sold in online markets. In E-Business the danger of happening of asymmetric information for new goods and used goods is almost same. However the risk of fraud can be many folds. In physical markets if there is fraud then either buyer or seller will be damaged or sometimes depending upon the severity of fraud both will be affected. On the other hand in online business the number of affected will be more in case of fraud. The name and image of buyer, seller, the online platform provider and the payment solution providers can also be counted into the list of affects.

4.5 Two sided markets phenomena

Two-sided markets, sometimes also called as two-sided networks, are platforms for transactions and economic exchange and possess two distinct user groups that share certain common economic goals. The economist call such economic arrangements under the name of multi-sided-platforms or two sided markets. These platforms have distinct characteristics to generate economic outcomes. The providers of such platforms work on both sides of the market. These two-sided markets have two sets of agents who connect through certain intermediaries or platform and the economic decisions of any one agent affects the outcomes of the other agent which normally pop up through an externality or network effect. Examples of two sided markets include credit cards, Yellow pages, and online businesses. In each category users are of both sides are got connected through the medium or the platform. In credit cards scenario the owners of the credit cards companies try to increase both the holders of credit cards and the outlets merchants who can accept the payments through credit cards.

The Ebay and Amazon fall into the category of two sided markets where both firms carry marketing activities to attract the buyer as well as the sellers. The challenges for these firms become two folds as they have to work on supply side as well as demand side. Such business firms' profits are associated with the number of interactions or transactions across the two sided customers. These firms develop special protocols to maintain the trust level of both groups. As these firms most of the time act as only platform providers for economic transaction and they do not involve themselves into the buying and selling of the products, however their brand name itself attracts the two parties to interact for an economic exchange. Hence these business firms execute and emphasize special measures that only trustworthy suppliers and customers interact on their platform. Thus the responsibility of reducing asymmetric information rests on the shoulders of the platform providers. These firms try to reduce the asymmetric information through various techniques.

4.6 Managing Asymmetric Information (AI) in Online Business

Contrary to physical markets in online markets the dilemma of AI is multifold. In physical markets the AI problem is mitigated by both customer and the business but resolution of AI in online markets is more problematic than physical markets. For example in physical markets the buyer and seller or their representative are physically present in the transaction point whereas the nature of online business is different than physical business. In the online business the physical presence of buyer and seller is out of question. Usually the buyers and sellers do not belong to same localities sometimes the seller is in one city or country and the buyer is sitting in other city or country and the transaction takes place online. The modalities of transactions like quantity, quality, price and delivery are set through controlled phenomena of business websites or platforms like Ebay or Amazon.

Before we further go into the details of managing AI by using KM we must look into the types of AI. In literature we find three basic types of AI adverse selection, moral Hazard and information monopoly (Pauly, 1974)[24].

4.6.1 Adverse Selection

Adverse Selection happens when one party has more information than the other usually the seller has more information about the product than the buyers (Abbring, Heckman, Chiappori, & Pinquet, 2003)[1]. Information is asymmetric even before the contract is signed. Adverse selection is sometimes called ex-ante hidden information. The asymmetry in the information will lead to unpleasant results and will end up bad selection of products. Through proper use of knowledge management the danger of asymmetric information can be reduced substantially.

4.6.2 Moral Hazard

Moral hazard Information is symmetric before the contract is accepted but asymmetric afterwards. The examples for moral Hazard include insurance industry where the insurer behaves differently after getting insurance (Abbring et al., 2003)[1]. The agent knows the same as the principal before the contract is signed, but it will know more than the principal about an important variable once the contract is accepted (ex post hidden information). In online business the chances of avoiding moral hazard type AI is difficult.

4.6.3 Verities of Asymmetric information in Online Business

During online business there is lots of information which can be categorized as asymmetric information. In online business the buyer and seller are connected through a virtual medium and if the transaction is going to take place first time then the chance of fraud or post purchase resentment will be higher. The asymmetric of information in any given transaction can be about identity of the buyer and seller, the product quality and quantity, the price, the payment, delivery time line, contract obligation etc. Online auction websites or online sellers try to reduce the asymmetric information through number of KM processes.

5. RESULTS AND DISCUSSION

After careful review of system of information processing adopted by Ebay and Amazon we have identified several technical and non-technical steps and strategies adopted by the E-commerce firms to increase the level of trust and reduce asymmetric information.

5.1 Managing Ex-ante Asymmetric Information

Ex-ante of pre purchase asymmetric information is related to the history of buyers and sellers and product features. The business of online ecommerce websites heavily depends upon the number of trusted buyers and sellers. As a result all online websites do special measures to make explicit knowledge about any buyer and seller. All websites issue a certificate of trust to each buyer and seller which is mentioned on the profile of each, so any person before engaging into the business with any other person first checks the certificate of that person.

5.2 Managing Ex-post Asymmetric Information

The ecommerce websites also do measures to provide feedback system after each transaction. This feedback system provides opportunity to each buyer and seller to rate and comment each other after each transaction. These comments are made published online and anybody can access them and to evaluate the prospective buyer and seller. This feedback system coupled with the trust certificate can lead to better satisfaction of any market participant to engage in further business.

5.3 Strategies to reduce Asymmetric Information

Knowledge Management is a powerful tool to minimize the asymmetric information in online business. Role of

KM starts right from the point when a buyer or seller gets registered on the business website (E-Bay or Amazon). Business model of EBay and Amazon is such that these auction websites have developed strong Information Systems (IS) to control the fraudulent transactions. These websites have evolved strong systems of registration for the buyers as well as the sellers. Here without being registered one cannot have buying and selling. The registration process for a buyer on these sites is long and contains much security fields. You cannot register with these sites with long postal code or wrong email address or cell number. It is compulsory for the sites to have your bank details as well. These websites before the final signal for registration verify the bank details and if the same information has been provided by the bank system only then these sites finalize the registration process.

5.4 Knowledge Management Technologies and E-Business

The online selling websites face dilemma of trust deficit between the buyer and seller. These websites adopt lots of strategies to overcome this dilemma and have developed various knowledge trust indicators (KTI) (Adler, 2001)[2] like feedback system, ranking of the seller and buyer and previous sales and purchase history. Following the theory of benevolence based trust (Cruz, Gomez-Mejia, & Becerra, 2005)[14] any buyer and seller prior to making any new online transaction decision goes into the details of the developed KTIs and get full satisfaction to reach on final decision. The knowledge memory of the system helps them create new level of trust to engage in the transaction (Hayek, 1945)[16].

Figure 1: Information Flow in Online Business Model

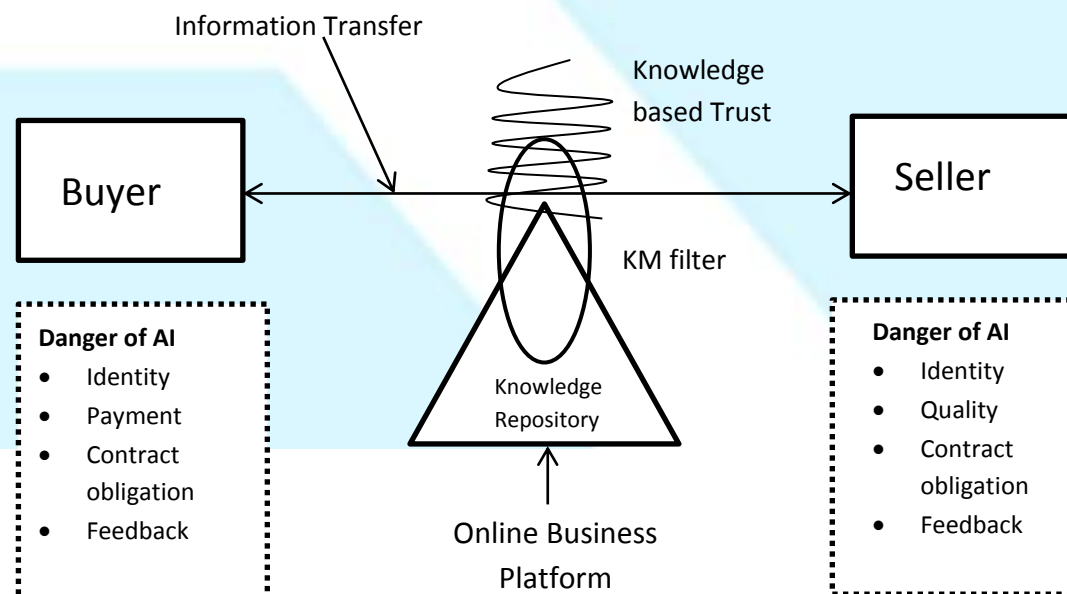


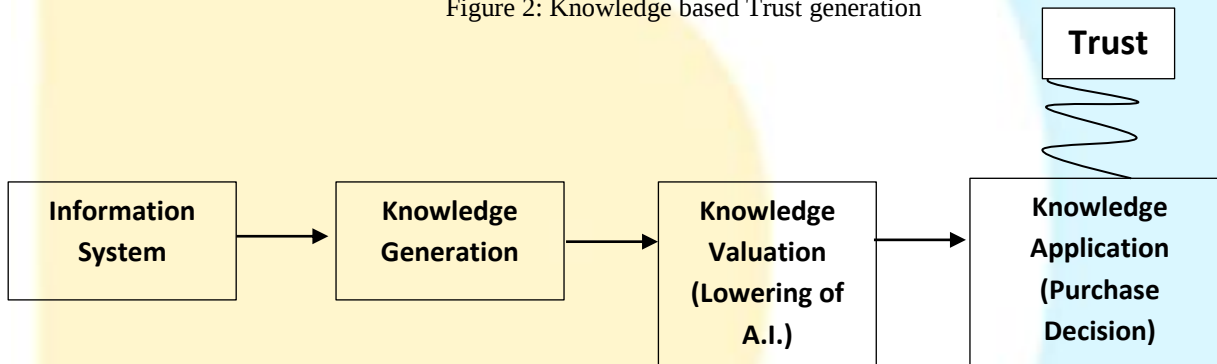
Figure 2 shows the information flow system in an online business models. The information search from either

buyer or seller is through the knowledge repository of online business platform. The sophisticated database

systems of online websites provide each bit of information to either buyer or seller to raise the trust between the buyer and seller (Kankanhalli, Tan, & Wei, 2005)[17]. Knowledge and information are grounded in data. The knowledge memory of the organization help to build an online purchase system (Sharratt & Usoro, 2003)[28]. The buyer and seller generate phronesis which provide basis for decision of online transaction (Nonaka et al., 2014)[23]. Trust generation is followed by knowledge creation in the online system. The information

management system of the online websites lead towards knowledge generation, knowledge valuation and knowledge application. The knowledge is generated once person interacts with the system and reads the given information which leads towards evaluating the given knowledge and the useful information leads towards the knowledge application and which eventually develops into a purchase decisions. After each loop is completed a level of trust is developed.

Figure 2: Knowledge based Trust generation

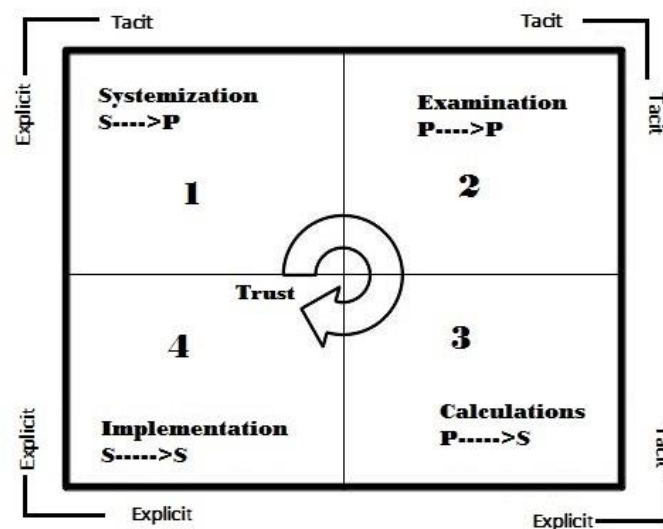


5.5 Knowledge generation in a virtual SECI Model

Following the famous Nonaka's SECI model (Nonaka, 2002)[22] of knowledge creation we bring forth the idea of virtual model of Systemization, Examination, Calculations and Implementation (SECI) where online user generate knowledge only in the virtual environment by interacting with the system only. The purchase decision of buyer is outcome of knowledge generated in the virtual environment. The generated knowledge in the virtual environment will empower the buyer or seller to

engage into virtual business. The elements of virtual SECI would be Systemization, Examination, Calculations, and Implementation. A buyer or seller will use the system as a resource for getting information previously stored and then he will make examination of stored information and will calculate the credibility of the information and once its credibility is established he will then make the decision of purchase or not to purchase. On the completion of each loop a level of trust is built which will help to reduce asymmetric information for both customers and sellers.

Figure 3: Nonaka's SECI model modified



6. CONCLUSIONS

By the use of technology the consumer is becoming wiser. The knowledge memory of the system has provided great help for the consumer to sharpen his phronesis process and refine his judgment. The use of the online system has made the buyer and seller safer. In this article we focused on a bigger challenge of making economic decision in online businesses by overcoming the asymmetric information through use of knowledge management principles. In online businesses we are confronted with the millions of buyers and sellers they interact with each other for an economic exchange by using digital systems of knowledge storing and knowledge delivery on demand for sense making to conclude a buying decisions. The other challenge we are facing is the transformation of information across the digital medium while the seller and buyer belong to distant locations and how can a successful transaction takes place in this scenario. We face two major sorts of AI in online businesses; one pre purchase asymmetric information and second is post purchase AI.

Asymmetric information in any market leads to disastrous market failure and inefficiencies in the market system thus compromising the welfare of a society and also jeopardizing the significance of online markets. Governments all around the world do measures to ensure efficient market systems in the economy (Grandmont, 1985)[15]. The online business models are designed in a way that buyers and sellers get maximum information for their economic decision. In the article we have tried to explore the possibilities of various types of asymmetric information appearing in the online business and how online firms are taking measures to control these AI. Online markets and online business can be a good example of efficient working of an entire market system and not merely an organization through use of KM. The knowledge repositories of online platform contain SOPs and rules of the game for smooth processing of the transactions (Kankanhalli et al., 2005)[17]. These efficient KM systems operative in online businesses offer state of the art functioning of the markets. Over the time the trust level on the online website has increased and more and more customers and products offering are increasing day by day. This can also be referred as the duality of the growth in online business. The increased efficiency and minimized AI has attracted not only the buyer and sellers but also new markets have evolved in virtual businesses. Through enhanced trust measures and induction of KM processes has enabled E-Bay and Amazon as a results the wealthiest firms in the category. The improved KM systems has resulted more businesses and more transparency for both buyers and sellers (Chuang, 2004).

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