

New Perspectives of Knowledge Economics**

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Abstract

Knowledge-based economy becomes a common place among policy markers and main stream economists. The shift to a digital knowledge-based economy, prompted by new goods and services, will be a powerful engine for growth, competitiveness and jobs. In addition, it will improve citizen's quality of life and environment. It enables us to discard some meanings and practices and retain others. Knowledge-based economy exhibits a dynamics different from a market economy. No organization can remain static and survive. Internal and external forces will provide or destroy opportunity and only those organizations equipped with technological infrastructure and strategy to economically exploit all facets of their knowledge will flourish.

Keywords: Information, Knowledge, Knowledge-based economy, Competition, Collaboration.

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1-Introduction

Knowledge, information and data are concepts that are often confused. The distinction nature of these three concepts is important in understanding the nature of organizational competitiveness since they are becoming increasingly dependent on knowledge and information [6].

Knowledge and information are not the same, nor are either of them synonymous with data. These concepts are interrelated and have no useful existence without each other. Information can be described as data in context and may be generated as a by-product of data processing. Data, on the other hand, may be considered as a convenient way to store and transfer part of what constitutes information. It is transferred from one user as process to another through media such as pieces of paper, data files as floppy disk and network file transfers [6].

While knowledge is understanding about domain. It has an essential future predictive capability. It can be represented as the likely consequences of a set of conditions, which are used as the context to interpret incoming data and information. Recurrent pieces of information lead to general laws-which are knowledge, thus it may also be automatically extracted as a set of rules from data-sets through processes known as machine learning and data mining.

The most important factor that defines the competitiveness of an organization is its ability to acquire, evaluate, store, use and discard knowledge and information spreaded to the market in order to survive and thrive through effective action [6].

Knowledge management emerged around 1995. The early emphasis was on information systems. Then the focus shifted towards organizational development, intellectual capital management, competence management, social learning, systemic innovation and change management... these revolutions needed to be managed through future research [17].

On the 23rd of April 2002 the European Knowledge Economics Council held in Berlin a seminar on Knowledge Economics. One of the lessons derived from that seminar is that speaking and using economics as a common language and science for knowledge management will provide the greatest benefit [3]. Economics should be an integral part of knowledge society from now on. The language of economics is an international and understood in all social networks. All economic entities need to develop and apply their knowledge in order to derive down their and clients' production

costs. They are engaged in production activities by transforming inputs into outputs, using their own knowledge as techniques... their production function.

Economics need not to be combined to money and profit-making firms and buying consumers. It is the study of how humans allocate their scarce resources including time and output... the experience. The success and growth of an economic entity (individual and organization) is fueled by the production activity of new techniques that drive down production costs, this activity is the technique or knowledge production function of the firm [6].

The aim of this paper is to familiarize concerned entities with the importance of economic principles application in knowledge management, without it, it is doomed to failure.

2-Knowledge, Information and Economics

There are many thoughtful and thought-provoking definitions of knowledge among them:

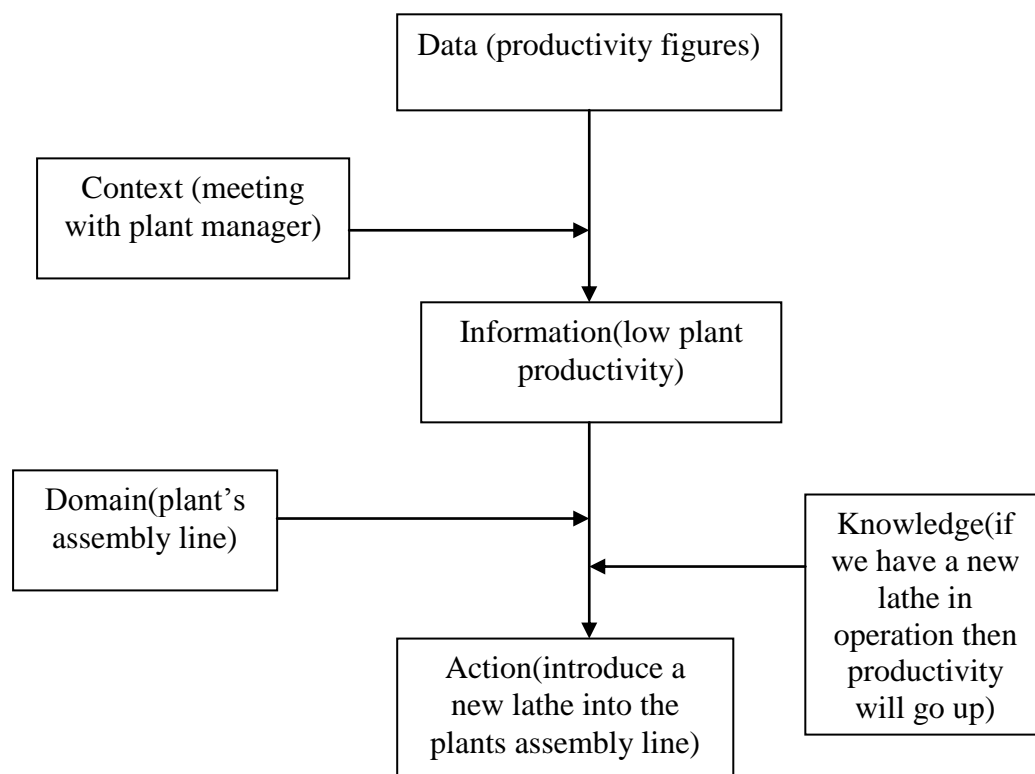
- It is a defined body of information, which might consist of facts, opinions, ideas, theories, models, principles or other frameworks [12].
- A person's state of being with respect to somebody of information. These states include ignorance, awareness, familiarity, understanding, facility and so on [12].
- A set of models describing various prospects and behaviors within a domain [11].
- The full utilization of information and data coupled with the potential of peoples' skills, competencies, ideas, intuitions, commitment and motivations [4].
- Knowledge is people, money, leverage, learning, flexibility, power, competitive advantage [4].
- Sustained business rather than capital, labor or land [4].

Many other definitions may be cited, yet we shall adopt the first two ones as they are good, sensible and functional. Two kinds of knowledge often mentioned in discussion related to the subject, i.e. explicit knowledge (formal knowledge) that can be documented, archived, codified and

articulated in language and transmitted among individuals. It includes patents, trademarks; business plans, marketing research and customer lists.

Tacit knowledge (informal knowledge) or the know-how is a personal knowledge rooted in individual experience and involving personal belief, perspective and values. This kind of knowledge is often viewed in business firms as the real key to getting things done and creating new value [14], others, however, see it does not matter whether a written procedure as a subject matter expert provides a solution to a problem, as long as a positive result is achieved, and provides the ability to respond to novel situations. Knowledge is stored in the individual brain or encoded in organizational processes, documents, products, services, facilities and systems. It is the basis for, and the driver of the postindustrial economies. It is the result of learning which provides the only sustainable competitive advantage. It is value-added behavior and activities... to be of value it must be focused, current, tested and shared [4].

Information is a stored and transferred data in context. It is difficult to store information, as the entire context for a given situation must be wrapped around the data. This limits its usefulness in changing contexts, it may be more appropriate to store data alone and generate information each time based on the present context. Knowledge and information enables effective action as illustrated in the figure below[6]:



“Knowledge and Information Enable Effective Action”

In the figure above data (productivity figures) is interpreted by a division manager in a context (a meeting with the manager of one of his division's plants) as information (the plant's productivity is low). This information is, in turn, combined with knowledge (if we have a new lathe in operation, then the productivity will go up) within a domain (the plant's assembly line) leads to effective action (introduce a new lathe into the plant's assembly line). Without relevant and accurate knowledge and information, action loses its potential of creating wealth, whatever means are used to measure it. All traditional types of business processes, from production to marketing and sales, rely increasingly on specialized knowledge and information which need to become more decentralized empowering the worker closest to the activity to make appropriate decisions and actions without consultation or direction from the upper level of management which in turn represent a new approach based on motivation and team work in the new type of organization called the knowledge organization which employs a high proportion of knowledge workers, who create knowledge and use it to interpret incoming information [7]. Such workers are more productive and better paid than non-experts who require more time to learn how to perform specific activities to a certain degree of quality and productivity in a specific industry.

Knowledge organization become part of daily life and deeply affected all societies due to [6]: [1] new and affordable technologies that automate mechanical activities, [2] the rise in the cost of expert labor, [3] the globalisation of the economy and the intense of international competition which pushed the organizations into specialization.

There is a misunderstanding among non economists that economics is about money and is related to profit making firms and buying consumers. This is not the case. Economics is the study of how humans allocate their scarce (limited) resources between competing uses for maximum satisfaction. Those scarce resources can include time as payment for consuming an activity and leisure time... output can be the experience.

Now with the increasing recognition of the importance of human capital, non monetary economic literature is starting to grow. Economic studies during 1920's do consider money but social currencies where wealth is measured in social value. The success and growth of an economic entity is fueled by the production activity of new techniques that drive down production costs. This activity is called a technique or knowledge production function.

The production function can be expressed mathematically as [16]:

$Q = f(K,L)$ A first-degree production function.

Q = the quantity of output (measured in appropriate units).

K = the number of “service-units” derived from physical capital scheduling as machines.

L = the number of labor-service units.

Most knowledge management projects are doomed to failure due to lack of economic analysis and pre-investment appraisal [16]. With limited resources organizations must know if these inventions worth investment to be allocated to them or are they wishful thinking. Economic-based knowledge management helps consumers when leading the creation or purchase of a KM tool or solution. Knowledge economics is the most powerful instrument to help consumers (individuals, countries or private and public organizations) determine which KM are likely to help improve their bottom line regardless of its measure: time, manpower, cost avoidance, market share, winning wars, money, and the like. Economics is no longer about money, but about understanding and improving how to make the best choice based individual and organizational performances and the resources at hand. Knowledge economics is about improving the effectiveness and efficiency of natural knowledge that all individuals and organizations have by improving the volume and quality of knowledge flows and stocks.

3-Knowledge Need to be Managed

Knowledge is a defined body of information that consist of facts, opinions, ideas, theories, principles, and models in addition to a person’s state of being with respect to somebody of information. The very important matter is how knowledge is acquired and how we can apply it (tacit or explicit) in order to achieve a positive result that meets business requirements. Managing knowledge represents the primary opportunity for achieving substantial savings, significant improvements in human performance and competitive advantage in the market place. In addition to the following factors[8]:

- 1- Organisations compete on the basis of knowledge.
- 2- Increasing competition in market places and the rate of innovation is rising.
- 3- Reduction in staffing creates a need to replace informal knowledge with formal methods.
- 4- Competitive pressures reduce the size of work force that holds valuable business knowledge.

- 5- The amount of time available to experience and acquire knowledge has diminished.
- 6- Early retirements and increasing mobility of the labor-force lead to loss of knowledge.
- 7- There is a need to manage increasing complexity, as small operating companies are transnational sourcing operations.
- 8- Changes in strategic direction may result in the loss of knowledge in a specific area.
- 9- Small companies need formal approaches to KM even more, because they don't have the market leverage, inertia and resources that big companies do. They have to be much more flexible, more responsive and make better decisions because even small mistakes can be fatal to them.

KM program should help a company do one or more of the following[13]:

- ♣ Foster innovation by encouraging the free flow of ideas.
- ♣ Improve customer service by streamlining response time.
- ♣ Boost revenue by getting products and services to market faster.
- ♣ Enhance employee retention rates by recognizing the value of employees' knowledge and rewarding them for it.
- ♣ Streamline operations and reduce costs by eliminating redundant or unnecessary processes.

Adoption of KM solutions face many roadblocks. Managing knowledge has been perceived as an unmanageable kind of problem-an individual human implicit activity, it has not become part of business infrastructure, yet the body of literature about managing intellectual capital is growing covering variety of domains and disciplines that can be applied to make knowledge work manageable and measurable... computer technology a cause of the problem-can provide new tools to make it all work. The computerized business environment provides opportunities and new methods for representing knowledge and leveraging its value.

KM draws from a wide range of disciplines and technologies among them[5]: AI, groupware, library and information science, technical writing, document management, decision support systems, semantic networks, simulation and organizational science in addition to many others.

There are two tracks of KM[6]:

- 1- Management of information as objects that can be identified and handled in information systems.
- 2- Management of people... processes a complex set of dynamic skills, know how, etc.

Others adopted three-part categorization[5]:

- 1- Mechanistic approaches,
- 2- Cultural (behavioral) approaches and
- 3- Systemic approaches.

Dealing with these approaches is beyond the scope of this paper. K.M. has already been embraced as a source of solutions to the problems of today's business, yet it has not been easy for this science to construct its road of self-validation.

4-Economic Value of Knowledge [14]

Any economy is based on trading labor or capital of some variety for needed goods and services. Knowledge is the capital of this era, and its economic value, while difficult to quantify is absolute. Nothing is manufactured or produced without passing through a knowledgeable worker. The more knowledge one has about itself, the greater the opportunity it extends itself. Conversely, when the knowledge leaves, so does the capital.

National economics has always been based on goods and services, and will remain that way for the foreseeable future. However, there is a shifting away from the traditional economic foundations of land, labor and capital to an information dependant economy. Information has become nearly a commodity in and of itself in one of the most fundamental shifts since the industrial revolution. Knowledge not only details the operation of an enterprise, but also can be exploited to the benefit of the employer and the employee alike. Training has always been a part of corporate culture, but now it can be supported with the most intricate observations, experience and the entire body of wisdoms gained over the history of the enterprise. Collaboration enhancement and direct cost saving are the biggest benefits of knowledge management implementation. In order to increase its productivity, the organization must evaluate inputs and outputs, determine the efficiencies of equipments it uses, and assure that all employees have access to policies, procedures and instructions. The rapid changes in world economics have had a profound impact on labor force movement within and among industries. The demand for accurate and secure data and information is greater than ever before in order to make sound decisions in resources allocation and efficiency improvement, capability, responsiveness, innovation and compliance. Becoming best at these will ultimately enable the organizations to dominate the markets they serve with true and sustainable competitive advantage.

Economic Returns to KM:

Economist Brian Arther, argued that production and distribution of knowledge-based goods and services should create and sustain increasing returns in contrast to diminishing returns that characterize production of industrial are constrained by a threshold of scale and scope as every unit increase in land, labor, or capital results in diminishing returns on every incremental unit beyond that threshold. In contrast, information and knowledge products seem to be governed by a different law of economic returns, investment in every additional unit of information or knowledge created and utilized could result in progressively higher returns[1]. Actual realization of such returns requires rethinking of the nature of these products and services in addition to their creation, distribution and utilization. There is more need for sustained business relationships with collaboration as well as potential competitors[10].

Incentives and rewards also must be used to justify economic knowledge sharing by the employees as well as the outsiders..i.e. customers and suppliers through contractual measures such as punitive covenants with the need for trust and loyalty of customers, employees, partners and suppliers, especially during the Internet age where global knowledge economics for knowledge, expertise, skills and intellectual capital in which the free market of knowledge is just a few mouse-clicks away[9].

In today's information driven economy, companies uncover the most opportunities and returns from their effective KM programs which help them[15]:

1. Making decisions faster and closer to the point of action.
2. Overcome internal and external barriers.
3. Provide more opportunities to innovate.
4. Reduce product development time.
5. Enhance customer relationships.
6. Increase efficiency and reduce costs.
7. Reduce wastes and increase revenue
8. Better utilise existing resources.
9. Create new knowledge.

Challenges of K.M.: They can be summarized as follows[2,3]:

1. Getting employees aboard through sharing in policy making and adapting an incentive program.

2. Allowing technology to dictate K.M. by making decision based on who(people), what(knowledge), why(business objectives) and how(technology).
3. Not having a specific goal.
4. It is not static as the value of knowledge can erode over time. It must be constantly updated, amended and deleted.
5. Not all information is knowledge. Quantity rarely equals quality...identity and “disseminate knowledge gems from a sea of information”

5-Conclusions

No organization can remain static and survive. Internal and external forces will provide or destroy opportunity and only those organizations equipped with a technological infrastructure and strategy to exploit all facets of their knowledge will flourish. Wealth of our time is that we know about what we do. Most real knowledge is contained in the minds of the knower. Development of a process to facilitate the exchange of ideas will create new wealth and opportunity. A process is only applicable as it is economically feasible and useful.

رؤيا جديدة لاقتصاد المعرفة

أ.د. بديع جميل القدو*

أصبح مفهوم الاقتصاد المبني على المعرفة منشرا بين راسمي السياسات الاقتصادية والسياسيين على حد سواء. فالانتقال إلى هذا المفهوم من الاقتصاد مصحوب بتوفير سلع وخدمات يمثل محركا قويا للنمو والمنافسة وخلق الوظائف وفرص العمل. كما أنه سوف يحسن نوعية الحياة للمواطنين وللبيئة التي يعيشون فيها. هذا الانتقال سوف يمكن من إهمال بعض المفاهيم والممارسات الشائعة والاحتفاظ بغيرها. إن الاقتصاد المبني على المعرفة يمثل ديناميكية مختلفة عن تلك التي يمثلها اقتصاد السوق. فلا يمكن لأي كيان اقتصادي (منظمة فردية أو جماعية) أن يعيش ويتطور إذا ما بقي ساكنا، ذلك لأن قوى داخلية وخارجية سوف توفر أو تفوت فرصة، ومن يستطيع البقاء والتطور في السوق هو ذلك الكيان (المنظمة) الذي تتوافر له بنية تحتية تكنولوجية واستراتيجية للاستغلال الاقتصادي لأوجه المعرفة المتاحة له. إن ثروتنا الحالية تتمثل بما نعرف عن ما يعمل، والمعرفة موجودة في عقول الناس العارفين المهم كيف يمكن هؤلاء العارفين من المساهمة في رسم السياسات المناسبة للمنظمة التي يعملون فيها والاحتفاظ بهم كموجودات مهمة لدى المنظمة وخلق البيئة المناسبة لممارسة وتطوير معارفهم.

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